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THE
**green
scene**

HORTICULTURE IN THE DELAWARE VALLEY
SEPTEMBER • OCTOBER • 1986 \$1.50



*The Tree Peony: A Plant for the
Connoisseur. See page 4.*



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Front cover: An unidentified Botan in Peter Smithers garden shows the influence of Rock's variety.

photo by Sir Peter Smithers

Back cover: photo by Dick Keen

Volume 15, Number 1

September/October 1986

THE PENNSYLVANIA HORTICULTURAL SOCIETY

325 Walnut Street, Philadelphia, Pa. 19106

Telephone: 215-625-8250

Horticultural Hotline: 215-922-8043

Monday, Tuesday, Thursday, Friday 9:30 am to 12 Noon

Robert S. Ryan / *Chair*

Jane G. Pepper / *President*

Jean Byrne / *Editor*

Elizabeth Hauck / *Editorial Assistant*

PUBLICATIONS COMMITTEE:

Kathryn S. Andersen

Darrel Apps

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Judy Foley / *Chair*

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L. Wilbur Zimmerman

Designer: Julie Baxendell, Baxendell / Lambeck Associates

Separations: Lincoln Graphics **Printer:** Havertown Printing

THE GREEN SCENE, (USPS 955580) Volume 15, No. 1, published bimonthly, January, March, May, July, September, November, by the Pennsylvania Horticultural Society, a non-profit membership organization at 325 Walnut Street, Philadelphia, PA 19106. Subscription: \$8.50 - Single Copy: \$1.50. Second class postage paid at Philadelphia, PA 19106. • **POSTMASTER:** Send address change to THE GREEN SCENE, 325 Walnut Street, Philadelphia, PA 19106.

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Green Scene subscriptions are part of the membership benefits for:

Pennsylvania Horticultural Society

Maryland Horticultural Society

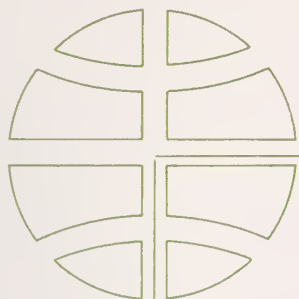
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THE **green scene**

Stretches Across the Atlantic, Across Time and Across the Park

 **by Jean Byrne**

Every once in awhile we enjoy stretching beyond our self-imposed limitations: geographically, in time and in language. We feel we've done that in this issue.

First, the beautiful photos of tree peonies featured in the first article are from Sir Peter Smithers, who lives and gardens in Switzerland. Sir Peter's photos of tree peonies will be on exhibit at the Pennsylvania Horticultural Society from November 3 to January 3. He writes here about the tree peony's place in art and its fascinating lineage through history. If you haven't seen Sir Peter's eye-popping photos of his garden in Switzerland, accompanied by his articulate "Principles for Garden Pleasure" published in the July issue of *House & Garden*, we recommend that you hunt it up. The PHS library has a copy on hand.

Our time and language stretch includes the fesity candor and piquant language of John Bartram and his British correspondents in the 18th century and the observations of his children and their associates in the 19th century. We wanted to include the spirit of Bartram along with Rudy Favretti's article about the restoration of Bartram's Garden in Philadelphia, and the best way to do that seemed to be to include excerpts from their salty transatlantic correspondence and other reports illuminating plant exploration, retainer's fees and shipping, especially shipping. Reading Carol Rowland Palmer's "Research Report On John Bartram's Garden" and Paul Meyer's master's thesis "A Proposal for the Interpretation of John Bartram's Garden," the source of the marvelous quotes interspersed throughout the article gave me a new respect for the vitality to be found in scholarship.

Another *Green Scene* leap was from 325 Walnut to 325 Chestnut. This spring the editorial office moved, along with Philadelphia Green, the Public Information and Accounting departments. The president's office, Membership, the Library and Flower Show offices remain on Walnut Street. I thought at first I'd miss the amelanchier tree outside my old office and the 18th century garden with its handsome allee of hawthorns. Not a chance. Our new view includes a beautiful section of Independence Historic Park, a village-like view of Philadelphia dotted with trees stretching far south, and a view of the Delaware River all the way to Camden.

What I do miss, however, are those chance meetings with volunteers and visiting members. This is an invitation to come by to see us in our new offices. We'll gladly take you on a tour and share our view. By the way, our phone number is the same and all correspondence still goes to Walnut Street.

Come by, you all.

P.S. This issue marks the beginning of Volume 15; happy anniversary to our readers.

Right: *Paeonia suffruticosa* Rock's var. This is the wild ancestor reintroduced into cultivation at the Arnold Arboretum after being lost for many centuries. A splendid simple flower adorned only with the great maroon flares.

Below: *Seiryō Den* - Temple of Refreshing Beauty. A mature plant of the Botan will carry between 20 and 50 enormous flowers, most of which will be open at the same time, thus making a relatively short but magnificent display.



photos by Sir Peter Smithers

FROM MOUTAN TO BOTAN: The Tree Peony, A Plant for the

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It is likely that members of the Pennsylvania Horticultural Society are familiar with the tree peony or Moutan, *Paeonia suffruticosa*, as a garden plant that grows in the Delaware Valley area. Yet another side to this wonderful creation of the hybridists is that since the earliest times it has been the most widely used of all floral motifs in Oriental art. When the English still painted their bodies with woad, and a millennium before the United States was even a twinkle in George Washington's eye, the tree peony was already a principal motif of decoration in the fine arts. It appears in countless art forms, in both ancient and modern times, in China and Japan. In the decoration on ceramics, in painting, in fabrics and on wallpapers, in lacquer designs, in sculpture and also in poetry, the Moutan is a constantly recurring theme. A visit to any museum of Oriental Art will make the point. In exhibit after exhibit the sparse straggling habit of the plant topped by the gorgeous great blooms is portrayed almost to the point of caricature. Yet unlike its cousin, the herbaceous peony, the Moutan has never been a common plant of gardens, and I would guess that relatively few of the innumerable collectors of Oriental art — now so fashionable — will have actually seen one of these stately plants in bloom, and that even fewer will have grown and flowered one of

them. From the earliest times down to the present day the Moutan was a plant for the wealthy specialist and the connoisseur, able to afford or to exercise themselves the skills needed for its breeding and propagation. It still is so, and though quite widely grown in the more serious gardens in the United States, the fingers of one hand would suffice to enumerate its breeders outside of Japan and China.

To call the Moutan an Imperial flower, is no figure of speech. The Sui Emperor Yang Te placed the plant under imperial 'protection,' perhaps meaning 'patronage,' at a time when there were already many choice varieties selling for up to a hundred ounces of gold per plant (Sui Dynasty 589-618 A.D.) Such sophistication suggests a long previous history of breeding and selection. Much later, by the time of the Ming (1368-1644), a substantial literature described the many Moutan varieties in detail. 'Top Candidate Red,' 'Dancing Green Lion,' 'Seven-Treasure Crown,' 'Emerald Butterfly,' 'Blessed Heaven's Fragrance,' 'Tipsy Immortal Peach' and 'Wang Family Greater Red,' suggest the pride and wonder with which the fortunate owners regarded their plants.*

*For these names and several translations from fifteenth century documents describing the Moutan, the author is indebted to Dr. John Marney, Associate Professor of Chinese at the University of Oakland, California, for his article in the *Journal of the American Peony Society*.



Paeonia suffruticosa Rock's var. This is the plant usually found under this name in England, and mainly distributed from Sir Frederick Stern's garden at Highdown after World War II. Of great beauty, it is probably a first generation hybrid between the type plant and a sophisticated Japanese white Botan.

Connoisseur



by Sir Peter Smithers

The Wild Form of Moutan

What were the wild materials from which the Chinese breeders worked in developing these extraordinary plants? Until relatively recently only a partial answer to this question could be given. Wild forms of the Moutan, mainly pink or reddish, are found in the mountains of Kansu, Szechwan and Shensi at considerable altitudes. They grow through low scrub, and for this reason exhibit the straggling gnarled habit so evident in Chinese painted wallpapers. But the picture was not completed until 1917 when the famous plant collector Reginald Farrer saw a magnificent white peony adorned with a maroon 'eye' on each petal, growing wild in southwestern Kansu. He failed to secure seeds of this ancestor of the Moutan, and it was not until the years between 1932 and 1939 that the American collector, J.F. Rock, then living in a Lamasery at Choni at an elevation of 8,500 ft., was able to send seeds to the Arnold Arboretum at Harvard University. *Paeonia suffruticosa*, J.F. Rock's var. (photo 1) has transmitted to many of its descendants its glistening white texture, and to some its beautiful maroon eyes. The plant in its true form remains extremely rare both in nature and in cultivation. As illustrated in the literature and as grown still at the Arnold Arboretum, it is a relatively simple though magnificent flower,

fully able to look its sophisticated descendants in the eye. The garden plants derived from Rock's introduction in England are almost all from Sir Frederick Stern's famous garden at Highdown on the Sussex chalk. He showed me the original plant in the chalk pit, fully 12 feet through, and gave me seedlings from it. Like all great gardeners, he was ashamed that a guest should leave his garden without some treasure to grow at home. But the plant, which in England passes for Rock's Peony, looks to me like a first generation hybrid with a sophisticated Japanese white as pollen parent. It is surpassingly beautiful (photo 2): more so than the wild plant. Yet it retains the boundless vigour of the plant in the chalk pit.

Moutan Becomes Botan

The cultivated Moutan grown in China travelled to Japan with Buddhist monks in the Tang period (618-907 A.D.), and its name became corrupted to the Japanese 'Botan' and as such it remains today. There were thus from an early period two distinct lines of development in what might well be a candidate for the title of the world's earliest systematically bred ornamental flowering plant. The Chinese bred for immense double blooms, towering layers of petal on petal. The Japanese, though

not neglecting doubles, preferred single flowers, and attached importance to the ring of golden anthers, the 'boys,' surrounding the 'girls,' the central capsule at the heart of the flower, which might be red, maroon, purest white or occasionally green.

Inevitably the artists and designers who incorporated these flowers in their work were not always notable connoisseurs of a fine bloom. Though they seem to have worked

From the earliest times down to the present day the Moutan was a plant for the wealthy specialist and the connoisseur, able to afford or to exercise themselves the skills needed for its breeding and propagation.

from live material in the earlier period, they often used quite indifferent varieties as models, rather as the modern photographer or artist may work with a bunch of flowers from a florist shop, unaware of the splendours that might be found amongst the latest products of the plant breeder. In addition, with the passage of time, live originals sometimes gave way to stylized designs, which to the horticulturist seem more devoid of life than the porcelain they are supposed to decorate, little more than a ritual nod to the splendour of the original.

Growing in my garden are perhaps a couple of hundred tree peonies, mainly Japanese, amongst over 10,000 other species and varieties of plant. It is a curious but unmistakable fact so far as I am concerned, that when photographed and enlarged over-lifesize, these flowers are seen to contain more subtlety and elaborate detail of texture than any other bloom given the same treatment. I cannot think that this is an accident, and it seems to me probable that generation after generation of intensive study and selection by Japanese specialists has bred these qualities into their product. These plants have a lineage rivalling in length that of the Imperial family of Japan, and exceeding in sophistication the development of other flowers used in early art forms and later literature such as the Iris and the misnamed Plum Blossom of Heian.

In Western Gardens

The tree peony was a relatively late arrival in western gardens, reaching Europe in 1787 from China, sent by 'a medical gentleman' in the service of the East India Company in Canton to Sir Joseph Banks** - no less - who grew it near Kew Gardens. Other exports followed to France, and it was in France rather than in England that these plants were further developed. Though the Moutan will grow in England, particularly at the foot of a north - yes

continued

**Banks, the eminent botanist who accompanied Captain Cook in his travels.

a north - wall, it prefers a more 'continental' climate, with hot summers and cold dry winters. The French thus worked with the double Chinese flowers and produced a race of peonies mostly named for long dead Gallic ladies and gentlemen, which though beautiful have a tendency to hang their heads. At the present time Monsieur Michel Riviere, with a nursery near Lyon, grows his father's extensive collection of old French hybrids and is raising some

For the price of a single piece of rare porcelain, it would be possible to prepare and publish an authoritative illustrated monograph on Moutan and Botan, to stand alongside Dr. Shuichi Hirao's splendid folio upon the Japanese iris.

new ones. He is also adding numerous Japanese varieties grafted from my own collection.

Japanese tree peonies did not reach Europe until the middle of the nineteenth century and were not available in the United States until Professor Sargent brought them back to the Arnold Arboretum in 1891.

The next step in the tree peony story was the arrival of yellow and mahogany coloured species in Europe from China and Tibet. These plants seem to have been unknown to the Chinese and Japanese breeders, and it was in France that they were first used in hybridization. This work was followed up in the United States by Professor A.P. Saunders at Hamilton College, in Clinton, New York, who produced a new race of plants from pure lemon yellow through orange to pink and darkest maroon. The work is continued today in the United States by several distinguished breeders: David Reath of Vulcan, Michigan, Nassos Daphnis of New York City, William Gratwick of Pavillion, New York and others. I was fortunate in being able to buy from Silvia Saunders a fairly complete set of her father's best hybrids, and splendid plants they are, flowering a little later than the Japanese and being perhaps more robust of constitution. Nevertheless, from a photographic point of view, they lack the extreme sophistication the Japanese plants have derived from 2000 years of breeding and selection. They are, thus, less photogenic when given macro enlargement. But then, in Oriental terms, their breeding has only just begun: a mere century, at most.

The history of the tree peony in western cultivation is quite a fascinating one, and the foregoing is no more than an outline sketch. Much, though not all, of my apparent erudition is owed to the work of John C. Wister, nationally known horticulturist, who served as Secretary to the Pennsylvania Horticultural Society from 1928-1951. His research is concentrated in *The Peonies* published in 1962 by



Apricot. An American hybrid using *Paeonia lutea* raised by Professor Saunders at Hamilton College, N.Y. Unlike the early European lutea hybrids with their massive double flower drooping under their own weight, the Saunders hybrids hold their heads up like the Americans they are.

the American Horticultural Society, available on loan from the Pennsylvania Horticultural Society library.

Before the Second World War it was possible to obtain several hundred famous peony clones from commercial sources in Japan. After the war, the agricultural subsidies were raised so substantially that the farmers who grew tree peonies for sale to exporters were tempted to turn to food crops. Today it would be very difficult to obtain commercially even 30 kinds, although many more are preserved in Temple Gardens and in private collections where breeding still continues under the auspices of the Nippon Botan Society.

Confusing nomenclature

Another difficulty lies in the naming of those clones that we actually have in cultivation. The

plants are shipped from Japan by exporters, who have bought them from the farmers. The farmers are usually not taxonomists. Many a plant therefore slips out of Japan under an alias. The ambiguity of the Japanese language as a means of describing colour and form, increases our perplexity. A name may mean one of several things. 'But which of those three meanings is the right one?' 'Who knows,' says my Japanese friend. 'But which one did the raiser of the plant mean it to be?' 'He meant you to choose.' At that point the seeker is wise to give up and accept the Japanese name without translation. Finally, there is an almost complete lack of authoritative illustrated texts available to the public. The best available is *The Picture Book of Peonies*, written in Japanese with a few English notes and published in Niigata Prefecture at some time



Hana kiso (Floral Rivalry). The height of sophistication in Japanese breeding, with delicate colours and an incredible complexity of texture caused by the crushing of so many petals in the tight bud of the flower before it opens.

after the First World War. This contains beautiful and accurate coloured lithographs of 54 different flowers, but when it came to the foliage, the artist evidently became bored and provided each with the same stylized leaves. In fact there is a great diversity of beauty in tree peony foliage. Even this book is now absolutely unobtainable to the public, and is not in the Lindley Library of the Royal Horticultural Society. The Pennsylvania Horticultural Society and Brooklyn Botanic Garden are both fortunate possessors of this splendid work.

The nomenclature of these plants outside of Japan is therefore in total confusion. To a gardener it seems paradoxical to reflect that in an age when the market value of Oriental art has risen to previously undreamed-of heights, the originals of one of its principal components are not the subject of systematic study. For the price of a single piece of rare porcelain, it would be possible to prepare and publish an authoritative illustrated monograph on Moutan and Botan, to stand alongside Dr. Shuichi Hirao's splendid folio upon the Japanese iris. The president of the American Peony Society, Mr. Roy Klehm, who grows a great many Japanese peonies in his nursery at Barrington, Illinois, is leading a gallant effort to produce at least an illustrated reference book for the benefit of gardeners. It is probably the Japan Botan Society however, which in the end will

have to sponsor a definitive monograph on the 2000-year old plant, which is still cultivated with infinite care in temple and private gardens in Japan.

Finally, in a romantic yet realistic vein, a photographic discovery. It may be that this discovery also applies to other plants: I cannot say. A flower! Through the ages, the present of the designing male to the female object of his desire, of the devoted husband to the adoring wife, of... well, the point is clear. But a flower is more than a sex symbol. It is sex in action. At the heart of the Botan, as I have pointed out, are the girls, few in number, in pink or red, green or white. Surrounding them are the golden boys, the yellow stamens, in their dozens. One day, both the girls and the boys greet the sun in the knowledge that they are ready. 'Oh for Sir Peter's bee (I am a bee-keeper) to come to marry us,' spluttering the girls with the golden pollen from the boys, as he forages material to build the wax cells in which later the honey will be stored. That joyous day is the day when I must take my photograph! The day before, the flower will be almost but not quite mature. The day after... well... there is pollen scattered everywhere and everybody is just slightly fatigued. The flower is still beautiful, but the peak of loveliness, the flush of the wedding-day, is gone. The shining black seeds will ripen four months later.

Exhibit of Tree Peony Photos at PHS

Sir Peter's tree peonies from his garden will be on exhibit from November 3 to January 3 at Pennsylvania Horticultural Society headquarters.

Tree Peonies in the Delaware Valley Area

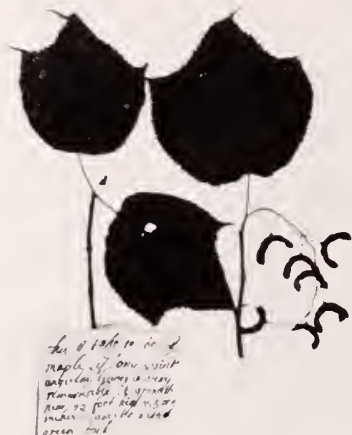
Tree peonies can be seen in bloom in Delaware Valley gardens in April and May including the following:

- Longwood Gardens
- Winterthur Museum & Gardens
- Tyler Arboretum
- Scott Arboretum
- Arboretum of the Barnes Foundation

A former member of British Parliament, undersecretary of State in the British Foreign office and secretary general of the Council of Europe, Sir Peter Smithers now makes his home in Switzerland. He has received the Alexander von Humboldt Gold Medal for the Conservation of Nature and Natural Resources, two gold medals from the Royal Horticultural Society for photographs of Japanese tree peonies, as well as RHS medals for photographs of hybrid hibiscus and magnolias. His photographs of Japanese tree peonies have been exhibited in Oklahoma, Florida, Minneapolis, New York and in Paris and Dieppe, France. Other exhibits in the U.S. are scheduled in 1987 in Atlanta, Pasadena, New York and the Boston area.

"He was, perhaps, the first Anglo-American who conceived the idea of establishing a BOTANIC GARDEN for the reception and cultivation of the various vegetables, natives of the country, as well as of exotics; and of traveling for the discovery and acquisition of them."

Excerpt from William Bartram's account of John Bartram, first published in Professor Bartram's Medical and Physical Journal.



*Striped Maple (*Acer pensylvanicum*)

"Since my leaving that place I have met wt. very Little new in the Botanic way unless your acquaintance Bartram, who is what he is & and whose acquaintance alone makes amends for other disappointments in that way. I first waited on him with Govr. Tinker & Dr. Bond whom he received wt. so much ease, Gaiety & happy Alacrity, & invited to dine wt. so much rural vivacity, that everyone was agreeably pleased & surprised. Unluckily Govr. Tinker had engaged some Company to be wt. him that day Else we should have taken part of his Botanic treat, which he seems fully designed to have some day this week. One day he Dragged me out of town & Entertained me so agreeably with some Elevated Botanical thoughts, on oaks, Firns, Rocks etc. that I forgot I was hungry till we Landed in his house about four Miles from Town, There was no parting with him for two Days, During which time I breakfasted, Dined & supped Sleep't & was regaled on Botany & mineralogy, in which he has some excellent Notions & grand thoughts." Alexander Garden — Cadwallader Colden, 11/4/1754
Letters and Papers of Cadwallader Colden, New York, 1920, IV, pp. 471-73

photos by Dick Keen



A host of plants decorate the east side of Bartram's Garden throughout the seasons, including phlox, goldenrod and marigolds. The house was built in the late seventeenth

RESTORING BARTRAM'S GARDEN:

by Rudy J. Favretti

When King George III made John Bartram "His Majesty's Botanist for North America" in 1765, he bestowed this honor, title, and an annual stipend of 50 pounds sterling upon the first American-born botanist of merit. Self taught, with only a fourth grade education, Bartram's interests encompassed the entire field of natural history: ecology, entomology, ethnology, geology, medicine, meteorology, ornithology, zoology, and paleontology. As a boy on a farm, he studied the minerals in the soil he plowed, observed plants along the waysides, noticed birds, fish, and other animals in their natural habitats, and generally developed a keen awareness of the complex web of nature.

It was as botanist, however, that Bartram was best known. In 1728, he established a botanical garden, considered to be one of the first in the Colonies, in Kingsessing, near

Grays Ferry, now part of Greater Philadelphia (54th Street and Lindbergh Boulevard).

After he purchased his own farm he began to collect plants from all over the colonies, and to grow them on for study and export or exchange purposes. His garden in Philadelphia was ideally located between the harsh climate of the North and the milder one of the South, a prime location for a botanical garden.

He was a progressive and prosperous farmer, who was assisted by his wife and nine children in his enterprise. The best time for John to get away to collect was in the autumn when the crops were in and there was a lull in the list of chores that usually confronted him. Autumn was also an ideal time to collect seeds and plants.

Bartram made many expeditions. First he collected near home. Then he went further afield, as far as the Ohio River. Eventually he



century by Swedish farmers and added to by John Bartram (1699-1777) and his granddaughter Ann Bartram Carr (1779-1858) in the eighteenth and nineteenth centuries.

America's Oldest Surviving Botanical Garden

made trips to Virginia, the Carolinas, Georgia, and to the North as far as Lake Ontario. These trips were exceedingly dangerous because there were few roads to follow, just trails broken by native Indians whom he frequently encountered. His botanizing was also expensive, so the stipend he received from King George III helped pay for his most famous trip to Florida and Georgia. As his son William grew older he became his father's companion on many of these trips.

The list of people with whom John Bartram corresponded, or who visited his garden, or who received his plants or seeds, reads like a "Who's Who" in botany and natural history. Locally, there was James Logan, William Penn's secretary, who offered encouragement and loaned him books, and Benjamin Franklin, to name just two. Dr. John Mitchell, Rev. Jared Eliot (author of *Essays on Field*

Husbandry), John Clayton, Cadwallader Colden, Peter Kalm, and Dr. Alexander Garden corresponded with Bartram. In Europe his correspondents were Carl Linnaeus, Professor Dillenius of Oxford, Dr. J.K. Gronovius of Leyden, Holland, Sir Hans Sloane and Dr. John Fothergill, Philip Miller, author of the *Gardener's Dictionary*, and Peter Collinson, merchant, perhaps his best friend and most active correspondent. All of these men, like Bartram, had occupations other than botany. Yet the fact that most of them had plants named after them — *Franklinia*, *Mitchella*, *Gardenia*, *Claytonia*, *Collinsonia*, *Fothergilla*, *Kalmia*, etc. — attests to the reputations they gained in their avocation. Bartram, too, was so honored with *Bartramia*.

John Bartram received many honors, among them a medal from the Society of Gentlemen of Edinburgh, election to the Royal

continued

"In thy letter of December 20th thee supposes me to spend 5 or 6 weeks in collections for you and that ten pound will defray all my annual expences but I assure thee I spend more then twice that time and ye ten pound will not at a moderate expense defray my charges abroad beside my neglect of businis at home in falowing harvest & at seed time...yet I dont begrudge my labor but would do anything reasonable to serve you but by ye sequel of thy letter you are not sensible of ye 4th part of ye pains I take to oblige you."

John Bartram to Peter Collinson, May 1738, Wildman Transcriptions



this one had come from
from the garden of the late
Bartram plant is shown in the
arrangement for staying of time

*Sweet-Fern (*Comptonia peregrina*)

"Now Dear Frd John I come to thank thee for thy curious Collection of Living Plants for my self But Oh Sad Story for to tell not the Least Glimpse of one was to be Seen; if the unworthy Captain had sett the case only in his Cabbin all had been Safe But it was Stowed in the Deck above the Hold and Covered all over with pipe Staves; but all this might have been tolerable if that Mischievous Vermin the Ratts had not fell on board it for so it was when I came to get it out of the Ship So behold Two nests of young Callow Ratts was kindled there and I take it what with their trampting, shiting & pissing Everything above the Ground was wholly Destroyed; and I am afraid by their pissing and dunging has Effected the Roots for only One appear'd to have life It grieved mee to the heart, to see so many Curious things and So much Labour & pains like to be destroyed by these nasty ►



continued

Creatures and the Neglect of the captain but for the future I must Desire thee to putt the Liveing things in a Less Case which takes up So much room that unless it is a Large Ship there is not room for it for all the Sodds of plants might have been packed in half the Roome which would save a great Deal of freight for the knows the Earth about them is only Intended to keep them Moist till they Come Here and then they are soon transplanted So that the Sodds may be thrusts as Close as possible to one another 2 Inches of Earth below & Covered 2 inches may be sufficient to Convey them Heither. be sure Make the Bottome full of Large Holes and rather to make Two Small Cases which are more manageable and more convenient to be Stowed then Such a Large One as this Last which I believe weighed 2 or 3 hundred Water and as much as two men could carry."

Peter Collinson to John Bartram, April 12, 1739, Wildman Transcriptions

Academy of Stockholm, and also to the Royal Society of London, all very high honors for a simple-living and self-taught Quaker farmer. Linnaeus considered him the most brilliant botanist of his day.

John Bartram lived a long and productive life from 1699 to 1777. When he died he willed the botanical garden to his son John. He was very fond of William, but had little faith in his ability to manage money and property. William however, came home from the South to help run the garden, which he did until his death in 1823. While doing so he wrote his *Travels Through North and South Carolina, Georgia, East and West Florida* (1791), for which he became famous. He was talented as a painter of nature, especially birds. In 1782 William was offered a professorship of botany at the University of Pennsylvania which he refused. Washington, Jefferson and Peale were among his friends and often visited the Garden.

When John Bartram, the son, died in 1812, the Garden was inherited by his daughter, Ann Carr, wife of Colonel Robert Carr, and they ran it until 1850 when it was sold to Andrew Eastwick who respected it and would not build his mansion within the bounds of the original botanical garden. In 1891, after Eastwick's death, Thomas Meehan, who had been his gardener and who had become a well known nurseryman and a member of the City Council of Philadelphia, convinced the City to acquire the garden and make it part of the city park system.

The Restoration Plan

Today we are fortunate that these events came to pass and that in 1893 The John Bartram Association was formed to oversee the garden areas as well as the excellent stone house and buildings built by John Bartram and his offspring. In 1981, The John Bartram Association and its Long Range Planning Committee began the study and planning that culminated in a master plan for the restoration of Bartram's Garden. This plan was completed and approved in May, 1984.

What is involved in the restoration of a major site like Bartram's Garden? The first step is to learn what is available through plans, the printed word, letters, diaries and similar documents, and graphic materials. This information was researched and gathered together by the Bartram Association staff, largely through the efforts of Carol Rowland Palmer. A major task, it was completed before the master planning process began. This "Research Report on Bartram's Garden" contained not only abstracts and reprints of valuable documents, but also a plan drawn to scale of all existing features on the site and especially the existing plant collection, including the famous *Franklinia* and the ancient and majestic yellowwood

(*Cladrastis lutea*).

As a next planning step, the data found through research was tested against the actual site. One of the most valuable documents for this purpose was a plan of Bartram's Garden, drawn in 1758 by John Bartram himself and sent to his friend Peter Collinson. A copy of the plan accompanies this article; the original plan is in the library of the Earl of Derby, Knowsley, England). It shows the house at the very top of the garden with three garden plots in front, each plot separated from the other by a path. The plot to the left (south) was the new flower garden where Bartram planted all of the new and exotic material sent to him by others or collected by him. The central plot he called the common flower garden, which we have interpreted to mean the garden from which cuttings and seeds were collected to disseminate around the world. The northernmost plot was the upper kitchen garden for small vegetables that were needed near the house to feed his large family.

Below this upper terrace were two long walks descending to the Schuylkill River; sheltering and bordering these walks were trees and shrubs that were probably underplanted with herbaceous material. Many visitors have written about strolls along these walks, enjoying the shade while studying plants. One such guest, the Rev. Mannaseh Cutler, a well known clergyman and naturalist, wrote in 1787: "...from the house is a walk to the river, between two rows of large, lofty trees, all of different kinds, at the bottom of which is a summer house on the bank, which is here a ledge of rocks, and is so situated as to be convenient for fishing in the river..." In surveying the site against this traveler's account what appears to be the foundation of this summer house was found under a tangle of weeds and brambles.

To the north of these two allées were two more kitchen gardens, each one apparently bordered with shrubs. It is believed that in later years, when sons John and William were in charge, much of this vegetable garden area was converted to nursery plants. Between these two kitchen garden beds was another path with a pond for growing aquatics, fed by a channel from a springhouse, situated on the very northern edge of the garden. In probing the actual site it was discovered that where the springhouse once stood, a large mound of earth now stands, and we believe that beneath it may be remnants of its springhouse foundation. Also, where the pond once stood there is a saucer-shaped depression in the earth; the soil from this depression tested high in aluminum, indicating a pond was once there.

The restoration plan projects the recon-



The banner above the stable door was derived from Howard Pyle's rendering of John Bartram for *Harper's Monthly* in 1880. Bartram's son William said that no likeness of his father existed in their time.

struction of all of the paths in their proper places, the recreation of all of the garden plots as they were: the reconstruction of the spring-house, water channel and pond, and planting trees, shrubs, and perennials along the allées and bordering the kitchen gardens. The gardens on the upper terrace will also be restored, but the two large, lower kitchen gardens will not be planted. These areas will be left in grass and natural groundcovers. Plants selected for this restoration were selected from Bartram's extensive lists; all existing trees and shrubs on the site, save for a few in poor condition, will be preserved.

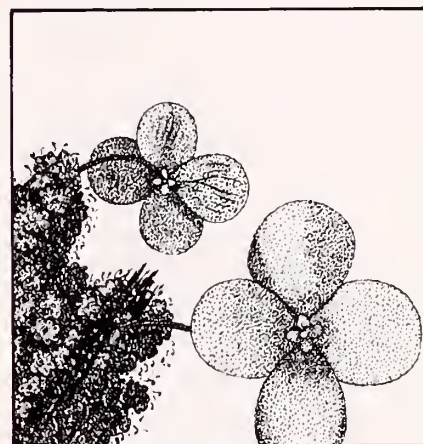
The plan that John Bartram drew might be

considered the most important research document for master planning. The Garden however, was much larger than these few acres enclosed by a paling fence. There were outbuildings, including greenhouses and nursery beds to the north, as well as a large ramp ascending from the river so that hay and other materials might be carried to the barn. There was also a landing at the river where one could approach the garden by boat. The master plan calls for installing such a landing, and we hope that boats may once again carry visitors to the garden via this route. There were also trees and an orchard to the south of the garden shown on the 1758 plan. The gardens

continued

"I have received thy kind letter by Whright which was very acceptable as also ye Cash which came in ye very nick of time when I wanted to pay ye morgage interest it was help in time of need & a demonstration of thy regard for my welfare & readiness to oblige me which lays me under an obligation to watch & improve all oportunities wherein I can gratifie thee."

John Bartram to Peter Collinson, July 1739, Wildman



**Hydrangea quercifolia*

"I have this week received my dear Peters letter of May ye packet which at first sight allmost made my heart leap for Joy but when I read but for want of care and exactness or perhaps left to some careless person to pack up one of ye boxes had but 8 sorts of seeds instead of 109 this knocked me down at once but considering this was not ye 1st or 2d or third time that I have been rashly censored & reproached when I have hazarded life & limb both my own & children using my utmost endeavour to oblige my correspondents I revived again surely you must think I am a careless fool When I know from long experience that ye least neglect will heap coals of fire upon my head but ye method I take its impossible to make such a mistake . . .but I cant watch them all along after until they come to your hands nor keep them from being rifeled neither on board ye ship nor after they are landed."

John Bartram to Peter Collinson, August 8, 1763, Wildman
Transcriptions, p. 597

"My dear John, what art thou talking of? Wait two years for the double white Daffodil! Think, man! and know how to value so great a rarity; for I waited almost all my lifetime to get this rare flower. I read of it and saw it figured in books, but despaired of ever possessing it. But about seven years ago, happening in a tour, forty miles from London, my botanic genius carried me into a garden where I expected to find nothing; on a sudden my eyes were ravished with the sight of this flower, and my heart leaped for joy, that I should find it at last; and never saw it since in any garden but my own. And I tell thee for thy comfort, if thou had not been John Bartram, thou hadst not possessed such a rarity. But as thou grudgest the time, and so little esteems it, I shall be careful where I cast my pearls another time."

Peter Collinson to John Bartram
8/4/1763

Memorials, p. 252



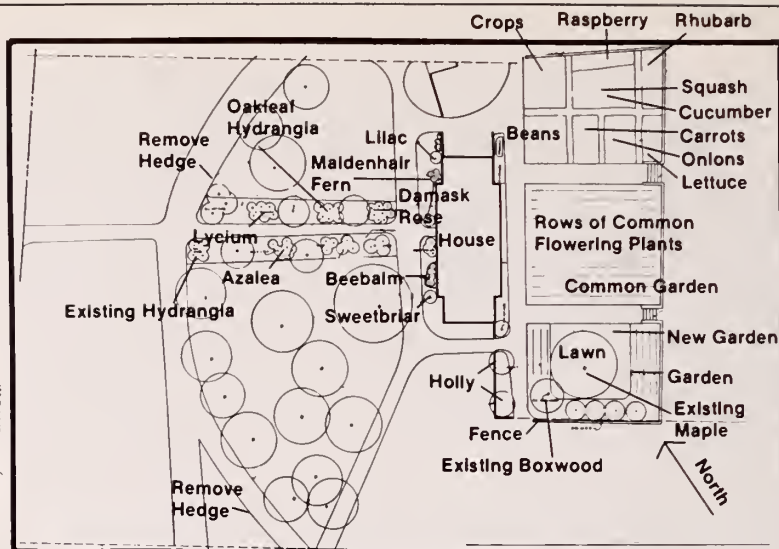
"If I had known the White double Daffodil had been such a rarity with thee, I could have sent thee large quantities thirty years ago. Our first settlers brought them with them, and they multiply so that thousands are thrown away."

John Bartram to Peter Collinson
10/23/1763

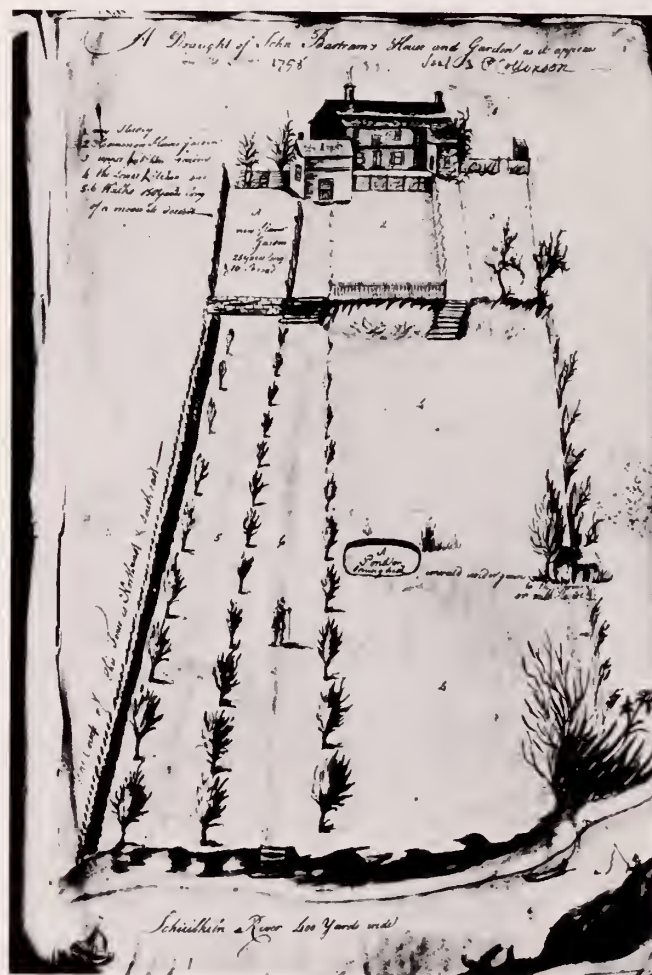
Memorials, p. 255

Thanks to Carol Rowland Palmer and Paul Meyer for the quotes accompanying this article. They were taken from Palmer's "Research Report on John Bartram's Garden for the John Bartram Association" and Meyer's thesis "A Proposal for the Interpretation of John Bartram's Garden" submitted for his M.S. in Ornamental Horticulture to the University of Delaware.

Rudy J. Favretti



BARTRAM'S GARDEN • Planting Plan

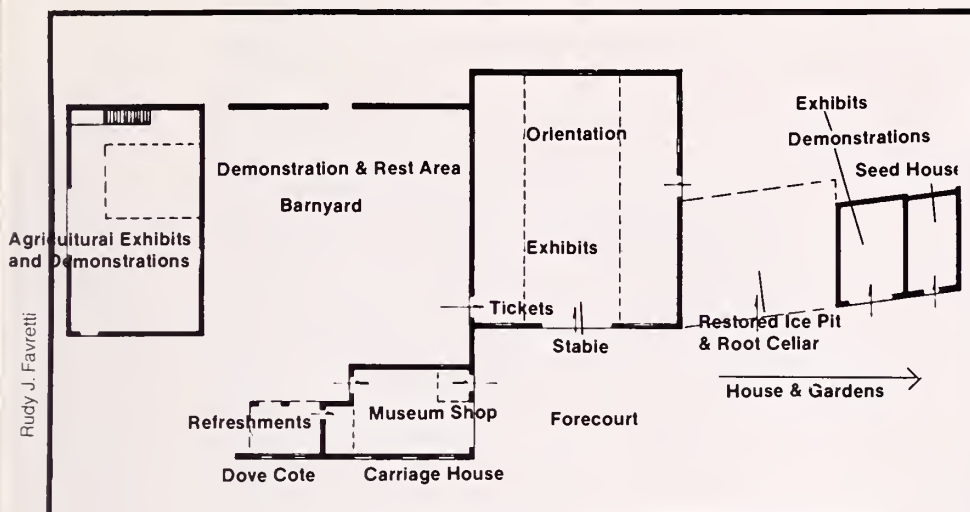


Courtesy of the John Bartram Association and The Earl of Derby, Knowsley, England

on the west side of the house, were part of the approach by land.

John Bartram laid out his garden in a manner used since ancient times, long walks, bordered gardens, laid out in squares and rectangles but in no way formal. It had a land front as well as a water front, just like so many other gardens in Philadelphia. His garden was different, however, in that the long walk was not in the center with gardens mirroring one another

on either side. Unique, however, were the many habitats and exposures that existed within such a small site. While the garden descended to the east all the way down to the River, within this descent were little nooks and crannies that faced west, north, and south made possible by uneven terrain. Marshland fronted the river; he created the pond in the center of the garden, and used the drier soil at the top of the hill to drain excess water away.



BARTRAM'S GARDEN • Proposed Use — Existing Outbuildings

The site was perfect for a botanical garden.

Modern Urban Problems

Finding the authentic garden layout and recreating it is not the whole master planning process, however. With attendance at Bartram's garden growing steadily, (now over 8,000 per year) problems such as where to park cars and buses, providing rest facilities, making a space for lectures, orientation, and classes, providing museum space to show the multi-faceted activities of the Bartrams, John and William, and finding office space for the staff, now located in the upper stories of the house are additional challenges. Moving visitors through the site in an orderly and safe manner, without jeopardizing the authenticity of the site is also a major consideration.

The accompanying sketch shows where all of these functions were fitted into the existing buildings on the site, all part of the original Bartram plan, with the exception of a new office building. The old stone barn will become a farm museum to show that aspect of the Bartrams' life. The basement of this building will be equipped with rest facilities. The old carriage house will be a museum shop so that the present one may be removed from the conservatory attached to the south side of the house. An auditorium will be housed in the stable for teaching, and the barnyard that forms an enclosed space between these buildings will become a resting and demonstration area for visitors.

Two other outbuildings, Bartram's seed house, and the ice pit and root cellar will be restored to their original use. The seed house, a small, tight stone structure is thought to be where Bartram received and prepared his seed and plant shipments for abroad.

In addition to creating a new parking area, the master plan called for the upgrading of the main entrance off Lindbergh Boulevard, with new fencing, plantings, and an attractive

entrance sign, which was accomplished last year. The large tract of land to the north of the Garden, approximately 17 acres and recently acquired by the city, will be restored and seeded as it probably was during John Bartram's time, and will act as a buffer to the Garden. The open land to the south of the garden, the location of the Eastwick mansion will be historically identified and continue to be used for passive recreation.

The master plan for Bartram's Garden is carefully worked out through stages. Some of the work has started such as improving the entrance road, and architectural planning for the renovation of the outbuildings (the house has already been restored). Existing plants are being cared for. The Philadelphia Committee of the Garden Club of America has funded an internship, through which all of the hundreds of difficult to obtain plants needed for the restoration may be acquired and held in a nursery at the garden. The Association has begun a capital campaign drive to raise the one million dollars necessary for the first phase of the restoration plan.

As the less costly aspects of the master plan proceed, fund raising goes on to raise the millions necessary to complete the total project. Enthusiasm for restoring the Garden is high. Philadelphia, which had better facilities for the study of natural history than any other city during John Bartram's time, is fortunate that through the foresight of Bartram, Eastwick and his gardener Thomas Meehan, Philadelphia's Fairmount Park Commission and the John Bartram Family Association, it has the site of the original Garden, with all its buildings, still intact. Many cities have lost important sites to "progress." While the restoration project seems large and costly, it is the least that can be done to preserve America's oldest surviving botanical garden which is known throughout the world.



[XII] *Andromeda pulverulenta*

**Andromeda pulverulenta*

Visit Bartram's Garden

57th & Lindbergh Boulevard, 19143

You may call for directions and other information. Phone: 729-5281

The Garden is open daily throughout the year (including holidays) from dawn to dusk. Free.

The House is open:

November through April, 10 am to 4 pm, Tuesday through Friday. May through October, same hours, Tuesday through Sunday.

\$2.00 for adults, \$1.00 for child.

Group tours for adults and children by appointment.

Landscape architect Rudy J. Favretti was the master planner for Bartram's Garden. He is professor of Landscape Architecture of the University of Connecticut, Storrs. He has worked on many other historical sites including Monticello, Gunston Hall, the University of Virginia, the Morris Arboretum, Strawberry Banke, Reynolda Gardens. With his wife Joy, he has written *Landscapes and Gardens for Historic Buildings*.

*The Travels of William Bartram, Francis Harper, Yale University Press, 1958, New Haven

photos by Molly Adams



Cool-loving orchids thrive in the solar greenhouse in winter with forced bulbs and azaleas, providing a changing color display on wooden benches.

When Solar Really Works



by Helen Tower Brunet



The Chubb greenhouse, built on the foundation of a former terrace, opens up to form the family dining area in summer. Wooden steps provide a staging area for greenhouse plants on summer vacation.

On a cold January day, Sally Chubb sits in her greenhouse, squinting in the sunlight. Outside, the New Jersey landscape is at its bleakest; inside, it feels like late spring, maybe even early summer.

"It's lucky I couldn't build a greenhouse when I first wanted one," she muses. "All that thinking, planning and waiting helped to clarify what I really wanted."

The plan started when Sally wanted more growing room than the unheated enclosed walkway outside the living room where she forced bulbs and potted azaleas. In December it got too cold and everything had to be moved elsewhere.

She had a problem; the family didn't want to give up the terrace adjoining the dining room, a shady dining spot in summer.

The Chubbs knew they wanted an energy efficient structure that wouldn't tax the oil burner, now struggling to keep their three story late 19th century stucco house "just barely livable in the winter — with the thermostat set at 62°F."

Various locations were considered. "At one point I was going to enclose the whole side porch with Palladian style windows and have a true English garden room," Sally remembers, shuddering at the cost.

While she considered other possibilities, her

father-in-law set up a "matching gift program" for building the greenhouse, with increments on birthdays and Christmas.

Of course solar heat would be the most economical in the long run, but solar heat collection and storage structures seemed clumsy and cumbersome. Family friend,

What they achieved surpassed their fondest hopes: a passive solar greenhouse that has lowered their household heating bill by 25% for the past six years.

architect Mort Scharmann of Morristown, felt that "solar designers failed to deal with aesthetics," and set about helping the Chubbs design a greenhouse that would be attractive throughout the year and energy efficient, without using black water bottles.

What they achieved surpassed their fondest hopes: a passive solar greenhouse that has lowered their household heating bill by 25% for the past six years.

Covering the original terrace, the greenhouse is tucked in an L formed by the south wall of the dining room and the east wall of the living room. The 10 x 16 foot glass and aluminum structure has a standard greenhouse roof and walls made of a series of Pella brand sliding glass doors.

Solar heat is stored in what Mort Scharmann calls a "giant bath tub filled with blue stone," 5 feet deep, under the brick floor of the greenhouse. The stone pit, actually a cinder-block foundation, is lined with rigid styrofoam and insulated on the outside by mounds of earth. Large blue stone, measuring 1½ to 2½ inches, was chosen because it exposes more surface for heat absorption.

Two 18-inch-wide strips of blue stone were left uncapped, running in front of the two glass walls, allowing a faster flow of warm air to pass the glass at night.

During the day, heat is collected in a white 4 inch PVC perforated pipe (used for septic fields), running the length of the greenhouse under the roof and then down into the bottom of the heat sink. A fan pulls the hot air down the pipe where it is stored in the stone mass, to be released by convection at night.

An electric space heater set at 48°F supplies additional nighttime heat during the three coldest months of winter.

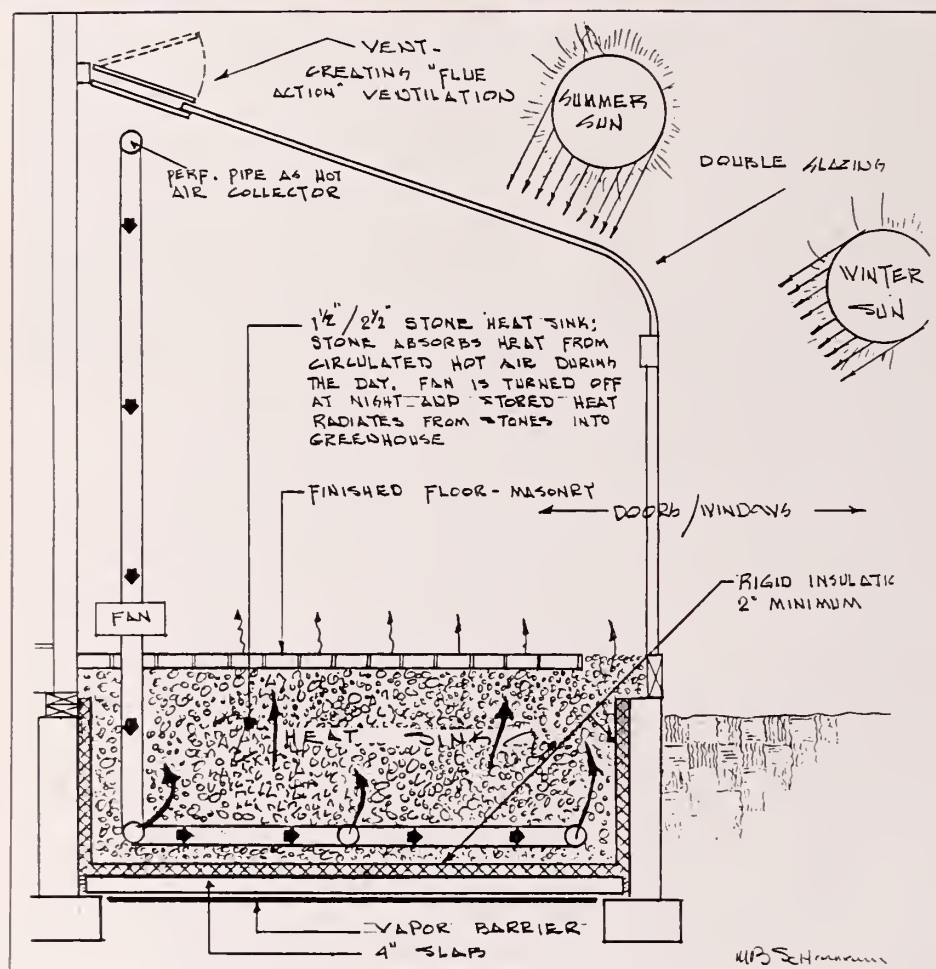
Ventilation during the day is controlled by ceiling vents triggered by temperature activated solenoid cells, disconnected in summer. Five small fans circulate the air all day long.

French doors joining the greenhouse to the dining room are left open on sunny days, giv-

continued



The flower-filled greenhouse adjoining both the dining room and living room creates a tropical garden all winter as well as a valuable source of additional household heat.



16

ing the furnace a rest for hours at a time, although no direct sun hits the greenhouse roof from early afternoon on in winter, because a wing on the house blocks the western exposure.

All winter the flower-filled greenhouse can be seen from the dining room as well as the living room windows. Now the forced bulbs and azaleas have been joined by calamondin orange trees, ivies, papyrus, ferns, podocarpus, orchids (cymbidiums and oncidiums) begonias, camellias, jasmine and ficus.

In summer most of the plants are moved outside, the greenhouse ceiling vents are left open and the sliding glass doors open to transform the glass walls into a veranda. The overhanging oaks provide cool shade all summer and the greenhouse is again the summer dining room.

Sally Chubb describes herself as a "seat of the pants gardener," but what she does by instinct seems to work. For rooting hardwood and softwood cuttings, she keeps a styrofoam cooler going at all times, filled with 4 inches of

lava-base kitty litter. All cuttings get a quick dip in a standard mixture of Rootone first. The center section of the styrofoam lid is cut out and replaced with clear plastic sheeting taped to the edge of the lid; drainage holes are punched in the bottom of the cooler. The moisture inside the cooler is recycled as in a closed terrarium; Sally adds water only occasionally to keep the kitty litter damp. The cooler, stored under a greenhouse bench out of direct sunlight in winter and under the trees in summer, is never ventilated. Sally reports remarkable success rooting cuttings this way.

She designed the greenhouse benches for portability. "I didn't want to look at a bunch of empty benches all summer," she explains. Each bench, made of treated pine, measures 30 by 36 inches. They are filled with kitty litter to keep them light, and when they are taken out for summer storage they are emptied and scrubbed down with Lysol.

Sally suffers from an ever-expanding plant population like good gardeners everywhere. She confesses to an inability to throw away a sick plant, determined to nurse it back to health in summer. Numerous shady areas behind the house are what the Chubb children call her "intensive care wards" with convalescing plants. Most of them recover, making the struggle to find room for them in the greenhouse in fall a problem in logistics.

What would she do differently looking back on the design for her solar greenhouse? "Why, make it twice as big, of course," she replies without hesitation.

Helen Brunet is a free lance writer and a member of the Garden Writers Association of America. She writes a weekly garden column for the Newark Star-Ledger.

Nature photographer Molly Adams has co-authored two books on home landscaping. Her photographs of gardens have been printed in *Audubon*, *Better Homes and Gardens* and *The New York Times*.



Pink and white dogwoods in flower

What is Killing the Dogwoods and What Can We Do About It?

by R. Christian Cash

Flowering dogwood, soft, subtle and majestic, has recently been flowering poorly, declining, and dying out. Is this a permanent problem or something that might just be temporary?

To understand our dogwood problems we can take a careful look at the systems and causes related to decline. Are there controls? Is there a future for dogwoods? I believe, quite definitely, that dogwoods will once again become healthy beautiful plants and that this is not a permanent problem.

Dogwood decline is evident through an area from Pennsylvania north into New York and Connecticut and east to New Jersey. Since about 1977 flowering dogwood (*Cornus florida*) has been showing signs of anthracnose diseases (spotting of leaves, flowers and fruits), severe twig dieback, and trunk cankers (bark splitting, raising, or sunken areas).

The classic symptoms of dogwood decline show progressive lower branch dieback. If trees have progressed to this stage of decline, often dogwood borers will be found boring through their trunks and branches. Further decline occurs as plants weaken and more pests attack. The flowering dogwood's last vain efforts to survive are recognized by the development of numerous stem and branch water sprouts. These sprouts often die in the heat of the summer or the cold and dryness of

continued



▲ Classic dogwood decline, lower branch dieback

▲ The base of a dogwood shows damage. Excessive mulching or deep planting can lead to debilitating cankers.

the winter. Once the sprouts have died, the trees have expended their energy reserves and die. Plants that show the symptoms listed here will often die within two seasons.

Environmental Stress

Is this decline only a problem with landscape trees? No. Take a stroll through our area woodlands and you will find very few healthy dogwoods. Before 1976-77 the woodlands and our gardens were supporting large populations of the native flowering dogwood. What happened?

Much of the problem seems to be associated with environmental stress — too *much* of this and too *little* of that. In articles written by Cornell University's Margery Daughtrey and Dr. Craig Hibben of the Brooklyn Botanic Gardens and another article by Dr. Gary Moorman, an Extension plant pathologist of Pa., they have postulated that dogwoods have been severely and adversely affected by recent climate patterns (Daughtrey and Hibben, 1983) (Moorman, 1984). These climate patterns include periods of excessive spring rains, summer drought, cold winters, hot summers, and rapid weather changes. These combinations of environmental factors have so weakened dogwood that they are unable to fight off many of the commonly occurring insect and disease pests they normally resist. The increased insect and disease populations have weakened the dogwoods' defenses leaving them open to further attack.

Bruce Clarke, the Extension plant pathologist for the state of New Jersey, points out that organisms such as anthracnose are opportunistic. Normally these diseases would cause relatively minor damage, but if the environmental conditions are right and the plants become stressed, these seemingly passive organisms become more invasive and destructive, taking advantage of the situation.

While analyzing rainfall patterns, it appears that the significant dogwood decline might be associated with the dry to average rainfall through the late 1960s to the early 1970s and to the severe climatic fluctuations since that time. The climatic fluctuations seem to have started occurring with the spring of 1975. At that time the northeastern states experienced the second wettest spring on record. Not only was the rainfall in spring excessive, but it continued into July, increasing the plant's spring growing period as well as their period of disease susceptibility.

The spring season is the primary growth period for plants, but excessive moisture is as beneficial or more beneficial to the growth of the disease organisms that attack the plant. Dogwoods are extremely susceptible to anthracnose diseases (*Elsinoe*, *Discula*) and root and stem rots (*Phytophthora*, *Botryosphaeria*). With the excessive rainfall during



Amelanchier and *Magnolia soulangiana* in flower

that time, the flowers and leaves of many plants were heavily infected with anthracnose diseases. While I was installing and maintaining landscape plantings in 1975 and 76, I observed many plants showing basal bark splitting that is often associated with *Phytophthora* rot.

In 1976 the weather reversed completely and the northeastern states experienced one of the driest springs on record. Following that period, the winters of 1976-77 and 1977-78 were extremely cold, and we went back to abnormally high rainfalls.

The symptoms of all this stress were to manifest themselves as disease and increased dogwood borer activity, and numerous dogwoods died in the years following the spring of 1976.

Up through the early 1980s fairly wet springs have continued. Then starting in 1985 winter drought and moderate to low rainfall occurred in the spring. I noticed following the summer of 1985 that dogwoods appeared to be making a comeback with reduced leaf anthracnose, increased branch and stem growth, and fairly good bud development before the winter. In other words 1985 may have been a year of promise for our dogwoods.

The approach and passing of the winter of 1986 were fairly moderate and a welcome reprieve for the struggling dogwood. One might have expected the spring of 1986 to be encouraging. In fact, one might have expected dogwoods to have flowered prolifically in the spring. They did not however. Once again we might blame the weather. The drought we experienced in the summer of 1985 was most likely responsible for delaying and preventing proper flower development for the next year.

This poor flower development might actually have been a blessing in disguise. Much food and energy goes into the production of spring flowers. If a plant produces leaves rather than flowers, more energy is concen-

trated into the plant's vegetative growth. Our dogwoods need this vegetative growth to replenish dwindling food supplies in their root systems.

The spring of 1986 was to bring good and bad conditions for our dogwoods. The surviving trees developed fresh green foliage with very little leaf anthracnose disease. Why so little disease? Simple. There was little rain to promote the spread of disease. That was encouraging and needed for the survival of many plants. Spring, however, also dealt us another weather problem. A slightly dry spring might have been beneficial to our plants, but one of the driest springs on record can only have stressed our plants.

Now, the question remains: Did we receive enough spring and summer moisture to allow for healthy root development and replenishment of food supplies for our trees? If excessive drought and excessive rainfall continue so will decline. If conditions become more moderate our dogwoods should respond positively. With the advent of winter and approach of the spring of 1987, we can only wait for spring flowers and summer growth and hope for the best.

What Can We Do

What can we do to help these struggling plants? First we must understand the causes of the problems. Contributing significantly to decline appear to be too much spring rain, too little summer rain; too many extremely cold winter days, too many extremely hot summer days, too many days of rapid temperature fluctuation; and too much disease inoculum on our existing declining dogwoods.

The most important steps to be taken to fight off dogwood decline involve increasing tree vigor and health while also combating fungus diseases. Management should include:

1. Watering during dry summer and fall weather, once every 10 days to supply plants with 1 in. of water. Much recent

research indicates winter damage on most plants can be reduced by summer watering programs. It appears to be important to provide plants with adequate moisture in summer and fall to give them the stamina to survive harsh winter conditions.

2. Fertilize in the fall or early spring, but avoid excessive nitrogen fertilizer applications. High nitrogen fertilizer applications might encourage too much soft succulent growth, which is susceptible to drought and disease. Moderation is best.
3. Remove all sources of fungus inoculum. Remove dead leaves, branches, twigs, or wood. Avoid pruning when leaves or twigs are wet.
4. Protect trees from pests. Fungicidal sprays will provide fair protection of uninfected plants. Plants showing stages of decline will respond poorly to fungicidal treatments as the treatments are mostly preventive.

The current pesticide control recommendations for Pennsylvania include applying a fungicide such as mancozeb or maneb as the buds begin to open. This application should be repeated at seven to 10 day intervals until the leaves are fully expanded. If spring weather is dry the fungicides should be applied over a three week period, if it is wet the spray period might be increased to four or five weeks.

Protection against dogwood borer should also be considered. In recent years, the New Jersey Experiment Station has found that Dursban applied in mid-May, early June, and again if necessary in late June, provides good control. Lindane was recommended but Dursban seems to be providing better control.

Other factors that will encourage dogwood health include:

- Planting in locations suited to dogwood growth. Dogwoods are weakened by planting in sunny, hot areas. Avoid those areas. Plant in areas where air circulation is fairly good. Poor air circulation encourages the build-up of numerous disease and insect pests.
- Proper planting methods. Growers now recommend that all flowering dogwoods be planted slightly higher than they had previously been planted to allow for proper root aeration and to prevent excessive moisture from collecting around trunk areas.
- Keep groundcovers and mulches away from the trunks. Over the last few years I have examined many plants that show root and stem rots that could be associated with excessive moisture or rodent damage common to dense groundcovers and mulches.

Alternatives to Dogwoods

As previously indicated, environmental stresses seem to precipitate our problems

with dogwoods. The procedures of proper planting, watering, fertilizing, pruning, and pest control have met with limited success.

We need an alternative. The alternative selected by many professionals today is to plant other species of small trees. Here are some highly recommended alternatives.

Japanese or Kousa Dogwood

The most commonly recommended alternative is the Japanese or kousa dogwood (*Cornus kousa*). This plant is similar to our flowering dogwood but is more upright in habit and blooms a few weeks later. In early June the plants develop raspberry-like fruits that are quite attractive but different from those of the native dogwood. This plant has shown itself to be fairly resistant to dogwood decline and is popular.

In the future we might also be treated to several new hybrids of *Cornus kousa* and *Cornus florida*, being developed by Dr. Elwin Orton of Rutgers University. The plants seem to have great promise for our gardens and are showing fairly good resistance to decline.

Blackhaw Viburnum

Possibly one of the best alternatives is the blackhaw viburnum (*Viburnum prunifolium*), which grows in the same areas as our common dogwood, often side by side along the edges of our woodlands. It has white flowers in spring, red fall color, pink and blue berries, and typical 'dogwood bark.'

In many areas of the Delaware Valley I would recommend this plant over dogwood. Why? Because blackhaw viburnum is not quite as stress sensitive as our native flowering dogwood. It will grow in heavier, wetter soils, withstand the same sun or shade as dogwood, and at the moment has very few pests.

Well, you say, why isn't this plant the most popular plant around? My answer: it's not quite as showy in spring or fall and it blooms a day or two later than dogwood. It will live, however, where dogwood won't, a big plus for the plant.

Crataegus phaenopyrum, Washington hawthorn

A plant with white flowers in the spring and bright red berries in the fall. It is considered more tolerant of sunny places than dogwood and is recommended for such sites. Drawbacks include large thorns and lacewing damage to plants in excessively hot spots. It too will show symptoms of decline if excessively stressed.

Amelanchier canadensis, shadblow or serviceberry

This highly recommended alternative has white spring flowers and purple to red fruits

that the birds quickly remove. Fall color may range from yellow to red. It is a native woodland plant that will do fairly well in the shade. In full sun the plant will also grow and flower but the sun's heat might attract lacewing fly, which will cause damage. Usually multi-trunked and occasionally with light pinkish white flowering cultivars, this plant is recommended for the lightly shaded areas.

Styrax japonicus, Japanese snowbell

A plant with white bell-like pendulous flowers may be grown as a small tree or shrub in full sun or light shade. The fall color is a dull yellow, complimented by fruits that hang beneath branches. This plant is a spring beauty and is also grown to display its structure and muscle-like bark in the winter.

Halesia carolina, Carolina silverbell

This plant develops white bell-like flowers in the spring that are larger than *styrax*. Its unique fruits develop protruding wings. A lovely spring plant, but if shaded it often develops a gangly weedy habit.

Other plants of merit that might deserve attention include other varieties of viburnum, Japanese flowering cherries (*Prunus subhirtella*, *Prunus x yedoensis*, *Prunus serrulata*), sorrel tree (*Oxydendrum arboreum*), and crabapples (*Malus sp.*).

If you are interested in yellow flowers, you might also consider the early spring flowering cornelian cherry dogwood (*Cornus mas*), which flowers with forsythia. Golden rain tree (*Koelreuteria paniculata*) also deserves attention with its long clusters of yellow flowers that form in late June and early July.

There are many alternatives to common flowering dogwood with my vote going to the fairly tolerant blackhaw viburnum and the later flowering, more formal kousa dogwood.

We hope we have seen the low point in the cycle of dogwood populations. The high point in the cycle seems to have been in the early 1970's when dogwoods grew helter skelter in sun and shade. Now that many plants have declined and died due to climatic changes and increased disease pressure, we are left with the survivors and the progeny for the future.

What will 1987 bring? With a little luck a moderate winter and spring and a step toward the return of the subtle majesty of the spring flowers of flowering dogwood.

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R. Christian Cash, assistant professor of Horticulture at Temple University, Ambler Campus, received his B.S. and M.S. degrees in plant science and plant pathology, respectively, at Rutgers University. He teaches woody plants, nursery management and tree pathology. Cash grew up working on his father's nursery in the Lansdale area, and worked for a landscape development firm for five years.

BE POWER-WISE



by Amalie Adler Ascher



photos courtesy of the Baltimore Gas and Electric Company. (photos by William T. Rees)

Workers trim trees for overhead electric wires in a customer's yard.

20

A small leaflet tucked into my bill from the Baltimore Gas and Electric Company had been sent to advise customers to follow certain procedures when undertaking any landscaping projects. By establishing the whereabouts of utility lines in advance, the notice said, a home owner could avoid digging into and perhaps damaging them, or causing injury to himself. Also included were ways to circumvent trouble in other respects.

The thought of striking an electric line as I was pruning a tree, making a planting hole or routing out a deeply embedded stone had often crossed my mind, and I wondered what the likelihood or consequences of such an encounter would be. I was also curious to learn more about the "Miss Utility" service BG&E offers for marking buried electric and telephone cables or gas, water and sewer lines lying in an area targeted for excavation. The information I received was eye-opening.

A cardinal rule in planting trees and shrubs

near the house or in a group or row is to provide them with adequate space for expansion. Keeping them away from power lines, it's now apparent, is a factor to consider as well. Once a tree has reached a fair size and its limbs start embracing overhead electric or telephone lines, there's not much you can do by way of moving it. Pruning is the only recourse. The altered shape of the tree may not be to your liking, but that doesn't matter if the good of the community is to be served. Indeed, a company whose lines are jeopardized is not apt to wait around for trouble to occur, but will seize the initiative by asking permission to remove interfering growth. You can rest easier, though, if the crews assigned to the job know their business. In Maryland, for example, says Irvin Bauer, Jr., BG&E's landscape architect who oversees tree-trimming operations, the men responsible for clearing power lines are "tree experts licensed by the state of Maryland," and are thus skilled in the art of pruning.

Other states may adhere to the same arrangement.

In new plantings, therefore, respecting the sanctity of power lines can save grief later. A good rule to follow in setting trees destined to grow tall, Bauer says, is to site them 15 to 20 ft. from overhead wires. Don't plant thorny plants or shrubs near meters too close to mounted transformers, either, adds Pete Hahn, BG&E's general supervisor of vegetation management. The doors must have room to open and close. Most often these transformers, designed for underground service, serve several homes. You can recognize a transformer by its concrete pad 4 ft. square with a green metal box on top. The doors swing out in one direction. Since a company trouble-shooter might need to replace or disengage a fuse during a storm, he could suffer serious harm and even death if he were to brush up against wet shrubbery in the process. But before he'd let that happen, he'd remove the offending

growth.

To forestall such an eventuality, not to mention the assault on your shrubbery, allow an 8-ft. margin between it and a transformer and 2 ft. on the other three sides. In front of meters, keep plants at a 3-ft. distance.

Exactly Where Are the Lines

Electrical cables may lie overhead or underground depending on when a house

By providing contractors with a central source for obtaining information on the whereabouts of all utility lines in an area in which they were working, utility companies hoped to prevent disruption to their services.

was built. In newer developments, Hahn said, they are underground. Gas pipes are always underground. But the old gas lines are being replaced with newer equipment and the material is composed of heavy plastic, which won't deteriorate as quickly or rust out, instead of the metal used formerly. Moreover, the new lines, sunk 2 to 3 ft. deep, are not quite as deep as electrical lines. The hierarchy of underground cabling places direct-burial or drop-in telephone lines at 18 in. below ground, electric lines from 30 to 36 in. deep, or below the frost-line, and water and sewer lines deeper still.

It would be wise, Hahn says, to get a general idea of the location of the sewer, water, telephone, gas and electric lines on your property (the telephone lines may be in a common trench with the electric lines), so you don't plant on top of them. If you had a failure in a line over which a valuable tree were planted, you could lose the tree if it had to be dug up to reach the line. Then, too, you wouldn't run the risk of hitting into a line if you excavated a deep hole for one reason or another. You're not likely to strike a power line (unless you have appreciably changed the grade of your property) under normal conditions of planting flowers, vegetables or ground covers, Hahn says, or even in settling an average-size shrub or tree.

The chances of striking a power line increase if you're driving in fence posts, which are embedded 20 to 30 in. in the ground and set about 6 ft. apart, or putting down liquid root feeders that also run deep. In those instances, you could conceivably strike an underground cable, and if you ruptured the insulation and

continued



Improperly planted shrubs around underground pad mount transformer can be dangerous to workers in a storm.

released water into it, you could knock out your service. The repair might require digging a hole 3 to 4 ft. in diameter merely to fix a quarter-inch break. Other consequences could result as well.

The best way to get a reading of where your power cables lie, Bauer and Hahn say, is to fix the point at which your various services enter your home and draw an imaginary line from those junctures to their sources. At the very least, you'll know whether the lines are at the front or the rear of your property. In the case of an electrical line, the source would be the transformer already described. A gas main is in the street at a property line and can be identified by its round concrete cover 6 to 8 in. in diameter over a pipe attached to a hand valve.

Sewer lines, Bauer said, are particularly vulnerable to weeping willows and certain maples, whose roots seek moisture and thus might enter cracks in the line, clogging it. By the time a tree reaches full size, its roots spread farther and farther afield, and whereas at one time the tree might have seemed to be a safe distance away, it could later close the gap. The other thing, Bauer says, is not to get within 10 ft. of electrical wires when you trim trees and shrubs. If you need to get that close, the law requires you to call in a professional.

One Call Does It All

The "Miss Utility" service is not unique to Maryland. The facility, in fact, covers the region from the Chesapeake Bay Bridge to Spotsylvania County, Virginia, which includes Baltimore and Washington, DC. It is part of One Call Concept, a private company that also operates the corresponding Dottie Center of Louisiana and Digger's Hot Line of Wisconsin. "Miss Utility's" counterpart in Pennsylvania is One Call Systems, Inc., which serves the whole of Pennsylvania. It's based in Pittsburgh. (For names and telephone numbers of other such concerns in *The Green Scene* area, see the accompanying list.)

One-call centers, as they are generally referred to, are private ventures financially supported by the various utilities subscribing to their services. Not every utility in every borough or town need necessarily be a member, but most companies are.

Edwin W. Skoglin, manager of the Marketing and Energy Services Department at BG&E, says the idea for one-call centers originated 12 or 15 years ago at a meeting of the American Public Works Association. By providing contractors with a central source for obtaining information on the whereabouts of all utility lines in an area in which they were working, utility companies hoped to prevent disruption to their services. All too frequently, Skoglin said, a contractor would fail to take into



Pole indicates underground gas transmission line.

account the existence of one line or another, inadvertently plow into it and knock it out of commission. An entire neighborhood might be inconvenienced as a result.

"In Pennsylvania," says Arlene Lefrancois, a One Call Systems operator in Pittsburgh, "anyone contemplating excavation, even something as little as moving a one-inch mound of soil, must by law locate utility lines in the vicinity at least three working days before digging starts." A phone call to a one-call center to request service will dispatch to the scene representatives from each of the participating companies. They will arrive armed with different colored markers: red to delineate electric lines, blue for water lines, green for sewage, yellow for gas and orange for telephone or cable TV or any other communication line. Markers may be in the form of wooden stakes, chalk or spray paint, or a combination of all three, depending on the utility concerned and the surface being drawn upon. "If you fail in your responsibility in this regard," Lefrancois warns, "you would be liable if you struck any lines and damaged them."

"When you call the center to have underground lines located," Lefrancois continues, "you'll be asked about 15 questions and given a referral number to prove that you did call and request the service." Questions include: your name, address and telephone number; the name of the contractor (if any); the county and town where the work will be done (this gives a data base for the area whose companies should be notified); the address where the digging, demolition or whatever will take place; the nearest intersection; the location of the property and the kind of surface on which the work will be done; the dimensions of the hole, and the starting date and time of the project. This information is then sent out over a teletype machine and the list of utilities affected obtained. If any of these are private concerns not affiliated with the service, they must be contacted directly.

The law Lefrancois refers to is Pennsyl-

vania Act 287. It reads in part, says Mark Morrow, assistant counsel in the Fixed Utilities Division of the Pennsylvania Public Utilities Commission Law Bureau (phone: 717-783-2810) "Any person who... performs excavation or demolition work for himself or for another person must contact..." and it goes on to name the utilities covered. Violation of the law, Morrow says, is punishable by a fine of not less than \$1,000 nor more than \$5,000, and/or a prison term of 90 days.

Laws differ in each state, says John W. Dorsey, chief engineer of the Public Service Commission of Maryland. The statute in Maryland, for example, known as Public Commission Law Article 78, Section 28A, provides that "Penalties for negligence shall be subject to a civil penalty of up to \$1,000 for the first offense and \$1,000 for each subsequent offense, or ten times the cost of repair of the damage to the underground utilities." But the homeowner is spared. The law continues by saying, "Nothing in this section shall apply to any excavation done by the owner of a private residence when said excavation is made entirely on the land on which the private residence is situated." Even so, it pays to play safe. Why risk trouble, as Skoglin says, when practically all it takes to avoid it is one phone call.

Companies to call in locating power lines:

Delaware — Miss Utility of Delmarva
1-800-282-8555 (in-state)
1-800-441-8355 (out-of-state)

Maryland, DC, Virginia — Miss Utility (serving the region from the Chesapeake Bay to Spotsylvania County.)
1-800-257-7777

New Jersey — Garden State Underground Plant Co.
1-800-272-1000 (in-state)
1-800-232-1232 (out-of-state)

New York — Underground Facility Protection Organization, Inc. serving Oneida County — the state has five call centers.
1-800-962-7962

Pennsylvania — Pennsylvania One Call System, Inc. (located in Pittsburgh, but serving the entire state.)
1-800-242-1776 (in-state)
1-412-323-7100 (out-of-state)


Rhode Island — Dixie
(located in Boston, Massachusetts)
1-800-225-4977 (in-state)
1-617-229-2770 (out-of-state)

Amalie Adler Ascher is a frequent contributor to *Green Scene*



Ruth Trent checks out her gardening mound at Medford Leas retirement complex.

Ruth Trent's Hill: A GARDEN LEGACY

 by Anne Cunningham

One look at Ruth Trent's room at the Medford Leas retirement complex, shows that she has not retired from the world of gardening. Containers of Safer's Insecticidal Soap, Ortho's White Fly Spray and rose care products cover her shelves. Garden catalogs lie on her desk, next to her bed and on the coffee table. The beautiful view from her ground floor window is a 220 foot long flowering mound, known locally as Trent Hill.

Ten years ago, when Trent moved to Medford Leas, a large barren berm was created from earth displaced for new residential and medical buildings. Landscapers planted evergreens on top of the five foot high lump and hoped grass would cover the rest.

Ruth Trent had a better idea. She asked permission to plant "a few flowers" around the berm. At the time her room was on the other side of the building, so there was nothing personal about the planting; she just missed her garden in Syracuse and the pleasure of gardening. A quiet woman, confident in her gardening skills, Trent had no grandiose plans. She worked from day-to-day with fresh ideas

to improve the dull mound.

She started with 25 *Hemerocallis* planted in five groups of five plants each. Ferns, primroses, and dusty miller were planted under the evergreens. She added iris and lilies, and in the sunny areas 31 rose bushes. Some of the roses came from her previous garden, lovingly wrapped and carried to Medford Leas with her suitcases. Others she ordered from a local nursery. Her favorite rose is Tiffany, one of the highest rated varieties of hybrid tea with as many as 20 soft pink blooms at one time, according to Trent. After the first successful season, she planted dogwood, pussywillow, forsythia, cherry (*Prunus higan* 'Pendula'), and Vanhoutte spirea (*Spiraea vanhouttei*) on the sunny side of the berm. On the shadier side, azaleas and rhododendron all soften the transition from trees to flowers along the undulating bed.

The mound is located conveniently adjacent to the large 40 foot long community greenhouse. When the greenhouse was constructed, Trent had all the space she needed to propagate flower seeds for annuals to be

continued



Inset of Ruth Trent's hill



Ruth Trent in the 40 ft. long greenhouse she once managed. Ruth Trent and fellow gardeners propagate flower seeds for annuals to be used on the mound.

used on the mound. She was the greenhouse manager, and started a tradition of 'display plants' in the hallway to show outstanding blooms or foliage. Women who had been active in garden clubs, and a few men, quickly joined the greenhouse, adding their expertise and assistance. Now indoor gardening is so popular among the residents there is a waiting list of those who want to participate. As it is, the current greenhouse manager, Betty Beide-man, has to divide the benches into 16-inch wide segments, each carefully marked with colored pins, to enable 85 people to participate. Some are amateurs, others are experts who show their skills at the annual Medford Leas Flower Show, judged by the strictest standards by certified judges from New Jersey and Pennsylvania.

Ruth Trent brushes back her silky white hair almost as frequently as she brushes away compliments. "It's no big thing really," she states. "I don't do charity work. Some of these people do a lot for charities. I buy plants and seeds and do some gardening."

Large items like bales of Pro-Mix for starting seeds and repotting are supplied by John Siminski Jr. and his staff in the Landscaping Department. Siminski, an enthusiastic young landscaper, arrived at Medford Leas about the same time as Ruth Trent. He was surprised when she first came to him asking for help; now he assigns one of his staff to work with her twice a week for five hours. Trent waters, fertilizes, and prunes her favorite roses herself, but shares the weeding and more strenuous work with her helper. Her current assistant is Chi-Shyang Chow, a Taiwanese man who has been developing the mound with her for seven years. Together they have planted literally thousands of fall and spring blooming bulbs.

"Every winter Mrs. Trent says she's proba-

bly too old to garden this year," says Siminski, "but when spring comes, she's out there working hard." Siminski does a lot to encourage gardening among the residents. When he needed a mass of bright celosia for a central courtyard planting, he asked Trent and other greenhouse members for help. They grew hundreds from seed, and the display was beautiful.

As a Quaker community, Medford Leas puts great stock in gardening. Outside of each resident's room is an individual garden space or a patio for container gardening. Every spring, the landscaping staff tills and prepares the soil in a large vegetable plot for those who prefer to tend edible gardens. Unhesitatingly Siminski says they have several of the most talented gardeners he's ever seen. Over the years, Siminski has changed the focus of some of the retirement complex's public areas from high maintenance (like lawns that took 16 hours to mow) to low maintenance, so time could be spent on more horticultural endeavors. Under the direction of The University of

Now indoor gardening is so popular among the residents there is a waiting list of those who want to participate.

Pennsylvania's Morris Arboretum, he has brought specimen planting and horticultural excellence to the 155 acres encompassed by Medford Leas and its newly constructed sister community, Rushmore. The only complaint from a resident is that the *Magnolia grandiflora*, recently planted outside her window, will block her view of Trent Hill.

Ruth Trent grew up in Vancouver, British Columbia. She has no romanticized memories of gardening in her past, just facts about a normal, pleasant childhood. She was brought up in the strict English tradition of 'children

should be seen and not heard' and it's possible that she was attracted to gardens as a place of accomplishment where she could be comfortably quiet.

When she married a doctor working for the Veteran's Administration, they moved frequently with the demands of his job. But no matter where they lived, Ruth Trent always had a small garden. She became a National Accredited Flower Show Judge for The Federated Garden Clubs of America, and is a member and emeritus judge of the American Rose Society. Most of her gardening education was garnered while they lived in the Midwest, so Trent feels somewhat unfamiliar with "these seashore plants that grow in New Jersey." Looking at her Medford Leas garden, one doubts her pleas of ignorance. She is quick and accurate with the names and cultural requirements of the hundreds of plants on Trent Hill.

For the past few years Trent has been putting perennials in Trent Hill. She still loves to start multitudes of seeds, especially pansies, petunias and delphinium in February and March, but she wants perennials "so the flowers on the mound will go on forever." With her gentle enthusiasm and horticultural talent, 93 year old Ruth Trent has contributed more than annuals and perennials to Medford Leas. She has given the community a horticultural tradition for which they will always be grateful.

Medford Leas is a Quaker continuing care retirement community located in Medford, New Jersey, just off Route 70. Phone 609-654-3000.

Anne Cunningham, a member of the PHS Publications Committee, writes frequently on horticultural subjects. Her work appeared recently in *The Philadelphia Inquirer Gardener's Guide*.



The Uncommon Japanese Umbrella Pine



by Evi Bossányi Loeb

Sciadopitys (Sy-a-dop'-i-tis) *verticillata*, the Japanese umbrella pine, formerly known as parasol pine, (no relation to *Pinus pinea*—the umbrella pine of Europe), is a pine by name only, since it is more nearly related to the redwoods. The name is derived from the Greek "skios," "skiados," meaning "shade" or "umbrella," "pitys" connoting "pine." The umbrella comparison originates from the arrangement of needles in whorls of 10 to 30 like the radiating ribs of a half-open umbrella.

It is so resistant to decay that the piling timbers used in building the Sensu Bridge (1558-1569) in Tokyo lasted without painting for 300 years.

Verticillata is a redundant designation because the word also means 'whorled.'

In Japan its name is *Kōya-Maki-Zoku*, "Kōya" derived from Mount Koyasan in the Prefecture of Wakayama. "Maki" means "real tree."

The tree is a conifer, classified as a gymnosperm: a class of plants bearing naked ovules, rather than ones enclosed in an ovary, characteristic of angiosperms. The tree is grouped into a small, but important family of the conifers called the *Taxodiaceae*, which characteristically bear more than two ovules on the scale of their cones. Some of the largest trees in the world occur in the *Taxodium* family such as the *Cryptomeria*, *Cunninghamia*, *Glyptostrobus*, and *Metasequoia*. Each representative collection of conifers must include the *Sciadopitys*.

The tree is native to central Japan to the Honshu Province where it is confined to two small regions in the wild, the best trees being found in steep, rocky, sheltered spots.

In Japan the umbrella pine attains a height of 120 feet. Its trunk diameter can measure up to four feet. In its native habitat, it is thin, emaciated, gaunt looking. Outside of its native land its vertical growth habit is one quarter to one third of its home performance. It is monoecious, i.e. having both male and female flowers (in April) on the same tree. It is slow-growing: a five year old specimen can be less than one foot tall. When it reaches about 20 inches, it gains momentum and it takes off growing six to ten inches per year. Its exceedingly slow growth is the reason that these nursery plants are so enormously expensive. One current catalog, Martin Brooks in Doylestown, lists eight to ten foot specimens between \$2-3,000.

A *Sciadopitys* will not grow in dry, sandy soil, or where it is exposed to hot dry winds. It does

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Sciadopitys at Tyler Arboretum.

not tolerate drought, lime, or air pollution. From the very start, the Japanese umbrella pine should be provided with well-drained, moist soil, enriched with decayed leaves with a pH of 6 to 7, preferably in full sun. If planted in a shady area, the needles will appear virtually a black green. Its slender horizontally spreading branches of dark green lustrous, somewhat leathery foliage form an attractive narrow pyramidal compact head.

prized wood

The light yellow wood is of medium weight and hardness. The sapwood is white, the heartwood is light yellowish brown, and the

separation between them clear. The wood is prized for its durability in water. It is so resistant to decay that the piling timbers used in building the Senu Bridge (1558-1569) in Tokyo lasted without painting for 300 years. The wood was examined by the Faculty of Botany of the Imperial University in Tokyo and was confirmed to be that of the Kōya-Maki.

Because the wood endures, it has been used to construct burial caskets. Its association with coffins gave many people the idea that the wood was "unclean." The tree was preempted from the plantings on the grounds of the Meiji Shrine. That bosky boycott did not, however, prevent the subsequent and exten-

sive adoption of the Kōya-Maki as a sacred plant by the Shinto shrines that abound in Japan. And, the Japanese Buddhists use the branches of this special tree on family altars because they believe that the Holy Spirit rides on the limbs of the Kōya-Maki.

I wrote to Japanese arboreta, botanical gardens, and to other authorities on the *Sciadopitys* because I wanted to know more about three 50 year old trees at "Threebrooks," our Bucks County garden. A director of the Kobe Municipal Forest, Keizo Takahashi, responded with a copy of an illustrated and elaborate monograph by Dr. Keiji Uehara, a distinguished expert on the Kōya-Maki. From him, I learned that in Kyoto the tree is called "All Souls Pine," and in August during the All Souls Day celebrations, cuttings of the Kōya-Maki are sold to decorate the ancestral altars. In Japan no established business is licensed to sell the tree cuttings; most are acquired by "unauthorized snipping." Plantations raising Kōya-Maki are hard hit by this seasonal sneaky activity. As All Souls Day observances approach each year "poachers mercilessly snip off the most precious parts of the plant: the top and the growing tip of the branches." The consequences are dismally obvious—the natural symmetry of the tree is destroyed. That Japanese umbrella pine purloining is a ritual custom restricted to the Kansai region of the country augurs well for the rest of Japan where the trees' integrity remain unharmed by soulless hatchetmen—so far.

Dr. Uehara indicates that there is "good evidence" that the Kōya-Maki has been planted for fire protection as well since the wood is resistant to conflagration. Originally that was the purpose for its planting on the grounds of the famous Buddhist temple on Mount Kōya. There was a serious fire in 1886, and an annex behind a row of Kōya trees escaped destruction. In 1922 some other buildings separated from a burning complex were saved by a guardian grove of some two dozen umbrella pines. The trees are still often planted as shelter trees around houses at Mount Kōya-san.

In its native land, the strong fibrous bark is made into oakum used to pack joints of steam pipes and boats, also for caulking compounds and making casks. The creamy white wood, pliable as well as fragrant is pressed into the service of making small boats, wharf pilings, and even bath tubs. The bark of the tree is a reddish grayish brown, and peels in wafery

slivery sheaths, long narrow vertical hairy strips somewhat resembling thinly shredded shavings of dry baking chocolate several days old.

transplanting

If you must transplant an umbrella pine, do it in the spring, balled and burlapped before active new growth begins or in early fall in mild climate with small potted stock if the soil is moist and the area around the tree is protected. The younger the tree, the greater the likelihood of success in transplanting.

propagating

New plants are raised from elliptic, compressed seed, which can be gathered as soon as ripe, sown in pots, containing a mix of 50% peat and 50% perlite, under glass in spring or late fall, depending on which authority on timing you follow. When sowing seed, cover them with soil, but no more than a quarter of an inch thick, and keep the temperature about 65° F.—damp and dark. Tests have shown that seeds do not germinate in the presence of light.

Infant plants, tender and tricky to coax along, need protection from the first several winters; keep them under cover. Seed does not require pretreatment. Some people prefer to stratify them, but germination will take several months: three to nine. The seeds can be stored in a cool place before sowing—up to a year in an air-tight container. Dr. Sidney Waxman, professor of Plant Sciences at the University of Connecticut has been successful in germinating five year old seed.

Tip cuttings are another way to increase stock. These cuttings are usually made from tip shoots with one year wood and two year base. The lower one third to one half is trimmed of needles. They are then set in moist, not soggy, clean sand flats (never use salty beach sand). Mild bottom heat is indicated at first. Cuttings should be adequately rooted in four to eight months. I have read that cuttings may also be rooted in outdoor summer frames with fermenting manure used as a substitute to stimulate bottom heat.

At the Arnold Arboretum, rooted cuttings and seedlings have been grown side by side. The results show variable growth rates and shapes among the seedlings, while the rooted cuttings replicate the form of the tree from which they were snipped. (For more information about propagating from cuttings see

Arnoldia Jan./Feb. 1977, Vol. 37, #1)

At the College of Agriculture and Natural Resources of the University of Connecticut Dr. Sidney Waxman experimented with propagating the *Sciadopitys* for 25 years. One very intriguing detail revealed here: cuttings producing the highest percentage of rooting in his scientific researches were taken on March 31. Dr. Waxman used Hormodin 3, a system of intermittent misting, and cuttings were all "wounded by running the point of a knife longitudinally down to the base of the stem on three sides. Dr. Waxman also introduced a cultivar that is not only an excellent dark green, but is found to be easier to propagate. It is named: *Sciadopitys verticillata* 'Wintergreen.' Its debut to the general public is anticipated by 1990.

S. Kurata in *Illustrated Important Forest Trees of Japan* declares that "the *Sciadopitys* sometimes propagates by layers," a fact confirmed by Liberty Hyde Bailey.

Genetic cloning techniques have been explored quite recently, but accurate statistics as to results are not yet tabulated.

Jean Iseli of Oregon's highly respected Iseli Family Nursery (most probably the largest supplier of *Sciadopitys* in the U.S. — 20,000 - 30,000 trees produced per annum) implores

In Japan no established business is licensed to sell the tree cuttings; most are acquired by "unauthorized snipping." Plantations raising Kōya-Maki are hard hit by this seasonal sneaky activity.

that growers give this tree an opportunity to be represented in other than the guarded, safe zones 5 and 6. His family's experience with the plant spans an excess of 30 years during which time the tree had been sold all over the U.S. Their best knowledge affirms that the plant is hardy to at least 40° below zero (F). "Young plants or poorly established plants may have problems, but with proper care and concern, it thrives in pretty harsh areas."

Locally, nurseryman Tom Dilatush, labels the *Sciadopitys* as "truthful"; if they feel sick or weak, they show it. One should never buy an umbrella pine that is 'thinned-out' or yellow-green, or otherwise sickly.

easy care

This tree is truly a genuine beauty. Given a good start, in a proper site, the tree pleases

itself and you by being free of serious problems or demands. It requires little or no maintenance, no spraying, no leaf removal, no pruning. Pennsylvania nurseryman Herbert Bieberfeld, advises: "Only the snow has to be knocked off, to prevent breakage." No doubt it is good practice to mulch with decayed leaves. On our land the surrounding deciduous trees drop a blanket of leaves in the fall. We do not sweep those volunteer coverlets away.

Since it is such a slow-growing tree, the Japanese umbrella pine is a plant primarily for the collector of rare species, but that need not be the case all the time. The wait is worth it. The tree with its profuse foliage, vibrant, year-round glow is a unique treasure. It is distinctive with unmatched grace, its branches growing in predestined nice and tidy trajectories, never interfering with each other. It is as if some latent genetic force signaled order, protocol, and courtesy.

Unlike many other conifers, the *Sciadopitys* retains its lower branches. If any pests molest it, I know of none; our trees have endured a cascade of sunrises and sunsets that have spanned a half century. It is a decorative tree with an aura and grandeur, during its entire life cycle. I have never seen any of our trees in disarray or unprepared for discriminating visitors. Basal suckering is unheard of in this species.


A magic spell has quite clearly been cast for me by the Japanese umbrella pine. In winter months I have snipped with discretion small branches to bring indoors. They keep appealingly alive for weeks on end, and provide an imposing and elegant decoration.

I do long to behold one day, or even simply to know the whereabouts of these other cultivars.

Call it Kōya-Maki, Japanese umbrella pine, or *Sciadopitys verticillata*, the tree appears to be something of an endangered species. I hope the horticultural community will move to perpetuate it, rediscover some of the elusive cultivars, and save the sumptuous *Sciadopitys* for future generations to grow.

Évi Bossányi Loeb is an enthusiastic exhibitor at the PHS Harvest Show and the Philadelphia Flower Show. She is a member of a number of local and national horticultural organizations. She gardens at her home in Jenkintown and her parents' estate-arboretum "Threebrooks" in Bucks County.

A Prize-Winning City Garden Emerges From A Mudpile

 by Robert Jones



photos by John Gouker

An overview of Robert Jones's garden in West Philadelphia. The garden slope at the back wall is 7ft. high going down to street level. The original slope was much higher until Jones hauled away more than a half ton of rocks, stones and other debris. This photograph was taken in July 1985; annuals in bloom were petunias, marigolds, impatiens and begonias. A Japanese maple is a seasonally colorful sentinel in the garden.

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When I moved into my home on Sansom Street in West Philadelphia in 1957, there were no flower gardens nearby, only old garages to the rear of my house. When the garages eventually became city property the neighbors of the 4700 block of Sansom Street formed a committee to have the condemned structures demolished; they were, in November 1979.

Following demolition, the grounds were backfilled with rocks, bricks, stones, clay, wood and metal. A slope was formed to protect the wall that separated the driveways at the back of Walnut and Sansom Streets.

Heavy rains caused mud slides from the slope, damaging garages and houses, and eventually stopping up the main sewer line.

In the spring of 1980, Roger Lockheed, my neighbor, suggested railroad ties would stop the erosion on the slopes. By now the slopes were covered with grass, weeds, insects and

debris from passersby.

I began to clear the ground, but my efforts were thwarted by the stubborn backfill. I then added compost, top soil, peat moss and cow manure. Eggshells, apple and potato peelings, sawdust and wood chips went into the pile. The result was soil two feet deep leveling the hill to a satisfactory plateau. The size of the garden that eventually emerged is 22 ft. by 23 ft.

In 1981, I dug six large holes to prepare to plant six azaleas, rhododendron, assorted shrubs, petunias, pansies, impatiens and geraniums. Success was limited to the smaller plants since the azaleas, rhododendron and yews did not survive the winter.

When I dug out the evergreens, I realized that the combination clay and peat moss had impaired the root systems. Undaunted, I replanted eight azaleas, this time filling the

oversized holes with topsoil and right-dress mulch. I also introduced a five-year-old dwarf Japanese maple. Success was immediate.

To facilitate gardening and add aesthetic appeal, I next built a walkway with concrete inner and outer retaining walls. The walk was paved with old roofing stones covered with colored pebbles. Then a walk common to my neighbor was added, setting off the developing plantings.

I used concrete blocks and scalloped bricks to design two circles distinguishing the center focal point along with an old iron wagonwheel mounted on pipe.

In subsequent years I added right-dress root mulch, cocoa bean mulch and lightly applied peat moss to the entire garden surface.

Varieties of annuals and perennials now flourish. The breathtaking display of this year-round Eden is enhanced by yews, weigela.



Cement slabs divide Robert Jones's garden from his neighbors.

mock orange, holly, pyracantha, roses, rose of sharon, lilacs and ground coverings. Featured also are New Guinea impatiens, geraniums, begonias, marigolds, petunias, tiger lilies, prim-roses, forget-me-nots and a pleasant assortment of perennials.

In the midst of all this, I display a copper-roofed birdhouse and two aluminum flower pots mounted on pipe supports. Many of my neighbors have planted plants and flowers that vie for the observer's appreciation.

I'm proud to have won, in 1985, first place in the medium size flower garden for an individual, in the City Gardening Contest, after having won second place in 1984 and third place in 1983.

•

Now that Robert Jones has retired from RCA Corporation, Camden, NJ, he is able to devote more time to the care of his garden. He is happy to report that many of his neighbors have joined in to beautify the back areas of the homes on Sansom Street.

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BEST OF SHOW, Patricia Wurts

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	2d	Patricia Wurts
	3d	Patricia Wurts
	H.M.	L. Wilbur Zimmerman
	H.M.	Brooke Morrison
#2-A Splash	1st	Ann Reed
	2d	Ann Reed
	3d	L. Wilbur Zimmerman
	H.M.	Judith D. Katz
	H.M.	Mario A. DiPuppo
#2-B Splash	1st	Ann Reed
#3 Feathered Friends	1st	Brooke Morrison
	2d	Ann Reed
	3d	Judith D. Katz
	H.M.	Ann Reed
#4 Patterns	1st	Patricia Wurts (BEST OF SHOW)
	2d	Patricia Wurts
	3d	Ann Reed
	H.M.	Ann Reed
#5 White Pine Challenge	1st	Patricia Wurts
	2d	Ann Reed
	3d	Judith D. Katz

AN INVITATION TO PLANT SOCIETIES... send us your plans for 1987

We will publish information about one major sale and one major event for each area plant society from January 1, 1987 through December 31, 1987. Send the information to Liz Hauck, (*Green Scene*, 325 Walnut St., Phila. 19103. Phone 625-8263) by November 1, 1986. Please use the following format:

NAME OF CHAPTER AND SOCIETY

	Event #1	Event #2
Name of Event	_____	_____
Dates of Event	_____	_____
Time of Event	_____	_____
Location (full address)	_____	_____
	_____	_____
Fee, if any	_____	_____
Name of contact person	_____	_____
Address	_____	_____
	_____	_____

AN EDIBLE FENCE

Rosa rugosa Shrubs

 by Jan Riemer



photos by Jan Riemer

Rose hips, the fruit of the rose, consist of a fleshy, bulb-like receptacle located at the base of the rose, provided the bloom has not been harvested before the hip developed. These seed pods offer nutritional benefits including abundant amounts of vitamin C, laced with a liberal supply of vitamin A, calcium and iron.

Hips are used in teas, soups, spreads, baby foods, extracts, jams and puddings.

All roses have hips but few are as palatable — having a combined fruity and spicy flavor — as those harvested from a few wild species that bear edible fruits. In Europe, the two most common varieties are *Rosa villosa* and *Rosa canina*, while in the United States the delicious hips are harvested from the rugged and spectacular *Rosa rugosa* shrub that grows throughout the country except in the extreme south along the Gulf Coast. They appear to thrive best along the sea coast. Those planted inland sometimes show signs of wilting during extreme summer heat.

One friend claims his 60 year old bush in the Poconos is quite winter hardy. "We chop it down every fall, and the following year it comes back to about four feet."

But this is just the beginning of the *Rosa rugosa* saga.

The bush is incredibly strong with spikes lethal enough to deter intruders: animal and human. Consequently, a hedge of dense *Rosa rugosa* shrubs, used as landscape plants, will insure privacy and eliminate the

need for expensive fences or electrical installations. Furthermore, while in bloom the shrubs are magnificently covered with countless shades of pink, red or crimson, single blossom roses that emit scents reminiscent of yesteryear's fragrances.

Five mature shrubs will provide a family of four with enough vitamin C to supply their needs during an entire winter, and also, furnish a hedge 10 feet long. Initially, select two year old nursery stock and plant two feet apart, 18 to 20 inches deep in a sunny area where the loam has been mixed with a combination of topsoil and rotted manure, and a sprinkling of bone meal and potash. The relatively bug-free shrubs that require only a minimum of pampering will respond beautifully if a mulch of pine needles and wood chips are added furnishing just enough acid to meet their cultural demands. The bed must be kept moist and well drained. The plants generally grow to a height of four to six feet; however, along the seacoast, in full sun, it's not unusual to see bushes 10 to 15 feet high with a diameter of five feet. Pruning is optional.

Although we planted our shrub in September, it's best to plant them in the spring as soon as you receive them and cut them back leaving only four buds on each stem. In a few months copious blossoms will decorate the bushes until late fall. The following years will produce an array of roses from late spring until frost. The shrubs self-propagate by layering and can be transplanted. Or, because they

are a distinct species they can be reproduced from seed by germinating the seeds in peat pots the following spring.

Harvesting and Preparing the Hips

As the petals drop, the crabapple-like hips begin their growth, first a light green, ripening to a vivid orange, gradually paling and finally after becoming a bright, reddish orange, they reach full maturity, which could occur either before or after a light frost. (If they are orange, they're not ripe enough and if they're dark red, they're past their prime.) It is at this stage that the firm fruits, which are sometimes referred to as rose plums, may be picked. I wear gloves to protect my hands from the spiked stems.

You can use several methods to preserve the hips but it's imperative to prepare them immediately upon harvesting to prevent deterioration. First, wash in cold water; drain and remove the leaves, stems and blossom ends of the seed pods and discard any bruised ones. They may then be placed in a tightly covered container and stored in the freezer up to six months.

Adding one and a half pints of boiling water to a pint of blender-minced hips will provide a liquid extract. (Less water will provide a thicker puree.) Cover and simmer for about 15 minutes in a heavy, stainless steel or enamel container. (Copper or aluminum pots and utensils will destroy the vitamin C.) Let stand in a crock for 24 hours. Strain the extract and bring to a rolling boil. Cool and strain again



Left: *Rosa rugosa*, blossoms, shrubs (right, top), and hips (right, below).

until most of the mass has been discarded. Before storing in hot, sterile bottles add sugar and lemon juice to taste. Seal at once and place in a dark cupboard until ready to use.

For dry storing, after the initial preparation as described above, place on a screen away from direct sun, and set it in a place where the hips will absorb air until they become dry and brittle. This will take at least a week—possibly longer depending on weather conditions. Or they may be dried by cutting them in half and baking on a cookie sheet in a 200°F oven until they're crisp. Store in a tight, opaque container until ready to use as a tea base by brewing with a concoction of dried mint and bee balm leaves topped with fresh lemon juice and honey. Or, after drying, the pips can be removed from the pods by placing them between layers of brown paper bags and crushing them with a rolling pin. Although this alternate process takes longer, the rose hip flesh has more uses.

The rugosa plants are native to Korea, China and Japan. It has been suggested that one of nature's wonderful recycling systems was conducted by the birds who relish the hips but can't assimilate the hard seeds within so they are deposited, completely fertilized, at random. Although we weren't one of the fortunate recipients, perhaps the birds will select some of the hips from our bush and propagate a neighbor's garden.

For centuries physicians made medicines from rose petals to treat their patients for head-

aches, painful eyes, throat and gum ailments but it wasn't until sometime during the last century that the scientific value of the hips has been realized. As a point of interest, during the Middle Ages the hips were dried and used as prayer beads, hence the coining of the word, "rosary."

What a treat to find a shrub that produces beads, food, fragrant blossoms and at the same time defies neglect, thrives almost anywhere and provides a perennial living fence.

ROSE HIP SOUP

¼ lb dried rose hips
2 cups of water
1 cup of orange juice
1 tablespoon of apricot brandy
1 tablespoon of honey
½ tsp. lemon juice
2 tablespoons of soy flour to thicken

Place the hips in stainless-steel pan. Add water and simmer for about fifteen minutes or until the hips are soft. Strain through a sieve. Bring to boil again. Add other ingredients.

Serve hot or cold.

Serves two.

May be garnished with whipped cream or slivered almonds.



After reading about *Rosa rugosa*, Jan Riemer became so intrigued that her research took her to the famous rose gardens in Elizabeth Park, Hartford, Conn., the coastlines of Mass., Maine and New Jersey and finally to Star Roses in West Grove, Pa.



WARNING: Never use the hips of any rose treated with a pesticide that is not clearly labeled as safe for food crops.



Paulownia at the Philadelphia Art Museum.

photo by Margaret Bowditch

Paulownia tomentosa — Trash Tree or Treasure?

Paulownia tomentosa, the Empress tree, brightens up Philadelphia's estates, parks and railyards each May. *Paulownia* thrives in the pastoral beauty of Winterthur, and it is equally useful as a city tree. The ring of paulownias around the fountains at Logan Circle is high on my list of Philadelphia's spring treats.

Empress trees were brought to this country from China in 1834 and have since seeded themselves throughout our area. The trees are valued for their wood, which is used in furniture making. The wood is reputedly non-flammable and is often used in the Orient for jewelry boxes.

Paulownia's ornamental features include impressive panicles of lavender flowers fol-

lowed by large bold leaves. With its rather coarse texture the tree looks best in a spacious setting. As both the Philadelphia Art Museum courtyard and a city dump are generously proportioned, the tree is well suited to either site. But you might prefer to check out the delicate fragrance of the flowers in the Museum setting.

Margaret Bowditch

Margaret Bowditch is a member of the PHS Council, a horticulturist, teacher and award winning exhibitor at the Philadelphia Flower Show. She is co-chair of the Horticulture Class at the 1987 Flower Show.

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Letter to the Editor

A Correction:**The Right Depth for a Fish Pool**

I particularly enjoyed the article "Water in the Garden" as I installed a small pond last year.

However on page 22 under 'Tips' at the 6th bullet it says the pool should be at least 12 feet deep. I am sure this is a typo and should read 12 inches deep.

One error I made was not to have an overflow pipe. I try to keep the water level a few inches below the top of the pool to allow for excess water due to rain.

My pool is 4'x5' and 18" deep. I have a dozen goldfish and control the algae with a chemical I get from Lilypons (one of your advertisers).

The fountain is controlled by a Little Giant pump and the electrical outlet is concealed behind the ferns behind a statue at the head of the pool.

The overhang of the flagstones seems to keep the Japanese snails in the pool. I have six snails and some fresh water clams to act as scavengers.

An immersible heater keeps the water from freezing during the winter.

Ralph A. Affleck
Flourtown, PA

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Bartram's Garden in full bloom on the river side of the garden. In 1770 John Bartram designed and built the unique stone facade fronting Bartram House in Philadelphia. See page 8.



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See page 12



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with master gardeners Bob Thomson and Jim Wilson



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Front cover: photo by David Graham

Back cover: photo by John T. Chew, Jr.

Volume 15, Number 2

November/December 1986

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Designer: Julie Baxendell, Baxendell / Lambeck Associates

Separations: Lincoln Graphics **Printer:** Havertown Printing

THE GREEN SCENE, (USPS 955580) Volume 15, No. 2, published bimonthly, January, March, May, July, September, November, by the Pennsylvania Horticultural Society, a non-profit membership organization at 325 Walnut Street, Philadelphia, PA 19106. Subscription: \$8.50 - Single Copy: \$1.50. Second class postage paid at Philadelphia, PA 19106. • **POSTMASTER:** Send address change to THE GREEN SCENE, 325 Walnut Street, Philadelphia, PA 19106.

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Green Scene subscriptions are part of the membership benefits for:

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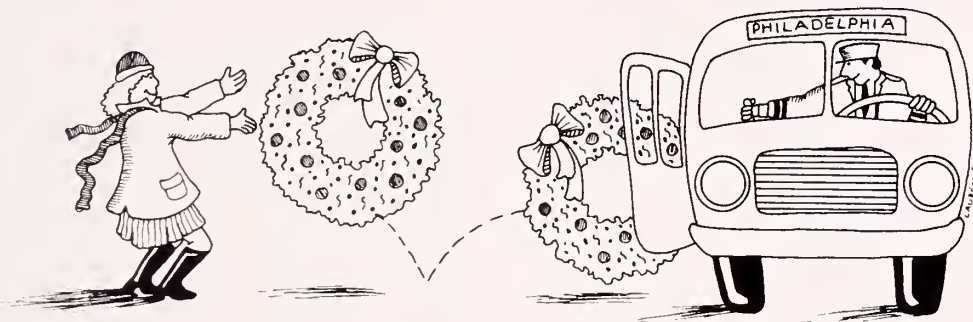
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Gifts from Gardeners and Some Caveats



We've been mindful of the holidays in this issue with Jeannine Vannai's story about decorating yourself with herbal cosmetics, and Anne Cunningham's story about decorating your walls with year-round wreaths. I was delighted when Anne suggested the year-round wreath story because in the summer of '85 I had left behind in the apartment I moved from a precious wreath bought from the PHS shop several years earlier. Its herbal garden scents cheered me from its perch over my typing table. When the holidays rolled around in my new quarters, I yearned for that bit of garden and my S.O.S. to Jane Lennon, its creator, in Morgantown brought to the Trailways station in Philadelphia two beautiful wreaths that bring pleasure in all seasons. What a great gift for giving and receiving.

Life is not always full of good news and Henry Lee felt we should sound the alarm about the casual use of

Cygon indoors. Henry has observed that some people feel that because Cygon is not sprayed that it is not dangerous; it is.

Two other items: soon the gardening video for home use will be added to books, magazines, newspaper articles and the TV and radio programs. It's a welcome addition to instruction and Jeff Ball recounts here some of the creative problems of getting taping underway and some of the advantages of using these videos.

Finally, we've included two reprints of articles about wood structures and wood preservatives in the garden. Rarely do we reprint articles from other publications, but these articles were so responsive to the conversation started in recent Letters to the Editor that we got permission to reprint.

Keep those letters coming. Your opinions and ideas and questions are useful to us all.

Jean Byrne, *Editor*

Wreaths that Go Beyond the Holidays



by Anne S. Cunningham



This sturdy wreath of dried leaves, cones, and lotus pods is ten years old and needs nothing more than a ribbon or a few red berries to make it festive for the holidays.



Pre-Christian custom called for evergreen wreaths to be hung at Winter Solstice, December 22, to ensure the return of vegetation. Christians hang wreaths on their doors during the holiday season as welcoming symbols of renewed life. Modern superstition suggests we dispose of all evergreens by Epiphany eve (January 5). Maybe we're just tired of falling needles.

Artistic alternatives to the cut evergreen



Silver woolly lamb's ears (*Stachys byzantina*) silhouetted against the attic gloom.

wreath have achieved a popularity that carries them through the year. Living wreaths of rosemary, jasmine, or scented geraniums grown in pots and trained around topiary circles make fine gifts that provide fragrance and flowers during the bleak months of winter. Free-standing living wreaths, created by planting rooted cuttings in wire frames stuffed with a growing medium, have a luscious three dimen-

sional feeling that varies with the slightest change of decoration. Dried twigs, leaves, flowers, fruits, berries, cones and pods in infinite possible combinations make attractive wreaths that last for years. Young branches of grapevine, wisteria, honeysuckle, or privet twisted into circles span the seasons adorned with ribbons, shells, feathers, figurines, almost anything that carries out a theme. Partially-opened

pussy willow branches make glorious wreaths heralding spring.

living wreaths

Meadowbrook Farms, in Meadowbrook, Pa., sells dozens of living wreaths, particularly ivy, in sizes ranging from one to three feet in diameter. Designer Nanci K. Walsh shows customers how a change as slight as ribbon color makes the wreath appropri-

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Wreaths

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ate for any season: she uses a ribbon in rich autumn tones of orange, tan and brown to decorate an ivy wreath featured as a Thanksgiving table centerpiece, then changes the accents to red and white for the Christmas season. Holly bright with berries, festive red ribbons, red and white carnations, or dried gypsophila, are readily available holiday accents. In the spring, ivy wreaths hang nicely outside on a shady wall. To add living flowers, Walsh inserts water tubes (available at any florist shop) into the frame at desired intervals, then fills the tubes with water and flowers that can be changed regularly.

Doris M. Kaufman's succulent wreaths win prizes every year at the Philadelphia Flower Show. "It's not too difficult to make them," says Kaufman. "The hardest part is finding enough interesting succulents." She grows thousands of common and unusual succulents in the small greenhouse attached to her home in Collegeville, Pa. To make a wreath, she fills a wire wreath frame with dampened potting mix and sews stocking material around it to keep the soil in place. Then she covers the whole wreath with slightly wet sheet moss, securing it in place with thin florist's wire. Using a sharp pencil, Kaufman pokes holes wherever she wants to insert the stem of a succulent. The results are stunning arrangements of green, gray, blue, and red succulents that look as good in summer as in winter. The wreath shown here includes *Aeonium simsii*, *Cryptanthus bivittatus* 'Minor' (pink starlight), *Graptopetalum paraguayense* (ghost plant), *Sedum pachyphyllum* (jelly beans), and *Sedum x rubroinctum* (Christmas cheers).

wreaths of dried material

Dried herbal wreaths of bay and laurel have been recorded since Greek and Roman times as a sign of victory or a symbol of esteem. Renewed appreciation of plants dried and preserved inspires talented gardeners and artisans to display their summer garden treasures in wreaths that remain attractive all year long. A rose-hip



Sprays of tiny red multiflora rose buds pick up the color of the old red painted door in Jane Lennon's dry herb wreath.

wreath and a layered dried herb wreath "where gray santolina, sea lavender, catnip, statice, and baby's breath are nestled in sprays of evergreen" are two fine examples in *Herbs, Gardens, Decorations, and Recipes* by Emelie Tolley and Chris Mead (Clarkson N. Potter, Inc., N.Y., N.Y., 1985).

Jane Reed Lennon, who runs a wholesale perennial nursery in Morgantown, Pa., has made herb wreaths for many years. She dries flowers, foliage, and seed pods by hanging them in her attic or barn. Once the materials are dry and at hand, she can

make a beautiful, fragrant wreath like the one pictured here in about an hour. Tying small bunches together with string, she layers the bunches around a wire wreath frame for the desired effect. (Straw forms can be used, but the finished product is denser and less graceful.)

"Fragrance is a vital part of dried flowers," says Lennon. "Scientific studies show that our strongest memories are connected with smells. Grandmother's sachet, Christmas pudding, sea air, even the smell of mildew may remind us of times or places

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A small wreath of sweetheart ivy (*Hedera helix* 'Sweetheart') looks equally festive hanging on an interior porch door or placed on a plate as a holiday table centerpiece.



▲ Meadowbrook Farm's ivy wreath (*Hedera helix* 'Helvetica'), adorned in winter with holly sprigs, is adapted for summer with fresh garden flowers inserted in water tubes hidden within the wreath.

◀ Jane Lennon combines colors, textures and lasting perfumes using lavender, yarrow, pennyroyal, German statice to make dried herb wreaths.

Wreaths

continued

photos by A. S. Cunningham



Succulents: Doris M. Kaufman subtly blends blue, gray, green, and red succulents to create these unique wreaths. The handsome pink star is pink starlite, a *Cryptanthus* cultivar.



Kaufman wreath with colorful straw flowers, cones, nuts and fruit.

long forgotten." Her dried material is subtly blended for complimentary smells, producing a delicate aroma that makes you want to stop, shut your eyes, breathe deeply and dream. Artemesias are her favorites, particularly 'Silver King' for its gray foliage, *A. schmidtiana* for its lacy effect, *A. genepi* for a yellow flower that dries truly yellow, and pineapple artemesia (*A. annua*) for its gloriously fragrant seed pods. She dries allium and poppy seed pods. Red roses picked in bud, she states, are better for drying than other colors. Lennon values *Astilbe chinensis* for the delicate pink purple flowers that retain their

color when dried, and *Sedum spurium* 'Dragon's Blood' for the intense purple of its flowers. Velvety lamb's ears (*Stachys byzantina*), German statice and sea lavender (*Limonium* spp.) calendula, lace cap hydrangea (*H. serrata*), yarrow, salvia, and feverfew are among the many she grows for flowers and foliage. Herbal lore suggests a small wreath made of dried pennyroyal (*Mentha pulegium*) would keep fleas out of her dogs' beds, but Lennon found the powerful odor more effective in repelling dogs than insects.

In contrast with delicate herb wreaths are the popular sturdy cone and pod

wreaths. Anyone who has been to The Brandywine River Museum in Chadds Ford, Pa. at Christmastime has come away filled with admiration and ideas for using dried material in holiday decorations. The Museum's creative volunteers choose only native plants to make an incredible variety of wreaths, critters and creatures. Different kinds of pine cones – whole or cut across the center for a rosette effect – teasel heads, dried leaves and grasses, nuts, dried fruits and more are wired together to make wreaths that can be stored from year to year then displayed with minimal additions of ribbon or holly, or by layering them on top of evergreen wreaths for contrast.

When Doris Kaufman isn't working with succulents she, too, crafts wreaths from combinations of cones, nuts, dried flowers and fruits. This is done with ordinary white glue or a hot glue gun for permanence. Just a few colorful straw flowers saved from her summer garden take a brown-toned wreath well beyond the holiday season.

The fragrance of herb wreaths, the gnarly textures of dried cone, fruit, or twig wreaths, and the lasting pleasure of living wreaths make them alternatives worth considering this holiday season.


See Holiday Wreaths

Brandywine River Museum in Chadds Ford, Pa. presents "A Brandywine Christmas," November 28 through January 4. Open everyday except Christmas 9:30 a.m. to 4:30 p.m. Admission is \$2.50 for adults, \$1.25 for senior citizens, students with I.D. and children 6-12 (children under 6 free). For more information call the Office of Public Relations at (215) 388-7601.

The Pennsylvania Horticultural Society presents "Home for the Holidays," December 8-19. Open Monday through Friday 9:00 a.m. to 5:00 p.m. Admission is free. For more information call PHS at (215) 625-8250.

Anne S. Cunningham is a writer whose main interest is horticultural topics. A frequent contributor to *Green Scene*, she has also written for the *Philadelphia Inquirer* and other regional and national publications.

PAINTING A CALENDAR

 by Joyce Stark



Skunk cabbage (*Symplocarpus foetidus*). The tiny yellow flowers of the skunk cabbage are borne on its club-shaped spadix beneath a mottled, hood-like spathe. The unique heat-generating properties of this marsh plant are not yet fully understood. It can melt through snow cover in February and the hooded spathes create small havens for pollinating insects which emerge early from hibernation. In March, the lush green heart-shaped leaves appear and ultimately reach heights up to 2 feet.

How best to paint a skunk cabbage from life? I knew if I sat in the marsh, I would sink to my ears in mud and, knowing my reptilian blood, probably freeze to death in the process. Working from life seems to translate life into my paintings. When I first began to illustrate a wildflower calendar for the Delaware Nature Education Society (DNES), I was determined to use live plants whenever possible. This decision was not without problems.

Skunk cabbage, *Symplocarpus foetidus*, the first sign of spring, was the first wildflower to be painted for the 1987 calendar. Although most people do not notice the skunk cabbage until its large lush spring-green leaves begin to unfurl, the hoods or spathes appear in February and March in marshy wet areas, sometimes melting their way through the last of the snow. The spadix is shielded by the beautifully sculpted spathe of mottled wine-reds and shades of greens and yellows. Heat generated by the plant releases strong chemical odors that attract early insects,

which pollinate flowers and warm themselves in the brisk weather of early spring.

Eventually I chose to pot a skunk cabbage from my own marsh and live with its

The bloodroot flower, I discovered, is extremely short lived. It's as if a hidden button is pushed and all the petals fall at once.

smell. This meant digging about a foot down in the mud, cutting the thick root, and putting the plant in a deep pot. I found it grew well in our cool entryway between "sittings," and I returned it to the marsh in good health when its leaves began to unfurl.

Finding each species of wildflower chosen for the calendar and watching for its flowering time proved tricky. The hepatica, *Hepatica nobilis obtusa*, took quite a few walks to find. It is a beautiful small plant with distinctively lobed leaves that grows in the woods under heavy leaf cover. Once located, I had to make frequent checks to

avoid missing the delicate light blue or violet flowers. I discovered that showing my five-year-old son a plant was the answer. He found the best flowers much more quickly than I did. A wok became the perfect pot for this shallow rooted plant, which also was returned to the woods when the painting was finished.

The warm wet spring of 1985 caused some flowers to emerge much sooner than expected. As my son and I were walking in the woods, he found a bloodroot, *Sanguinaria canadensis*, in bloom. My friend, who owned the woods, allowed me to take one home temporarily, but the bloodroot flower, I discovered, is extremely short lived. It's as if a hidden button is pushed and all the petals fall at once. I was just beginning to draw the second flower when I found myself staring at a golden center of stamens and pistil. Back to the woods where a lovely flower was found to record in my sketch book while my son acquainted himself with an accommodating box turtle.

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Partridgeberry (*Mitchella repens*). This creeping woodland wildflower with dark evergreen leaves carries tiny four-petaled flowers, borne in pairs united at their base like Siamese twins. Together they form a single berry with two spots like eyes, which frequently retains its brilliant red color until the next spring. Blooms May-June.

The trout lily, *Erythronium americanum*, brought its own surprises. Trout lily beds are abundant in woods near streams and the blooms appear at the beginning of trout season. The problem is finding a plant in bloom. One theory is that the tubers of the plant continually grow downward, while sending out a network of rhizomes that

clone the parent plant. When rocks or tree roots disrupt the underground cloning action, the plant resorts to sexual reproduction and blooms.

Because they grow so deep, trout lilies cannot survive in a pot, so I had to paint them on location. I chose a plant with distinctive maroon, green, and white mottling

on its leaf. It took a few days to paint, and as the flower faded (flowers were always painted first) I thought my sight was fading with it. The maroon mottling had vanished. It was now hardly visible at all.

We have an abundance of jewelweed, *Impatiens capensis*, growing at the edge of our yard, but when I cut a piece to carry



Illustration by Joyce Stark

Art courtesy Delaware Nature Education Society



photo by Mike Riska

Joyce Stark draws spring beauties (*Claytonia virginica*) in the field.

is a drop in the plant's water pressure. I resigned myself to painting it on cloudy, windless days between rain showers, but this, too, had its drawbacks. Red mites running across my paper could have been disastrous had I given them an instinctive brush-off. Other insects landed and attempted to do their own artwork in the

In between, my rambunctious five-year-old discovered why the plant is also called touch-me-not. He exploded every ripe pod in sight, sending the seeds flying in all directions.

wet paint. In between my rambunctious five-year-old discovered why the plant is also called touch-me-not. He exploded every ripe pod in sight, sending the seeds flying in all directions.

Painting is a discipline that forces you to look very hard and long at each subject. Few flowers could be as demanding as the composites – joe pye weed, *Eupatorium fistulosum*; butterfly weed, *Asclepias tuberosa*; or the seaside goldenrod, *Solidago sempervirens*. In comparison the mayapple, *Podophyllum peltatum*, and swamp rose mallow, *Hibiscus moscheutos* were model flowers.

Partridgeberry, *Mitchella repens*, was the last plant I painted. It is a low, forest-green, ground cover with unusual red berries. Each berry is produced from twin flowers. It lived very satisfactorily for the duration of the painting in a flat aluminum salad bowl with a plastic dome lid. The problem here was that the berries are at their best between Thanksgiving and Christmas, and I found myself struggling to find enough free hours to finish it. That partridgeberry

traveled with me on trips to Connecticut and Florida. I was home in my studio putting the finishing touches on the painting when my cat decided that the illustration was lacking something. He attempted to help with a well-trained sense of composition and balance. Luckily I could turn his artistic attempt into a twig in the lower left corner.

It has been a wonderful year. The calendar is now finished, and I know my knowledge and interest in wildflowers is just beginning.

Calendars Are Available

Send \$7.50 plus \$1.50 each for postage to Wildflower Calendar, DNES, P.O. Box 700, Hockessin, DE 19707. Proceeds from the calendar sales benefit the education and preservation programs of the DNES, a private, non-profit organization of nearly 5,000 members.

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Wildflowers Are Not For Collecting

Although we had not chosen any endangered wildflowers for the calendar, all wildflower populations are shrinking due to lost habitats and they should not be collected in the wild. The whole purpose of the calendar project was to call attention to the beauty of native wildflowers and to the need to preserve representative habitats. The DNES recommends that wildflowers in private gardens be started from seeds or from plants that have been propagated for sale. The Ashland Nature Center in Hockessin, Delaware, and the Brandywine Conservancy in Chadds Ford, Pennsylvania, sell seeds and plants that have been grown by volunteers. **J.S.**

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Joyce Stark studied art education at Florida Atlantic University at Boca Raton and scientific illustration at the University of California at Berkeley. Her work has been exhibited in Delaware and in Chester County, Pa., and published in the *Delaware Conservationist* magazine.

Herbal Cosmetics for Giving and Gilding

 by Jeannine Vannais



photos by David Graham

The gentle heat of a wood stove is perfect for infusing fragrant herbs, and traditionally would have been the centerpiece of the stillroom. The author (in picture) has spent many warm hours bent over this lovely Kalamazoo.

The early morning sun slanting through the low attic windows, spotlights the orderly rows of comfrey leaves, strung and dried. Great bunches of lemon balm crackle as I load them into my basket, already bursting with sweet southernwood and piney rosemary. As I gently sweep the chamomile off its drying screens into a small blue bowl the air is filled with its apple-like scent.

All summer, as I harvested these herbs and hung them to dry in neat rows and bunches, I've been preparing for this day – the day when I can start making the herbs into the lotions, creams and scented oils that will be lovingly given to friends and family during the holidays.

After my second trip downstairs, the kitchen is ready. Rows of blue glass jars stand washed and ready for the orange vitamin E moisturizing cream that Aunt Marge always loves. New bottles of sweet almond oil, safflower and olive oil, rose-water and orange flower water line the counter. Precious tiny bottles of essential oils – lavender and rose geranium, citronella and ylang-ylang – stand with a pile of clean droppers ready to provide the finishing touches to my efforts.

It occurs to me, as I move through my preparations, that I am continuing a ritual repeated year to year back to ancient times: the home production of cosmetics. For women throughout history and across the world have gathered and mixed herbs and fragrant oils in their search for health and beauty.

Sometimes we forget that before the industrial revolution removed production of cosmetics from individuals to manufacturers, all lotions, creams, bath oils and astringents were made at home from pure natural ingredients, often locally grown or gathered. The center of all this activity was the still-room, so named because the essential oils of flowers were distilled there. Today, few people go to all the trouble of distilling their own flower oils, but home production of pure natural cosmetics is on the rise. Excellent books abound, and the recipes of mothers and grandmothers are being rediscovered and concocted again. As I smooth open the stained page of my own favorite well-used books, I feel a part



The author grows and gathers many of the herbs used for cosmetics. Here, in late August, she fills the baskets with cuttings of coltsfoot leaves, lemon balm and sage while her infant Dorothy enjoys the sun, scents and her mother's attention.

of this tradition and know the satisfaction of bringing another gardening year to completion.

harvesting from my own garden

This spring my daughter, Dorothy, was born on May 30th, so I didn't have a chance to plant the calendula and lemon basil that I normally sow. Nor have I the bundles of home-harvested lavender that usually go into my "Hot Oil Treatment for Hair." Instead, lavender and calendula wait in

their store-bought bags, like many of the more exotic ingredients I use. These are readily available here in the Philadelphia area from our fine herb houses – Penn Herb, Tatra or Haussman's (see list with this article). They also carry a selection of essential oils. Some are pure and costly, like fine rose oil (30,000 blossoms of the finest Bulgaria roses yield one ounce of oil) or sweet ylang-ylang, made from the heavy-scented flowers of the *Cananga odorata* tree, cultivated throughout Java

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After the herbs have infused in oil for a few hours, they're carefully poured into an unbleached muslin bag to separate them from the now fragrant oil.



and the Phillipines. Like many essential oils, however, rose oil is found, most commonly, as a synthetic, which can be "coarse" and is unsuitable for aromatherapy.

As I set the crock of calendula, chamomile and comfrey into the woodstove oven to heat, though, I marvel at the bright color of my home-gathered chamomile and comfrey, and am glad that I can grow and gather many of my own herbs and insure myself the best possible quality. Heat, light and moisture release the properties from herbs, so they should always be gathered, dried and stored properly. Their fragrant volatile oils are then easily extracted by gently infusing them in vegetable oils. Perfectly dried herbs are best stored in dark glass bottles or airtight tins away from both heat (radiators, etc.) and direct sunlight.

The vegetable oils that are the "base" of many creams, lotions and ointments can be found in any good health-food store. I often use olive oil or a specially blended mix of sunflower, safflower and sweet almond oils, to which I add a little nourishing wheat germ oil as an anti-oxidant, to retard rancidity. Base oils can be "drying" as well as "non-drying" and are absorbed by the skin at different rates. I custom blend my base oils to suit their uses —

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RECIPES



Cocoa Butter Skin Softener for the Hands*

Equal parts (by weight) of cocoa butter, oil of sweet almonds and white wax (preferably beeswax) can be melted together, stirred until cool and kept in a labeled, dark glass jar.

This deliciously scented balm is healing and softening. It makes a wonderful gift for a hard-working gardener friend. It can be used as an excellent night cream or as a protective coating against the elements.

Rosemary Hair Oil (for hot-oil treatment)

Cover a couple of handfuls of dried rosemary with a combination of safflower oil, sweet almond oil and olive oil in a small saucepan; blend to "taste" starting with equal parts of each oil. Heat gently for one to two hours, strain and allow to cool down a bit. Massage the hot oil into your hair for a twice-a-week treatment for dandruff or dry hair. Wrap in a hot towel or duck under a hairdrier for about 1/2 hour for extra conditioning.

This oil can be made in bulk and bottled in dark glass for gifts. Dried southernwood or catnip could also be added to the rosemary to invigorate the scalp and promote hair growth. Both smell wonderfully.

Jeanne Rose's Orange Vitamin E Moisturizing Cream**

- 4 oz. olive oil
- 3 tbsp. beeswax
- 2 oz. orange flower water
- 5,000 units vitamin E
- 5 drops oil of orange flower or orange peel

Melt the oil and the wax in the top of an enamel or glass double boiler and remove from the heat. Allow to cool slightly. Slowly add the flower water, drop by drop, whisking continuously. Pierce the capsules of vitamin E oil and squeeze the contents into the cream. Finally, add the essential oil drop by drop until the desired strength of odor is present. Continue whisking until completely cool. Pile into small jars and label.

*Recipe adapted by permission of Doubleday & Co., *The Complete Herbal Guide to Natural Health & Beauty* by Dian Dincin Buchman. © Dian Dincin Buchman 1973.

**Adapted by permission of Grosset & Dunlap/Perigee Books from *The Herbal Body Book* by Jeanne Rose. © 1976 by Jeanne Rose.

This cream is very moisturizing and soothing to tough, chapped skin. Initially it seems quite oily, but is quickly absorbed, leaving only its delicious lingering fragrance and much happier skin. It can be scented with other essential oils but they should be used sparingly.



Rosemary and lavender wait to be infused into sweet almond oil for a hot oil treatment, while lipstick in a pot and cocoa butter skin softener cool.

Comfrey-Calendula-Chamomile Ointment

Place a large handful each of dried comfrey leaves, dried calendula blossoms and dried chamomile flowers in a glass or enamel baking dish. Cover with olive oil and heat in a very slow oven (180° - 200°F) for three hours or longer. The oil should take on a beautiful deep yellow color. Strain out herbs and return warm oil to a clean saucepan. Stir in beeswax. Test the consistency of your ointment by dropping a bit onto a chilled plate. Remember that you'll want to make a harder ointment (more wax) in the summer.

Pour the ointment into small, wide-mouth jars while still warm. If it doesn't harden to

your liking, simply reheat and add more wax.

This ointment is soothing and anti-inflammatory. It will promote healing of scrapes, cuts, bruises and burns, as well as rough, dry or chapped skin. It can be scented with a few drops of oil of lavender, which adds antiseptic properties to a lovely scent. The ointment without essential oils is just fresh and "green" scented.

Relaxing Bath Blends

- 2 oz. hops
- 1 1/2 oz. chamomile flowers
- 1 oz. sage
- 2 oz. rosebuds
- 1 oz. strawberry leaf
- 1 oz. lemon balm leaf
- 1/2 oz. saffrafrs root bark

Blend all the ingredients in a large glass jar and let sit for two weeks, covered. Tie handful of the mixture in a muslin or calico square (be sure the fabric is colorfast) with pretty ribbons and pack three in a box, for a lovely gift. Be sure to include a note-card with directions and a list of the herbs.

To use: Place a "bath-ball" in a covered enamel saucepan with cool water. Gently heat until the "tea" is just steaming and then pour the mixture into the bath. You can also use the bag as a "scrubber" in the bath or shower.

This relaxing blend may also be infused in vegetable oil to yield a soothing bath oil. To do this, cover the herbs in a glass jar with an oil blend (olive, safflower and sweet almond oil are good) and let sit in a warm place for two weeks. Strain and add a few drops of oil of rose or lavender for scent.

Lipstick in a Pot

- 1/2 oz. alkanet root
- 4 oz. base oil
- 4 tbsp. cocoa butter or beeswax

Soak alkanet in base oil for two weeks or heat gently and let stand for 24 hours. Strain. The vegetable oil will now have a lovely cherry-red color. Warm this red oil and melt thickener into it. Check consistency by dropping a bit onto a chilled plate. Pour lipstick into small, wide-mouth jars.

This cocoa-scented lip gloss is smoothing and moisturizing. The only problem is that it's so delicious that you'll be tempted to eat it.



Pouring a blended oil over chamomile and calendula blossoms is the first step in creating a healing salve. Jars of cocoa butter skin softener harden nearby.

safflower and sesame for an absorbing bath oil or nourishing cream, while "non-absorbant" olive oil and cocoa butter will stay on the skin surface longer, and are used for fragrant massage oils or soothing ointments.

Like cooking, cosmetic production is a balance between following recipes and experimenting. As I add a few drops of

lavender oil to the now strained and filtered ointment, I wonder if by adding a drop or two of citronella oil I could make my salve insect repellent, as well as healing and soothing. Jeanne Rose's lengthy description lists citronella as an excellent normalizer of the sebaceous glands, so I assume it may be safely used in cosmetics, make a note on my recipe, and add a few

drops to one jar. I always do research and a "patch-test" when trying a new ingredient. Essential oils, especially, may occasionally cause skin irritation and should always be used with knowledge and care.

Now, as the salve cools and hardens in the blue glass jars, I carefully letter the labels in waterproof ink and go over my Christmas list in my mind. Rosemary Hair Oil and Orange Vitamin E Moisturizing Cream for Aunt Marge. Cocoa Butter Skin Softener for Kay and my mother, to help soothe their gardening hands, and Comfrey-Calendula-Chamomile Ointment for Jody, who just moved to Maine. This last smells slightly of lemony citronella, and I hope she likes it, because maybe it will repel mosquitoes that I've heard are fierce in Maine. Have I forgotten anyone? Ah, yes, the relaxing bath herbs are for me for a cold winter's night. Happy Holidays to us all.

Jeannine Vannais lives and gardens in Tyler State Park, Newtown, Pa. with her husband, David Graham, and their new daughter, Dorothy. She has studied herbs for 12 years, and she ran an herb store for five years. At present she works for PHS as a Greene Countrie Towne coordinator for Philadelphia Green. She will be giving a cosmetic workshop at PHS on December 11. See *PHS Newsletter* or call 625-8250 for information.

Resources

Many ingredients can be found in the local grocery store, health food store or pharmacy. High quality herbs and essential oils may be purchased at the following:

Kiehl Pharmacy
109 3rd Avenue
New York, NY 10003

A wonderful source of pure essential oils, herbs and their own perfume blends. No mail order.

Hausman's Pharmacy
6th & Girard Avenue
Philadelphia, PA 19127

All sorts of herbs, ingredients and essential oils.

Tatra Herb Company
P.O. Box 60
222 Grove Street
Morrisville, PA 19067

Excellent quality bulk herbs and a wonderful line of essential oils of France. Mail order available.

Penn Herb Co. Ltd.
2nd & Spring Garden Streets
Philadelphia, PA 19123

A full selection of bulk herbs, available through an informative mail order catalog or in person, 9-5.

Reading about Herbal Cosmetics

Brown, Alice Cook. *Early American Herb Recipes*. Bonanza Book, New York.

A collection of 500 authentic recipes from 17th century American sources, transcribed unchanged from the originals. This book includes medicinal, culinary and toiletry uses of herbs in often quaint and sometimes fanciful language. It provides a historical perspective rather than a practical guide but is fascinating and charming nonetheless.

Buchman, Dian Dincin. *The Complete Herbal Guide to Natural Health and Beauty*. Doubleday & Co., Inc., Garden City, New York, 1973.

This is another simply wonderful book by the author of *Herbal Medicine*. Buchman was taught by her Rumanian grandmother to care for the skin, hair, hands and feet with simple applications of common ingredients. Fresh vegetables and herbs are combined into rinses, baths, lotions and masks. An excellent usage chart is included. This is a classic.

Guyton, Anita. *The Women's Book of Natural Beauty*. Thorsons Publishers Limited, England, 1984.

This well-produced British book is filled with sophisticated recipes and some slightly spicy photographs. You'll find everything from a simple

rosemary and mint mouthwash to a "Victorian Hand Lotion for Chapped Hands" with a page of ingredients. Guyton provides an extensive and excellent chapter on aromatic oils and has lovely cologne and floral water recipes.

Rose, Jeanne. *The Herbal Body Book*. Perigee Putnam, New York. Paperback, 1976.

I found this volume much more reliable than her herbal, *Herbs & Things*, and filled with useful and well-tried recipes. Her table of oils (which lists drying, semi-drying and non-drying oils) is useful in custom-blending base oils for lotions and creams. She offers her own recipes as well as classics from "The Toilet of Flora." As its cover indicates, however, this is a product of the '60's - but with much fine information, nonetheless.

Tisserand, Robert. *The Art of Aromatherapy*. Inner Traditions International Ltd., New York, 1979.

Predictably, much of the fine work in perfumery is being done by the French, and this book offers an excellent description of this aromatic art. Besides outlining basic principles of therapeutics, massage and diet, it offers a cross-cultural history of aromatherapy and a practical guide to the use of essential oils in healing. This book may provide a clue to the reasons why some people dislike a scent that is a favorite to others.


photos by Jim Thompson



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ROMANCING THE ROSES:

Getting two million roses ready for the retail market isn't all moonlight and roses.

 by Jody Petersen



The day's rose crop sorted and wrapped awaits delivery in cold storage.

It's a lot to heap on the shoulders of the delicate, temperamental, hothouse rose. Acres of greenhouses, miles of pipe; hundreds of gallons of oil; hundreds of thousands of dollars; children in college; food on the table.

Of course, the rose gets a lot of help. Richard and Pennock Yeatman 3rd are third generation Kennett Square, Pennsylvania rose growers; their grandfathers, fathers and now these cousins have grown and marketed roses for more than 75 years. Those beautiful flowers are big business.

Pennsylvania is second only to California in the United States in rose production. And Kennett Square is one of the bigger rose growing areas in Pennsylvania. More



The proper way to cut roses is just above the five leaf section.

roses are grown here, in greenhouses, than in all of Florida. Kennett Square is still fairly rural, yet is close to many major markets such as Philadelphia, Wilmington, New York and Atlantic City. Highly perishable roses are shipped quickly to these cities and arrive in top condition.

This from-soil-to-crystal-vase story starts in California, where the Yeatmans buy their hybrid, hothouse rose cuttings. The cuttings are specially bred and patented varieties, suited to the cut flower trade. They are bred for the quality of the flower and for the vigor of the plant.

The cuttings are planted in carefully monitored soil beds, which are tested every two weeks for pH levels and trace elements. They soon grow into mature



plants, and the Yeatmans can get three to five years worth of maximum production from each plant.

A few clever techniques are used to get the most from these exploited blushing beauties. To get 30 long stemmed blooms per bloom period (with about three periods each year) per plant, the Yeatmans cut the stems back to the knuckle, the hard woody joint on the bush, to encourage the soft growth that produces flowers. When a bud forms, it is pinched back to a section on the stem containing a leaf with five leaflets. This section then will send up three buds with long stems. All this adds up to the 12 greenhouse workers cutting 5,000 to 10,000 roses per day, or about 100,000 to 2 million per year, depending on light and

the weather. This is quite a bouquet.

Another technique the Yeatmans use is carbon dioxide. We all learned in school that the plant kingdom "breathes" carbon dioxide. Production rose growers capitalize on this by pumping carbon dioxide (CO_2) through pipes into the greenhouses to encourage plant vigor. A crushed corn cob mulch around each plant also adds to the CO_2 level; composting woody plants give off carbon dioxide. Raising the CO_2 level gives growers an extra bloom cycle.

Growing flowers in the cold north is not all rosy, however. In the Yeatmans' 25 glass houses, all used for growing roses, last year's fuel bill was \$130,000, despite heavy double paned glass. On one of the colder days last year the furnace was burn-

ing oil at the rate of 100 gallons an hour. Cornell University is currently researching a rose variety that will flourish at lower temperatures, which will save growers thousands of dollars in fuel bills.

Temperature is crucial to growing cut flowers all year. These days the Yeatmans have computers monitoring all watering and temperature changes. In the past, a man was hired just to stay overnight in the greenhouses and watch the gauges; a 10° temperature drop can damage the crop. The Yeatman's heating system can convert from gas to oil and back again as the volatile fuel market dictates. This helps to main-

The Yeatmans' heating system can convert from gas to oil and back again as the volatile fuel market dictates.

tain economically the optimum 60°F night and 70°F day temperatures when the hostile January winds try to keep roses from your Valentine.

The roses are cut just as the bud starts to open and are then stored in preservative in a cooler for 24 hours before delivery. When you get your roses home, Yeatman suggests "Place them in warm water, add some floral preservative and keep them out of direct sun and wind. If the necks bend, which shouldn't happen if they are cut just as they open, soak the whole rose flat in a bathtub in warm water for one hour. That should revive them."

Busiest times of the year for Pennock and Richard are Mother's Day, Christmas, Easter and Valentine's Day, with Secretary Day coming up fast. Asked about the exorbitant prices for red roses at Valentine's Day, Pennock Yeatman, bristled slightly, explaining that the long cold, cloudy days of January are not the best bloom producing days. Red roses make up 75% of the Yeatman crop with the balance being Easter pastels and odd colors to "keep the retailers happy."

South America has been flooding the United States with cheaper, poorer quality flowers, but Yeatman is unconcerned. "People do not skimp on roses; they want quality, and we stress quality," he says confidently. The extravagant nature of the product helps. As for local competition, the hothouse rose growing business takes considerable capital to start, and most growers are family operations. Only strong, healthy growers can stay in business. The

continued



▲ The workers are harvesting the day's crop in the greenhouses. The metal guide wires keep roses straight and upright.

◀ The sorting and packaging room. The freshly picked roses are arranged and culled and sorted.




Yeatman operation grosses "under one million dollars" a year, with the average wholesale price for a rose at .44¢.

For three generations the Yeatmans of Kennett Square have helped us to say "I'm sorry," "Get well," "I love you," and even "Get lost." And what about the third generation? "My son? He just wants to party; he's 15 years old. I don't mind; whatever he wants. I still have a few years left," Pen-nock says good-naturedly.

Jody Petersen is a landscape designer with Kepich Farm and Nursery in Holicong, Pa. She continues her landscape design studies at Temple University, Ambler Campus. She also likes to stop and smell the roses.

YARDENING WITH JEFF BALL

When a new video tape series tackles gardening, show biz comes to grips with nature's cycles, benefits and risks.

 **by Jeff Ball**

To create a yard with lawns, gardens, shrubs, and trees in just five months takes lots of adrenalin, money and work. It is also a fascinating experience. In the past six months, I have been working with Kartes Video Communications in Indianapolis, Indiana to produce a series of 12 one-hour instructional video tapes entitled *Yardening with Jeff Ball*. For the various programs on raising vegetables, flowers, roses, herbs, lawns, and houseplants we needed a set. Designing, developing and managing this "instant" garden has been a challenging horticultural experience.

A difficult part of the effort was to design and develop this demonstration garden or set, for the 12 programs, with only weeks to plan and build it. We started the plan in early March, 1986. Plants had to be in place so that we could begin shooting by late May.

Our first problem was that the site for this video set had been prepared previously for the construction of a three-story office building, so the soil had been thoroughly compacted by heavy machinery and was completely bare. We had to find a way to build our suburban backyard with wooden fence, lawns, flower gardens, and vegetable gardens on top of compressed heavy clay. The solution was to spread a layer of top soil over the compacted surface, build all the gardens in raised beds and hope that drainage would not become too serious a problem. A landscaping firm was hired and work began.

Our next problem occurred just after all the top soil had been delivered in April and was properly spread. Indianapolis received almost 12 inches of rain over the next six weeks, making access to the set impossible. At least the heavy rains did

show us where we had drainage problems, so we were able to lay drainage pipe in several critical spots to avoid complications later in the season.

We were supposed to be shooting video about how to build a vegetable garden while these heavy rains were pounding our set. When you are shooting a gardening program, you can't afford to delay — it's difficult to demonstrate the benefits of cloches in the steamy heat of July. To ease the problem we hired a master gardener to take care of the daily maintenance of the set, and we started everything we could in peat pellets and soil blocks so that when the rains stopped, we could quickly put everything outside, creating an instant garden. This approach worked well for the vegetables and herbs. We purchased most of the annuals and perennials as full-sized plants from a local nursery. The roses were donated by the All America Rose Selection committee.

By the first week in June we had an instant landscape. In and around about 5,000 sq. ft. of beautiful grass sod, were 2,000 sq. ft. of flower gardens in full bloom, 200 sq. ft. of rose garden, 200 sq. ft. of herb garden, 500 sq. feet of vegetable garden, and a small orchard. Complementing the gardens were a 300 ft. wooden fence, a 400 sq. ft. grey slate patio, a large sunspace, a small greenhouse, and a potting shed all ready for shooting. Twenty foot Norway maples lined the yard, the compost bins were filled, and birds were beginning to build nests in some of the evergreen shrubs.

Once the set was complete I discovered some of the complexities of video production. Again, timing was important. Producing programs about raising plants means

continued



The video department in bookstores is growing rapidly. Jeff Ball's garden videos made for Kartes Co. will be sold in garden stores, supermarkets, and through catalogs as well as in bookstores.



photos by Elizabeth Ball

▲ Planting techniques are shot here. It takes the author three days to write a script for a shooting, yielding about 10 programming minutes. On camera, Jeff depends on his memory and some cue cards.



you must have those plants in various stages of growth or maturity exactly at the time the producer has scheduled the shooting of that particular subject regardless of what the calendar says. If you are going to shoot vegetable seedlings on June 20th, you must be sure you have seedlings ready on that day in at least three different stages of growth – just emerging as a seedling, two weeks old and ready for the first transplant into a larger container, and 6 weeks old ready for trans-

We started the plan in early March, 1986. Plants had to be in place so that we could begin shooting by late May.

planting out into the garden. After a while I became skilled at predicting germination times and growth rates to various stages of maturity, so all the props were ready when the camera started rolling.

The logistics of preparing the plans for shooting video were tough enough, but we made our life especially difficult by simultaneously producing video programs about a variety of types of plants including cool weather vegetables, warm weather vegetables, annual flowers, perennial flowers, roses, herbs, houseplants, and lawn

▶ Although Jeff Ball (shown here) had some experience before TV cameras, nothing prepared him for the Indiana heat and the hours of preparation for each video hour. The videos feature boxed raised beds, drip irrigation and a tunnel system for an extended growing season.



This island garden and the border beds are about two-thirds perennials and one-third annuals. Shown also are the combination tool/potting shed built on site from a plan in a magazine. Its front panels can be removed to permit shooting. The compost bin is a design from Jeff's book *60 Minute Garden*.

grasses. As you might expect, because of the breadth of our topics I learned a great deal about gardening while writing and then performing in all of these programs.

instructing: specialized and simplified levels

One insight I gained stands out for me. I discovered that the routine gardening activities of soil preparation, watering, feeding, and mulching can be presented to beginning gardeners using one of two levels of detail. I label the two levels the specialized approach to gardening tasks and the simplified approach.

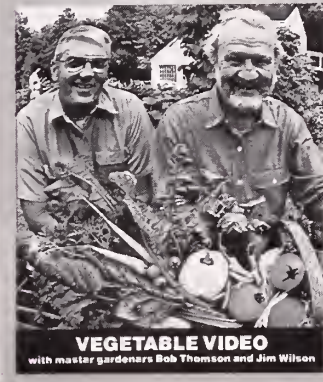
Since much has been learned in horticultural science about the individual needs of each of the most common plants in our gardens, many garden books (including my own), in an attempt to inform and be helpful, describe the differences in management practices among each group of plants, so the reader can learn how to grow the very best specimen of each plant. We point out that there are heavy feeders and light feeders. Some plants want just a little water and some demand a lot of water. Unfortunately, those specialized details when presented for all the different plants in a typical backyard, can become very

confusing and somewhat overwhelming, especially to the beginning gardener.

Being forced to deal simultaneously, as we did in this video project, with all the management practices for all the different kinds of plants in the yard, I began to see a more simplified pattern of management practices emerge. While green beans do best with light feeding and tomatoes are definitely heavy feeders, I believe a gardener can give both plants the same modest amount of fertilizer on a regular basis and both plants will do well. One may not get the absolute maximum production that is possible from each, but the beginning gardener will have acceptable success with both plants. I concluded that we can offer some general rules for the routine gardening tasks that work satisfactorily for almost all plants found in the average American yard.

I found I could generalize basic steps for watering, whether we were watering vegetables, perennial flowers, roses, herbs, or lawns. The same is true for soil preparation and mulching. The management principles are almost identical among all the plants, as are most of the practices, at least for those routine tasks. Mulch is mulch is mulch. Some type of

continued



GARDEN VIDEOTAPES FROM OTHER SOURCES

Victory Garden Vegetable Video: Cited in a review of garden videos by Eric Rosenthal in the *New York Times* (June 26, 1986) as the newest and best, this video was produced for home use by WGBH starring master gardeners Bob Thomson and Jim Wilson of the TV series *Victory Garden*. It shows, step by step, how to have a successful vegetable garden. Its 31 chapters cover subjects ranging from getting started, soil testing, sowing, fertilizing, thinning, pests, composting, etc. 60 minutes, color.

The video is available in video centers and book stores, or through Crown Publishers, Inc., 225 Park Avenue South, New York, NY 10003 (phone 212-254-1600). \$24.95

Brooklyn Botanic Gardens at present has available a video, "Get Ready, Get Set, Grow — A Kid's Guide to Good Gardening." The video includes the tape and two booklets as guides for teachers and parents. During the next year, BBG plans to convert their six films to video. The films cover bonsai; pruning techniques; herbs; planting and transplanting; dried flowers, and dyes from plants. \$29.95

For more information contact:

Marketing Services
Brooklyn Botanic Gardens
1000 Washington Avenue
Brooklyn, NY 11225-1099
or phone: 718-4433

Garden Way's Joy of Gardening Series: made by Magic Video Publishing Compact Gardens; Tomatoes and Salads; Herbs and Annuals, each 34 minutes. \$14.95

Available at bookstores, video outlets, nurseries, seed and feed suppliers and mail order.

mulching materials are better in one instance than another, but mulch does the same job for vegetables that it does for flowers. I am assuming of course that the gardener we are helping here is looking for an average level of success in the garden rather than looking to win prizes at the local county fair. I think the distinction between the simplified approach and the specialized approach to gardening is very important to make, especially for gardeners who are just beginning their adventures in horticulture.

If you are going to shoot vegetable seedlings on June 20th, you must be sure you have seedlings ready on that day in at least three different stages of growth – just emerging as a seedling, two weeks old and ready for the first transplant into a larger container, and 6 weeks old ready for transplanting out into the garden.

Creating that "instant" backyard and learning to work in the world of video production was a wonderful experience. But the set itself became a special place for me. In the early spring of 1986, the back lot behind Kartes Video Communications was nothing but a bare field. By first frost in October, there was a living ecosystem in place. First the lawn and gardens had to be built, but soon the insects, animals and amphibians moved in. We had warblers, goldfinches, and killdeer along with the ubiquitous swallows and sparrows. A family of rabbits resided in the flower bed and a 5-foot black snake insinuated itself into the herb garden. With the cucumber beetles, cabbage worms, and white flies came the butterflies, spiders and the ladybugs. By now the soil is filled with millions of microbes, and some earthworms, which we added. Producing the 12 video programs was a satisfying accomplishment. I gained many insights about gardening and how best to communicate information about garden tools and techniques. However, creating a beautiful place for all those creatures to share has become my special pleasure.

Having "graduated" from naval and human services administration careers, Jeff Ball now devotes full time to communicating about gardening. In addition to his *Self-Sufficient Suburban Garden* and *Jeff Ball's 60 Minute Garden*, he has co-authored *60 Minute Flower Garden* with Charles Cresson to be published by Rodale in January, 1987. He has also designed a software program, "Garden Manager," which will be out in February, 1987.

EXAMPLES OF SIMPLIFIED RULES FOR GARDEN MAINTENANCE INCORPORATED INTO VIDEO PRODUCTION

Soil Preparation. Add one inch of compost or compost substitute (e.g., peat moss, dried cow manure, and a touch of limestone) on the entire surface of all gardens every year. Letting 4-6 in. of chopped leaf mulch decompose each year is a good substitute.

Mulching. All bare soil in any garden should be covered with at least a 2-4 in. layer of mulch all year long. Chopped leaves are the best all-purpose mulch.

Watering. All lawns and gardens will succeed receiving an inch of water each week during the growing season. Keep track of the rain-

fall and supplement until you get the inch. Place a coffee can out in the area of your sprinkler to see how long it takes to get an inch of water.

Feeding. All plants (vegetables, flowers, herbs, and houseplants) will stay healthy and productive if they receive some form of fertilizer (never exceeding the recommendations on the package) once a month through the entire growing season. Or if you use one inch of good compost or a commercial fertilizer with the nitrogen in a slow release form, you can give your garden just one application of fertilizer each year for satisfactory results.

VIDEOS AND BOOKS CAN CO-EXIST

In many ways an instructional gardening video is much like a book. It is comparative in cost, running between \$15 and \$25 depending on the tape and the sales outlet. It has a table of contents on screen and a page number system, using a small counter in the lower right-hand corner of the picture. The table of contents indicates the counter number for each chapter or segment of the video tape. This feature allows the viewer to quickly scan the tape using the fast forward device on the VCR, and then to go back and find a particular segment to watch in detail. The instructional video is intended to be viewed and digested in parts, just as a how-to gardening book might be used.

On the other hand, the instructional video goes several steps further than a book in providing valuable information to the gardener. Gardening videos offer interesting visual clues to gardening principles; they give clear details on the use of tools and equipment, and they demonstrate complex techniques that are difficult to describe in writing.

A top quality instructional video uses a number of visual devices to make information clear to the viewer. The standard video picture is supplemented periodically by static graphic displays such as a list of steps, and by animated drawings that give clarity to some points not even possible with the normal video camera, such as how water enters the soil and adheres to certain soil particles.

The instructional video can provide the gardener with a much more thorough understanding of the variety of tools and equipment available to perform a particular gardening task. The tool is not only described, but the technique for its use can be quickly demonstrated. We demonstrated digging the garden with a spade, then using a rotary tiller, and finally using a U-bar digger.

Also, the use of new gardening materials can

be clearly presented with the video format. We showed how tunnels in the vegetable garden can have polyethylene film in the spring to warm plants, and then later have fleece material to shade lettuce in the summer. Or the gardener can switch to fine bird netting over the tunnels to protect the strawberries from the birds. These different uses of the same device are all quickly and clearly shown on a video in less than a minute.

I think the most powerful characteristic of the instructional video is its ability to demonstrate complex gardening techniques in a manner seldom possible in a book or article, even with good drawings. As you can see in the titles listed here, we tried to cover many of the techniques that I think can be more clearly presented in video format than by a book:

- Double digging the garden soil
- Foliar spraying for both feeding and pest control
- Pruning and pinching houseplants, flowers, and trees
- Installing drip irrigation all over the property
- Starting root cuttings
- Dividing perennials
- Dethatching a lawn
- Making soil blocks for seedlings
- Detecting insect damage
- Drying herbs

I suspect that it is going to take a few years for gardeners to begin thinking of their television set as a learning tool. Right now, most of us think of our TV as a source of entertainment. But as more gardening videos are published and as the access to relatively inexpensive one hour instructional programs increases, I think the gardener will discover the video tape as one of the handiest gardening tools he/she has.

J.B.



The fleeting beauty of 'Bella Donna' rose is captured forever in this stepping-stone.

TWENTIETH CENTURY FOSSILS UNDERFOOT:

25

As a teenager interested in botany and horticulture I went on many field trips. One field trip that I always enjoyed was a spoils site for plant fossils near St. Clair, Pennsylvania. While the fossils from these field trips now enrich the Claude E. Phillips Herbarium at Delaware State College, this site is closed today as attempts are made to wring every last bit of coal from the earth.

Often on these field trips I would encounter large sprays of the now-extinct *Pecopteris* (a seed fern), *Lepidodendron* (a giant lycopod), *Calamites* (a giant horsetail), or other Carboniferous plant fossils embedded in three to six foot slabs of shale. No amount of muscle or determination could wrest those fossils from the stone in an easily transportable form. Now that I finally have my own garden, I think

back to those large fossils, and I consider how great they would be as garden sculptures or stepping-stones. I have seen attempts to incorporate modern plants into concrete but they never impressed me because they lacked good definition. So I set about to refine a procedure to create my own twentieth century plant fossils to be incorporated into a pathway beneath a grape arbor.

The following outlines step-by-step details for the stepping-stones. Deviation is encouraged. You may find cheaper or better alternatives. Experiment; I have plenty of rejects to attest to my own experiments. I have deliberately not calculated prices. These stepping-stones are your original works. Who can set a price on that?

continued

Create Your Own Stepping-Stones

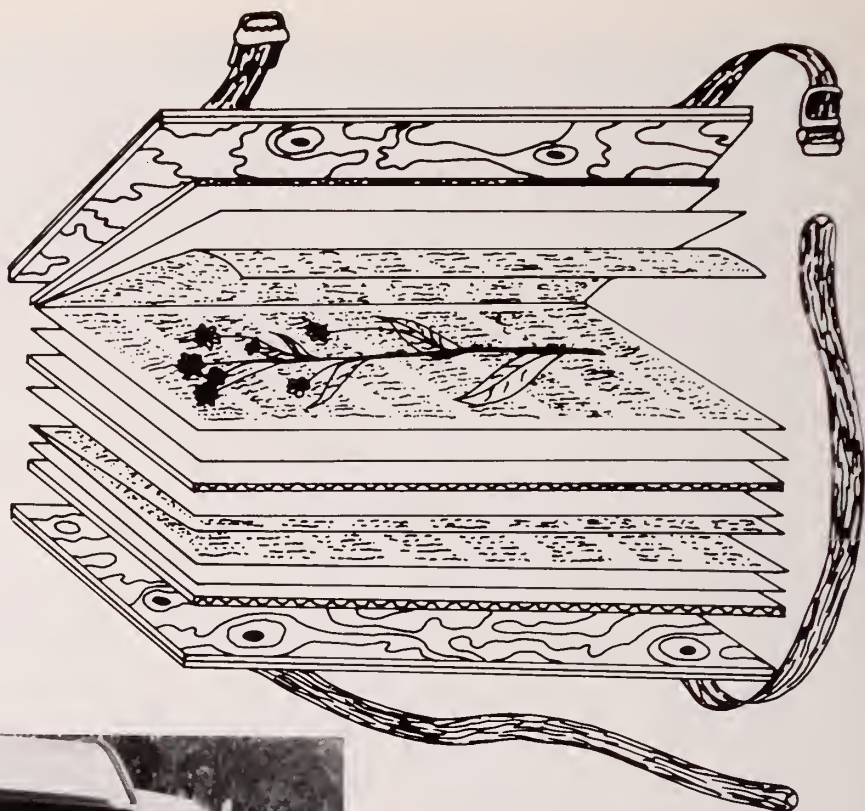


by Arthur O. Tucker

Step-by-Step

1

Choose plants that have abundant definition (e.g., coarse veins) yet can be flattened: sage, butterfly weed, lemon balm, elecampane, mints, and roses have been successful for me. Plants should be pressed in a plant press; either purchase a commercial plant press or construct one from plywood. Plants are laid in a double sheet of 15 in. x 11½ in. newspaper, enclosed within blotters, and then enclosed within corrugated cardboards. The final press sequence should be corrugated cardboard-blitter-newspaper-plant-newspaper-blitter-corrugated cardboard, etc. End with corrugated cardboards and bind the whole together with straps around sheets of plywood.



2

A closed car on a hot summer day is perfect for drying. Depending on the succulence of the plant, drying may take from a few days to a week or more. Plant specimens must be dry and as flat as possible.

3

Construct the mold from the following materials: two 2x4s 19 in. long; two 2x4s 22 in. long, three 3-in. cheap galvanized hinges; and one cheap galvanized hasp. Also purchase a sheet of ¼ in. glass that is 19 in. x 18¾ in. (¼ in. plexiglass may also be substituted but is more expensive). Black landscaping plastic sheeting or other thick plastic sheeting is also needed.





4

The best time to begin the actual casting is in the early evening (notice the long shadows of evening in these photos). This allows the curing of the concrete under cooler conditions. Remove the dried, flat plant from the plant press. Spray the plant with photo adhesive on the side with the less definition (i.e., the side with the more smooth, upper leaf surfaces).

5

Have your mold, glass, and plastic sheeting arranged in the shade to prevent baking the concrete during the initial stages of curing. Lay plant specimen, glue side down, on the glass. Press all over the flat plant to ensure that it fully adheres to the glass. If the plant is loose the concrete will creep under and produce a poor impression. Spray everything – mold, glass, and plant – with spray oil. The oil should cover the plant and glass lightly but thoroughly, while the wooden mold generally requires more oiling.



6

Mix 15 cups of a fine-grained concrete with water to create a thick but flowing slurry the consistency of a cheap, cold, thick milkshake from a fast food franchise. I prefer a vinyl concrete here for added strength. Make sure all crevices are covered evenly with as few air spaces and bubbles as possible. Apply the concrete gently and thoroughly over the plant specimen.

Step-by-Step

7

Mix an 80-lb. bag of concrete with water. The amount of water here is not as critical as that with the initial concrete but it should still produce a stiff but flowing mixture. After mixing thoroughly, apply about half of the concrete to the mold and trowel to the edges. Lay onto this concrete a 17½ in. piece of 18 in. wide 1 in. chicken wire (rat wire could be substituted here and is stronger, but it is also more expensive). Apply the remaining concrete and trowel smooth.



8

Cover mold with plastic and allow to cure 48 hours.



9

At the end of the additional 24 hours of curing, now (before the concrete hardens further) is the time to clean and file. Discarded dental tools work best for prying out the plant materials and refining any concrete that may have slipped under the plant specimen. File the edges of the block, if desired, with a coarse file to create a smooth, beveled edge. Cure (in sun or shade) an additional three weeks.



10

At the end of 48 hours of curing, gently remove mold and turn the concrete block upright. With a beveled chisel or scraper, gently pry glass from the concrete. Careful! The glass is easily cracked if your prying is too rapid or uneven. Immediately clean glass for the next use. Cover block with plastic sheet again and cure for another 24 hours.



11

Highlight and stain the block. I have been unable to find concrete stains in my geographical area that are not in garish colors and sold in quantities of less than one gallon. Thus, I have turned to exterior wood stains. Highlight the plant imprint with a teak stain and dry 24 hours. Then, stain the entire block with a mahogany stain (the closest to terra cotta) diluted 1:1 with paint thinner, rubbing rapidly after application to remove any excess. Then, quickly, while the block is still moist with stain/thinner, splatter green, teak, and undiluted mahogany stain to create aged effects. After a few minutes take a paintbrush soaked with paint thinner to smooth out any undesirable blotches and to blend the splatters. Dry another 24 hours. Then coat with a concrete resin sealer to seal in the stain and prevent cracking during the winter. Dry another 24 hours and then install. Installation should be done in a manner similar to that for bricks (I prefer a 3 in. base of sand/gravel). These blocks are heavy (about 90 lbs.), so inveigle someone with muscle to help in the moving and installing.

Sources

plant presses:

Carolina Biological Supply Co.
Burlington, NC 27215
919-584-0381

Herbarium Supply Co.
P.O. Box 883003
San Francisco, CA 94188
415-584-7000

lumber and glass:

building supply store

plastic sheeting:

garden supply store/hardware store

photo adhesive spray:

camera/photographic supply store (Scotch Photo Mount Spray Adhesive is one popular brand)

spray oil:

hardware store (3-in-1 Household Oil Spray is one popular brand)

concrete:

building supply store (Quikrete Vinyl Concrete Patcher and Sakrete Concrete are popular brands)

exterior wood stains:

hardware store/paint store (Carver Tripp is one popular brand; Contempo Mahogany, Oriental Teak, and Leaf are desirable colors – also mix your own moss green with Leaf and Oriental Teak)

concrete resin sealer:

brick supply or building supply store (Perma Seal Clear Concrete Sealer is one popular brand)

12

Stand back and admire your handiwork. These will be original one-of-a-kind creations. You could specialize in wildflowers, roses, etc. Flat shells from the seashore and flat rubber animals from the toy store also work well. Displayed here is part of a full summer's work, created during spare time using herbs. Now I can begin installation! ▼



Arthur O. Tucker is a research associate professor and co-curator of the Claude E. Phillips Herbarium in the Department of Agriculture and Natural Resources at Delaware State College in Dover. His personal interests include the systematics and cultivation of essential oil/herb plants and the flora of the Delmarva Peninsula

wood

For Use in Gardens and Outdoor Applications

 by Fred M. Lamb

Wood needs protection from decay or rot if (1) it is in contact with the ground; (2) it becomes wet on a regular basis from rain or other water sources; or (3) it stays in a moist condition. If wood is properly dried and kept dry, it will not decay. Obviously, wood used in garden and outdoor applications cannot always be kept dry. How then do we choose wood for these uses?

Wood that cannot be kept dry must be treated with preservative chemicals. These chemicals make the wood resistant to rot and insect attack. An alternative to chemical treatment is to use a decay resistant wood. Table 1 lists the relative decay resistance of the heartwood of some major wood species.

It is important to note that when using a species with a high natural decay resistance, it is only the **heartwood** that is decay resistant. The sapwood of all species is nonresistant to decay and will rot in about one to three years when in contact with the ground.

The heartwood of slow-grown black locust should last over 15 years when in contact with the ground. The heartwood of cedar, old-growth cypress, and mountain-grown white oak will last from about 5 to 15 years in contact with the ground. Redwood has become very expensive and its decay resistance is highly variable. Where long service life is expected and/or strength considerations are important, the best choice of wood for outside applications is pressure treated wood.

Pressure treated wood is ordinary wood that has preservative chemicals forced deep into the wood under pressure. The major preservative for wood used in and

Table 1. LISTING OF SOME WOODS BASED ON THE DECAY RESISTANCE OF THE HEARTWOOD

Resistant or Very Resistant	Moderately Resistant	Slightly or Nonresistant	
Cypress (old growth)*	Cypress (2nd growth)*	Ash	Magnolia
Cedars	Douglas-fir	Beech	Maple
Cherry, Black	Honeylocust	Birch	Oak, Red
Junipers	Pine, White*	Butternut	Pines (all others)
Locust, Black	Pine, Southern	Elm	Spruce
Oak, White	Longleaf*	Fir	Sweetgum
Redwood**	Slash*	Hackberry	Yellow-poplar
Walnut, Black		Hemlock	
		Hickory	

*Southern pines, white pines, and cypress are now mostly second growth trees with a large proportion of sapwood

**The decay resistance of redwood can be highly variable in ground contact.

around the home is chromated copper arsenate or CCA, the so-called "salt" in salt-treated lumber. CCA treated wood is odorless and usually has a light greenish/brownish color. It can be painted or stained when dry. CCA treated lumber is used for applications such as decks, patios, fencing, plant boxes, benches, greenhouses, plant stakes, etc. Properly treated CCA lumber in contact with the ground will last 25 years or longer.

When you buy pressure treated lumber, look for a "quality stamp" on the wood. This stamp includes information such as the treating company name, the chemical used, and the level of treatment either "Ground Contact" or "Above Ground Use." When buying lumber for use in contact with the ground, be sure it is stamped "Ground Contact." This lumber has more preservative in it than lumber treated for "Above Ground Use." (Note: There is also a special treatment called "Fdn" or "Foundation" for use in all wood foundation systems.) Some treated lumber is also stamped "Dry." This means that the lumber was dried after treating. When straightness and uniform

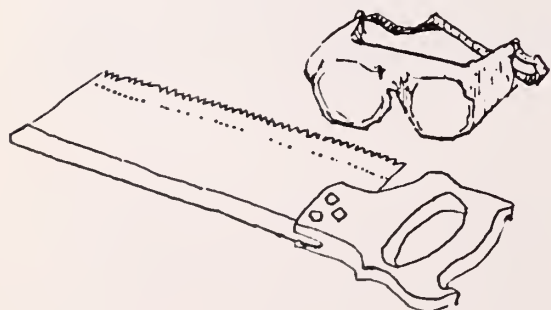
size are important, it is desirable to use this dry material.

Some individuals are concerned about using CCA treated wood. Studies have shown that the chemical reacts with and is fixed in the wood. It stays in the wood even if the wood is in the ground or in water. The CCA treated lumber should be free from surface deposits of salt. Properly treated lumber should not have surface deposits.

The following are some simple precautions that should be taken when handling and working with CCA treated wood. Protective goggles and a dust mask should be worn when power sawing CCA treated lumber. Hands and other exposed skin areas should be washed before eating or drinking, and after the project is completed. Launder clothes on which sawdust accumulates separately from other clothes and before the clothes are worn again. Do not burn CCA treated wood in a wood stove or fireplace. To ensure maximum performance, use only hot-dipped galvanized or stainless-steel nails when nailing CCA treated lumber.

Fred M. Lamb is an extension specialist, Wood Products, Virginia Cooperative Extension Service, Virginia Tech and Virginia State University

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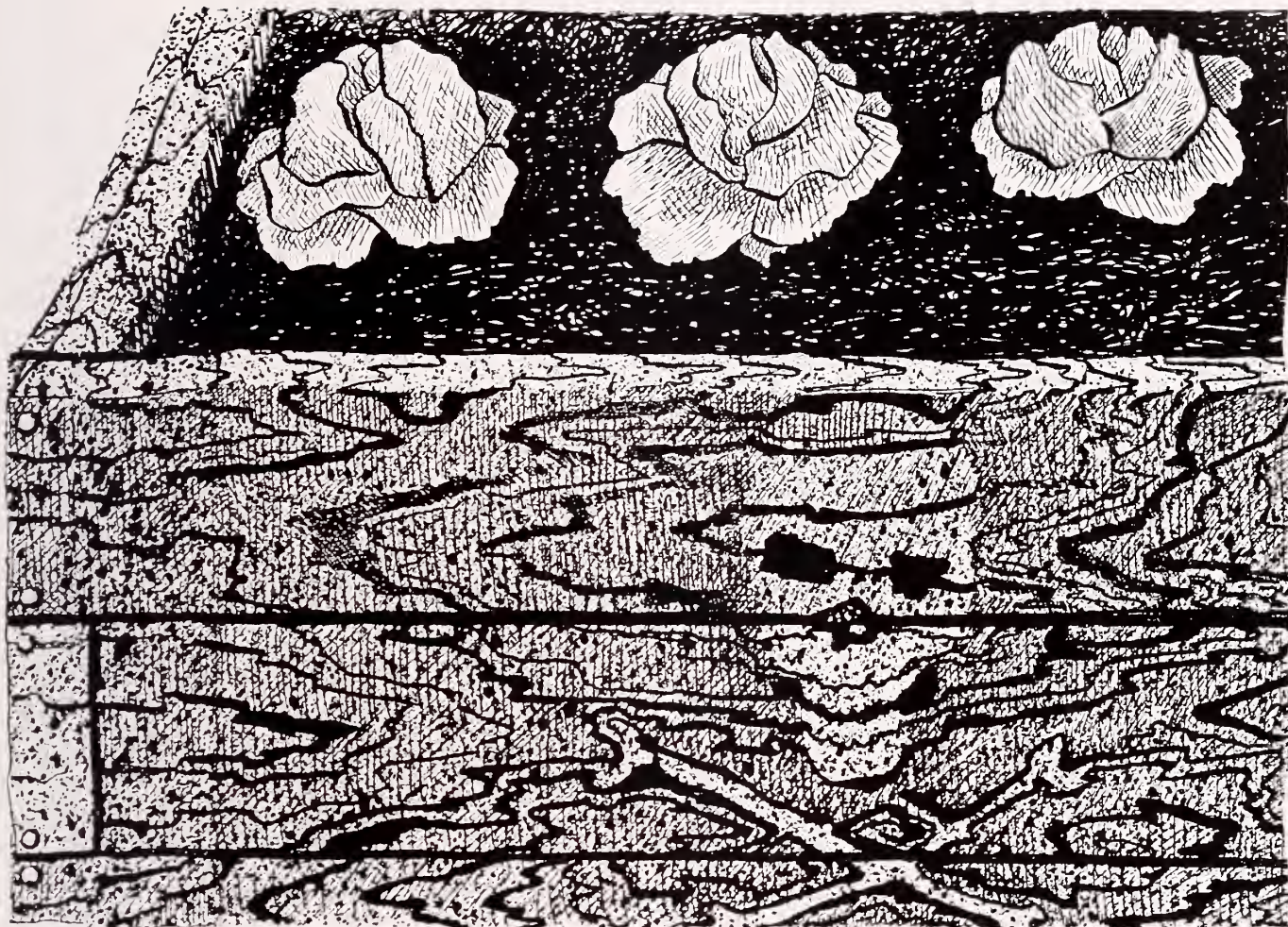


wood

Preservatives



by Cynthia Norman



illustrations by Liz Hauck

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Did you know woodworking can be dangerous to your health? That you can inhale poisons in the air and in the sawdust when you're working with it? That your skin can absorb poisons when you handle wood?

In every case, we're referring to wood that has been treated to help it last in good condition much longer than it would normally do. The wood preservatives are the source of the poisons.

Because gardeners are so often handy and love making cold frames, compost bins, trellises, fences, birdhouses and other structures small and large, we think it's helpful to have reliable knowledge about wood preservatives and how to avoid contaminating yourself, your plants and your soil.

that funny greenish wood

Commonly known as "pressure-treated lumber," the green-tinted wood sold at lumber yards these days for use in decks and other outdoor structures has been treated with either of two arsenic compounds: chromated copper arsenate (CCA) or ammoniated copper arsenate (ACA). As dangerous as they sound, these preservatives are considered the safest for your garden. They bind tightly to the wood and have a very low tendency to leach into the soil.

Soil around arsenical-treated ("pressure-treated") stakes in place for 30 years in Mississippi showed arsenic residues of 73-220 parts per million (ppm) next to the stake and only 1-7 ppm about 6 in. away. Since toxicity for most plants is in the

continued

neighborhood of 94 to 450 ppm (depending on soil type, plant sensitivity and other factors), arsenical-treated lumber is not considered to be really dangerous to plants.

It is possible, however, for plants grown in small quantities of soil that is heavily exposed to treated lumber to show damage. For example, in one scientific study, tomatoes grown in CCA-treated greenhouse flats showed light injury the first year, though there was only trace injury the second year and none after that.

There appears little danger of ingesting arsenic by eating fruits or vegetables grown near treated lumber, though scientific information on this is limited. In one study, grapes grown next to arsenical-treated wood showed no detectable uptake of arsenic.

The arsenicals are actually more dangerous to the gardener than they are to the garden. Studies show they can produce cancer and genetic changes in laboratory animals. Woodworkers should wear a dust mask sawing treated wood to avoid inhaling the treated sawdust. Don't save the scraps for summer bonfires or winter kindling: the fumes may be dangerous.

Pressure-treated lumber is available treated to several "retention levels," which indicate the amount of preservative in the wood. The three most common distinctions are wood treated for above-ground use (for example, a porch railing), ground-contact use (deck posts or fence posts), and structural support (building foundation). These are coded L2, L22, and FDN, respectively. When buying lumber to build a cold frame or raised beds, ask for lumber that's certified for ground contact. Try to get lumber that has been inspected by a third party inspection agency; properly inspected wood will be marked with a "cloverleaf" stamp, the symbol of the American Wood Preservers Bureau.

the brownish gooey stuff

Creosote is familiar to all of us as the gooey, brownish-black tar used to preserve railroad ties and telephone poles. It used to be commonly available over the counter, but the Environmental Protection Agency (EPA) restricted its sale in 1984.*

*All mentions of EPA restrictions in this article refer to regulations published by the agency in July 1984. These regulations are not now being enforced because several preservative manufacturers have called for a hearing to review the agency decision. The regulations included banning over-the-counter sale of creosote and pentachlorophenol and requiring a consumer information sheet to be distributed with pressure-treated lumber explaining how to handle the wood safely. See update at the end of this article.

Distilled from coal-tar, creosote is a complex mass of chemicals containing over 200 major components and several thousand minor ones. Several of these have been found to be carcinogenic and many are damaging to plants. Creosote leaches into the soil for several years and gives off

Brushing preservatives on softwoods makes them more durable, but not as long-lasting as hardwoods, or wood that has been pressure-treated or saturated.

vapors in diminishing amounts for at least seven to nine years. Scavenged ties from abandoned railroad beds are probably pretty safe, but newly-creosoted ties will kill plants within several inches for at least a year or two.

It may be dangerous to train climbing vegetables up telephone poles. We have little information about the uptake of creosote's chemicals by plants, but the creosote could easily get on your beans or cucumbers if they touch the pole, and it won't wash off easily.

A study by the University of Mississippi indicates that the major creosote components biodegrade readily and are undetectable several inches from the source, but many gardeners prefer to keep creosote out of their gardens.

the hidden one

Pentachlorophenol, often called simply "penta," is used like creosote to preserve heavy-use timbers (pier pilings, utility poles, railroad ties, etc.) but it also can appear in unexpected places like door jambs, window casings, ready-made picnic tables, lawn furniture and as a surface treatment of undried lumber. Unfortunately, its presence is hard to detect; it darkens wood slightly — but how can you tell what's "slightly darker"?

Penta is considered dangerous and has been restricted by the EPA because it contains a dioxin contaminant as a result of its manufacturing process. Dioxin, a known carcinogen, is the toxic chemical in the notorious Agent Orange used in Vietnam. Like creosote, penta gives off dangerous fumes, so penta-treated wood should not be used for any enclosed building. A Michigan farmer lost 300 dairy cows after housing them in a barn built of penta-treated timbers.

Wood treated with penta should be sealed if it is to come in frequent contact with bare skin. Paint is best, but urethane, shellac or varnish are alternatives. This is not a problem with door jambs and window casings, since they are almost always painted or sealed, but if you suspect that a picnic table or other item you are buying has been treated with penta, ask whether a sealant has been applied, and try to confirm it by examination. Remember that resealing treated furniture may be necessary if the varnish wears off after several years of exposure.

When buying lumber ask for kiln-dried wood. Undried wood may have been treated with penta to prevent "sap-stain," the discoloring effects of surface mold. (In some parts of the country, pentachlorophenol is being replaced by tetrachlorophenol in this surface treatment process. Although it has not been studied or restricted by the EPA, tetrachlorophenol contains the same dioxin contaminants as pentachlorophenol.)

Manufacture and use of penta is declining, so the ordinary consumer is not too likely to encounter it. Over-the-counter sales of penta for home use were prohibited by the EPA regulations published last year but it may still be available (the regulations are being challenged).

over-the-counter preservatives

Some gardeners have a cheap source of untreated wood and want to increase its durability by applying preservatives themselves. Keep in mind that softwood lumber treated with brushed-on preservatives may be more durable than the same wood untreated, but it will not be as durable as hardwood or wood that has been pressure-treated or saturated.

Copper naphthanate is commonly available from hardware stores (in the brands Cuprinol, Barworth and others). A thick, dark green liquid that renders treated lumber tacky to the touch, copper naphthanate is appropriate for ground contact use but is not as durable as the other preservatives mentioned above. It will not, for example, render pine as durable as the very durable hardwoods. It is thought to be less toxic to both plants and people, but it has not been studied as much as penta, creosote and the arsenicals, so little specific information is available. Zinc naphthanate is similar to copper naphthanate, but con-

sidered slightly weaker and slightly safer. It does not have the characteristic green color of copper naphthanate.

alternatives

Since all preservatives can conceivably pose some danger to both plants and animals, many gardeners prefer to steer clear of them altogether. There are a number of alternatives if you're willing to modify your plans a bit.

Consider naturally durable hardwoods, which are nearly as durable as treated lumber. Some are difficult to work with, but sawing oak may not be any harder than working with treated lumber using rubber gloves and a dust mask. The main drawback of durable wood is its expense. Wood such as cedar used to be fairly common, but it is becoming scarcer as we use up our forest preserves, so its price has risen. If the rot-resistant woods are too expensive remember that you can increase the life of wood just by painting, varnishing, or even staining it.

National Gardening Association member Fay Trout wrote NGA a long letter urging gardeners to consider cinderblocks as an alternative garden construction material. As far as durability goes they can't be beat. Low raised beds can be built by cementing blocks together, but for large retaining walls Fay recommends reinforcing with concrete reinforcing rods driven through the block holes. Though less attractive than wood, cement block walls or raised beds can be covered with vines, and flowering borders can be planted in the block holes.

We have never heard of stone wall raised beds, though in some parts of the country this would be one of the cheapest solutions; we know many gardeners use stones for retaining walls for terraces. Low rock plants incorporated in a well-built wall will help to hold the soil as well as forming an attractive border for your garden beds.

When it comes to raised beds, first decide whether your garden really needs them. Unless your soil has poor drainage or bending over to garden is difficult for you, raised beds are not necessary. Some people prefer to form their raised beds of mounded soil each year, rather than be restricted by permanent beds.

greenhouses

Greenhouses afford some special con-

siderations since the choice of materials is limited. Rot-resistant wood should be used because the high moisture level in the air can increase decay. Wood treated



with creosote and pentachlorophenol is out because the fumes they emit are dangerous in enclosed areas. Highly resistant natural woods are usually prohibitively expensive for such a large structure.

Pressure-treated wood is one option, if precautions outlined above are followed. Copper naphthanate is often recommended because of its presumed low toxicity to plants and animals. A combination of the two is possible, using pressure-treated wood for timbers that touch the ground and stained or copper naphthanate-treated wood for the above-ground structure.

The veteran Maine gardeners Scott and Helen Nearing built their greenhouse of stone using wood only for the window casings. Working with stone is not difficult, Scott said, just more time consuming. He and his wife preferred working with stone because they found it very satisfying.

Since greenhouse flats come in close contact with growing plants, they are better built of untreated wood.

Editor's note: Readers may be interested to know that the hearing on the Environmental Protection Agency's July 1984 restrictions mentioned in our Nov '85 article was resolved in an agreement between the EPA and industry representatives signed Sept. 30, 1985. Regarding pressure-treated lumber, the EPA agreed to a voluntary "Consumer Awareness Program" on the part of the industry in place of the mandatory one. Mr. Kempinska is correct: gloves are only required for workers involved in certain parts of the pressure-treatment process, not by handlers of pressure-treated lumber.

Cynthia Norman manages the Seed Search service at National Gardening Association and is an Editorial Assistant.

Addendum

The following are updates that appeared in subsequent issues of *National Gardening*.

January, 1986

wood preservatives: correction and update

Because some members have had questions since our wood preservative article appeared in the November issue, we want to clarify our mention of the dangers of absorbing wood-preserving chemicals through the skin. Creosote and pentachlorophenol can be absorbed, so wood treated with these chemicals should be handled with rubber or plastic gloves and sealed. On the other hand, the arsenic chemicals in pressure-treated lumber bind tightly to the wood, and will not come off on your hands. Gloves are only recommended for handling this wood to avoid splinters, which conceivably could inject chemicals below the skin.

May, 1986

on wood preservative safety

I read Cynthia Norman's Nov. '85 article, "Wood Preservatives" carefully. Koppers Company, a wood-treater for 55 years, is grateful for your magazine's coverage of treated wood and wood preservatives, especially the chromated-copper arsenate (CCA) preservative. Generally the article was accurate.

But we in the wood-treating industry have worked hard to show people the difference between the CCA preservative and treated wood. This was a key point not fully explained in the article. The CCA liquid preservative is a toxic chemical by itself. But the farm or residential user never comes in contact with the liquid preservative, when using properly CCA-treated lumber, such as our company's Wolmanized® pressure-treated wood. Our toxicologists refer to fixed CCA as being "non-bioavailable" to people or animals coming in contact with the wood.

Though we continually monitor the scientific literature on toxicology of CCA, we are unaware of any reports of carcinogenic effects of the CCA preservative or CCA-treated wood. We feel the statement that "arsenicals are actually more dangerous to the gardener than they are to the garden" is incorrect. Results of animal feeding tests performed for Koppers by an independent laboratory indicated no observable toxicity symptoms in dogs fed a five-day diet of 10 grams per day of CCA sawdust.

Ms. Norman also incorrectly advises that "woodworkers should wear rubber gloves when handling treated wood and a dust mask when sawing, to avoid inhaling the treated sawdust." Koppers recommends wearing gloves to protect from splinters—not because splinters can "inject chemicals below the skin," as stated in your Jan. '86 correction.

Regarding the burning of CCA-treated wood: Wolmanized® pressure-treated wood has been shown in laboratory testing not to produce any more toxic off-gases than burning untreated wood. But indestructible metals present in ashes may present an environmental and health hazard if not properly handled. This is why we recommend disposing of CCA-treated wood by ordinary trash collection or burial.

Conrad Kempinska
Koppers Company, Inc.
Pittsburgh, PA



CYGON-2E: A Warning

by Henry F. Lee

I want to sound a warning about the improper use of Cygon-2E.

This product is highly active against all the insect pests known to affect cacti and succulents. Even a single drench is effective against root meales.

It would seem to be just what we need. But it is not. It's just too toxic. I have recently learned that despite specific label warnings against indoor use, there are persons who feel that it should be safe when used as a soil drench and systemic. Their reasoning is that, unlike sprays, the drench will not be inhaled. The fallacy lies in the fact that Cygon-2E is moderately *volatile* and the resulting invisible vapor is toxic. **It has no place in the home or greenhouse.**

Let me give a bit of information: Cygon-2E is an organo-phosphate, precisely a dimethoate, related to "nerve gasses."

In our nervous systems, messages from brain to muscles pass across junctions between nerve fibers by means of tiny amounts of liberated acetylcholine. This substance, having served in the relay of a

message, is then almost instantly destroyed by an enzyme called acetylcholine esterase. Then that nerve junction or relay is ready to function again. Cygon-2E prevents the action of the enzyme, acetylcholine accumulates, and the connection is now blocked. This impaired control of the passage of nerve impulses has widespread effects in the body.

In small doses organo-phosphates can cause many subtle symptoms the cause of which may not be recognized. Larger doses may paralyze breathing.

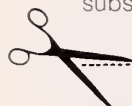
Through effects on the nerve circuits controlling muscle contraction there may be: easy fatigue, mild weakness, muscle twitching or cramps, blurred vision, tightness of breathing (especially in asthmatics where minute traces in the air may make trouble), tingling in hands or feet. In the brain itself, where all our thought processes are electrochemically mediated, some strange effects may occur: excessive dreaming, nightmares, unreasonable anxiety, confusion of detail, faulty memory, slurred speech and many more.

Fortunately recovery from the effects of small doses occurs over a relatively short period of time but repeated exposures may lead to chronic symptoms puzzling to doctors, unless they know the individual uses insecticides frequently.

It's only fair to point out that the manufacturers of insecticides do put warnings on their labels. Often the print is very fine. Often users do not read it all or fail to note "skin absorption is possible" or the product is "not to be used indoors or in greenhouses."

I have singled out Cygon-2E because it is so effective against the sometimes difficult enemies of those with cactus collections. Its use is very tempting and the symptoms produced by its *misuse* may be subtle and not recognized for what they are.

Henry Lee is a physician who has long had an interest in the toxic effects of commercial products. Lee has been gardening for four decades with a special interest in desert plants.



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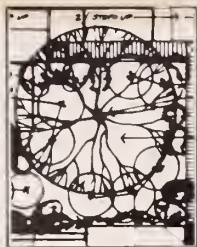
Herbs drying in Jane Lennon's attic for year-round wreaths. See page 4.

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THE green scene

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Joanna Reed's Crewel Seasons.
See page 24.



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Front cover: Joanna Reed features giant burdock (*Arctium lappa*) blooms designed in crewel on a panel representing summer. The weaving stitch, called spider web, gives a three dimensional appearance.

photo by John T. Chew, Jr

Back cover: Photo of Sinkler garden. See page 10.

photo by Colin Franklin

CORRECTION:

In the November issue of *Green Scene*, in the article "Twentieth Century Fossils Underfoot: Create Your Own Stepping Stones," captions 9 and 10 were inadvertently reversed.

Volume 15, Number 3

January February 1987

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Designer: Julie Baxendell, Baxendell / Lambeck Associates

Separations: Lincoln Graphics **Printer:** Havertown Printing

THE GREEN SCENE, (USPS 955580) Volume 15, No. 3, published bimonthly, January, March, May, July, September, November, by the Pennsylvania Horticultural Society, a non-profit membership organization at 325 Walnut Street, Philadelphia, PA 19106. Subscription: \$8.50 - Single Copy: \$1.50. Second class postage paid at Philadelphia, PA 19106. • **POSTMASTER:** Send address change to THE GREEN SCENE, 325 Walnut Street, Philadelphia, PA 19106.

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Hershey Gardens of Hershey, PA

THE SORCERER'S APPRENTICE AS SPELUNKER

Remember Mickey Mouse as the sorcerer's apprentice in *Fantasia*? Mickey got hold of the sorcerer's hat and got the brooms to carry water, but once they started, he couldn't stop them. That's what Milton Laden's pursuit of the late Dr. Edgar Wherry's correspondence and slides at Anita Kistler's suggestion reminds me of. Kistler, of the American Rock Garden Society, started the search for Wherry's memorabilia from the members of the Delaware Valley Chapter, to help establish archives at The Morris Arboretum of the University of Pennsylvania, the Academy of Natural Sciences, and for ARGS. Milton, a longtime friend and admirer of Dr. Wherry, took to the idea with the dedicated passion of the scholar; he has the stamina of the spelunker, crawling his way through attics and basements to find papers and slides at The Morris Arboretum and the Arboretum of the Barnes Foundation, among others. Every letter he wrote generated another letter.



Marnie and Bill Flook who, in this issue, assess part of the history rising from the collection, experienced the onslaught of the sorcerer's apprentice when 1,809 slides arrived instead of the 400 they expected. Marnie and Bill took a deep breath, organized the 1,809 slides and Bill made two copies of each of 1,411. These will reside at The Morris Arboretum with copies also in the Academy of Natural Sciences archives.

When you read Marnie and Bill Flook's story on page 21 and see what a perfectionist Edgar Wherry was as he painted the first colors on his glass lantern slides, before the advent of color photography, you'll know Bill Flook's faithful copying was no mean achievement. Wherry felt that the later commercial color copies of his work were highly inaccurate; he felt Bill Flook's slide copies came closest to his own achievement and he had the highest praise for the 60 phlox slides Flook copied in 1975-76.

Jean Byrne, *Editor*



The Caulk city garden. For design details see page 12.

TRANSFORMING FOUR CITY YARDS INTO GARDENS



by Colin Franklin

Lack of space is part of the price we pay for enjoying the benefits of city living. Indoor space is often less than desired and access to the outdoors rare. A few fortunate people do have balconies, rooftops or even backyards that they envision turning into little havens. The fact is that urban yards are rarely ideal places to make gardens. Typically they are tiny and poorly lit. Despite these basic drawbacks, however, it is possible with an understanding of the city environment and ingenuity, to transform an unpromising backyard into a real garden.

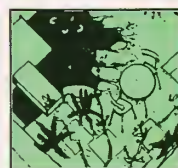
The city is still an ecosystem, even though it has been altered by man. Urban soils, for example, which are often compacted mineral soils, without much organic content, are surprisingly similar to floodplain soils. So it should come as no surprise that floodplain trees, such as elms and sycamores, find themselves at home as city street trees. A visit to a vacant lot, an abandoned railroad track, or a neglected bit of riverfront reveals a remarkable diversity of native plants — cherries, maples, crabapples, viburnums, alders, tulip poplars, and dogwoods, with damper areas filled with ferns. While one cannot recreate the primordial Wissahickon in a backyard, it is reasonable to seek to achieve the kind of urban habitat afforded by the glade within a forest, the hedgerow or thicket in a small meadow, or the young woodland grove.

Such transformations do not come with a touch of a wand; a few plants purchased from the local garden center do not make a garden. If the basic problems of the space are not addressed the results will always be disappointing. It is more helpful for a homeowner who is contemplating making a garden to think in terms of decorating and furnishing a room as a comparable investment. Indeed, the city garden really is another room — an extension of the living space that is part living room, part dining room and even part kitchen.

The four city gardens shown here were built over the last eight years in Center City Philadelphia. They are all "outdoor rooms" that enhance the living space of the house as well as give that contact with nature that is such a rare commodity in the city. Together they illustrate an approach to creating city gardens that combines an understanding of the natural world with some venerable design strategies.

Since most city gardens' basic problem is their small size, each design uses a number of techniques to create "added dimensions" and expand the perception of space. Architects are familiar with the apparent paradox that a space feels larger when things are in it than when it is empty. Clients are often horrified at the apparent small size of the rooms in their newly built houses before the furniture goes in. When familiar sized objects are put into a room, a measure of the scale is possible and the space seems larger. This is as true of trees and shrubs as it is of chairs and tables, and the added bonus that plants are not solid objects makes it possible to see through them to the space beyond. One should therefore not be afraid of putting in too many plants or too large a plant into a small space. What is important is how these objects divide up the space in the garden and what form the plants take.

Gardens have delighted us throughout recorded history but today they have an added meaning. We are not threatened by wildness as were our medieval ancestors. We know instead that few monsters are left and that nature is vulnerable and precious. If our gardens can become not just a symbolic, but a *real* piece of the natural world, however small, we will be helping to reclaim the city as a part of the larger world of nature. This is the ultimate "added dimension" to which a city garden can aspire and each of the four gardens shown here attempt, not only to pay homage to the long history of garden art, but also to show that through an understanding of urban ecology the greater connection can be made.

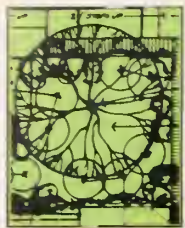


Colin Franklin is an architect and landscape architect and one of the four partners with Carol Franklin, Rolf Sauer and Leslie Sauer in the Philadelphia firm of Andropogon Associates, Ltd. All of the partners contributed to the development of the article.

Andropogon has done work throughout the entire east coast and is responsible for the master planning and design of a number of well known horticultural institutions including Philadelphia's own Morris Arboretum of the University of Pennsylvania.

The name "Andropogon" refers to a common local field grass. The elegance and economy with which these grassy meadows adapt to a wide variety of natural and disturbed environments aptly describes the goal of Andropogon's work — to weave the landscapes of man and nature together for the benefit of both.





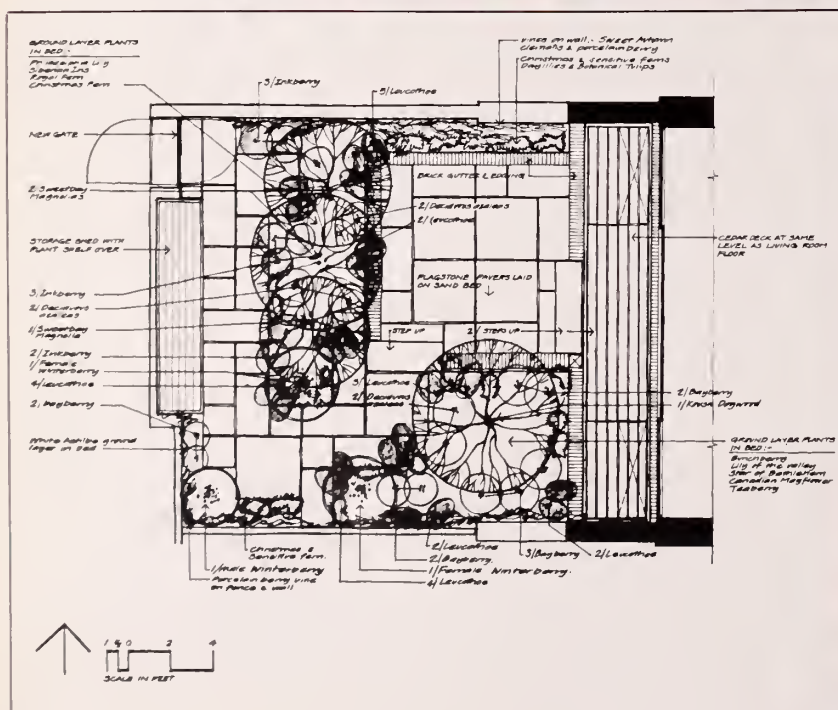
SACHS GARDEN



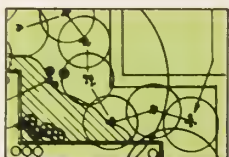
In the Sachs garden, the plants are arranged to create several different spaces within the garden. A small dining terrace is the main space; however, other spaces lead to and from it. In fact, a path takes one through the garden. This zigzag route starts in the living room, leads out to the narrow wooden deck that is level with the living room floor. From this deck one steps down a stone step to the terrace. The path from the terrace then turns to the left, back up another stone step, towards the garden fence that separates the garden from the next door neighbors. It then doubles back to the back gate, on the right-hand side of the garden. Walking this path a person not only travels more than twice the length of the garden, but also sees the space from a constantly changing viewpoint. Consequently, the garden seems larger and more varied.

The owners of this walled courtyard, measuring only 17 ft. x 22 ft. wanted their garden to feel spacious and lush despite its small size. A flagstone path between large planting islands leads from the garden gate to a small dining terrace adjacent to a four-foot-wide wooden deck extending from the living and dining rooms. Sweetbay magnolias, inkberry, and winterberry are among the glossy native plants of the Coastal Plain which attract abundant birds to this urban retreat.

continued





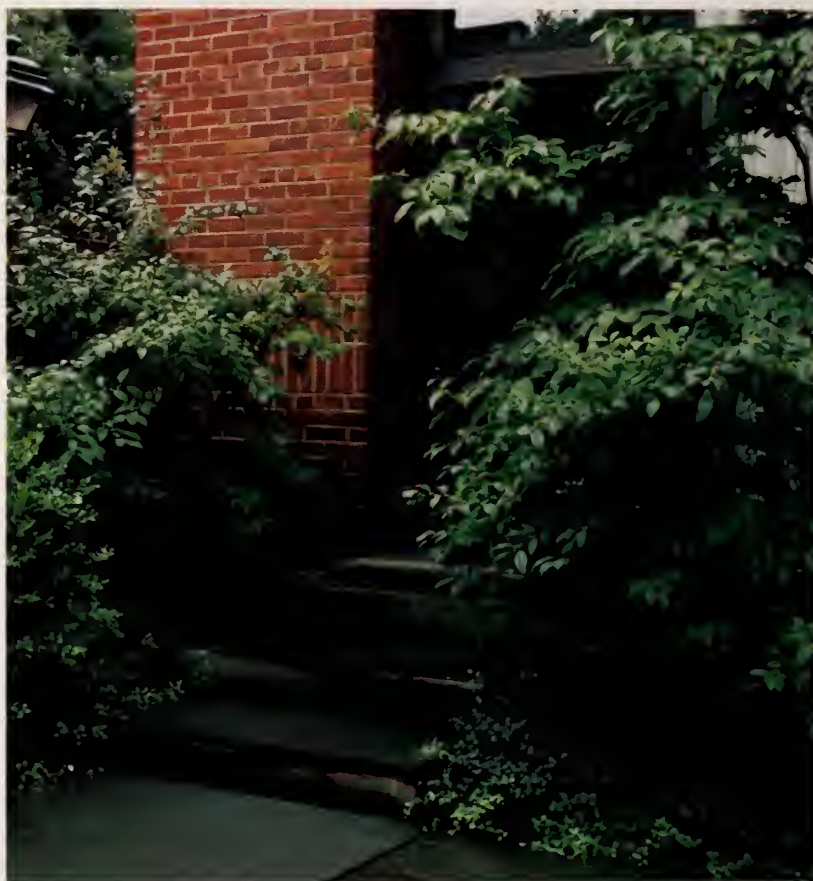
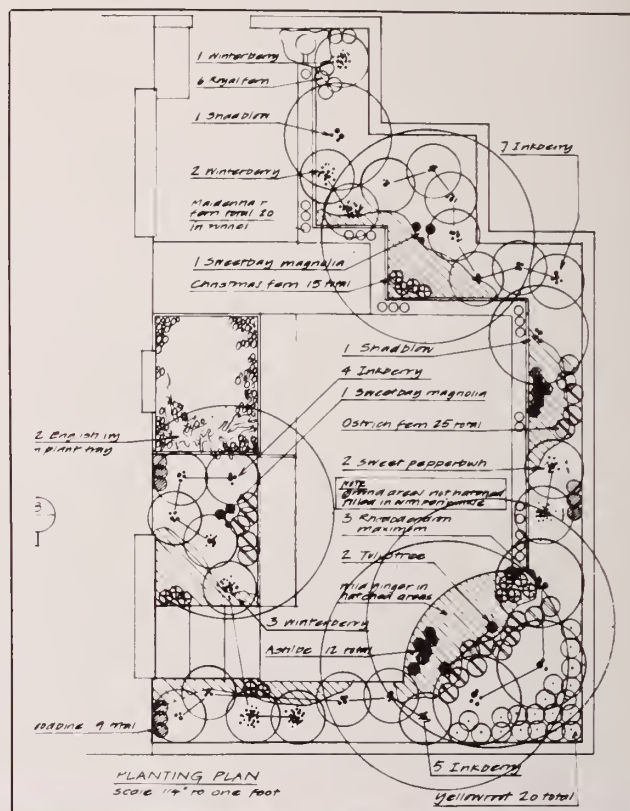


ADLER GARDEN

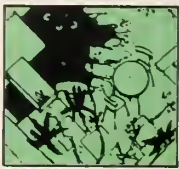
In the Adler garden, a circular route and small changes of level create a sense of a larger space and differentiates functional areas. The terrace is the main space for dining and cooking. The garden's service area is placed by the side gate and a small storage shed. The shed is roofed with a planting box to blend in with the rest of the vegetation.

Whatever a garden's style, it is in a small way symbolic of nature. Light, air, soil and water are the elements necessary for the plants' growth, and when all these are in the garden it becomes a richer experience. In the Adler garden, water is represented by a small pebble-lined gutter filled with ferns that can be irrigated from a wall faucet. The gutter does double duty as a drain; rainwater from the terrace runs into it and into the ground via a gravel filled trench below.

continued



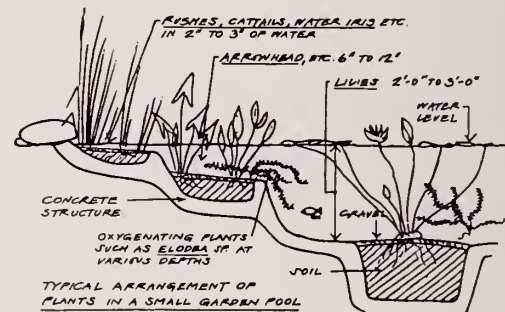
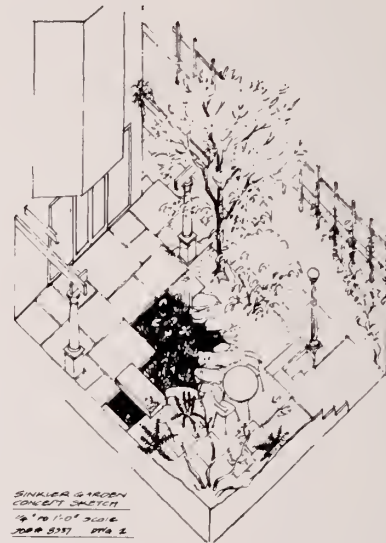
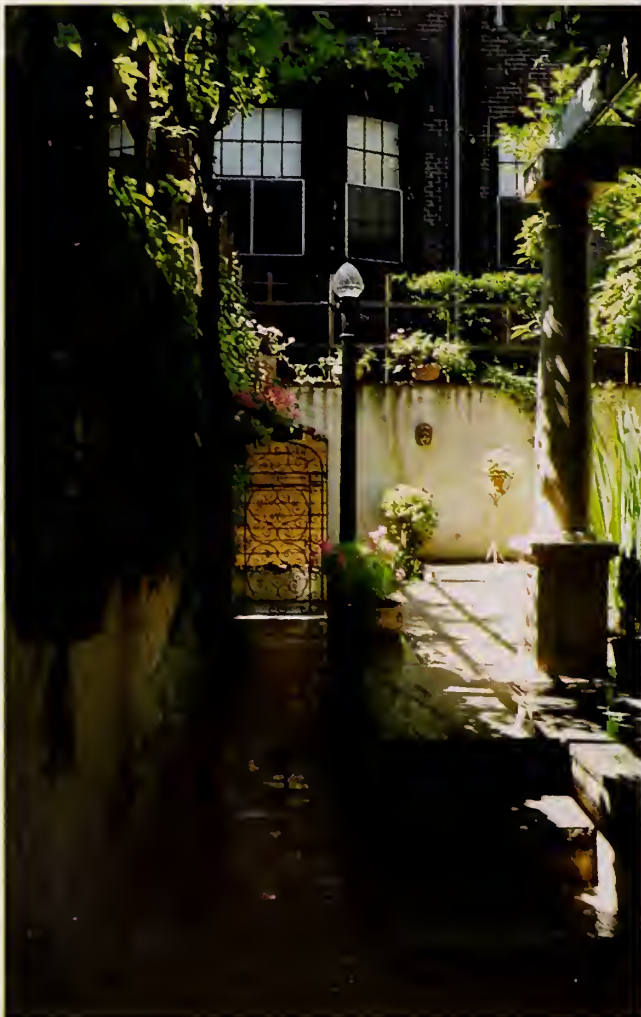




SINKLER GARDEN

In the Sinkler garden, water is represented by a naturally planted pond directly off the kitchen. This garden is tiny, but it also has several different routes through it. A change of level differentiates the path to a side door from the main garden area. The pond, however, adds still more dimensions. A natural "balanced life" pond has both plants and fish. Properly built such a pond can be left filled with water through the winter. Once established, the bottom will be dark and the water a clear brownish color. Such water mirrors and reflects its surroundings and the sky, increasing the sense of space. The pond has a mysterious quality since the bottom cannot be seen and one wonders at its depth and what may be lurking below. Water enlivens the garden in many unexpected ways. It is a magnet for wildlife even in the most urban situations. Birds, insects, and small mammals will be attracted to it and little incidents and relationships hitherto unnoticed will become part of the daily life of the garden. The Sinklers put out feed for their bird visitors on a small rock by the side of the pool and delightedly tell how the scattered seed husks are eaten by the goldfish. This garden also has nesting doves in the grape arbor, an arm's length from the terrace table.

continued



THE NATURAL POND

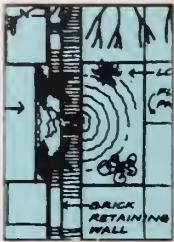
Fully establishing a successful, natural, or "balanced life" pond, takes at least a season, after which little maintenance is needed. Small ponds are usually built of concrete or preformed fiberglass and filled from the faucet. To avoid having the pond fully freeze during the winter and to give sufficient depth for certain plants, it must be at least two feet deep. Planting pockets should be provided at different depths for different types of plants. Plant in good rich soil when the pond is empty of water. Cover the soil with a layer of fine gravel to avoid muddying the water. Nurseries, specializing in water gardening, can provide information on plants and their needs, but water depth is the most critical factor. After filling with water, the pond will go through a series of disconcerting stages, one of which will be that the water will turn bright green. This is a natural and inevitable problem, which must be allowed to run its course. *Do not change the water* or else the process will be repeated. As the nutrients in the faucet water are used up, the algae responsible for the green color will become less evident, and eventually the water will become a clear, slightly brownish color. Fish can be introduced at this point. Goldfish will live and breed year-round, are great fun to watch, and will eat the mosquito larvae. Native species of fish generally need more area than a small backyard pool can provide.

A pond can be left filled for many years. During the summer it should be topped up if the water level drops. A healthy pond develops a black organic layer on the bottom — do not expect to see sparkling pebbles, they only occur in streams. The organic layer will fill the pond in time, so periodically remove dead leaves and other debris to delay the process. This is the only real chore in water gardening. In contrast to the flower bed, there are no weeds to remove, no watering, and no fertilizing. In the water garden, the plants bloom continuously from spring to fall.

Colin Franklin



See back cover for close up detail
of pond.

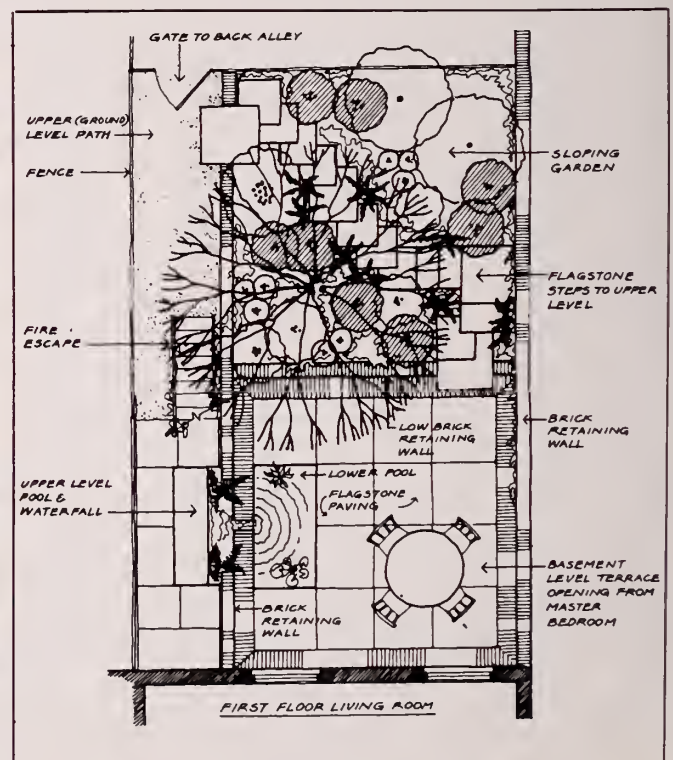


CAULK GARDEN



The Caulk garden is the most ambitious of the four gardens and was built in two phases over a period of five years. The Caulks moved into town from an elegant and spacious suburban house with a large garden. They saw the garden of their renovated townhouse as an essential ingredient to a pleasant life in the city and had already made some important decisions before seeking advice about their garden's design. The most significant of these was to excavate the backyard down to the basement level where the master bedroom was to open out onto a terrace. Since the house is on the end of a block, there is also a garden wall on the street side which, added to the height of the retaining wall, forms an internal wall 16 ft. high. At the opposite side of the garden, an eight-foot-high retaining wall supports a walkway at ground level. The walkway also receives a fire escape from the upper floors. The Caulks were concerned that the deep walled space would be dark, cramped and isolated from the ground level both visually and physically. The wall fountain solves this problem with its upper and lower pools and small arched niches, by breaking up the expanse of retaining wall and visually linking the two levels. Beyond the sitting terrace a planted bank slopes dramatically up to the ground level presenting a wall of green to the master bedroom. The leafy canopy of the trees on this bank diffuses the light downwards into the lower court. The flight of steps, which traverses the bank, is fringed with Christmas fern and inkberry and provides the physical link to the upper level. In a theme common to all the designs shown here this path enables one to amble through the garden and enjoy it from different vantage points.

12





FEATHER ROCK CONTAINERS



by Jonathan Frank

Feather rock planters offer unique advantages to horticulturists: they are inexpensive to make (about 25 cents per pound), require no special tools (putty knife, small hammer, and chisel), and last for many years. Virtually any kind of plant from orchids to cacti can be cultivated with minimal care or effort.

The ponytail (pictured in 1), *Beaucarnea recurvata* in feather/lava rock planter, has been growing in its rock container for more than seven years and is still thriving. Apart from light, its only requirement is an occasional watering. Since feather rock is extremely porous and acts like a sponge, the simplest method of watering is just to set the container in a large bowl for about 48 hours. The rock will absorb enough water to sustain the plant for many weeks. In fact, this particular ponytail is watered only once a month, requiring low maintenance and making it an ideal houseplant.

Feather rock containers are suitable for a wide range of plants including both hardy and non-hardy varieties. Photograph 3 illustrates an example of two semi-aquatic plants, dwarf umbrella (*Cyperus alternifolius gracilis*) and miniature sweet flag (*Acorus gramineus variegatus*), cultivated in a soilless mixture in a feather rock "dish." In contrast, photograph 2 illustrates an arid, desert thriving plant, (*Aloe arborescens*). It, too, is cultivated without soil, preferring a mixture of sand and crushed feather rock.

Another advantage of feather rock containers is that they can be carved or sculpted to accommodate specific plants, thus highlighting the unique features or character of the plant. The *Cycad zamia* sp. (photograph 4) was planted above the feather rock so the trunk became more prominent, adding to the overall visual interest of the plant.

carving the feather rock

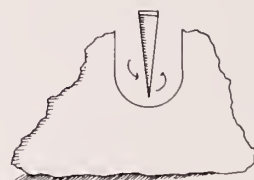
The feather rock container for this bromeliad (on this page) was carved to accentuate the existing texture and graininess of the rock. Carving and shaping is



Step 1



Step 2



Step 3



Step 4

a relatively simple process involving four basic steps:

Step 1:

Examine the rock to find its best features and determine what size piece is needed.

Step 2:

Position chisel or putty knife where the rock is to be split; tap with hammer until the desired piece is separated.

Step 3:

Slowly begin to force the chisel into the rock using a twisting motion, until the planting cavity reaches the desired size.

Step 4:

Using a putty knife or steel file smooth away rough edges until container is completed.

Use extreme care when working with feather rock. It is razor sharp and unprotected hands are easily lacerated. **Heavy duty suede gloves and some form of safety glasses are an absolute must.** The carving process will produce a lot of dust and minute pieces of rock; some people might wish to wear a face mask over their nose as well.

Area sources for feather rock

Snipes Farm and Nursery
Route #1
Morrisville, PA
(215) 295-1138

Langhorne Stone Company
Route #413
Langhorne, PA
(215) 757-2208

Delaware Quarries, Inc.
Lumberville, PA
(215) 297-5647

Trap Rock Industries
Kingston, NJ
(609) 924-0300

Jonathan Frank is a staff member of PHS, Field Operations Supervisor for Philadelphia Green. He has won numerous awards for his feather rock planters at both the Philadelphia Flower Show and the Massachusetts Horticultural Society's Flower Show.

1.



Beaucarnea recurvata (ponytail) in feather rock lava.

3.



Cyperus alternifolius gracilis (dwarf umbrella)—larger plant, with *Acorus gramineus variegatus* (miniature sweet flag) around it.

Since feather rock is extremely porous and acts like a sponge, the simplest method of watering is just to set the container in a large bowl for about 48 hours.

2.



Aloe arborescens

4.



Cycad zamia

TOMATOES:

Getting the First, Last and Best

 by Joe Colanero



photos by Joe Colanero

Delaware Valley tomato garnished with basil.

16

As a garden columnist in the Delaware Valley I learned that tomato lovers revere our most treasured fruit with a devotion that excludes all other trivia. When they feast on the season's first tomato, they repeat an unchanging annual ritual. Every summer the return of the great race is on for the first red wonder – for summer *is*, as one reader asserted – tomatoes.

The dash for the regular reds starts with sowing seeds indoors during the first or second week of March. That's a bit early for mid and main season types, but not for the early varieties. My favorite for first early has been Early Girl, the first to satisfy the craving for a home grown taste. The later varieties can wait a week or two, and they will be stockier for it, and more productive when it counts. These later varieties will, in due course, get to the garden. It's the earliest that get the attention first.

Just as with other indoor sown plants,

the tomato plants are fed frequent very dilute amounts of high phosphorus soluble fertilizer (e.g. Peters' Blossom Booster 10-30-20) to encourage root growth. By mid-April the plants are transplanted to larger containers at least once and into the cold-frame for hardening off. Standby covering is provided when temperatures dip to low 40s or less.

While in the coldframe, site preparations begin. Remembering plants need warm soil as well as warm air, I've found the open, sunny area with excellent drainage warms the fastest. Black plastic mulch elevates the soil temperatures. The black mulch also suppresses weeds. Rows of farm plastic can be replicated at home using dark colored plastic trash bags. After the soil is prepared, the plastic can be laid out in mid-April. Long rows favor drip irrigation; I use a piece of hose with emitters. With or without plastic, early warm-up can

be helped with hills or raised beds.

From the coldframe and into the garden soil, the big question is when. I'll risk a few "earlies" if the weather cooperates, usually by late April in my Woodbury, New Jersey location. For others, the dictates of available time and a suitable holding site will influence the big day.

Choices of protective coverings are plentiful. Wall O' Water, dry cleaner bags and baskets are but a few ways to shelter plants when temperatures dip and winds pick up. Don't wait for frost warnings; the mid to low 40s call for protection. Last year the winning tomato plant was covered with a peach basket.

Pruning the indeterminate Early Girl to a single main stem also aids in earlier ripening. Main season plants can be trained to two or three main stems, except strong determinate types such as Celebrity. Of course, only staked plants are pruned.

When not overwhelmed by the great tomato race, Joe Colanero writes a self-syndicated gardening column (*Down to Earth Gardening*) for several Delaware Valley newspapers.



Garden ready husky tomato plant.



Trained stem showing emerging sucker, a candidate for pruning.

what about flavor?

Any smartie knows the full tomato taste develops from garden varieties allowed to develop all the flavor compounds on the vine, picked at the "ready" stage. But does the "Vidalia" principle, e.g. that the sweetness of the onions in Vidalia, Georgia derives from that region's special soil, apply to this region's sweet tomatoes? To answer which region sports the best tasters, Steven A. Frowine, staff horticulturist at W. Atlee Burpee, said the influence of warm days and moderate nights seem to account for full flavor, rather than soil. "Container grown plants, in artificial soil, will taste the same as garden grown." I don't think the folks in southern New Jersey want to hear that.

area favorites

What's the best variety to grow? I don't have a single winner, but from taste sur-

veys and experience, I can suggest the best varieties suited to our locality. Aside from patio types, the first respectable variety is Early Girl Hybrid, arriving at the finish line by the last week of June and continuing all season long. You can celebrate with Early Girl until better tasters arrive. Another choice, Springset, is popular at garden centers, though as a determinate, it bears all at once.

Celebrity Hybrid, an All America Winner, leads the mid-season choices. Strong on disease resistance and a short season determinate, Celebrity is a winner for flavor. It's a pity that it doesn't continue producing throughout the season. Two others for mid-seasons are Ace and Supersonic Hybrid. Both have loyal followers: Ace for its sub-acid flavor and Supersonic for its all around performance.

For the main-season types, it gets crowded. Big Boy Hybrid has staunch sup-

porters for flavor, since introduced by Burpee in 1949. Productive with pound-plus tomatoes, Big Boy still outsells its more disease resistant challengers, notably Big Girl Hybrid.

Ramapo Hybrid gets the nod for best bread and butter producer. Even though it doesn't always score a 10 on taste, it's always in the thick of the pack. It's an indeterminate with heaps of disease resistance. Ramapo has pushed out Rutgers, which is still sold at garden centers. Steven Frowine suggests Burpee's VF Hybrid for a main crop, and Libby Goldstein, County Extension director of Cooperative Extension Service, Pennsylvania State University, threw in Moira. When asked why, Libby said "Its near complete resistance to blossom end rot sure saves a lot of phone calls."

By now I should declare tomato lovers fall into two categories: devotees of the

continued





Harvest basket. Who can judge if phlox or tomatoes are more appealing?

medium red slicers or fanciers for the Beefsteak whoppers. For the latter, breeders have been working overtime to smooth out the ugly cat facing, but they haven't convinced the public that they have kept the "beefsteak" flavor. Before the hybrid era, there was Ponderosa Pink. It was listed in the Orol Ledden and Sons 1930 catalog, and it hasn't been put out to pasture yet. Flavor is super, productivity is not. It seems Beefmaster VFN and Supersteak Hybrids are pacing for the lead as modern day versions. All are indeterminates.

A few more miscellaneous varieties are due some comment. Marglobe keeps its fans as it's a non-hybrid old favorite with smooth, firm fruit. Park Seed's introduction, Better Bush, has shown promise as a compact bush type sturdy enough to forgo staking. From Shepherd's Garden Seeds, two European types, Carmello and Lorissa, have both scored high in "blind" testing. European growers are closer to their markets; they can grow varieties too soft for our commercial shipments.

finishing the season

Winding up the season, try growing at least one Longkeeper, not the best in

flavor, but way ahead of store bought in late winter. If you're caught short, the farmers on the New Jersey side of the Delaware, I know, are growing Pick Red for the

Determinate and Indeterminate Tomato Varieties

A tomato variety is determinate (bush) if the vines make little or no growth once the fruit has set. They are not commonly pruned and are grown without support or on short stakes or cages. Determinates are preferred by canners as the fruit ripens over a short period from late July to mid-August. Examples are Celebrity or Springset.

Indeterminate (staking) varieties of tomatoes continue to grow until stopped by frost; examples are Ramapo or Early Girl. Many gardeners favor the longer ripening period — sometimes until November. Because indeterminates have a higher leaf-to-fruit ratio, they are often pruned for earlier ripening and higher yields. Left unstaked, they sprawl over a large area, so are usually tied to a sturdy stake and pruned to one or two main stems. All suckers are removed for single stem culture and only the first sucker is allowed to grow for the two-stem method. Caging, which is becoming increasingly popular, bypasses pruning entirely.

Most better catalogs do identify the type of tomato.

markets. It's a solid tomato suitable for canning as well as for salads.

It's no exaggeration to report on the lure of the first tomato or the annual ritual performed when it arrives every year. Nor would it be an overstatement to remind the readers in our Delaware Valley region of the great extended season we have in autumn. More often than not, the first frost is followed by a glorious Indian Summer. Simply by continuing minimal care in late summer and into early fall, we can harvest up to hard frost, which with luck won't come until November. Those last pickings are priceless. Hey! Maybe there's a story on the last tomato.

Tomato Seed Sources

Almost every garden catalog that carries vegetables includes tomato seeds. Here are the addresses for the firms mentioned in this article:

W. Atlee Burpee Co.
Warminster, PA 18991

Orol Ledden & Sons
Center and Atlantic Avenues
Sewell, NJ 08080
(also plants in season)

Park Seed Co.
Highway 254 North
Greenwood, SC 29647

Johnny's Selected Seeds
Albion, ME 04913

Shepherd's Garden Seeds
7389 West Zayante Road
Felton, CA 95018
(European seeds)

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

Early Plants from the Garden Center

At the garden center, seek out the healthiest tomato plants: stocky, thick of stem and uncrowded in the container. Avoid plants grown tall, thin and deep green from force feeding. Even early varieties should not be purchased until early April. Most main season plants should not be bought until late April.

Once home, immediately transplant deeper into larger containers. For early varieties begin conditioning outdoors in mid- to late April. Never assume purchased plants have been hardened off. Plants purchased with blooms are seldom as productive as later starts.

Unfortunately, plants purchased for extra early fruition often fail to survive the harsh early season and must be replaced. Be patient. Later starts catch up and sometimes pass sick earlier plants.



Although Guido de Marco gardens on a small lot in Ardmore, he's a farmer at heart.

A Lot of Tomatoes and Peppers and Fennel

In Italy, near Rome, he grew wheat, peaches, cucumbers, melons, tomatoes, fennel, celery and olives. In Philadelphia he grew tomatoes and peppers in plastic tubs, 42 of them staged on risers to catch as much sun as possible in the backyard of his small South Philadelphia house. In Ardmore he was able to dig up the lawn and plant tomatoes, peppers, fennel and celery on the corner lot. Almost every inch is planted and in August when driving by I noticed the tomatoes rising above the privet hedge on the front lawn.

Guido de Marco has always been a farmer at heart. He was born in Philadelphia in 1908 and returned to Italy with his parents when he was four months old. He came back to the country of his birth in 1954, gradually bringing over all but one of his six children. For 25 years he worked in the Campbell Soup Company's 11th and Catharine Street macaroni factory, and in

1984 he married Justine, a widow with a corner lot in Ardmore.

Guido's talents are many and one of my favorites is his ability to serenade his visitors on the accordion. He speaks little English, however, and my Italian is limited to a handful of words and much waving of arms, so we converse through Justine.

In his small plot, de Marco plants close, leaving only 2 - 2½ ft. between tomato or pepper plants. His plants are vigorous, the tomatoes carefully staked and some close to 6 ft. tall with masses of large fruits. The peppers are equally prolific and as they ripen Justine splits each one in half, removes the seeds and leaves them to dry on a wire rack outside for a couple of days. She then puts them in the oven, warmed only by the pilot light, to dry.

One of my favorite combinations in Guido's garden is the oleander in a wooden tub surrounded by pepper plants.



by Jane G. Pepper



Guido waters fennel in the growing house in August. The home-grown fennel is one of the starring vegetables during the Christmas holidays.

continued



Is music one of the secrets
of Guido's vegetables'
skyward growth?

Come winter the oleander shares space
with his crop of fennel in the small wood
and plastic growing house built for him by
his son, the contractor.

Guido sows the fennel in early summer
both inside the growing house and also in
a small wire enclosure outside. When the
frost comes he covers the plants outside
with leaves and covers the leaves with a
layer of plastic. Fennel is an important
vegetable for the de Marco Christmas
celebrations.

As Justine says "Guido loves his plants"
— all 120 tomatoes and 140 peppers — and
when I visited him in late summer he was
busy making preparations for the following
spring. A huge pile of horse manure lay in
the driveway waiting to be spread on the
garden after frost.



Jane Pepper is president of the Pennsylvania
Horticultural Society and writes a weekly gar-
dening column for the Sunday *Inquirer Books/*
Leisure Section.



Peppers in the foreground, tomatoes in the background. A phenomenal yield for a small suburban garden.

Edgar T. Wherry's

Hand-Colored Slides



by Marion M. &
William M. Flook



Edgar T. Wherry, circa 1925. Wherry was a soft-spoken man with a wry sense of humor. An early conservationist, he once described the vandals who dug up an entire stand of *Gentiana autumnalis* (the pine barren gentian) presumably for commercial purposes, as "a herd of *Swinus vulgaris*."

Dr. Edgar Wherry's enthusiasm for plants was such that in his 80s he would jump from a car almost before it had stopped moving and rush over to examine a plant he had spotted from the roadway. His knowledge of plant locations was so great that, when friends were driving him in his old age, he could lead them through twisting back roads to find stands of wildflowers he had located decades earlier. One friend, Josephine Breneman, says of him during this period: "He had lost the sight of one eye but he could see more with the other one than the rest of us all together. He had an eagle's eye for plants."

Edgar T. Wherry was well-known as a naturalist, ecologist and authority on native ferns and wildflowers. What many may not know is that Wherry was also a pioneer plant photographer, making hand-colored lantern slides of plant species in the 1920s and 1930s long before modern color film was available.

From 1915 to 1948 Wherry travelled extensively in the United States and in

Canada, photographing plants. Because practical color photography was not commercially available until the late 1930s, Wherry's photographs were black and white. While in the field, however, he took careful notes about the colors of his plant subjects, using a color comparison standard he had prepared from commercially available transparent dyes. Upon his return, his black and white negatives were printed on 3 1/4 in. by 4 in. glass plates, which he then meticulously hand colored using the same transparent dyes and following his field notes. The finished plates were bound into lantern slides, which he used to illustrate his lecture. If Wherry ever made a catalog of his slides it has been lost.

Dr. Wherry was a careful craftsman and the best of his hand-colored slides rival the results obtained with modern color film. His colors, in fact, are very likely more authentic than those that can be recorded without special expert attention on commercial color slide film, and his dyes are probably more permanent than the dyes

Edgar T. Wherry was born in Philadelphia in 1885 (d. 1982). He received his Ph.D. from the University of Pennsylvania in Geology and Mineralogy in 1909. He first worked at the Smithsonian Institution, then at the U.S. Department of Agriculture in the general area of geology. He married Gertrude Smith in 1914 and settled in Chevy Chase. About that time he became interested in plants, and with characteristic energy he soon became an expert. This interest, which quickly narrowed to native American wild plants, became the dominant factor in his life. He became this country's leading authority on ferns, on native phlox, and on native wildflowers, writing definitive books on each. He was a tireless writer: in his lifetime he published more than 400 papers on geological and horticultural subjects.

In 1930 he joined the faculty of the University of Pennsylvania as Professor of Plant Ecology and Soils, and moved back to the Philadelphia area. He was the first ecologist at the Morris Arboretum, a founder of Bowmans Hill Wildflower Preserve, and, in the 1950s, a member of the faculty at the Arboretum of the Barnes Foundation. He was the first editor of the *Bulletin* of the American Rock Garden Society, and also served as editor of *Bartonia*, the Journal of the Philadelphia Botanical Club.

Original slides taken and
handpainted by
Edgar T. Wherry.
Copies of
glass slides by
William M. Flook.

continued



Tiarella wherryi (now called *T. cordifolia* v. *collina*): Tennessee, probably 1933. "My first find" (of a new species discovered by E.T.W.).

used in present day color transparencies. One thousand four hundred and eleven of these hand-colored glass lantern slides have survived, plus about 400 more uncolored plates. Most of the uncolored ones are snapshots of people and scenes, duplicates, or photograph discarded because of poor quality.

Besides photographs of plants in the wild, Wherry prepared numerous distribution maps of plant species in the United States and Canada. These maps were carefully prepared, photographed, and also bound into lantern slides. They represent a valuable record of plant distributions in the first half of this century. His range maps of Pennsylvania plants appear in the *Atlas of the Flora of Pennsylvania*, Edgar Wherry, John Fogg, H. A. Wahl, Morris Arboretum, Philadelphia 1979.

In the fall of 1985 we undertook the work of sorting, numbering and classifying Dr. Wherry's slides, which were found in various storage locations at the Morris Arboretum by Milton Laden. Laden, a friend and admirer of Dr. Wherry's, has been ferretting

out correspondence and other materials relating to Wherry's long, productive career. The discovery and reassembling of the hand-colored slides completes an essential part of the Wherry archives. We sorted through more than 1800 slides grouping them into genus and species as they arrived. The slides were numbered, then stored in numerical order in groups of 80 in wooden file boxes made for the purpose.

Dr. Wherry had labelled many of the slides by genus and species (using nomenclature current at the time), as well as by date and location. Once in a while a touch of Wherry humor would show up, as in the case of a picture of some small plants in an expanse of gravel. Wherry's label reads: "Starring the gravel." Going through the labels on the 1809 slides that have survived one is struck with the number of out-of-the way places Wherry visited in search of plants — he was not a person who stuck to the beaten path. His labels are filled with places like Cutler, Florida; Black Creek Falls, Alabama;

Pringle, South Dakota; and Bear Creek, Tennessee.

We entered the information Wherry had put on his slides into a computer data base: genus, species, location, date, whether the slide was a distribution map or a plant, and any other explanatory notes. The computer sorted the information into 10 different categories: slide number, genus and species (alphabetically) using Wherry's nomenclature, by state (or province), by date, and so forth. At the suggestion of Dr. Richard Lighty of the Mt. Cuba Center, Wherry's nomenclature was corrected to conform with the latest usage as listed by J. T. Kartesz & R. Kartesz,* and a separate computer printout was made of these corrections. Wherry's original slides are stored at the Morris Arboretum, and copies of the computer printouts are on file there and at the Academy of Natural Sciences in Philadelphia.

*Synonymized Check List of Vascular Flora of the United States, Canada & Greenland. Vol. II Biota of North America, University of North Carolina Press, 1980.



Gentiana autumnalis: New Jersey Pine Barrens, date unknown. The rare pine barren gentian, mentioned in text.



Phlox missoulensis: Missoula, Montana, 1948. One of Dr. Wherry's last hand-colored slides.
the green scene / january 1987

About 400 of Dr. Wherry's glass lantern slides had been copied in 35mm format in the 1970's under the direction of Gottlieb Hampfler, who was then the staff photographer at Longwood Gardens. These are slides that Wherry himself had chosen as being among his best and most important work, and included many ferns and other wild plants.

Our work included making one copy of each of the originals copied at Longwood, and two copies of all the other hand-colored slides. The copy work was done using a photographic copy stand built for the purpose, using natural sunlight as the light source to reproduce the color as closely to Dr. Wherry's original as possible. A complete set of Kodachrome 35mm copies, including all the Longwood slides, was delivered to the Academy of Natural Sciences, and another complete set to the Morris Arboretum.

We hope that the sorting, classifying and copying of Dr. Wherry's photographic work, and the proper storage of his originals in the archives at the Morris Arboretum will contribute to the lasting memory of this eminent Philadelphia plantsman.

Marnie Flook is a former vice-president and director of the American Rock Garden Society and past chair of the Delaware Valley Chapter. She was Guest Editor of the Brooklyn Botanic Garden *Handbook on Rock Gardening*. She has written articles for the *Green Scene*, *Organic Gardening*, the *Winterthur Museum and Gardens Newsletter*. She wrote the *Avant Gardener* special issue on Rock Gardening.

Bill Flook is a retired physicist who has had a lifelong interest in photography and its technical aspects. He holds gold and silver medals from the Wilmington, DE, Camera Club and has lectured on techniques of plant photography.

Joanna Reed's Crewel Seasons



by Anne S. Cunningham



One of Joanna Reed's many sized hoops used for stitchery; they range from four to 12 inches in diameter. The pedestal can be lowered or tilted. It is especially useful for stitches that require one hand on top of the material and one hand beneath.

Joanna Reed looks up from her herb garden, wipes her hands on already grimy pants, gathers an armful of clippings and shoves them into a crowded wheelbarrow. "About my curtains," she says, pushing the wheelbarrow toward the barn, "some of the flowers are gems, others are just stitches."

Ostensibly Reed's crewel work shows plants in four seasons, but just as medieval tapestries told a story, Reed's crewel

curtains reflect much about her life since she started them 17 years ago. Her needlework proclaims a passion for horticulture, augmented by an artist's eye. Details of the embroidered buds, flowers, leaves, pods, and cones are crafted as knowledgeably as are the extensive gardens outside.

With the friendship and guidance of Laura Barnes Reed began gardening in

1942, studying at the Arboretum of The Barnes Foundation. "Mrs. Barnes made it sound possible for anyone to have a garden," recalls Reed, "and I couldn't wait to get started. At the Arboretum, I learned propagation from Dr. Henry Skinner, and I studied with Dr. John Fogg. I've forgotten a lot, and killed a lot that Mrs. Barnes gave me, or let plants be eaten by sheep, horses, dogs and lawn mowers, but I keep working away at it."

Reed's passion for gardening led her to prominence in the horticultural world, as president of The Herb Society of America, and designer of a Specialty Herb Garden at the National Arboretum in Washington, DC. But in the 1960s, she developed severe osteoarthritis and had to stop gardening. The pain blanketed her back and right side, but mercifully didn't extend to her fingers.

She turned to crewel work, a skill she'd always admired but never had time to learn. "I took it up as a self-taught project while visiting friends," she says. "My hostess told me about classes. What she was really telling me was that I should take lessons." Reed signed up for classes at a nearby studio where crewel embroidery with wool is taught as an art form with all the subtleties of an oil painting. She has taken classes intermittently since then to sharpen her skills.

Her artistic instincts, enhanced by two years of art school training in Philadelphia in the 1930s, came to the fore, and she decided to tackle a major project: crewel living room curtains, four panels representing the four seasons. She chose a Jacobean design full of fancy stitches for an imaginative garden that would have been



◀ Hundreds of french knots depict the central flower, goldenrod (*Solidago canadensis*). The gray berried shrub is *Myrica pensylvanica*, bayberry; the blue berried shrub is swamp holly or inkberry (*Ilex glabra*.)

The *Magnolia tripetala* leaves are shaded chain stitch. The pod, one of nature's marvelous color combinations of raspberry rose and vermillion is worked with buttonhole and satin stitches.

Joanna Reed works on a panel.

elaborate but not realistic. When she described the plan to her husband, he persuaded her to drop it in favor of realistic plants because she has such a vast knowledge of them. She loved the challenge and set out to "paint" her flowers and berries with wool.

Reed distinguishes shapes by intricate variations of color rather than by outline or contour. Instead of using the coloring-book or popular kit approach of filling in an outlined object, she almost literally paints it, stitching freehand. A catkin, for example, evolves from subtle shades and unedged laid work. Or she roughly bastes tree trunks and large branches to remind herself where they should lie. A leaf may look as if it falls across a branch, but she never embroiders one pattern on top of another. By keeping the work light, the material moves freely and enhances the feel of a breezy garden, rather than a stiffly woven pattern of plants.

Shading, particularly soft shading, is Joanna Reed's greatest skill. The extremely subtle progression of colors is possible because she uses Appleton wool, an expensive fiber made by a small family-held company, Appleton Brothers of London. More than 400 colors are available on carefully numbered cards with color families grouped together. The colors are sophisticated old world European, with only a few vibrant modern shades.

She works from models in nature as she would for a painting, choosing a flower or plant that interests her, adding touches of color as she goes along. She picks a flower and keeps it in a vase in front of her while she stitches, or sketches it on paper to become familiar with the lines and flow. "It





Looking at the embroidery from the top of the photo, a single peony is framed by a sprig of creeping jenny or creeping charlie, *Lysimachia nummularia* (by either name it creeps with reckless abandon), and a blossom of *Laburnum*, the golden chain tree. *Ajuga reptans* is above the *Rhododendron periclymenoides* and sweet woodruff, *Galium odoratum*. The dark round seed pod is skunk cabbage, *Symplocarpus foetidus*, which has the appearance of carved wood. May apple, *Podophyllum peltatum*, hopefully is recognizable. At the base of the tree trunk is a bloom of *Shortia galicifolia*, oconee bells from the Appalachian mountains; *Polygonatum biflorum*, solomon's seal; *Muscarii*, grape hyacinth, and the unfurling croziers of *Onoclea sensibilis*, the sensitive fern.



From top to bottom: white swamp oak and acorn (*Quercus bicolor*); a bare branch of scrub oak (*Quercus ilicifolia*) contrasts with the solid seed pods of *Paulownia tomentosa*. *Daphne mezereum* gives us fresh pink blossoms when the rich red seed pods of staghorn sumac (*Rhus typhina*) begin to dull in late winter. The oval green cone and needle-like foliage are *Cedrus atlantica glauca*, above a truss of *Rhododendron maximum* leaves with a flower bud and spent seed case. The bright red fruit on the left is *Malus zumi calocarpa*, which holds its color until late March. A spray of *Clethra alnifolia*, sweet pepper bush accents the prickly density of a chestnut burr above the winged seeds of *Acer negundo*, known commonly as box elder. Next is one of winter's jewels, *Hamamelis mollis*, the Chinese witch hazel, with its ribbon-like flower petals and open mouthed seed capsules. Another oak, the black *Quercus velutina* and its acorn; the white cedar, *Chamaecyparis thyoides* and *Pieris japonica* in bud come next. Lastly is a winter look of the *Magnolia tripetala* pod and the showy fruit and prominent winter buds of *Viburnum setigerum* or tea viburnum.

helps to know the plants," she muses. "As much as I look at flowers I'd never think of petals falling down that way when they're almost over. I like to have one in bud, one in bloom, one going by." With the flower in front of her, she holds the wool up to it, noting the colors that really appear – not those she expects. When stitching a lilac, she was surprised to find no color really matched, so she decided she'd better "make it interesting, if not accurate."

Winter was the first panel. She took the curtain on trips, stitching and occasionally picking native flora as they attracted her. She points with fondness to a piece of scrub oak from Colorado, a rose and meadowsweet from Maine. As she recovered from her arthritis, she stitched spring and summer panels. She began gardening again, and the panels reflect her pleasure. Spring has touches like the fruit pod of a skunk cabbage and a cabbage moth. Because she works directly from models, she was happy to be able to include a realistic bee "who had the courtesy to die mid-flight."

Now that the last panel, fall, is almost finished, Joanna Reed is looking forward to her next stitching project: crewel work bed hangings. She gardens full time again, cooks extraordinary herb-based meals for large and small groups, lectures, writes, and stitches. Begun as a surrogate for gardening, crewel became yet another passion. At 69, she enjoys having several projects at the same time, so she can work on whatever fits her mood, not force herself through a tedious problem when she's not ready to conquer it. "In theory I should finish one thing before I go on to another," she says, "but I never do. I always have at least three things going on at once, and in the end, I think I get more done that way."

(Portions of this article are reprinted with permission from *Threads*, a textile and fiber art magazine, published by The Taunton Press, Box 355, Newtown, CT 06470.)

Joanna Reed received the PHS 1985 Distinguished Achievement Medal.

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Anne Cunningham is a writer specializing in horticultural subjects. She has written for the Philadelphia *Inquirer*, several national magazines and is a frequent *Green Scene* contributor.



Although impatiens plays a large role in any deep shade garden, fuchsia, philodendron and other house plants also complement the fountain. Water lettuce floating on the surface, along with several submerged pots of grasses, enhances the effect.

photos by John Gouker

photos by Colin Franklin

building a fountain that goes with the flow



by *Stephanie and Charles Andrews*

Although we like to think we are eminently sensible people, our fountain had no advance planning. We had no image of how it would turn out, certainly no sketch of it. We began by occasionally commenting that it would be nice to have a splashing, watery sound in the garden in the heat of summer.

The fountain actually began to build itself well before we recognized it for what it was. The retaining wall, supporting the property line fence, was bulging. If not repaired, it would eventually fall down. The project: fix the wall.

A slightly different thought, however, began to creep into the conversation. Suppose we keep that bulge. Repair it, of course, but if we leave the bulge and build another bulge going the other way on the back side of the wall, we would have a basin that could hold water. Soon the word "fountain" began to dominate our conversation.

Luckily the wall had bulged in a centrally located spot easily visible from the long, plant-filled porch where we spend our summers. That location led us to visualize a fountain construction, central to the garden and around which colorful flower beds would be arranged.

We began to look around to see what kinds of fountains were possible. At first, we vaguely envisioned a stream of water issuing from something mounted on the fence above the basin. We looked at lion heads, sun faces, little boys, mermaids, jars, jugs, all pointing water at a pond. Somehow none of these worked for our garden.

After our search, we began to consider the idea of a lower second pool at ground level. We had plenty of materials to work with. The wall was built, as was our house, of the same prolific Wissahickon schist that

we had strained to pry up from almost every square foot of our flower beds and piled at the rear of the yard. What better use for it than to build a lower pool and let the water fall from the one to the other.

But a lower pool required further research into construction: foundations, drainage, pumps, plumbing. The Pennsylvania Horticultural Society library staff helped identify pertinent books. At this point we thought we would need to have the water fall upon copper pans to give the proper splashing noise. Although we opted for another solution, the final fountain still has unused pipes embedded in it, intended as bases for pan supports.

Fortunately, before we finished the upper pool we remembered to cement in a pipe through which the water could be pumped from the pool below.

While digging for the lower pool, we discovered that the entire area rests on massive stones, fitted together some 15 in. below the surface. These stones cover an abandoned cistern. Our property was originally joined to our neighbor's; the house was on that property while the stable was on ours. In the early years of the century when these structures were built, a soil line fed into the cistern from the house. We unearthed pieces of the soil pipe during the excavation. With this discovery our drainage questions were resolved. We cemented in a drain pipe, extending from the bed of the pool down through the stones, into the cistern. Draining it dry for the winter is easily accomplished in a few minutes.

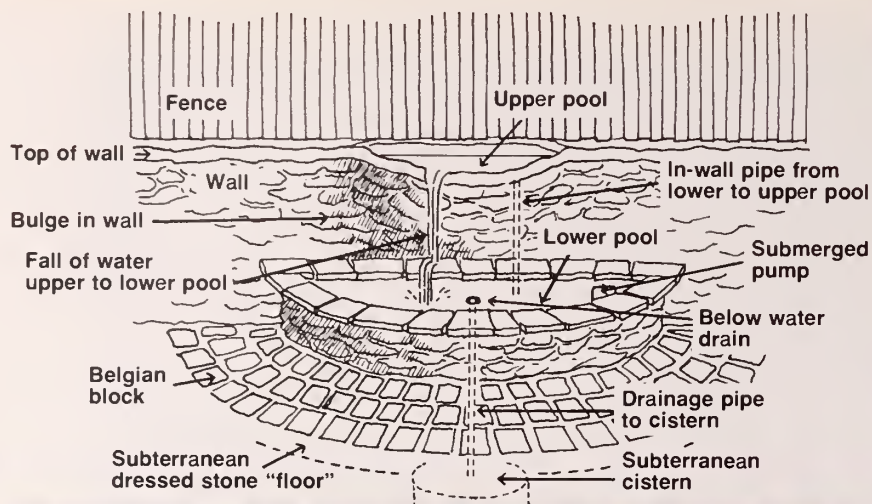
Until the foundations were complete, and even the wall of the pool largely constructed, we planned to finish off the top with the schist we used during construction. But as we started visualizing the plants we would place there, and pos-

sibilities for seating (too wet), we decided on a smooth slate ledge to finish off the pool wall.

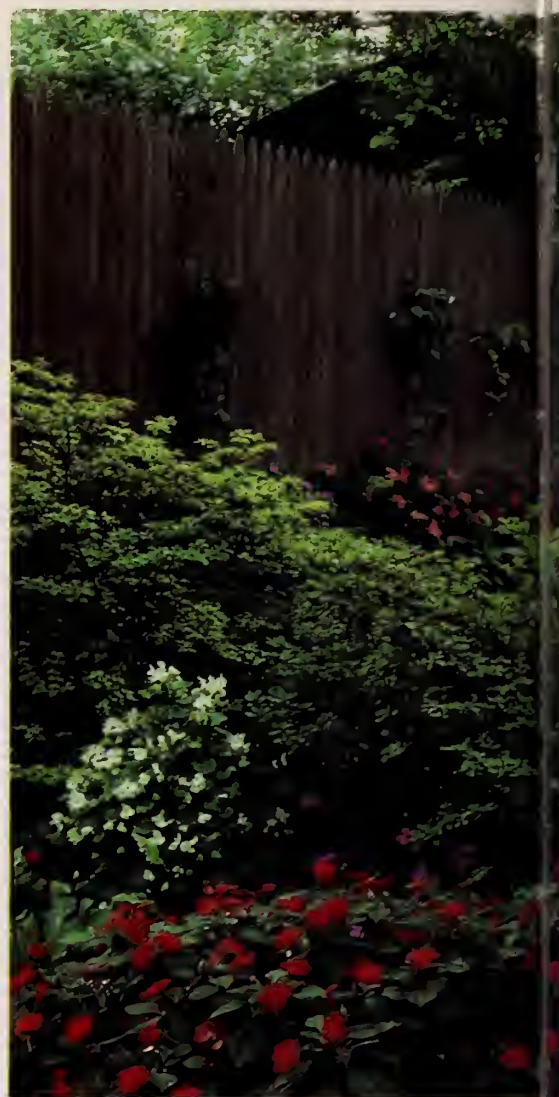
It was at this point we relinquished the idea of copper pans to give the proper sound. Slate showed us our mistake. When both pools were complete, when water had been hosed in, when the pump was turned on and the upper pool began to spill its water onto the slate ledge below, we realized that the pattern of the water as it splashed and spread over the slate, dripping at uneven intervals into the pond, sounds and looks perfect.

We liked it. The appearance seemed so natural. It almost seemed as if the pools were built years ago as part of the wall, or as if they had been there to slake the thirst of passing deer when Mount Airy was still a forest.





A close-up of the fountain. The slate replaced an earlier plan to have copper pans provide proper splashing noises.



The Belgian block was an afterthought. During construction of the fountain we had, of course, ruined the lawn in the area. Even more pertinent, we had discovered a pile of damaged and broken block, which some contractor had dumped on a deserted street near the airport. Since it would cost the City taxpayers' money to remove and trash the stone, we volunteered to move it; hence the semi-circle around our fountain.

the plantings

Although the wall chose to bulge in a central location, it also chose one of the shadiest spots in an already shady garden. This, of course, greatly modified the selection of plants we could put there. No variety of water lily that we have discovered can flourish there. We are now trying a plant we only know as water lettuce, which floats as lovely light green leaves on the pond surface. We have had some success with placing potted grasses in the water for the growing season, sticking them thereafter in the ground to last out the winter. By now



As it surrounds the former stable, the garden provides a sense of tranquility and rural living in the midst of the busy city. The porch on the right is central to the family's summer living and dining enjoyment.

ground geranium has intruded between the Belgian blocks; English ivy and Virginia creeper climb the wall and fence. In spring the fountain is flanked on each side by wild flowers – trillium and American columbine and shade loving bulbs. In summer, glossy abelia, impatiens, begonia and birds foot violets take over. Nestled in against the wall, the fountain creates the effect we had hoped for, balancing the shaded perennial bed across the lawn.

We gave the perennial bed, unlike the fountain, a degree of advance planning. It also had a bit more sun – two to three hours. We double-dug and planted a variety of perennials. Even here there was trial and error, however. A number of species simply can not thrive in our shady environment; many of our original plants now live with friends and neighbors as a result. But we are glad to find that phlox, forget-me-nots, monkshood, clematis, lady's mantle, globeflower, salvia, lythrum, Japanese anemone and purple coneflowers are well and happy with us. In the "sunniest" part

of the garden (maybe three hours and a quarter) we have glorious marigolds that reach their peak only at the very end of the summer.

Perhaps it would have been better to have thought out the fountain construction before we started. Our false starts slowed the work. On the other hand, we rather like the idea that the fountain evolved out of a wall, some slate and two rock piles.

It gives it a special personality.

Stephanie Andrews is a health care administrator in Lawrenceville, New Jersey; Charles is a project manager with the Philadelphia Redevelopment Authority. As amateur gardeners they have had four summer seasons in which to bring their flower garden to its present colorful state. In 1985 it won second prize in the PHS City Gardens Contest (large individual flower gardens category). In 1986 it won first prize as well as the Eugene E. Smith Memorial Award for the best individual flower garden in the City Garden Contest.

Plants Around the Fountain

Common Name	Botanical Name
abelia	<i>Abelia x grandiflora</i>
begonia	<i>Begonia evansiana</i>
bird foot violet	<i>Viola pedata</i>
English ivy	<i>Hedera helix</i>
geranium	<i>Pelargonium</i> spp.
impatiens	<i>Impatiens</i> spp.
trillium	<i>Trillium grandiflorum</i>
Virginia creeper	<i>Parthenocissus quinquefolia</i>
wild columbine	<i>Aquilegia canadensis</i>

Plants in the Perennial Bed

Common Name	Botanical Name
clematis	<i>Clematis x jackmanii</i> and <i>Clematis vitifolia</i>
forget-me-not	<i>Myosotis laxa</i>
globeflower	<i>Trollius europaeus</i>
Japanese anemone	<i>Anemone japonica</i>
lady's mantle	<i>Alchemilla</i>
lythrum	<i>Lythrum salicaria</i>
marigold	<i>Tagetes</i> spp.
monkshood	<i>Aconitum napellus</i>
phlox	<i>Phlox paniculata</i>
purple coneflower	<i>Echinacea purpurea</i>
salvia	<i>Salvia farinacea</i>

PRUNING INDOOR TREES



by Joan and Robert Feuer

Have you ever noticed that the plants featured in decorating magazines are placed for photographic effect rather than in optimal growing conditions? You can't blame the artistic directors, who are paid to produce eye-pleasing results rather than horticulturally accurate information. Homeowners endeavor to select the proper plants for their growing conditions so the plants will do as well as possible.

One of the most popular indoor plants is *Ficus benjamina*, the weeping fig, which many people have great difficulty keeping alive, let alone in good condition. You can find a listing of its cultural conditions in any book on houseplants, with one exception; pruning. Pruning this indoor tree properly is nearly as critical as providing the correct amount of water. Even books devoted entirely to pruning techniques rarely mention the indoor specimen. While some of the same principles for outdoor pruning hold true, there are differences. First and foremost, the indoor tree will be confined unless you have a cathedral ceiling with an opening skylight at the top. The indoor specimen does not develop the resilience outdoor trees need when the constantly moving wind strengthens their branches. And it is important to create and maintain balance between leaf area and the root ball confined to a container. Using popular *Ficus benjamina* as an example, let's examine the best way to prune.

First, good pruning requires good tools. Buy a pair of razor sharp pruners for your indoor trees. We prefer the kind with narrow, curving blades that will fit in limited spaces. For small twigs, sharp scissors are preferred. Pruning paint is unsightly and unnecessary. Neutral colored twine or monofilament fishing line is excellent for tying up weak branches.

Ficus benjamina is related to the rubber tree and has milky latex-like sap, which tends to seep and spatter, staining just about everything it touches. Prune a small specimen over newspaper; use a dropcloth for larger trees. If you inadvertently spill sap on carpet or furniture, blot it immediately. Do not rub. Should you miss a spot, use a good commercial solvent like acetone to remove it. Soap and water

are ineffective. A word of warning here. Many people react conversely to *Ficus* sap on their skin. If you don't like the sap, wear gloves, and if pruning above your head, protect your eyes. Dried sap on clothing is permanent; nothing will wash it out.

looking the plant over

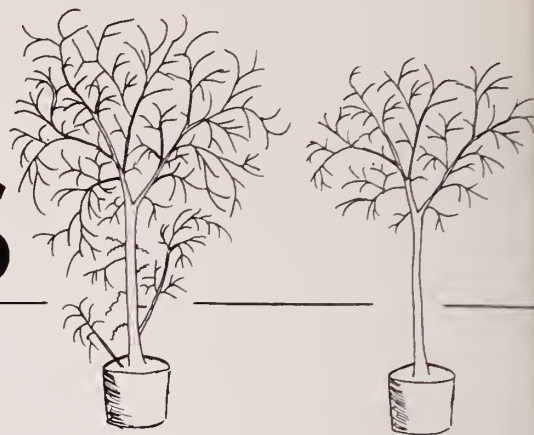
Sometimes newly purchased specimens of *Ficus benjamina* look more as if they were fresh from the jungle. Aerial roots from the main stem poke out at odd intervals; branches point at odd angles and are a matted mess. A tree in this condition will require major work. Try to buy your *Ficus* during its active growing season, early spring to early fall. While the weeping fig grows year-round, the growth slows dramatically during the short days of winter and you can shock it badly if you prune drastically at this time. *Ficus benjamina* should be a graceful tree, fairly symmetrical, branches upright with drooping leaf tips. Begin by removing dead branches and twigs and aerial roots with a diameter measuring a quarter inch or less. The easiest method is to grip the trunk with a gloved hand and strip downward. Use pruning shears on larger roots.

dimensions

Decide how tall you want your tree to grow. If it has not yet reached that height do not touch the leaders. If it is taller than you wish, examine the leaders carefully and cut at a point approximately 10 in. below desired height. Make sure you cut at a spot where smaller branches emerge. You do not want a bare stick protruding above the leaves. The next constraint is diameter. An indoor tree should be freestanding, not jammed into a wall or cabinet. Contact with solid surfaces will damage leaves. Again, examine the branches critically and make cuts 8 in. to 10 in. back from terminal twigs.

shape

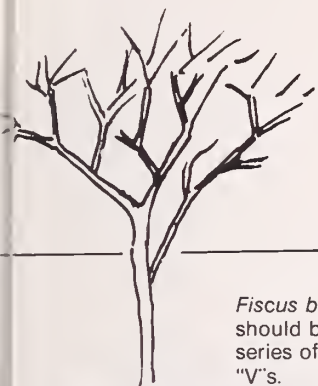
Ficus is at its best as a formal ball with wispy, downward pointing terminal twigs. If your decor requires an abstract or angular specimen to mimic a painted screen, choose



1. Before: This potbound tree has outgrown its living space.

another plant, e.g. Balfour aralias. Balance is essential. A tree extends 360° and should be pruned accordingly. If there is room, walk around it as you cut or turn the tree from time to time. What looks good from one side may damage the other dramatically. *Ficus* should be pruned in a series of ascending V's (see diagram), proceeding from heavy wood to the finest twigs. First, remove any branch along the main stem which does not conform to this "V" shape, i.e., branches emerging at the horizontal or pointing downward. Should any branch be marginal (near the horizontal or just slightly above), a reduction in leaf weight or thinning may be all that is necessary. Keep in mind that everything you remove from the tree will reduce branch weight and lift the branch slightly. If you find a branch you consider critical to tree shape but which falls into this marginal category, tie it with twine or monofilament. Once you reduce its weight, it is possible that particular branch will grow in the more upright position. Leave twine on for four to six months without disturbing, then remove

photos by Nanci Walsh and Charles Cresson



Ficus benjamina should be pruned in a series of ascending "V"s.



2. White milky latex, exuding from cuts, is harmless to the tree but can stain skin and clothing.

to check branch position. If it has hardened off in its new location, fine. If not, reduce weight and retie. Note: some branches refuse redirection, no matter what you do. If necessary, they can be tied permanently. The branches should be independent rather than overlapping, to provide a trace of air throughout. This does not mean large gaps in the canopy. If your specimen arrives looking like swiss cheese (and most do), these gaps can be filled with judicious pruning. Remember that each branch will grow in the direction of the last remaining twig. To fill a gap, merely cut back on a branch until you find a twig pointing in the correct direction. Make all cuts as close to the main stem as possible. Stubs are unsightly and, once calloused over, are sharp enough to slice through the skin.

Once the major branches are cut to your satisfaction, it's time to begin on the finer pruning, using either shears or scissors. Inspect each branch and weed out twigs that criss-cross, leaving behind the one that follows the shape you want. Terminal twigs should come

continued



3. Root Pruning: Remove the outer inch or so from the sides and bottom of the root ball with a sharp knife.



4. After root pruning there is space for fresh soil in the original container.



5. After: Reduced in size and repotted, this tree will again enhance its place in the home.

from the underside of the branch. This provides for the graceful droop that gives weeping fig its name.

maintenance pruning

Once the tree is established into a particular conformation, it will only be necessary to do minor pruning from time to time, probably every other month or so. This is a simple matter and requires only clipping back terminal twigs as they grow too long. Occasional thinning may also be necessary since new twiglets may sprout at any location. Even the best kept specimen will grow suckers from the trunk; remove these before they become established. In this manner, it is possible to keep *Ficus benjamina* indefinitely in one

location.

root pruning

Ficus, like many woody-stemmed plants, can be maintained in the same size pot for years. It is, however, a good idea to unpot it every few years and cut away the outer inch or two of roots and soil, adding fresh soil to replace it. If you want to place the tree in a larger container, the old root ball must be scarified in order to promote growth into the new soil. This may be done by cutting away the outer inch of the root ball with a sharp knife as if you were going to leave it in the same pot. Alternately, you may slice through the current root ball with the tips of your pruning shears. One inch intervals are recommended. Don't

forget to scarify the bottom of the root ball. The idea is to damage the root system, forcing new growth and extension. If this is not done, you will wind up with a compact ball sitting like a lump inside a great volume of fresh soil. Often, water will simply channel through the new soil without supplying the roots with needed moisture.

An indoor tree can be a decorator's delight or a decorator's nightmare. The choice is up to you.

Robert Feuer is a free-lance ecologist and writer. His articles on plants and their care have appeared in several magazines and newspapers. Joan Feuer has worked in a greenhouse, as an interior landscaper and as a biochemist.

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1 Date of Filing: October 28, 1986 2 Title of Publication: The Green Scene 3 Frequency of issue: bimonthly 4-5 Location of Known Office of Publication and Headquarters: 325 Walnut Street, Philadelphia, Pa. 19106 6 Names and Addresses of Publisher and Editor: Publisher - Pennsylvania Horticultural Society, Philadelphia, Pa. 19106; Editor - Jean Byrne, 325 Walnut Street, Philadelphia, Pa. 19106 7 Owner: The Pennsylvania Horticultural Society, Philadelphia, Pa. 19106 8 Known bondholders, mortgages and other security holders holding one percent or more of total amount of bonds, mortgages or other securities: None 9 Extent and Nature of Circulation

	Average No. Copies Each Issue During Preceding 12 Mos	Single Issue Nearest to Filing Date
A Total No. Copies Printed (net press run)	11,146	11,376
B Paid Circulation		
Sales through dealers and carriers, street vendors and counter sales	431	526
Mail subscriptions	10,192	10,537
C Total Paid Circulation	10,623	11,063
D Free distribution by mail, carrier or other means, samples, complimentary and other free copies	174	170
E Total Distribution (sum of C and D)	10,797	11,233
F Copies not distributed: Office Use, left over, unaccounted, spoiled after printing	349	143
Return from news agents	0	0
G Total (sum E and F should equal net press run in A)	11,146	11,376

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A natural pond in the Sinkler garden. See page 10.

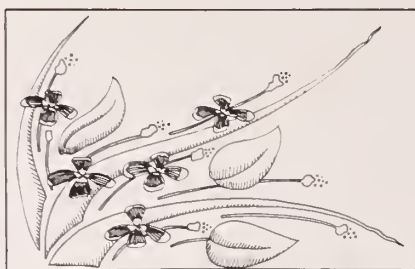
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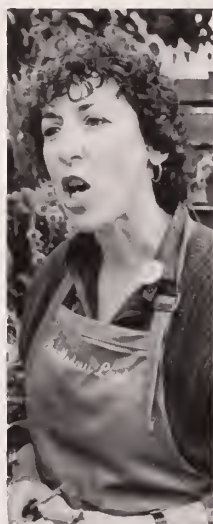
Elbow Deep in Flowers.
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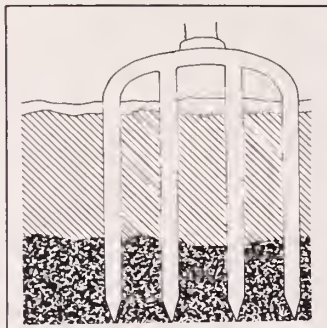
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Front cover: On a hot July day flower designer Cheryl Monroe works with more than a thousand flowers of all sizes and shapes to create a floral setting for a friend's wedding. See page 4.

photo by John Gouker

Back cover: photo by Jennifer Platt

CORRECTIONS: green scene/march 1987

Whoooooops – who shot it

Colin Franklin, take a bow. An enthusiastic stripper at the printers sliced Colin Franklin's name from his beautiful photographs of transformed city gardens on pages 4-12. Colin's photographs truly caught the spirit of those special city gardens.

Captions were reversed on page 23 between *Gentiana autumnalis* and *Phlox missoulensis*. Thanks for catching it goes to Marnie Flook (with apologies to Dr. Wherry).

Volume 15, Number 4

March April 1987

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Designer: Julie Baxendell, Baxendell / Lambeck Associates**Separations:** Lincoln Graphics **Printer:** Havertown Printing

THE GREEN SCENE, (USPS 955580) Volume 15, No. 4, published bimonthly, January, March, May, July, September, November, by the Pennsylvania Horticultural Society, a non-profit membership organization at 325 Walnut Street, Philadelphia, PA 19106. Subscription: \$8.50 – Single Copy: \$1.50. Second class postage paid at Philadelphia, PA 19106. • **POSTMASTER:** Send address change to THE GREEN SCENE, 325 Walnut Street, Philadelphia, PA 19106.

* Pennsylvania Horticultural Society, 1987

Green Scene subscriptions are part of the membership benefits for

Pennsylvania Horticultural Society

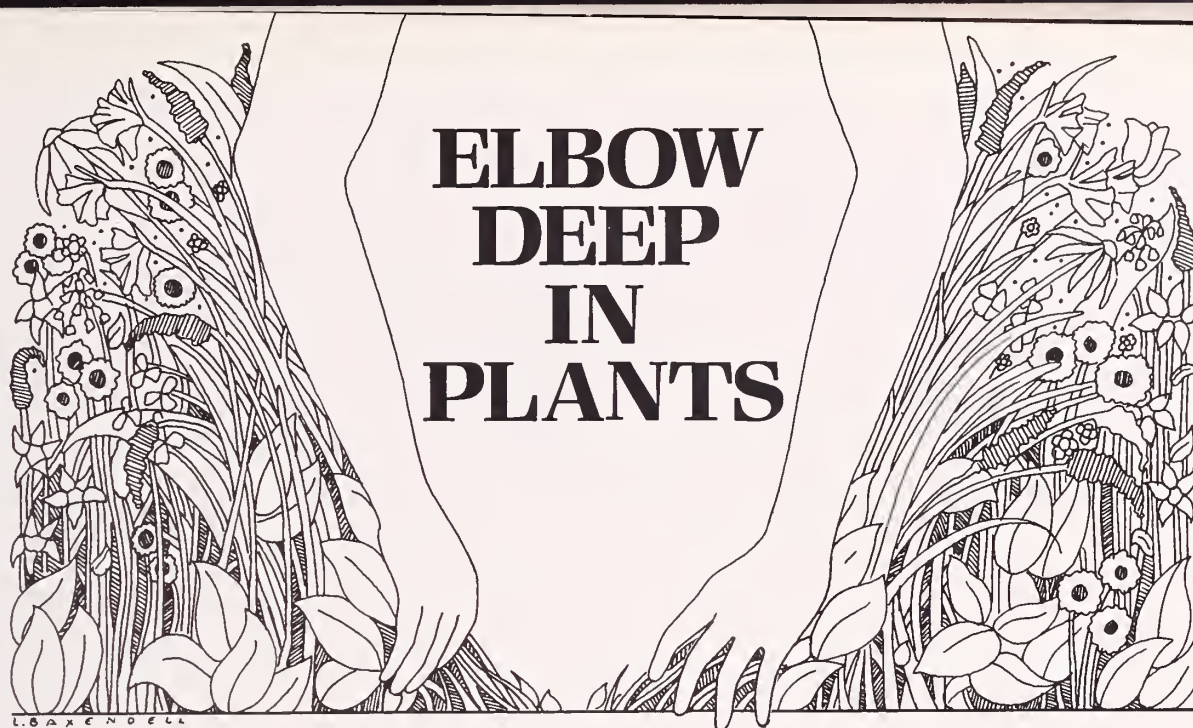
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Putting this issue together, I felt I was traveling at high speed, because I was so swept up by the energy of several of the horticulturists whose stories are told here: Dick Lighty, Rosemarie Vassalluzzo and Cheryl Monroe. Not only is their energy apparent, but their interest, experimental styles and their standards reveal people who are patient, committed and willing to stay elbow deep in plants.

Claire Sawyers, who studied with Dick Lighty as a Longwood Fellow, and who now works with him as he directs at Mt. Cuba Center, shows us the private side of Dick Lighty, gardener. Lighty, who worked for 16 years as the coordinator of the Longwood Graduate Program, has helped to mold the presidents, directors and curators of some of the major horticultural organizations across the United States. Each spring the Longwood Fellows visited Springwood, where Dick's garden inspired and increased their own enthusiasm and taste for plants. Claire tells us that Dick modestly considers the more than 5,000 plants in his private garden a low maintenance project. If that's low maintenance, I'll eat my aspidistra.

We're delighted to have Rosemarie Vassalluzzo's pointers on pressed flower pictures in this issue of *Green Scene* in time for the Flower Show. But don't look for her pressed plant designs this year; she's judging the pressed plant design class. She'll be exhibiting in the Horticult and else-

where, however. Rosemarie is a four-time Grand Sweepstakes winner at the Philadelphia Flower Show. The Grand Sweepstakes is awarded for a combination of points for horticultural and artistic class ribbons. Last year Rosemarie won 51 ribbons (first, second, third and honorable mention) for 66 entries. She manages to exhibit along with her writing responsibilities for several Bucks County newspapers and to maintain a garden bursting with plants.

We assigned photographer John Gouker and writer Ann Jarmusch to follow Cheryl Monroe around as she prepared to create her unique floral designs for a friend's wedding. Cheryl acknowledges that arranging is for her a high on a par with the delights of Christmas; she particularly enjoys mass arrangements and a hotel ballroom or cathedral is as comfortable a backdrop for her designs as her own coffee table or the dais at the Flower Show Awards luncheon. Not only does Monroe juggle a full-time job as administrations coordinator at the Pennsylvania Horticultural Society, she is a passionate gardener whose idea of fun is to debate nomenclature and design principles with her husband, Thomas Monroe, wherever they might be, on the highway, at the Flower Show or in a garden.

Who ever said a gardener's life was serene. Listen to our authors, grab some zest along with your spade and let's go.

Jean Byrne, *Editor*



Elbow Deep in Flowers



by Ann Jarmusch

photos by John Gouker

Cheryl Monroe creates her unique arrangements gathering Queen Anne's lace from the roadside as well as selecting more exotic flowers at local wholesalers.



Monroe selects a variety of cut flowers from the cold storage at Wild Flowers Quality Wholesale in Linwood.

Last July Cheryl Monroe carefully selected, cleaned, wired, arranged, transported, coaxed, and babied hundreds of dollars worth of dazzling flowers for a friend's wedding. Her work with these flowers was her gift to the betrothed. At 6:30 a.m. on the Friday before the Sunday ceremony, she arrived at her favorite flower wholesale house to complete her order. By noon on Sunday, she was a composed, if not so cool, wedding guest, viewing her just-finished creations from the guest's side.

Much of what happened in between was directed toward fulfilling the expectations of the bride, the groom, their families and Monroe herself for the perishable floral accents on a very special day.

Temperatures in the 90s caused Cheryl considerable worry, since, as a freelance floral decorator and designer, her facilities are limited. Making matters worse, Wild Flowers Quality Wholesale, Inc. is closed on Saturdays during the summer, so her order was to be delivered a day early. Monroe solved this problem by arranging for scores of fresh flowers to be stored for the day in the cooler at the nursery where her husband Thomas works. Putting their full-time jobs aside for the weekend, the

couple spent Friday evening at home surrounded by colorful bunches they cleaned stem by stem.

Saturday's agenda included racing back and forth between flowers they hoped were staying cool in the crawl space under their house, the den and garage, with Milo, their big dog, keeping pace. It was a minute-to-minute challenge to encourage some blossoms to open just the right amount and others to stay closed for one more day. In between, the Monroes potted 150 annuals in mossy clusters so that healthy handfuls of begonias, impatiens and marigolds would enliven the reception dining tables.

Monroe's arrangements turn heads in part because she usually combines fancy imported hybrids like those from Wild Flowers with actual wildflowers she gathers along roadsides. Such garden-variety favorites as zinnias complete her confectios. For this wedding, she cut Queen Anne's lace, black-eyed susans and juvenile goldenrod from friendly fields. "As I collect each thing, I start getting wound up," Monroe explains.

After all there are no rules, insists this 29-year-old designer. Take the funeral arrangement she conceived in memory of

her grandfather, an expert vegetable gardener she could never convince of floriculture's merit. She ordered fresh fruit displayed with spring flowers. This unorthodox tribute pleased and touched her family, and Monroe says she hopes people know they have options when they order flowers.

On Saturday the different drummer inside Monroe accelerates her tempo as darkness falls. The night before the wedding, she wired all the corsages and boutonnieres, spritzed them with cool water and put them to bed in a sturdy box that once held somebody's shoes.

Sunday, 2:30 a.m. "I purposely made the bride's bouquet at that hour — the last thing before bed — to work up tension," Monroe recalls. "With flowers, you do everything you can to use that tension to elevate quality."

In some ways, this fragrant and delicate bouquet — a startlingly effective marriage of mauve roses and miniature apricot carnations with stephanotis — would be the prima ballerina of the flower show Monroe was choreographing. She had considered every step the wedding party and their guests would take through The Willows, the manse in a Radnor park where the

continued

ceremony and reception would take place.

Monroe's plan called for arrangements for the foyer and buffet table, of course. Because she believes flowers are for lavishing, her bouquets of roses and freesia would also reach the bride's dressing room and guests' powder room. Some 25 potted plants and ficus trees would be grouped at the front steps; the molded fish in the grotto fountain hidden with spraying flowers. Not even the wedding cake went bare: Monroe supplied special flowers to its caterer.

"I try to create a whole 'look,' with flowers everywhere," Monroe explains, adding that she provides clients with a written proposal of her intentions after touring a party site and reviewing the budget. "But you don't want people to come in and gasp over the flowers. Then you've called attention to yourself. The bride is the star."

7:15 a.m. Cheryl and Thomas Monroe throw open the doors of their van to the cool mist outside The Willows. Out onto the stone-paved courtyard come bucket after bucket packed with riches plain and fancy — jewel-bright lilies, delphinium, yarrow, godetia, scabiosa, snapdragons, zinnias, baby's breath, daisy mums, mouth-watering pink roses, and much more. Armsful of tall Queen Anne's lace fresh from a field remain in the van, forming a filigree curtain for one window.

"People don't realize that you cannot screw up flowers," Monroe insists. "I mean, Nature put them all together."

Claiming the heritage of suburban Baltimore "brown thumbs" (except for her vegetable-keen grandfather), Monroe learned flower arranging by watching and doing, her method more intuitive than studied. Monroe's contagious energy ricochets through her work, but she modestly sidesteps any discussion of natural talent by citing experience — much of it under pressure for weddings, parties and holidays that wouldn't wait.

8:30 a.m. The van's radio mingles Beatles songs with birdsongs and chickadee rasp. Thomas Monroe is anchoring asparagus fern so that it cascades down the glaringly white stucco grotto wall. Cheryl Monroe stands in shorts and sneakers halfway up the still-shaded grotto steps, adding the eremurus she's been reserving for the buffet table to a tall, elaborate arrangement. "Do you know how many thousands of posies I've pushed to have it turn out like this?" she grins.

Monroe truly does make her work look easy, moving without hesitation to balance

color and composition in profusion. But ask whether she consciously designs so that, say, dense flowers hug the base of an arrangement as dainty ones rise to the top, and she'll shrug off the question, saying she isn't conscious of working that way.

As a teenager, Monroe's roommates were spider plants and philodendron. Her job at a garden center greenhouse put her in the right place at the right time when the garden center added a flower shop. It flourished under her management and so did she. Still, people didn't understand why she wanted to study horticulture in college.

9:20 a.m. "I don't like that at all," Monroe scowls at the asparagus ferns she just stuffed into the grotto niches for a softer background for the outdoor wedding ceremony. Opting to let a solution brew, she moves away to finish the big arrangements she considers successful. The waist-length hair that swished behind her is now coiled into a knot to beat the heat. "One of the secrets to arranging, I think, is not to gunk it up so that you lose a thing," she muses, peering into the flowers. "You want to see

each 'face,' perhaps have a chat with every one of the flowers."

As needed, Monroe coordinates her schedule and logistics with caterers, musicians, even parking attendants. For this wedding to proceed at noon, the Monroes must have every well-watered stem in place, every fallen leaf swept off the stone pavers at the grotto by 10:30 a.m. Then they'll move indoors for more decorating, the toughest assignment being to create four full arrangements that will hold their own on ledges against glass windows and look good from the outside.

"You always think that you're not going to make it," Monroe confesses, calling upon arranging experience that reaches back 10 years. "You have three hours to go and five hours of arranging to do and you're down to gut instinct. Somehow, everything always comes together in the last hour."

10:30 a.m. The sun burns down on fluttering ranks of caterers and nervously eager relatives crisscrossing the drive from grotto to house. The police are called



Monroe uses roses, stephanotis and miniature carnations to adorn the bride's hat and the family Bible the bride will carry.

photos by John Gouker



Several of the eight major arrangements await last minute touches. In addition to these mass arrangements Monroe created delicate table arrangements and other touches throughout The Willows, the manse where the ceremony was held.

to tow from the courtyard an abandoned car mysteriously stockpiled with liquor from an earlier function. Monroe's concentration remains focused on flowers; a rose has found its way into her hair.

"Abundance" is the way this designer describes her style when pressed. "A profusion of flowers. English, lavish and feminine." Having worked for other designer/decorators including Pat Lansdale and Herb Plankinton, she originally aimed to please as a quick-study of their prized styles.

"I have made enough arrangements now that I can analyze someone's work and do something that looks similar to theirs," Monroe observes. "I also realize that they like my work."

And so it was that Monroe recently found herself invited to help decorate for an opulent party in art-and-antiques-drenched rooms, where she adored placing flowers in priceless containers. Her own home bulges with vases of flowers in summer — "too many," is the way she likes it — but these are treasures she delights in scavenging from flea markets and thrift shops. Flowered plates serve up Monroe meals beneath framed pictures of antique floral extravaganzas.

10:45 a.m. The smiling bride breezes

into the solarium, her wedding gown puffing the garment bag slung over her shoulder. Monroe, flushed and pumping adrenalin, breaks from her task of streamlining assembly of the last arrangements to greet her friend. The bride produces a small family Bible and Monroe secures the bride's bouquet to it with ribbons, and next ties flowers to her brimmed white hat.

Administrations coordinator for the Pennsylvania Horticultural Society by day, Monroe freelances flower arranging and decorating in as big a way as her schedule permits. "I'd love to do a few parties a year," she says. "That's all my nervous system could handle with my full-time job."

11:10 a.m. Both Monroes and several recruits are animatedly thrusting flower stems into vases positioned high on the solarium ledges. That the caterer's troops seem not to have caught the same fever causes the hovering relatives of bride and groom to buzz. Thomas Monroe doles out florist knives after dividing identical bunches of flowers on the floor beneath each arranger's station. The idea is to pick a color here, a texture there, as if working from a painter's palette, keeping the bouquets similar. Cheryl moves from bouquet to bouquet, deftly popping a blossom into just the right spot and cheerfully encourag-

ing her assistants.

"Somehow, flowers are the truest expression I have of myself," Monroe reflects. "They are happy and they give back to you."

11:30 a.m. Monroe is beginning to drag a bit, slowed by the thick and muggy air. Still she zips through The Willows for one last flower check, while Thomas hurries across the cobblestone court with now-empty flower buckets, watering cans, broom and dustpan. They hurriedly offer leftover flowers to anyone willing to rescue them from the heat.

Searching for a handle on her passion for staying elbow-deep in flowers, Monroe reflects: "Maybe it's the child in me that allows me to feel like I'm playing; it's hard work, but it's playing."

Noon. Having resurrected themselves in fresh clothing, Cheryl and Thomas Monroe melt into the wedding picture, mopping their brows along with everybody else. Now they can relax and sweat from natural causes. The ceremony begins outdoors at the grotto — and so does the rain. Soon a water-saturated potted plant, placed with precision only a short time before, topples over. Cheryl Monroe laughs.

Ann Jarmusch writes on gardening and other visual arts for national and regional publications.

OUTSIDE CONTAINER GARDENING REQUIRES



by Darrel A. Apps

At a marathon session two colleagues and I were thrashing out a publication for Longwood Garden's Balcony Garden Exhibit in early 1978.

The exhibit was to have five balconies, each with a different theme: Victorian Moods, City Form, A Balcony For All Seasons, Dining Al Fresco and Gardener's Balcony. Every theme seemed to give us a new set of problems, to require more research, and to delay the writing process. The gardens were to be staged in the East Conservatory, so we knew the balconies, with their containers, would be in a protected environment, yet we wanted this exhibit to represent, as nearly as possible, the same conditions that balcony gardeners would actually encounter. When we began to discuss the theme, "A Balcony For All Seasons," it was immediately obvious the subject was complex. And, sharing our individual experiences of suburban and urban container gardening emphasized how dependent container plants really are on their gardeners.

During our conversation we concluded that the best horticulturists are probably those who study floriculture and have to grow greenhouses full of gardener-dependent container plants. Unlike nurserymen, who plant in field soils and can generally let nature take care of their plants, greenhouse growers have to consider the pot plant's every need. If a plant dries out, it can be damaged or killed; concentrated fertilizers in a limited root zone can destroy a plant's root system; and the artificial environment of a greenhouse often encourages insects and necessitates more spraying. We concluded that container growing does, indeed, require a higher level of commitment.

My first real experience of "gardening at a higher level" came when I moved to State College, Pennsylvania in 1972. We purchased a home that had a front wall-enclosed concrete terrace. The terrace had two cut-out holes that seemed like natural places for plants. I built boxes to fit the inside dimensions and made planter seats from each one. Hoping to have attractive plants all winter, I chose *Ilex decidua* 'Warren Red' and planted a male pollinator with one of the females. ('Warren Red' is a compact holly that holds its fruit

until nearly spring.) I prepared the soil with one-half sphagnum peat and one-half garden soil. The plants thrived and were bearing beautiful berries by the time I sold the home during their second growing season. The planter seats, incidentally, were not true containers but simply less gardener-dependent raised beds.

Even with the addition of these hollies, I found I still needed more plants on the terrace. I had painted the concrete when I discovered the surface had become so

porous that water was seeping into it. I learned that the best paint for sealing concrete was epoxy and that the only color that came close to matching my house was a battleship gray. Once painted, the terrace seemed more than ever to need additional plants.

All over town, I had seen gray, concrete-like containers that were sold by a local landscaper, so I decided to buy three of these. They were actually made of asbestos and concrete and were guaranteed to



Malus 'Red Jade' in full bloom in the author's driveway parking area. This plant survived eight winters at various outdoor sites.

photos by Darrel Apps

A HIGHER LEVEL OF COMMITMENT

last a lifetime. (Recently, however, I learned that because of the asbestos product, the Montreal, Quebec manufacturer went out of business.)

What I like about these containers – or as some call them, “pots” – are their unique shapes. The largest, a cylinder with an urn-shaped base, is 3 ft. wide and 22 in. tall. The second is one-half of a globe with a flat bottom and is 3 ft. wide and 17 in. tall. The third, half of an oval with a flat bottom, is 2 ft. wide and 23 in. tall. I have become,

rather sentimental about these containers: since they decorated my terrace at State College, they have moved with me to the big rental house at Longwood Gardens; they have given me insight into balcony gardens; and finally they made the trek to the oversized asphalt parking area beside my suburban Chadds Ford, Pennsylvania garage. I know now that my “pots” will probably last a gardener’s lifetime, even though I’ll need to change their plants occasionally.

selecting the plants for containers

The first plants I selected for the containers were jade crabapple, *Malus* ‘Red Jade’ for the large cylinder; Hinoki cypress (*Chamaecyparis obtusa* ‘Nana Gracilis’) to give height and cutleaf Japanese maple, *Acer palmatum* ‘Dissectum’ to hang over the edge of the half-globe-shaped container; and atlas cedar, *Cedrus atlantica* ‘Glauc’ for a vertical element in the half-oval-shaped container. The soil mix for each was one part Pro Mix and one part garden loam. The first year these containers sat outside until the temperature dropped to 20°F (–7°C) in late December. My research into root hardiness showed that lower temperatures wouldn’t be safe for some of the plants I had selected. At this point, I called my neighbor, and he and I slipped cardboard under the two smaller pots and pulled them into the unheated garage. The jade crabapple stayed outside, and as I had hoped survived the winter. In early April, we reversed the process and brought the plants out on the terrace for the summer. I followed the simple practice of watering only when the plants dried out, and I fertilized with a solution of 20-20-20 Peter’s fertilizer (one tablespoon per gallon) about once a month during the active growing season. Usually I applied a gallon of solution each time. The plants survived and flourished.

By early fall, I learned that I would be moving to Longwood Gardens, and I was determined to take my container plants along. I was able to convince the movers to include them on the truck. To get the weight down, I started drying out the containers in September by placing plastic around their bases to keep out rain water. By November, the containers had become so dry that I decided to water them a little. Each week, I’d lift them to check the weight. At first, I couldn’t lift the crabapple pot, but by November, I could easily lift one side. Since the movers were charging by the pound, I wanted to make sure this was a worthwhile effort; otherwise I could hire a pickup truck.

In mid-December, the last thing the movers loaded on the truck was the containers. The crabapple was tall enough to scrape the roof as it was loaded. Of course, the first items to greet my new Longwood col-

continued



Groups of container plants can have astounding winter interest. Most container plants can be left outside until December in the Delaware Valley. When the temperatures creep down to 20°F (–7°C), they can be moved to an unheated garage.

leagues and neighbors, as they helped to unload the truck, were these three big containers. Even the Longwood folks seemed a bit astonished that someone cared that much for his plants.

a new environment

Fortunately, that winter was mild, and my transported plants survived without noticeable root injury. By April, we'd purchased our Chadds Ford, Pennsylvania home. Later that summer, the asphalt was laid for the driveway and the large containers placed in strategic positions to relieve the monotony of an otherwise plantless suburban lot. The pots needed watering much more frequently in this rather hostile new environment, often once or twice a week; previously I had watered them only during droughts.

The following winter, 1976-77, was not kind to my plants. The ground froze early, in October, and didn't thaw out until April. A week-long conference kept me away from home when I needed to be there to move the plants to the garage. By the time I reached home and tried to rescue my plants, the outside temperature had already fallen to 8°F (-13°C) – much too cold for the maple and atlas cedar roots. When I took them out of the garage in the spring, they simply dried up in the sun. Fortunately, the crabapple and the Hinoki cypress had survived. I thought about replacing the cutleaf maple, but my wife helped to change my mind when I told her that a similar plant would cost \$250. So I decided to replant the cypress in the center of the container and let it go at that. The result was more pleasing than I had expected. Although the plant was still short, the proportions weren't bad. I replaced the atlas cedar with a 3-ft. eastern red cedar, *Juniperus virginiana* 'Canaertii.' This plant grew faster than I had expected and soon became too large for its container. Its roots eventually blocked the bottom drainage hole, and it succumbed after sitting outside in a virtual ice block during the winter of 1984-85. This container now boasts a *Betula platyphylla* 'White Spire.' Its root hardiness is undetermined, but I'll know more by this summer, after it sits outside all winter.

Of all the plants with which I've experimented, the Hinoki cypress has been the most successful. I admit to liking it enough to go through the extra effort of pulling it into the garage during very cold weather,



photo by Darrel Apps

The daylily cultivars 'Little Grapette' and 'Butterpat' provide four weeks of bloom in mid-summer. Both cultivars can be over-wintered in large pots outdoors.



photo by Larry Albee

The continuous blooming daylily 'Happy Returns' greets the guests coming up the front walk. This cultivar proved winter hardy to -15°F (-26°C) in this simple wooden container.

although it has been outside when the temperatures have been nearly 0°F (–18°C). Considering my first container plant choices, the most beautiful landscape specimen was the red jade crabapple. Its fault is that it is biennial in blooming, heavy one year and light the next. Every year, though, it had at least some fruit set for fall and winter decoration.

I lost the red jade crabapple after overwintering it for eight seasons. By mid-April of 1982, the plant was in full leaf. (Its flowering time was usually a week to 10 days ahead of other red jade crabapple trees, probably because the above ground container warmed up more quickly than field soil.) On April 17, the temperature dropped to –1°F (–18°C). To my surprise, the hard freeze killed the crabapple foliage. I thought it would leaf out again, but no such luck – it was dead.

daylilies in containers

I viewed that ill fortune as a chance to try other plants. I had already been growing daylilies in containers but hadn't really tried them in an overwinter landscape situation. With the demise of the crabapple, I had an empty 3-ft.-diameter container. By the time I knew for sure that the crabapple was dead, it was a little late to dig daylilies, but I took a chance and dug them anyway. I jammed the container full of a mix of *Hemerocallis* 'Little Grapette,' 'Butterpat,' and 'Buffy's Doll,' planting the fans 4-6 in. apart. Predictably, they bloomed poorly that first summer because of transplant shock. During the following winter, most of 'Buffy's

Doll' died, but 'Little Grapette' and 'Butterpat' survived beautifully and rewarded us with four weeks of spectacular bloom. Four weeks, however, is only a fraction of the whole growing season. I needed to experiment further.

The daylily success encouraged me to consider container-growing for a reblooming yellow daylily seedling I had hybridized. I had seen a rough-sawn wood planter at a local garden center that I

I had no intention of over-wintering this special daylily seedling outdoors above ground, but fate intervened.

thought would be perfect for decorating our wide entrance walk. Knowing that finding gifts for Father's Day was always a task for my family, I hinted often about what I would like, and it worked. Once in place, this single container looked somewhat lonely, so I purchased a second one almost immediately.

I had no intention of over-wintering this special daylily seedling outdoors above ground, but fate intervened. In December of that year, I had surgery and recovered slowly. While I lay in bed, the weather forecaster announced record-low temperatures and high winds. I wasn't able to move the daylily containers into the garage, so I just put them out of my mind. The temperature dropped to –10°F (–23°C) with 30 mile-an-hour winds. I suspected that my prized seedling was dead. In early March, however, I was surprised to see

new shoots coming out of the container, and by the first of June they were in bloom. Because these containers were rather small for the number of plants they supported, I watered them nearly every day when it didn't rain. Every two weeks or so, I fertilized them with one tablespoon of Peter's 20-20-20 soluble fertilizer in a gallon of water.

This seedling daylily bloomed almost every day from June until late October, and I was ecstatic to discover a reblooming daylily that was winter-hardy above ground. Subsequently, I named the plant 'Happy Returns.' It will be released by Wayside Gardens in the summer of 1987.

Generally, I can say that many of my adventures with containers – both at home and at Longwood – have had happy returns, and I can think of few gardening projects that have given me more satisfaction. When guests come to my garden, especially those who are photographers, they are drawn to the containers – a nice testimonial.

My own experiences have proven that container plants are most definitely gardener-dependent. To get involved, you'll have to start gardening at a higher level. Containers need to be judiciously watered, frequently fertilized, and occasionally repotted. Even when all of these tasks are accomplished in a timely fashion, you may still have problems with root injury during the winter. I've listed two studies that will help gardeners determine which plants are more likely to survive above the ground in winter (see box). Also, listed with this article are a few woody plants that I recommend for outside container overwintering in the Delaware Valley.

Author's Recommendations for Overwintering Plants in Containers in the Delaware Valley

Acer ginnala – Amur Maple
Carpinus betulus 'Fastigiata' – European Hornbeam
Chamaecyparis obtusa 'Nana Gracilis' – Hinoki False-Cypress
Comptonia peregrina – Sweet Fern
Ilex x meserveae 'Blue Maid' – Meserve Holly
Juniperus horizontalis 'Douglasii' – Waukegan Juniper
Picea abies 'Nidiformis' – Bird's Nest Spruce
Picea glauca 'Conica' – Dwarf Alberta Spruce
Potentilla fruticosa 'Abbotswood' – Potentilla
Potentilla fruticosa 'Goldfinger' – Potentilla
Potentilla fruticosa 'Knaphill' – Potentilla
Rhododendron carolinianum – Carolina Rhododendron
Rhododendron catawbiense – Catawba Rhododendron
Rhododendron 'Black Satin' – Rhododendron
Rhododendron 'Molly Fordham' – Rhododendron
Rhododendron 'Olga Mezitt' – Rhododendron
Rhododendron 'PJM' – Rhododendron
Rhus aromatica 'Green Globe' – Fragrant Sumac
Rhus typhina 'Laciniata' – Staghorn Sumac
Thuja occidentalis 'Fastigiata' – Eastern Arborvitae

Studies: Root Hardy Woody Ornamentals

"Root Hardiness of Woody Ornamentals." John R. Havis. *Hort Science* 11 (4):385-366. 1976.

"Root Hardiness of Woody Plants." Peter L. Steponkus, George L. Good, and Steven C. Wiest. *American Nurseryman*. CXLIV (6):16. 1976.

Darrel Apps is departmental head of Education at Longwood Gardens. Before that, he was state specialist in Ornamental Horticulture at The Pennsylvania State University and the University of Kentucky. He is an avid home gardener who grows a wide assortment of ornamental plants.

PRESSING FLOWERS . . .

A Time-Honored Art Form



by Rosemarie P. Vassalluzzo

Pressing flowers is a time-honored art form and hobby that is as old as civilization itself. This simple process for preserving the wonder of nature hasn't changed over the years. Like their ancestors, the early settlers to the New World pressed flowers for a decorative effect as well as to preserve a memorable event.

It was during the Victorian Era that we saw an increase in the use of pressed plant material as a graphic art form.

Many of us have taken, at one time or another, a four-leaf clover, some wild spring violets, buttercups or lovely and graceful Queen Anne's lace and pressed them in a wallet or book for safekeeping. The principle of pressing flowers is simply to flatten the leaves and petals of the flowers, then arrange them to make pictures, greeting cards, stationery, decorative boxes and even folding screens or a lamp shade.

We can collect flowers for pressing year-round, but the summer months are especially appropriate since we have lots of fresh material available in our yards and gardens as well as in the woods or along roadsides.

Herbs such as thyme, parsley and sage, Japanese maple leaves, violet flowers, daffodil and delphinium petals are all suitable material to press since they keep their color, shape and texture.

Flowers that are too thick to press must be taken apart petal by petal. Remove each petal from flowers such as roses, carnations, marigolds, hydrangeas, tulips and zinnias. Flowers should be free of all surface moisture when they are picked for pressing. The petals then are used in pictures or the flowers may be recreated.

A heavy book such as a dictionary or encyclopedia is perfect for pressing fresh plant material. When using a dictionary, I like to place leaves and petals according to initial consonants of the names of the flowers: marigolds go on the "M" pages, hydrangeas on the "H" pages; rose petals on the "R" pages and so on. Typing paper

makes a great liner.

Among the collectibles spotted throughout our home are two antique bookpresses and a napkin press. Both are ideal for pressing plant material.

Most flowers will dry in about 10 days; then you're ready to start your picture or decorate your box, lampshade or screen. If you are creating a picture, sketch a plan. Then trace the sketch lightly onto your paper. I use a piece of opaque plexiglass over a box with a light under the glass, which makes it easy to follow my sketched-

out picture.

Tweezers, fine quality surgical or sewing scissors, a scalpel, toothpicks, small camelhair paintbrush and Sobo glue are just a few of the necessary tools. I thin the glue with water and apply it to the back of the flowers and petals with a fine paintbrush. I use tweezers to apply the flowers to the sketched design. Here are some step-by-step instructions for creating designs. Maybe we'll see your designs on the wall at the Philadelphia Flower Show one of these years.



photos by George A. Palmer, Jr.

1. Early preparation and planning is a must when creating pressed plant designs. Sketches of the plan or picture help create the final design.



2. Herbs, such as thyme, parsley and sage, or Japanese maple leaves, violet flowers, daffodil and delphinium petals are all suitable for pressing since they keep their color, shape and texture.



3. Tweezers and surgical scissors are necessary instruments when clipping miniature plant material.



4. Pressed individual carnation, rose or iris petals give good vibrant colors for pressed plant design. Remove each petal, preferably with tweezers, and place on a sheet of paper ready for pressing.



5. A heavy book such as a dictionary or encyclopedia is perfect for pressing fresh plant material.



6. Sheets of cardboard lined with typing paper can be used effectively. If you happen to have an antique book press or napkin press, you are really in the flower-pressing business.



7. Stationery, made with pressed flowers, is especially nice in spring.



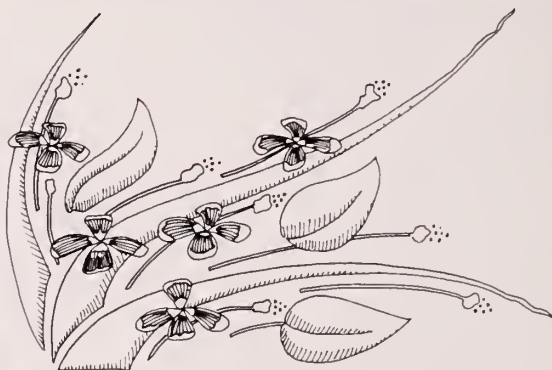
8. When decorating a box, cover it with plain paper or paint it. Then sketch your design on the box. Gently place the delicately pressed flowers on your box. Pick up each petal, flower or leaf with tweezers. Apply glue and replace the flowers on the box. Spray with hairspray, clear acrylic or fixative.



9. This lampshade design was a winner in the pressed plant section at the 1984 Philadelphia Flower Show.



10. E. T., design for a bell jar, and a miniature screen all garnered ribbons at the Show in recent years.



Rosemarie P. Vassalluzzo, a newspaper columnist in the Bucks County area, is a four times Grand Sweepstakes winner at the Philadelphia Flower Show. To win the Grand Sweepstakes at the Show requires that the exhibitor earn points in both the Horticultural section and Artistic section of the Competitive Classes. Rosemarie's entries in the pressed plant section of the Show certainly contributed to her many points in the Artistic Classes.

SPRINGWOOD:

A Public Horticulturist's Private Garden

 by Claire Sawyers

Several years ago I received, unsolicited, a few drab-looking bulbs of an unfamiliar plant. I planted them in a prominent spot because an enthusiastic description accompanied them. This past August for the first time, a naked reddish scape protruded from the ground and a globe of flowers followed, opening with petals a true blue suffused with pink and anthers a melon orange. This unusually beautiful plant, *Lycoris sprengeri*, and numerous other gems (*Acidanthera bicolor*, *Miscanthus sinensis*, and *Echinacea tennesseensis* to name a few) have all come to me as ornamental overflow from Springwood, the garden of Richard W. (Dick) and Sally Lighty. Like the three springs in their woods (hence the name Springwood) that constantly feed the stream meandering through the garden, Dick's enthusiasm for plants spills over onto others, touches other gardens, and never seems to run dry.

Dick estimates he has as many as 5,000 different kinds of plants growing on their seven acres outside Kennett Square. Imagining that many different kinds of plants in a residential garden might suggest horticultural mayhem. Springwood is not like that thanks to Sally's moderating effect, although Dick admits when he first started gardening there in 1961, he mainly wanted a broad collection of plants. His first big planting included hundreds of lily cultivars (having just finished his Ph.D. dissertation at Cornell on lilies probably had something to do with that); he built a rock garden and loaded it with little plants; he laid out a nursery to hold unusual species; and he started "dotting plants all over." But after eight years of collecting he realized "plants do not a garden make," and he shifted his focus from strictly diversity, to diversity within a design. He also recalls realizing then from his own personal growth that "a garden wasn't something you built and owned; a garden is a process."

a soothing landscape

With most of the lily cultivars forsaken and the rock garden dismantled, the character of Springwood now is of a soothing, private landscape with expansive sloping lawns, naturalistic beds and borders plant-



photo by Rick Darke

A frequent occurrence at Springwood: Dick Lighty leads a group of students and friends through his garden.

ed for drifts of color, all nestled in and enclosed by mature deciduous woods. At the heart of the property on a knoll stands the Lightys' house. From that central knoll, they have broad views over the open spaces and plantings, especially from the most recent addition: a square terrace off the front of the house. Made of handsome Avondale quarry stone, it functions like any good family room. Visually, however, the terrace fits more with the garden. Pots of fragrant and colorful plants sit here and there, and the stone walls double as a handsome backdrop for perennials and conifers planted all around. Two sets of steps off the terrace into the garden and the repeated appearance of stone as rock outcroppings in the surrounding beds make the transition from house to garden a gradual one.

Some of the plants near the terrace dominate most any conversation. The *Amorphophallus rivieri*, or devil's-tongue, has giant, tropical-like leaves all season. In early spring, its blackish-red spathe and spadix, the latter reaching nearly two feet in length, cannot be ignored. By planting it in the corner between the terrace and

the house, Dick takes advantage of the microclimate there to grow a plant not generally hardy in this area. *Sycopsis sinensis*, a member of the witch-hazel family with evergreen leaves and *Lagerstroemia indica* 'Natchez,' a crape-myrtle with rich, red-brown exfoliating bark, are other marginally hardy plants he's tucked by the terrace.

From April through October, the Lightys eat outside at the rear of the east side of the house. Breakfast and dinner are routinely served by the swimming pool where plants surround and soften the rectangle of water and enclose the space, separating it from the rest of the garden. Countering the strong straight lines of Sally's favorite exercise area, Dick has used a number of plants generally associated in nature with water or which create a sense of a marsh or a meadow. Three willows, *Salix pseudolasioglyne*, with fine-textured, silvery leaves cascade over one corner of the pool reminiscent of willows in creek channels running through pastures. Dick annually prunes these to keep them open and "airy," to emphasize their graceful lines, and to keep them a size (20-25 ft.)

continued



photo by Claire Sawyers

A vista in Springwood from the woods' edge across to the willow planting and "symbolic" meadow beyond.

16

that relates to the pool. Dick collected this species in Korea because of its attractive weeping habit. Opposite the willows lies a mass of the *Siberian iris* 'Caesar's Brother.' Through the growing season the slender foliage resembles roadside cattails; when in bloom, the vivid, royal blue flowers suggest the refreshing effect of the water. A low dense-growing horsetail, *Equisetum scirpoides*, frequently found in dank areas in nature, surrounds the poolside spigot with wiry green stems.

On the slope rising away from the pool, fountains of ornamental grasses create a wild lushness from mid-summer into fall. A firm believer in the beauty of grasses, Dick has a "symbolic meadow" covering about 16 square yards that balances the broad plane of water. Other perennials in the planting provide swatches of summer color, but the patchwork of textures, sizes, and colors created by the grasses alone is impressive. Four cultivars of miscanthus or eulalia grass contribute to the composition – *Miscanthus sinensis* 'Gracillimus' with leaves narrower than the species; 'Zebrinus' with thick yellow bands across the leaves; 'Variegatus' with white running the length of the leaves, and 'Purpurescens' with purple fall color. *Calamagrostis x acutiflora* 'Stricta,' *Pennisetum alo-*

pecuroides, *Stipa* species plus others add varying heights, habits, and colors.

Low clumps of blue fescue, *Festuca ovina glauca* at the pool edge help connect the grasses to the water and they harmonize with the color of the pool along with other plants, making the turquoise seem more natural. A blue spruce (*Picea pungens* 'Montgomery') sits on one corner of the pool; a silvery-blue yucca (*Yucca smalliana*) nearby carries the color, and blue cultivars of hostas join in. The blue hostas, along with other hostas, provide mounds of bold leaves contrasting wonderfully with the willows, iris, and grasses.

After the Lightys reluctantly move inside to dine, they continue to admire the grasses. Through the winter, their plummy inflorescences and dried foliage, having turned silver, tan, yellow, brown or purple, sway and rustle in the wind. In March Dick cuts them to stubble before the growth and outdoor dining season begin again.

While striving to create a sense of water in the dry area around the pool, Dick has struggled with an abundance of water less than 20 yards away where runoff collects in a dip in the lawn and flows from the woods across the property. For years he fought to keep it mowed as lawn, trying all kinds of remedies, until he saw the problem

as an opportunity to grow a corridor of plants that don't mind occasionally wading. Like the mosaic of ornamental grasses, a variety of willows run together here but don't look like a collection because other plants suited to wet conditions such as shrubby dogwoods and Joe-Pye weeds create a sense of a plant community, and the willows create a unified decorative theme varying with the seasons. During the summer billows of foliage demand comparison; in winter brightly colored stems and curiously contorted branches cause your eyes to dance over the plantings; and in spring the catkins or pussies link the shrubs with subtle floral beauty. *Salix matsudana* 'Tortuosa' and *Salix* 'Snake' stand out for their squiggly, picturesque branches. *S. gracilistyla*, which produces numerous, fat silky catkins and *S. gracilistyla melanostachya* with unexpected black catkins, star in March. The shrubby dogwoods contribute most to the winter show. Twigs of *Cornus sericea* 'Flaviramea' appear chartreuse, and red-stemmed selections of the same species, which Dick made from native plants growing on his parents' property in New Jersey, add festive hues to the controlled thicket.

Dick keeps the whole planting low (6-10 ft.), by pruning annually. If allowed to grow

unchecked, the shrubs would form a wall, effectively dividing the open area in two and blocking the views. Pruning also keeps the shrubs colorful by promoting new suck. Otherwise the stems become brown as the bark thickens with age.

the lure of water

Water is what attracted the Lightys to the property in the first place. Not the pool, they added that, and not the seepage area, they didn't bargain for that, but the spring-fed stream that flows out of the woods and curves around behind the house before slipping off their property. When Dick started work at Longwood Gardens in the fall of 1961 as a plant breeder, Sally and he started looking for a permanent place to live. Though covered in snow when they settled on their current home, the spring thaws brought no disappointments in their coveted stream valley. Dick chose this natural setting for a native plant garden. Once across a simple board bridge, you encounter native plants *exclusively* in this section.

This area, the most intimate part of Springwood, has a mossy narrow path snaking through plantings, paralleling the stream on one side and a three-to-four-foot

clothed and in a bed of ferns, she appears to have just wandered out of the dark, mysterious woods. She is the only piece of sculpture in the garden and she arrived there by happenstance.

Shortly after Dick became coordinator of the Longwood Graduate Program in 1969, he invited Kenneth Lynch, a dealer of garden ornaments, to present a seminar for the students. Lynch came complete with props and left Autumn behind since his men didn't want to wrestle with her a second time (she's concrete). Dick managed to haul her into the garden with his garden trailer. She lay in snow through winter, but by spring she was granted a place in the garden. Standing overlooking the secluded, green glen, somehow she seems an appropriate reminder that the valley is a created composition.

Downstream from Autumn and the native plant garden, coarse foliage becomes the theme. Buckeyes, *Aesculus pavia* and *A. parviflora*, planted on the stream banks provide bold, compound leaves as understory trees and shrubs. Repeating that foliage pattern at ground level (and making a play on names is *Rodgersia aesculifolia* and two other species of *Rodgersia*, *tabularis* and *sambucifolia*. *Crambe cordifolia*, a seldom seen but worthy perennial, qualifies with its rosettes of leaves that reach 2 ft. in length. Giant Solomon's seal (*Polygonatum commutatum*) with 6-ft. long stems arches over the path and below that, a dense patch of candelabra primulas and *Lysichiton americanum*, the so-called western skunk cabbage, cover a boggy flood plain with coarse rosettes. A layer of delicate white, rose, and raspberry colored flowers fills the area with a lacy beauty in the spring.

A bit beyond the primulas, planted like a hidden treasure, lies a mass of *Kirengeshoma palmata*, another novelty perennial with bold leaves and delicate flowers. This rarity (I've never seen more than one plant in any garden before) has leaves vaguely like a sycamore or maple topped by drooping clusters of butter-yellow flowers in September.

maintenance under control

Other areas, plants, and design ideas at Springwood deserve description — the *Stewartia* grove, the magnolias, other plants Dick brought back from the Korean expedition he went on for Longwood — but if I don't mention another aspect of Springwood, I'll be skipping something as important to Dick as the plants themselves: garden maintenance. He has developed

Springwood as a high interest, low maintenance garden by following several tenets: use electric equipment where possible since gasoline engines require high maintenance. Don't open or plant any more ground than can be controlled that season. Plant perennials to function as groundcovers using herbicides and mulch only as temporary weed control measures.

The equipment Dick owns with gasoline engines are two chainsaws, a Gravely tractor, and a leaf machine. With the one tractor he plows, mows, hauls, and blows snow with various attachments. The Roof leaf machine gathers and pulverizes leaves by sucking them up like a vacuum cleaner. Dick then puts these back on the beds, effectively raking and mulching all in one process. In planting, he sets trees and shrubs out singly in the lawn knowing a year or two later they will be joined together by making a bed. Even perennial beds evolve in stages so the weeds don't get ahead. Just this past year he linked two beds in the stylized meadow by eliminating the grassy strip between them. As for using perennials as groundcovers, *Liriope cultivars*, *Epimedium spp.*, *Pachysandra procumbens*, the native pachysandra, several species of ferns, *Phlox stolonifera*, and astilbes have proved to be good ones. That means once they're established, they require only an occasional removal of a woody weed seedling. Large sweeps of these plants either used alone or in combination as a mosaic, prove his point. Surprisingly, *Hedera helix*, English ivy, commonly employed by commercial landscapers as a groundcover, failed the test miserably. Weeds and rodents invaded it and it invaded other plantings.

Now that he's generally maintaining the plantings instead of continuously adding and expanding as in the early years, Dick works in the garden primarily on weekends and figures he and Sally spend a total of 52 days a year on all outside activities. That includes cutting fire wood, caring for the pool, and growing a vegetable garden (black plastic makes it a low maintenance endeavor).

Week nights are now reserved for enjoying the garden, not just seven acres with thousands of plants, but also the learning, the sharing, the personal growth — the process.

Claire Sawyers toured Springwood frequently as a Longwood Graduate Fellow. Now she works closely with Richard Lighty as administrative assistant at Mt. Cuba Center where he is director.

photo by Claire Sawyers



Salix pseudolasioogyne, which Lighty collected in Korea, "weeps" over one corner of the pool.

high bank on the other. *Trillium grandiflorum* interplanted with foamflower (*Tiarella cordifolia*) cover the ground with bloom in spring when fresh green massive rosettes of skunk cabbage (*Symplocarpus foetidus*) line the stream bed. Bluebells (*Mertensia virginica*), creeping phlox cultivars (*Phlox stolonifera*), dwarf crested iris (*Iris cristata*), fiddle heads of a variety of ferns, and countless other wildflowers add to the early floral carpet. Moss-covered weathered logs, here and there, indicate mother nature's assistance.

A way upstream the path leads you up the bank and circles back along the upper level. And there, where garden meets woods, stands Autumn. Only partially

Getting down to business

 by David S. Platt

photo by Jennifer Platt



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Ellen Platt is parlaying her love for flowers into a second career that is rapidly overtaking her first one. After only two growing seasons, she is spending almost as much time running her dried flower business as she does managing her psychological counseling and consulting practice.

Platt, who runs career development seminars for women is only practicing what she preaches as she launches her own new profession. "In the seminars we start out," she noted, "fairly non-traditionally: the work develops from your own interests rather than training; you create your own markets and find your own niches." What would be more natural than to start marketing the flowers that she had always enjoyed growing on her 50-acre farm.

Marketing presented a few problems. Platt decided to start with dried flowers because they were less perishable; while watering and harvesting times still depended on nature, she could do the selling as



Ellen Platt sells her wares at her booth at the PHS Harvest Show.

time permitted. Although her children are grown, juggling two careers still presents scheduling problems. Invariably, the days she saves to garden are rainy, while the days on which she schedules office clients are usually gorgeous.

Meadowlark Farm, in Orwigsburg, Pa. located in the shadow of Hawk Mountain, about 30 miles north of Reading, produces over 100 varieties of dried flowers, both cultivated and wild. Products range from simple bunches of dried flowers, through bouquets and wreaths, up to carefully decorated straw hats and pressed dried flower pictures in antique frames. It is a home-grown operation, run by Platt, with only occasional help in tilling from her husband, and part-time work from local teenagers during the growing season. Lacking a greenhouse, she starts seedlings on the 19 large windowsills of her restored stone farmhouse. The local florists who buy her dried flowers are now looking to her for

photo by John Gouker



Platt's drying barn.

fresh flowers as well. Because of her location, she can respond faster to the needs of local florists than can the suppliers of imports. She also supplies varieties that do not travel well, such as four-foot-tall 'Pacific Giant' delphiniums.

Trained with an M.S. in psychology, Platt is horticulturally self-taught. "When I was a little girl in Philadelphia, living on Parkside Avenue," she says, "my mother would take me almost daily to Horticultural Hall in Fairmount Park. I learned the names of all the flowers, and used to collect and play with the dropped petals, hardy oranges, and horse chestnuts. Wherever we lived, I always tried to have a garden and grow something that I hadn't tried before." She is learning about production farming the hard way, through trial and error. Seed catalogs provided invaluable assistance, while serving on the board of the local library gave her first shot at the new horticultural books. She rounds out her horticultural

education by attending seminars sponsored by horticultural societies and the Penn State University Extension Service.

As with any business, small or large, old or new, the problem of publicity, of making

How can you still get your hands dirty – the raison d'être of gardening, after all – while taking care of all the administrative problems of a growing business? "These are good problems to have," says Platt.

the products known to potential customers, was paramount. She decided early on to avoid paid advertising. She sold her wares, at first, at the county fair and through contacts developed through 15 years of living in Schuylkill County. But the grand marketing push was a fall harvest festival, held on Meadowlark Farm itself. In addition to flowers, the festival featured

other local craftspersons, such as weavers, fruit preserve makers, and blacksmiths. She printed up a batch of fliers advertising the festival, and distributed them through local stores, offices, and other businesses. The word got out, and attendance was excellent. These strategies as well as several feature articles in local newspapers launched the venture.

In addition to careful marketing strategies, serendipitous breakthroughs are a plus for any business. Platt has had two major breaks. A neighboring clothing designer and manufacturer was bringing out a fall line of country dresses and needed straw hats to wear with them. Decorating them with dried flowers was a natural next step, and now floral hats are a major product line. The second happened at a gift show in New York, where she had gone to help a friend exhibit and also look for ideas for new products. In talking with manufacturers there, she discovered

continued



Growing fields behind the drying barn.

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that they all had trouble finding reliable growers. They embraced her with open arms, and now sales of dried flowers to manufacturers represent about 50% of her total turnover.

The technical side of growing is also a challenge. Originally Meadowlark Farm was a horse farm, and offers the flower grower a choice of sand or shale. The best

gardening area is the old riding ring, packed with sand, which is well-drained if not very rich. She uses green manure to enrich the soil: rye grass plowed under, household compost, sawdust, and the like. Labor costs are controlled through careful mulching, avoiding the need for weeding by hand. An automatic sprinkling system will be installed this spring.

At first Platt had some difficulty being taken seriously in her home town; some people regarded her business as a nice hobby. "In Schuylkill County, however, you gain a great deal of respect when you sell out of the area," says Platt. Her rapidly-rising sales, and customers in Georgia, New York, and Chicago, soon had the skeptics convinced, and interested in her business's progress.

Having completed two full growing seasons, and tripling sales in the second year, the problems of any small business are beginning to surface. Where, for example, do you draw the line between creativity and profit? How much time do you devote to doing the old things that sell and how much to new experiments; how much to wholesale and how much to retail? And how can you still get your hands dirty – the *raison d'être* of gardening, after all – while taking care of all the administrative problems of a growing business? "These are good problems to have," says Platt.

To her great pleasure recently, Platt both exhibited and sold her wares at the Pennsylvania Horticultural Society's Fall Harvest Show. With help from her mother, niece and sister-in-law, she returned to Fairmount Park, although at another site, where it all started 50 years ago. From her decorated trade booth, she sold an entire van load of dried flower products, and her pressed flower pictures won an honorable mention in the crafts judging.

Her future plans call for continuing to expand her business. She intends to concentrate on the twin areas of increasing her horticultural knowledge, e.g., in the areas of fertilizers and pest control, and also to grow new flowers to broaden her product base. "I find the growing to be the most satisfying portion of the business, so I'm leaning towards that. It's a wonderful change from my practice, and I love the peace and quiet. When the flowers talk back, it's with a very muted voice."

David Platt is an engineer and a free-lance writer. His work has appeared in *The Boston Globe*, *Scuba Times*, and *The Journal of Irreproducible Results*. Ellen Platt is his mother.



Natural companions in a grapevine basket: nigella, zinnia, Joe Pye weed, lunaria, artemisia and small, tight cotton bolls. The Chinese tallow berries came from a visit to South Carolina.

In Those Cotton Fields ... in New Jersey

 **by Jean Gaasch**

Uva Frey plants her cotton crop around mid-March. She has been following this spring ritual for more than a decade in the basement of her Moorestown, New Jersey home. "I first got interested in cotton when I saw an ad in a South Carolina seed catalog," she says. "The 20 or 30 original seeds I ordered and planted have reproduced themselves over the years. I've never had to order any others."

Frey wanted to see if she could grow cotton in a home garden. She knew that Rutgers University was raising cotton under scientifically-controlled conditions on their experimental farms and so was Longwood Gardens.

Since Frey has two gardens and raises a large variety of vegetables, flowers and herbs, space is at a premium. She has room for about one dozen cotton plants. They grow about five feet tall in her garden. The individual attention and nourishment that she gives the seedlings and plants

throughout their developmental stages and on into maturity assures their robust quality.

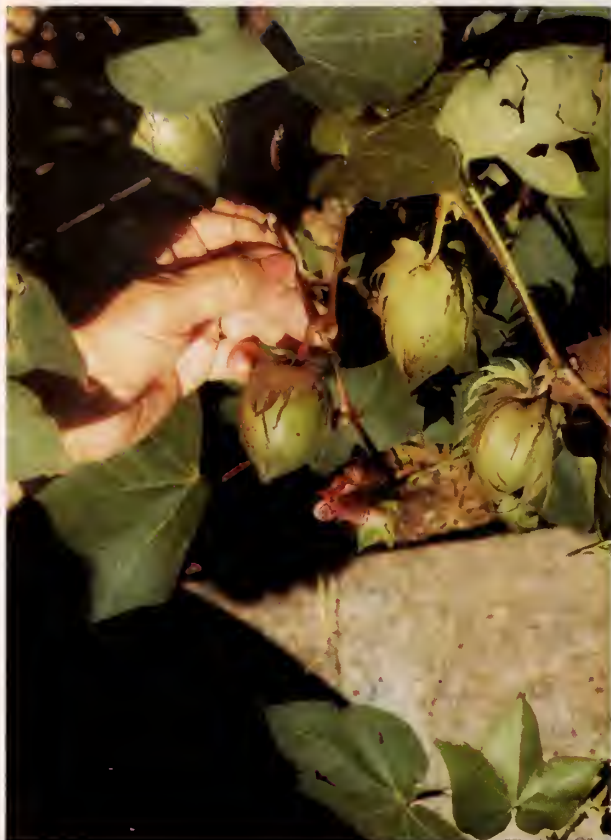
Each plant produces about 40 cotton bolls, six to eight seeds in each boll. She saves the seeds from the previous year's crop, and shares those she does not use with other gardeners interested in trying their luck at growing cotton north of the Mason-Dixon Line. This group includes members of a local weaving guild who plan to spin the cotton into thread and to weave it into cloth.

germinating and planting

Frey takes the cotton seeds, the size of large peppercorns, and soaks them in water overnight to soften. This hastens germination.

Styrofoam cups filled with a mixture of sphagnum moss, sand and vermiculite serve as mini-incubators. She pokes two or three seeds into the moistened soil of

continued



Blossoms start forming on the bottom branches, followed by green bolls. As the cotton plant grows taller, blossoms continue to form on new growth. Different stages of the growing cycle are visible at the same time. (Uva Frey, the grower, holds the boll next to blossom to show stages side-by-side.) Color sequence of blossoms: first-day bloom is creamy-white. Self-pollination occurs within the first day. Blossoms then turn pink, and finally lilac.



Frey's container-grown cotton plant adjusted to its 18-in. cedar pot and reached a height of 4 ft. in five months. It bloomed profusely. The plant received approximately six hours of daily sunshine on the terrace. It was fertilized weekly with 15-30-15 and watered daily. It went through the entire cycle of growth and reached maturity.

each cup, punctured with drainage holes. She covers the cups with polyethylene bags to provide a mini-greenhouse condition while they germinate in darkness. The seeds are covered with a fine layer of sphagnum moss to discourage damping off and fungus growth. Good drainage is essential.

"Bottom heat is important for germination," says Uva, "so I set the cups on the heating ducts of the furnace. The seeds are checked daily for signs of germination.

"In three to five days, when the first set of green leaves appears, the bags are removed to allow air to circulate. The cups are placed about 4 to 5 in. from the grow lights, timed to stay on for 18 hours a day."

Frey saves only the strongest seedlings and will nurture them for six to eight weeks. They are misted with fertilizer, one-fourth teaspoon of 10-15-10 to one gallon of water, about every other day to prevent drying. Frequent checks for fungus are made. When seedlings produce the second set of leaves they are transferred to

larger pots.

In early April, the tender shoots are around six inches high. They are placed

The bolls, heavy with ice, were rushed to the basement and hung around the furnace. Eventually they opened and fluffed out, showing no ill effects. Ever since then, Uva has planted her seeds in mid-March.

in a cold frame to harden off.

Bottom heat is supplied by waterproof, electrical soil heating cables* thermostatically preset to 74°F. Frey prefers to mount the cables on peg board before placing them on top of the gravel under the cold frame. This heating source is used to encourage strong root systems.

When danger of frost is past, the bushy plants, now 8 to 10 in. high, are transferred to the sunniest spot in the garden where

*Available from Park Seed Company, Greenwood, South Carolina 29647-0001.

Frey has worked cotton seed meal deep into the planting holes for the roots to reach. The meal will slowly release nitrogen during the months ahead.

The plants are spaced 18 in. apart because of the limited size of Uva's garden. They are mulched with folded newspapers topped with 2 to 3 in. of compost to retain moisture. A monthly feeding of liquid fertilizer (10-15-10) is provided. The cotton blossoms by mid-summer.

blossom time

"The blossoms resemble those of the Rose of Sharon or okra," she says. "At first, they are the color of cream. This lasts for only one day; they turn pink, then blue. One plant can simultaneously have all three blossom colors; the bolls look like large green golf balls.

"It takes from 45 to 60 days for the bolls to mature and turn brown. The average plant grows three to five feet high and its leaves resemble those of a maple tree. The bolls are ready for picking 180 days from



Baskets of bolls and burrs to be used in arrangements, tussie-mussies, wreaths, and as decorations on the Freys' Christmas tree. Uva's favorite Christmas arrangement consists of large, fluffy bolls of cotton, magnolia leaves, arborvitae and white pine highlighted with red berries from the Brazilian pepper tree that her sister sends from Florida.



Uva Frey's custom arrangements, wreaths and tussie mussies have gone as far away as Iceland and Finland. Most recently a bride and her attendants in Windsor, England, carried tussie mussies made up of a variety of garden flowers including six perfect half-opened cotton bolls. The bride's special request was for accents of cotton grown in Moorestown, NJ.

the time the seeds were soaked."

As the growing season progresses, the bolls are picked in various stages for use in dried flower arrangements, flower wreaths, grape vine wreaths and fresh bouquets.

"The bolls usually don't open on the plants while they are growing outside because of the short growing season in this part of the country," says Frey. "Last summer was the first time it happened in my garden.

"I'm just as glad they don't all open completely because they wouldn't be as useful to me. A half-opened specimen has a more aesthetic quality. I have a use for every stage from buds to burrs."

Frey arrived at the mid-March planting date after she had to prematurely harvest her first crop. To extend the growing season through some early cool nights, she had enclosed the plants in plastic tents. An early sleet storm caused her to harvest the crop without delay. The bolls, heavy with ice, were rushed to the basement and hung around the furnace. Eventually they opened and fluffed out, showing no ill effects. Ever since then, Uva has planted her seeds in mid-March.

"It's a big thrill for me to see the bolls slowly open," Frey says. "It's a sight I wait for every year. The ridges at the tip of the egg-shaped bolls gradually begin to separate and just a sliver of white appears. In time, this sliver becomes a mass of pure white cotton anchored to the nut-brown base of the boll. The experience continues to be a source of pleasure to me."

Frey believes cotton goes well with just about everything and enhances the other textures in arrangements. She says, "It's especially pretty with evergreens, berries, shiny leaves, dried flowers and weeds. The brown burrs look like wood carvings. Their starburst design adds a special touch to Della Robbia wreaths and grapevine baskets. I don't spray or treat the cotton in any way.

"I enjoy what I grow and hope others get pleasure from my arrangements," Uva says. "A finished arrangement gives me as much satisfaction as completing a painting."

Jean Gaasch is a freelance writer from Moorestown, New Jersey. Her articles appear in daily and weekly newspaper and other publications in the South Jersey area.

Plantings for a 17th Century Garden in the 20th Century

 by Jan McFarlan

Early morning. The air is still; a mist hangs over the river. The garden glitters. Dew lingering on the grass makes the lawn shimmer. As I sit in front of the manor house at Pennsbury, looking out over the formal flower garden, I imagine what life was like here more than 300 years ago when William Penn, proprietor of Pennsbury, was in residence.

To create an atmosphere that allows visitors to relive the past, Pennsbury's staff and volunteers continuously research all aspects of life in the 17th century. Historical authenticity is crucial. Even the living components of the site must be accurate. Red Devon cattle and Dorset sheep grace the barnyard because of their similarities to 17th century breeds, and in the gardens, Pennsbury's horticulturist, Charlie Thomforde, has reintroduced varieties of vegetables and flowers that might have been growing during Penn's time.

Documents that specifically mention plants grown by Penn are scanty. According to Thomforde, "William Penn doesn't mention much in his letters. The only flowers he talks about are roses. He's a little more help on vegetables but doesn't talk about varieties specifically." To fill in the gaps, researchers consult a variety of books, many of them primary sources.

John Gerard's *The Herball or General Historie of Plantes* (John Norton, London, 1597) and John Parkinson's *Paradisi in Sole Paradisus Terrestris* are two botanical treatises from the early 1600s that are used regularly. Both have been reprinted, are readily available, and are particularly useful sources because they include drawings and descriptions of the plants they discuss.

Pictures and written descriptions are the most helpful when doing historical plant research. This is particularly true at Pennsbury, where the gardens to be recreated are so early, dating from the late 1600s to the early 1700s, before Carolus Linnaeus developed the generally-accepted system for taxonomic classification.

One problem that occurs when doing research is determining if a plant being described in a book from the 1700s is really



The old-fashioned African marigold (*Tagetes erecta*), with its single row of petals rather than large balls of petals on the modern cultivars, is appropriate for Pennsbury's 17th century garden.

similar to the plant that is available today. Common names, popular at that time, often have changed and Latin names are sometimes a series of five or six descriptive words that may be different depending on the source consulted. But while research is important, the ability to imagine a time far different from our own is essential. Thomforde maintains, "We really have to

Ponderosa seed can be saved by picking selected fruit when ripe, scooping out the seed-containing pulp, placing it in a jar with water, and allowing it to ferment. After about four days, the good seed will have dropped to the bottom and the bad seed will be floating on top.

squeeze ourselves into a 17th century skin to figure out what Penn would have grown."

Not only have the plants that were grown in the 1700s changed but landscape styles have also evolved. Where a modern flower garden may be a display of intensely colored hybrid annuals, William Penn's garden was probably more sparse. "A 17th century garden," says Thomforde, "was like an art gallery that contains a series of carefully-placed objects to look at.

Hybrids are frowned upon in Pennsbury's gardens since hybridizing was not begun until 1717 when an English nurseryman placed the pollen of sweet william on the style of a carnation. It did not become

a common practice until the 20th century. Consequently, some of the flowering plants grown at Pennsbury may not be as showy as modern varieties, but they often possess a simpler beauty. For example, the african marigolds (*Tagetes erecta*) planted in 1986 were not large balls of petals like modern cultivars but had instead a single row of petals around a tufted center. Seed for these plants was obtained from Monticello, Jefferson's garden in Virginia, and will be saved for planting in the spring. It will breed true unlike seed from hybrids that is often sterile, or if it does germinate doesn't produce plants that resemble their parents.

An old tomato variety that has recently been grown at Pennsbury is *Ponderosa*. It proved to be very tasty, though during Penn's time only the very brave or foolish might have eaten what was considered to be a poisonous fruit. People associated the plant with deadly nightshade and the fruit was probably discarded rather than eaten. Tomatoes, known at that time as love apples, were grown in the flower bed as ornamentals rather than in the vegetable garden. Though they were eaten much earlier in southern Europe they were probably not commonly used in this country for food until the 1820s.

Ponderosa is a large, beefy tomato. It is quite dense and delicious. Its color is more pink than orange-red and it will breed true from seed. Seed can be saved by picking selected fruit when ripe, scooping out the seed-containing pulp, placing it in a jar with water, and allowing it to ferment. After about four days, the good seed will have dropped to the bottom and the bad seed will be floating on top.

An extremely showy plant grown in the flower garden during the summer of 1986 was *Amaranthus tricolor* commonly known as Joseph's coat. According to Gerard this plant was a favorite of the Elizabethans. Gerard wrote, "Every leaf resembles the most faire and beautiful feather of a parat." That is an accurate description for the red and pink leaves that offer intense color to the garden.

Another successful annual was *Gom-*



In the 16th century, John Gerard wrote that the *Amaranthus tricolor* (Joseph's coat) resembled "the most faire and beautiful feather of a parat."

phrena globosa, globe amaranth. The seed is unusual resembling a handful of fluff, and though the packet warned that all of the seed may not germinate most of it did very well. Gomphrena flowers resemble a bristly clover flower and, according to Philip Miller who wrote *The Gardeners Dictionary* in 1737, "The flower seemingly has no petals, the cup of the flower is dry." When cut before the bloom is full and hung upside down, gomphrena dries very well.

A large number of other plants grown in

the formal flower garden at Pennsbury are native perennial wildflowers. While tending to his affairs in England, Penn wrote back directing his gardener, Nicholas, "To save as many roots [as he can] of flowers next spring, by transplanting them out of the woods." Some of those included in the garden have been *Limonium nashii* (sea lavender), *Lobelia siphilitica* (great lobelia), *Physostegia virginiana* (obedient plant), *Stylophorum diphyllum* (celandine poppy), and *Lobelia cardinalis* (cardinal flower). All

of these plants did very well. Two of my favorites were celandine poppy, because of its long bloom period, from April until September, and cardinal flower because its color was such a showy, intense red.

Celandine poppies have a yellow flower, deeply lobed leaves, and a hairy seedpod. Yellow sap exudes from the stems when they are broken. During Penn's time, when the practice of medicine was far different than it is today, it was believed that the color of a plant partly determined the diseases it would cure. Celandine poppy may have been used against jaundice.

Cardinal flower bloomed from July until September. Flowers grow on a long spike. According to Philip Miller the flower is "hal- lowed like a pipe and furrowed or channell- ed, divided as it were, into many parts, in the shape of a tongue." He maintains that the flower "exceeds all the flowers I have seen in the deepness of its color." Accord- ing to legend, the flower gets its name from the bright red robes worn by Roman Cath- olic cardinals.

Researching, obtaining seed, and grow- ing old plant varieties is both challenging and fascinating. It provides a link with our past and creates a sense of continuity. As garden historian Ann Leighton said it in her book *Early American Gardens for Meate or Medicine* (Houghton Mifflin, Bos- ton, 1970), "In recreating gardens of other times we come as close as possible to those who worked and walked in them."

Pennsbury Manor

400 Pennsbury Memorial Road
Morrisville, PA 19067
Phone: 215-946-0400

Tuesday through Saturday 9 am to 5 pm
Sunday 12 noon to 5 pm
Closed Mondays and holidays except Memorial Day, July 4th and Labor Day.
Admission is charged. Call for information.
Tours last 1½ hours approximately.

Jan McFarlan is currently education coordinator at the Morris Arboretum and a student of horti- culture at the Ambler Campus, Temple Univer- sity. She was a garden intern at Pennsbury Manor during 1986.

INTRODUCING FERNS INTO YOUR GARDEN

 by Dee Peck

Often when I talk to gardeners about ferns, they look at me wistfully and murmur: "I just don't have the right conditions."

When they hear the word "fern," they picture a cool, moist, shaded woodland glen. Granted, that is where most ferns thrive, but not many of us are fortunate enough to have such a place. Yet ferns can be persuaded to move into a less than ideal area.

Because they have adapted to shade over many eons, ferns are used to lower temperatures than plants in the sun, perhaps only a few feet away. That is why some ferns cannot tolerate full sun even if their moisture requirements are met. On the other hand some ferns have adapted to living in the blast of full sun, such as the xerophytic ferns of the desert. Their roots run deep into cracks in rocks where there is a constant supply of moisture, however little. When conditions are too harsh, they curl up and become dormant, to be awakened when the rains return. Somewhere between these two extremes you are sure to find ferns that you can help adapt to



photo by Dee Peck

The north side of the house shades a thriving clump of christmas fern (*Polystichum acrostichoides*), which in turn shades a contented resident. To the left, *Astilbe chinensis pumila* is just finishing its August bloom.

your conditions.

Let's consider some of the ways an environment suited to ferns can be created. We will presume that you, like me, do not have a shady woodland glen. However, you probably have sources of shade. The most obvious is a tree, or group of trees. Then look at shrubs, both large and small; hedges; fences and walls; and last but not least, the north and east sides of buildings. None of these should be too far from a convenient source of water, which will be needed to help establish the ferns, and in case of drought, help keep them going.

If you have an oak, or other deep-rooted

tree, you are very fortunate. Almost any tree will provide excellent shade, with one exception, the Norway maple. Here we have a killing combination of extremely dense shade and a shallow root system that robs the soil of all water and nutrition. Many other trees have shallow root systems, but if they allow enough light to reach the ground, with your help, your ferns will have a fighting chance. To give them a good start, excavate a generous hole, and fill it with an ideal, humusy soil (one part loam, one part sand, one part compost, leaf mold or peat moss). No fertilizer is necessary at this time. After planting, water well and continue watering whenever there is not enough rain to keep the soil moist. To conserve moisture, mulch the area well with rotted leaves or wood chips. When the ferns must compete with tree roots, it is necessary to fertilize regularly.

A large shrub can serve as well as a tree. Just make sure that the fern is placed so that whatever shade is cast is available during the hotter part of the day. A row of shrubs or hedge can offer ferns needed protection from too much sun if it is properly used. If it runs from east to west, plant your ferns in the shade of the north side. If it runs from north to south, use only the east side, and make sure that some shade is available late in the morning on hot summer days. If the hedge runs NE-SW or NW-SE, or snakes about, the same principles hold true. Just watch the sun and decide carefully where to plant, remembering that shade must be cast on the ferns when it is most needed.

Fences and walls can be used like hedges, and in one way are even better; there is no root competition to worry about. The higher the wall, however, the denser the shade, and if a building or other object

Fundamentals of Fern Culture

Good fern culture depends upon two interdependent factors: a constant supply of *moisture*, and *soil* that drains well yet holds that necessary moisture. This is not the contradiction that it appears to be. A well-structured soil is a mixture of humus (compost, peat, or other organic matter) that hangs onto water, and of soil that permits excess water to drain rapidly, yet retain some in the pore spaces. Clay particles are too fine for this and hold too much water too long, once it gets wet. Coarse sand lets too much water drain away too rapidly. Although this is an oversimplification, it should help the novice gardener understand how to modify the soil at hand. Interestingly enough, the solution to both these problems is about the same: add humus. It opens up the dense clay soil and facilitates drainage, and it also helps to hold moisture in the sandy soil. The smart fern grower is also a composter.

Two more factors must be considered: *light* and *nutrition*. While most ferns prefer shade, no plant, not even a fern, will grow in truly dense shade. "High" shade is the ideal. This is the type of shade that admits bright light and even some direct sun, usually in the early morning or late afternoon hours. "Dappled" shade is just as good. Here, the overhead canopy is sparse

enough that alternate patches of light and shade travel across the undergrowth as the sun moves across the sky. This can be achieved by judicious pruning. The degree of shade determines how much moisture is needed. Naturally a group of ferns growing in ideal shade will not need moisture replenishment as often as those exposed to sun for longer periods. Therefore, if you plant ferns in less shade than the family have adapted to over the centuries, you must supply the needed additional water. You can make the job easier by getting some shade started. Plant a shrub or tree where it will shade the ferns more and more as it matures.

Fern nutrition is not a real problem. If you are generous with compost and leaf mold, both in the soil and as a mulch, you are supplying a good portion of their nutritional needs. A light fertilizer at the beginning of growth in the early spring is not essential, but your ferns will show their appreciation.

If these cultural practices are observed, pests are seldom a concern. Slugs love some of the very small ferns, and for this reason, as well as others, they are a challenge to grow. Forget these until you become more expert, and are willing to wage an on-going war.

D.P.

casts additional shade, the ferns may not get enough light. Fences, walls and hedges also make attractive backgrounds for your planting.

In the absence of natural shade, the north side of a house or other large building makes an ideal spot for a fern planting. Direct sun is eliminated, but plenty of reflected light is usually available. Again, however, any close-by large object casting additional shade may make the area too dark. As with fences and hedges, the eastern aspect can also be used, with consideration for late morning sun in summer. You might even find that the protection given from the prevailing westerly winds allows you to grow ferns and other plants there that are marginally hardy.

The result of your inventory will surely be the discovery of several potential fern sites. Use them, always keeping in mind the words of George Schenk, that evocative garden writer, who says, "These are the plants that put wings on the garden. Nothing else ... affords us quite the visual buoyancy of ferns. They lighten the garden, and so they lighten the gardener."

ferns for delaware valley gardens

***Adiantum pedatum* (maidenhair fern)**

This is the airiest and most fragile looking of the common ferns in our area. It has dainty palmate fronds, and as they uncoil in the spring, they have a reddish glow. It is 12 to 18 in. high, and if given the shade and constant moisture it needs, will spread into large patches, but is never invasive. It is reputed to like lime, but I have not found it necessary.

***Athyrium felix-femina* (lady fern)**

The lady fern can grow up to a yard high if conditions are ideal. It will do well with a considerable amount of sun but will have shorter fronds. It spreads slowly. Its one fault is that it tends to become "ratty" looking towards the end of summer. Constant moisture helps prevent this. There are many different forms, some beautifully crested. It is a handsome, easy fern that is locally available and should be in every garden.

***Athyrium niponicum pictum* (Japanese painted fern)**

This spectacularly beautiful relative of the lady fern is easy to grow and increases readily. For some reason it is moderately expensive — I don't understand why. To encourage the wine-red gradations in the fronds, put it where it will receive bright light (and supply extra water). Otherwise, it will be the greyish green of the species, *Athyrium niponicum*.

***Athyrium thelypteroides* (silvery glade fern)**

This *Athyrium* is not often found in gardens. As a wild plant, along roads, it is not very attractive. When moved to more ideal conditions, with deep rich soil and plenty of moisture, it is a beautiful fern, and will stand quite sunny exposures. Its fronds are similar in shape to the New York Fern (see below).

***Cystopteris bulbifera* (bulblet bladder fern)**

This is a small, easily grown fern that propagates readily from small bulbils found on the backs of the fronds. It is at home and looks best among rocks, and is reputed to like lime. I have not found it to be necessary. It can spread too far by means of falling bulbils, but is no chore to pull out.

***Cystopteris fragilis* (fragile fern)**

Another small dainty fern that is not at all fragile. It may turn brown and appear dead in dry weather, but promptly unrolls new fiddleheads when the rains return. If grown in moist, shady conditions, that can be avoided. Not a fast spreader, but not difficult either.

***Dennstaedtia punctilabula* (hay-scented fern)**

This fern will grow almost anywhere — in sun or shade, in moist or dry soil. Be careful; it may spread rapidly into areas where it is not wanted. If you have a difficult spot where you want it, try to contain it by some sort of barrier. It is a pretty fern, with the scent of new mown hay, but it also tends to brown off in summer.

***Dryopteris goldiana* (Goldie's fern)**

Here we have a giant that can grow up to five feet tall. It needs a cool, shady, moist, humusy location to attain this size. Be sure you have plenty of room for this one.

***Dryopteris marginalis* (marginal shield fern)**

A medium-sized fern that retains its evergreen foliage through the winter. It is a clumpy fern that does not spread. It is not difficult to grow and is easily obtainable.

***Matteuccia pensylvanica* (ostrich fern)**

Another big one that can grow as high as five feet. It is a moisture-lover, but will do quite well in ordinary soil and stay a reasonable size. It is a striking background plant, easy to grow, but does spread quite readily. The unwanted portions, however, are easy to pull up. Just don't let it get away from you. The spores are born on a separate feather-like frond, hence the common name.

***Onoclea sensibilis* (sensitive fern)**

This is another rampant spreader, but if

carefully controlled, has several positive attributes. It will grow in full sun, has an interestingly shaped frond — quite unfern-like, and also has a separate spore-bearing frond or "beadstick" that is quite decorative. Just be careful of its aggressiveness.

***Osmunda cinnamomea* (cinnamon fern)**

The cinnamon fern is another large fern, often confused with the ostrich fern by the beginner. It has a separate fertile frond also, but it is in the form of a "beadstick" rather than feather-like. At the base of each pinna (leaflet) is a tuft of brown hair — not present in the ostrich fern. This is another fern that can be grown in full sun if moisture needs are met. It is an excellent background plant and a slow spreader.

***Osmunda claytoniana* (interrupted fern)**

Similar to the cinnamon fern, but does not have a separate fertile frond. The spore cases occur along the centers of some fronds, "interrupting" the progression of the regular leaflets. Growing conditions are similar to the cinnamon fern, and a bit of extra peat moss mixed into the soil is appreciated.

***Osmunda regalis* (royal fern)**

This *Osmunda* has quite different appearing fronds. The leaflets are somewhat angular and less delicate. The spore cases occur at the tips of the fronds giving rise to another common name, "flowering fern." Again, the same growing conditions as the above two *osmundas* should be followed, with extra attention to moisture.

***Polypodium virginianum* (common or rock polypody)**

This fern is a little trickier, but if you can grow it at the base of a large rock or pile of rocks in semi-shade, you have a good chance of success. The fronds are quite short, about 10 inches, and stay green throughout the winter. It can tolerate some dryness, but watering during dry spells gives you a healthier plant. It looks like a small version of the christmas fern.

***Polystichum acrostichoides* (christmas fern)**

This is the perfect fern for Delaware Valley gardens. It is beautiful, evergreen, easy to find, easy to grow, and a good moderate spreader. In a few years a single small plant becomes a generous clump that can be divided and spread about. Although it loves shade, it will thrive in partial sun if kept moist.

***Pteridium aquilinum* (bracken fern)**

This is a common, even attractive fern but it is mentioned here only to warn you to avoid it like the plague. It will grow in

sun or shade, moist or dry soil, in fact, almost anywhere. For this reason, it becomes an obnoxious weed with a dense root system that is almost impossible to eradicate.

***Thelypteris hexagonoptera*
(broad or southern beech fern)**

This is a lovely, rather small fern with triangular fronds. It loves rich, humusy soil and plenty of moisture. It spreads rapidly, but is never invasive. A very similar fern *Thelypteris phegopteris* (long, narrow or northern beech fern) is differentiated from broad or southern beech fern by connecting wings of leafy tissue between the first two lower sets of pinnae. I can tell them apart easily, but can never keep the names straight.

***Thelypteris noveboracensis*
(New York fern)**

A medium-sized fern whose fronds taper gracefully both at the top and bottom. It is easy to grow but can be very invasive. With adequate moisture, it will stand considerable sun, but is the first fern to turn brown at summer's end.

There are many other beautiful and valuable ferns for you to try, but the above are the best to begin with. Horticultural societies, botanical gardens, and arboreta periodically have excellent courses and lectures on fern culture and their use in the landscape.

Companion Plants for Ferns

Although ferns are primarily shade plants, and we tend to think of shade as lacking in blossom color, that's not necessarily true. There are many flowering companion plants for ferns in such situations, subtle, yet more startlingly beautiful because of the diminished light. Whether you think of these plants as companions to ferns, or of the ferns as secondary, is immaterial. You should have them both.

The most welcomed color in the garden is that of the spring flowering bulbs. Many appear even before the foliage of the trees and shrubs has emerged — some before the snow is gone. But, by the time the garden is furnished with its full complement of plants we are long weary of the yellowing, but necessary bulb foliage. Mature ferns, just emerging when the bulbs are at their height, act as a screen for the ripening remains. They perform the same task for a number of other beauties, which do not age gracefully, such as the early primulas (*Primula denticulata*, *P. frondosa*, *P. abschasicus*, *P. sieboldii*, *P. juliae* and the juliana hybrids, etc.). The presence of ferns also enhances the later blooming candelabra primulas (e.g., *P. japonica*) and later hides their enlarging and unattractive foliage.

Some plants do not need ferns in the same way, but are more attractive when combined with them. Among such plants are the hostas. Ferns are as perfect a foil for the *Hosta sieboldiana* early lavender-white bloom and bold leaves as they are for the fragrant white trumpets of summer's August lily (*Hosta plantaginea*). Careful planning will yield a flowering hosta almost every week of the summer. Among them are many with foliage as brilliant as any blossom. They vary from four inches to five feet tall, to combine with any size fern, to fit any size garden.

Many iris bloom well in combination with ferns. Among them are the little native crested iris (*I. cristata* and *I. cristata alba*) and the small Japanese woodlander, *Iris gracilipes*. The latter is a real eye-catcher, noticed by everyone. Mine is next to a clump of beech fern (*Thelypteris hexagonoptera*). Even if a fern is tardier than the early diminutive iris it is meant to enhance; the croziers,

or fiddle-heads, are utterly charming as they emerge in watch-spring coils, and they contrast just as nicely as the later appearing fronds.

There are a number of shade tolerant larger iris that combine elegantly with the ostrich and osmunda ferns. In a moist spot, try the flamboyant Japanese iris (*I. ensata*) and its hybrids. The more modest yellow flag iris (*I. pseudacorus*) is also worth trying, especially in its variegated form. In a drier area, *I. siberica* is an excellent choice. Hybrids in many colors are available. The old standby 'Caesar's Brother' is gorgeous and inexpensive.

Unbeatable, in my estimation, is a mix of ferns and astilbes. In a wide range of colors, astilbes can be had to bloom through summer into early fall. They also come in sizes from a few inches to three or four feet. One of the easiest, and a good spreader, is *Astilbe chinensis pumila*, a pink late August bloomer only 12-18 in. tall. *Astilbe* 'Fanal' is also fairly small, an earlier bloomer and a good red. A moderate investment will buy you several plants of varying size, color and bloom time that can be divided and redivided, yielding an abundance of color in a few years.

Other good fern companions, some for foliage contrast, some to add flower color, some whose ripening foliage needs hiding:

Alchemilla vulgaris
Anemone japonica, *A. vitifolia*
Aquilegia canadensis
Begonia evansiana
Begonia semperflorens (annual)
Brunnera macrophylla
Cimicifuga racemosa
Dicentra eximia, *D. spectabilis*
Epimedium ssp.
Geranium ssp. (not *Pelargonium*)
Impatiens wallerana (annual)
Lobelia cardinalis
Mertensia virginica
Myosotis ssp.
Phlox divaricata, *P. stolonifera*
Polemanium caeruleum, *P. reptans*
Polygonatum ssp.
Rhododendron ssp. (esp. azaleas)

And many, many more. Experiment. Your available light and moisture is the key. **D.P.**

Read about Hardy Ferns

(All are available at the Pennsylvania Horticultural Society library.)

†*Fern Grower's Manual*. Barbara Joe Hoshizaki. Alfred A. Knopf, New York City. 1975.

The Fern Guide. Edgar T. Wherry. Doubleday and Co. 1965. (Out of Print)

†*Ferns to Know and Grow*. F. Gordon Foster. Hawthorne Books, Inc., New York City. 1964

A Field Guide to the Ferns. Boughton Cobb. Houghton Mifflin Co., Boston. 1956

Hardy Ferns. Reginald Kaye. Faber and Faber. London. 1968

†*The Home Gardener's Book of Ferns*. John T. Mickel with Evelyn Fiore. Holt, Rinehart and Winston, New York. 1979.

How to Know the Ferns and Fern Allies. John T. Mickel. Wm. C. Brown, Dubuque, Iowa. 1979.

†Best for beginners

Where to Buy Hardy Ferns and Companion Plants

Russell Gardens
600 New Road
Churchville, PA 18966
(215) 322-4799

Expect to have an excellent selection of ferns this spring. Always have many perennials.

Varga's Nursery
2631 Pickertown Road
Warrington, PA 18976
(215) 343-0646
Mostly wholesale. Call for appointment.

Vick's Wild Gardens
Conshohocken State Road, below
Spring Mill Road
Gladwyne, PA 19035
(215) LA 5-6773
Call for hours.

Waterloo Gardens
Rt. 30
Devon, PA 19333
(215) 293-0800
and
200 N. Whitford Road
Exton, PA 19341
(215) 363-0800

Mail Order

Fancy Fronds (Judith Jones)
1191 4th Avenue, West
Seattle, WA 98119

Foliage Gardens (Sue Olsen)
2003 128th Avenue SE
Bellevue, WA 98005

Fronds, Inc.
P.O. Box 20026
Cincinnati, OH 45220

We-Du Nursery
Route 5, Box 724
Marion, NC 28752
Many Japanese woodland plants

Dee Peck studies horticulture at the Arboretum of the Barnes Foundation, and has studied at the Ambler Campus of Temple University. She is an active gardener with a broad interest in all plants, but especially enjoys working with woodland and rock garden perennials.

New Potatoes for the 4th of July

 **Gordon A. Brandes**

"New potatoes and peas for the 4th of July" was the mark of a good gardener where I grew up in North Dakota. Potatoes in the home garden can be as easy as just putting a few pieces of potato in the ground in the spring, and in 60 to 75 days you'll have some small "new" potatoes. With a little coordinated effort and space for one or more 3-ft. wide rows, a better return is possible. Potatoes respond best to a well prepared seed-bed, heavy fertilizing, uniform moisture and good insect, disease and weed control.

soil

Potatoes prefer a light textured, slightly acid soil, but will grow well in most of the soils of the mid-Atlantic area, except heavy clays. Added organic matter is desirable, but only well rotted manure, properly managed ryegrass or aged compost should be used. Do not use chicken manure because it may encourage tuber disease or excessive vegetative growth. Potatoes can be grown in large containers with artificial soil mixes, or compost, or even under a thick straw or hay mulch, but these methods are not the focus of this article.

fertilizer

Potatoes are heavy feeders of nitrogen, phosphorous, potash and minor elements. Commercial growers use about 2,000 pounds per acre of a complete 1-1-1 ratio fertilizer. This is equivalent to about 1½ lbs. per 10 ft. of row of 10-10-10. Half is spread over the surface before initial soil preparation; the balance is worked into the top of the row at planting time.

liming

Potatoes grow over a wide range of soil pH, but prefer soils that are slightly acid, pH 5.5 to neutral, which are predominant in this area. Unless your soil tests extremely acid (below pH 5.0), don't worry about liming.

soil preparation

Mold-board plowing, 6 to 10 in. deep, in the fall or spring is the ideal initial tillage for potatoes and most vegetables, but is rarely possible for home gardens. Deep digging with a spading fork is the next best choice, but it is hard work. Roto-tilling is commonly used because it gets rid of the trash and makes the garden "look nice." But in the effort to get the garden smooth,

the surface is often over-worked, and the sub-soil compacted. Even the large tractor models only get down to a depth of 6 in. and may cause serious compaction. Small garden tillers work only to a depth of 3 to 4 in. and are used best for final shallow seed-bed preparation and cultivation.

I have grown my potatoes recently in a community garden that is roto-tilled in the spring with a large tractor model that compacts the sub-soil. Before planting, I turn over the soil to the full depth of an 11-in. spading fork down the middle of the proposed potato row. Then I go down each side and turn over another fork width or more to the full depth, piling it onto the center. I break the large clods that are brought up from the compacted sub-soil by tapping them with the tines of the fork as I turn over each forkful. This forms a wide, low ridge above the original soil level, starting the "hill" necessary for surface drainage and covering the new tubers. The spading provides a deep, friable, well aerated seed bed that facilitates tuber formation and root penetration. The new tubers grow at the end of stolons, which form along the underground stem (see figure 1).

After the rough spading, the remaining half of the fertilizer is spread over the row. The final forming is done with a garden rake. The hill should be about 6 in. high, 18 in. wide at the top and 24 in. at the base, with a 6 in. wide furrow on each side. If the deep spading is too much work, and the surface soil is normally loose and friable, form the hill as above, with a rake and hoe, break up any clods, and plant.

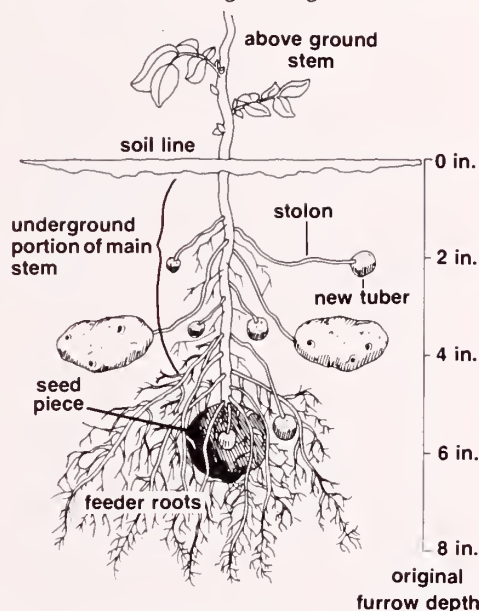
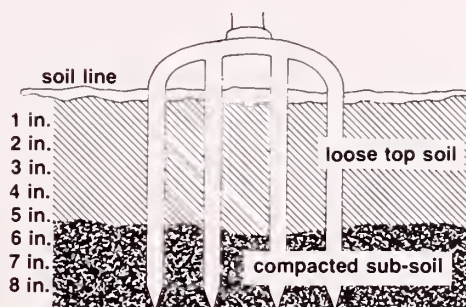


Fig. 1. Diagrammatic drawing of a potato plant adapted from *Commercial Potato Production in North America*, Potato Association of America Handbook, 1980.



time to plant

Potatoes grow over a wide range of temperatures, but avoid planting in cold, wet soils. Wait until the soil is warmed to 45° to 50°F. As a guide, plant radishes, onions, lettuce, peas, cole crops, etc., first. A week or two later plant the potatoes.

continued

seed potatoes

Any potato tuber that sprouts can be a "seed" potato, but Certified Seed is preferred for planting because they are less disease prone. Many garden and farm supply stores sell small packages of bulk lots in the spring. Agway Stores are a good source because they sell seed to commercial growers. Potato "eyes" can be purchased from W. Atlee Burpee and other seed companies. You may even use table potatoes purchased in the grocery store if they are last year's crop from a northern state and show strong, vigorous sprouts. "New" potatoes found in stores in late spring are likely newly harvested from southern states or California that have not gone through dormancy and may not sprout properly. Do not plant these. Some wholesalers and repackers in Philadelphia, and probably elsewhere, offer seed potatoes in small packages to dealers. Preferred varieties for home gardeners are not readily found in metropolitan areas, but they are available. Contact your garden or farm store early so the manager can order a supply of the varieties you want. The potato or horticultural specialists in your state or county Agricultural Extension office will probably know local sources of seed potatoes.

varieties

A couple dozen varieties of potatoes are grown commercially in the United States. They have skin colors of red, white, russet, yellow, even purple (which look awful). Each has distinct culinary properties, cultural requirements and length of growing season. For early "new" red potatoes I suggest Redsen, Red Norland or Chieftan. For an early white, try Atlantic, Superior or Irish Cobbler, an old variety, but still offered by Burpee. For late crop, large sized tubers, use Kennebec or Katahdin whites or Red Pontiac. Do not try to grow russet types (e.g., Idaho, Burbank) in this area. Their water requirements are too fussy and they tend to be knobby, misshapen and of poor baking quality.

My favorite potato is Bintje, an old Dutch variety, still popular in Western Europe. It has yellow skin and a creamy yellow flesh with outstanding flavor and holds together well in cooking. The oblong tubers are small, but are very attractive. Bintje supplies are very limited in North America, but the author may be able to obtain a



Potato types and varieties: (A) Red Norland, (B) Bintje, yellow, (C) Russett, (D) Kennebec, white.

small quantity for PHS gardeners in 1987. If interested write me, c/o Green Scene at PHS. A new yellow flesh variety, Yukon Gold, reputedly is outstanding. Seed is scarce but be on the lookout for it.

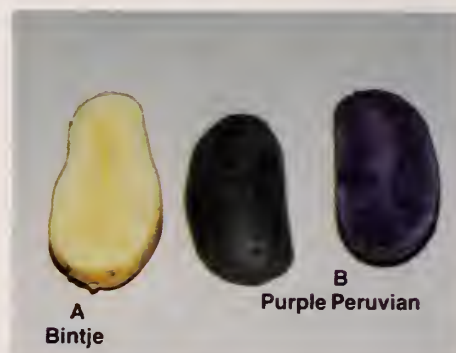
Unfortunately potato shippers do not label table potato varieties accurately; consequently, we are poorly informed about varietal differences.

Small red potatoes have become popular because they hold up well after cooking and have attractive color. I grew up on red potatoes and still grow them, or buy them for year-round use. To retain the red skin cut, slice, cube or remove a circle of skin *before cooking*. In addition, the cooking time of cut potatoes will be reduced by almost half.

handling and cutting of seed

If you obtain your seed potatoes more than three weeks before the expected planting date, hold them in the refrigerator until a week or two before planting. Then warm the tubers to 50° to 60°F. to trigger sprouting. Spread them in a garden flat in indirect light, not darkness, to encourage stubby, pigmented sprouts.

The potato seed piece's optimum size is 1½ to 2-3 ounces. Small tubers, 1½ to 2 in. in diameter, weighing about 1½ to 2 ounces, should be planted whole. Tubers 2½ to 3 in. should be cut in half through the apical or bud end. Larger sizes should be cut into four to six blocky pieces, with at least one eye per piece. Try not to break off the sprouts before planting, but if you do, others will replace them. The side and stem end eyes will usually sprout later than the apical eyes, but they will sprout after the cutting, which breaks the apical dominance. Plant the freshly cut seed immediately; don't let it dry out.



The author found this purple potato in a California supermarket. It had been grown and shipped from Oregon. Here it is shown with the author's favorite Bintje.

planting

Make a furrow 4 to 5 in. deep down the center of the preformed, raised seedbed. Place the seed pieces, sprout side up, in the bottom. Space 6 to 7 in. apart if you want to harvest smaller size tubers, or 10 to 12 in. apart for larger ones. Cover with 2 to 3 in. of soil and tamp lightly with the back of the rake. The sprouts should emerge in one to two weeks.

hilling and weed control

The tubers must be covered with soil and protected from the sun to keep them from turning green. Usually within one to two weeks after planting, numerous small weeds will germinate just below the surface. With a rake or hoe, scratch the surface shallowly and pull up a small amount of soil over the row to keep building the hill to a final depth of 4 to 6 in. over the seed piece. Even if the emerging sprout is covered, it will grow through and the weed control will be better. Hilling will probably be required two or four times before the vines cover and shade the row. A new flush of weed seedlings will be de-

stroyed with each hilling. Weeds coming later can be pulled by hand.

watering and irrigation

Potatoes need about an inch of rainfall or its equivalent in irrigation, per week, to promote steady growth and maximum yield of uniform, well shaped tubers. If rainfall is short for a week or 10 days, they should be watered. If possible, the rows should run across the slope, however slight. I prefer to use a canvas or plastic soaker on the end of the garden hose, laid in each furrow and soaking both sides. With even the slightest slope, some small check dams will usually be needed to retard the downhill flow and allow the water to soak in more uniformly all along the row.

Only roots are capable of taking up water to satisfy the plants' needs. Some gardeners like to sprinkle their gardens because they think the plants are "hot and thirsty." Actually, sprinkling only waters the upper soil surface, which encourages a shallow root system. Sprinkling in the late afternoon or evening causes the plants to stay wet overnight, making them more susceptible to blights and other foliar diseases. Deep soaking encourages a deeper and more extensive root system making the plants more tolerant of drought and heat stress. These same principles of water management apply to most long season garden crops such as tomatoes, corn, squash, melons, okra, peas and beans. I "furrow" irrigate my entire garden.

insect control

The Colorado potato beetle (potato bug) is the most frustrating insect to control. The yellow and black striped adults (hardshells) emerge from overwintering pupae in the soil about late May. In a few days, clusters of bright orange eggs will appear on the undersides of the leaves. These hatch into soft-bodied, red-orange larva that are voracious feeders. Uncontrolled, they can strip the plants down to the stems and leaf mid-ribs, causing a serious setback to the crop. A second brood usually appears in July.

Hand-picking the adults and eggs and dropping them into a can of kerosene or "squishing" the egg clusters between your fingers will reduce the population, but I find there are too many escapees. Spraying is necessary for control.

Potato flea beetles, tiny black insects that hop when disturbed, also overwinter

as pupae in the soil. They seem to emerge with the first crops and their typical, pinhole feeding injury is quite noticeable on potatoes, radishes, cole crops and eggplant.

Leaf hoppers and aphids attack potatoes but are of little concern to the gardener.

"New" potatoes as offered in area markets in the spring will likely be newly harvested from California or southern states. They have not gone through dormancy and may not sprout properly, if at all. Do not plant them.

The Colorado potato beetle is now resistant to most of the insecticides approved for home garden use. The botanicals, rotenone and pyrethrum, and the biological, *Bacillus thuringiensis*, are ineffective, as are garlic powder, red pepper or soap. The best products available today are Sevin (carbaryl) and methoxychlor. I prefer Sevin. Both also take care of the flea beetles. I use water sprays applied with a pressure tank sprayer, rather than a proportioner gadget on the end of a garden hose. I also use 5% Sevin dust.

The key to good pest control, whether weeds, insects or diseases, is to start early, before the damage is done. That means spraying or dusting for flea beetles almost as soon as the crop emerges. When I see the first Colorado beetle adults, I apply the first spray of Sevin, because the larvae will soon be there. Watching closely, I usually apply three or more sprays at three- to five-day intervals until the first brood declines. I usually add diazinon or malathion to the Sevin for extra knock down and control of leaf hoppers and aphids. The second wave of Colorado beetles comes on about a month later and usually requires a couple of sprays.

diseases

The two potato diseases of most concern to gardeners are early blight, *Alternaria*, and late blight, *Phytophthora*. They are prevalent only in wet years and may be encouraged by overhead sprinkling. Early blight causes foliage to die early and reduces crops. Late blight, the disease that devastated Ireland in the 1840's, can destroy the vines quickly and rot the tubers. Since I spray my potatoes regularly for insects, I usually add a preventive fungicide about mid-season and repeat every

seven to 10 days if it is a wet year. I used no fungicide in 1986, because it was so dry. The leading approved fungicides for potatoes are mancozeb and maneb.

When using any pesticide, follow the label directions carefully and consult your local county extension office. Direct the spray to the undersides of the plants, as well as the tops. While pesticides mentioned here are of relatively low mammalian toxicity and not readily absorbed through the skin, it is wise to wear long pants, a long-sleeved shirt and cap while spraying and to wash your face and hands with soap and water immediately afterwards.


harvesting

Some small tubers should be big enough to eat after 60 to 75 days and can be dug any time. For your main crop, wait two weeks, or longer after the vines are dead. This gives maximum yield and mature tubers, with a well set skin, for best storage. Lift the tubers carefully with the spading fork and allow them to dry on the top of the ground. Hold them for a week or so in a cool dark place to heal the cuts and nicks. I usually then wash the tubers carefully, let them dry and store them in cardboard boxes in the garage, a cool basement or root cellar. Held under 50°F. They should keep until December, or later, without excessive sprouting.

Gardeners should be mindful that a good garden soil has 50% or more air-space, that most plants have a greater biomass below ground than above, and that most fresh vegetables are 80% or more water. Thus, good soil preparation and proper water management are fundamental to successful gardening. These principles apply to most crops, but especially to potatoes. Enjoy your own home-grown "spuds" this year.

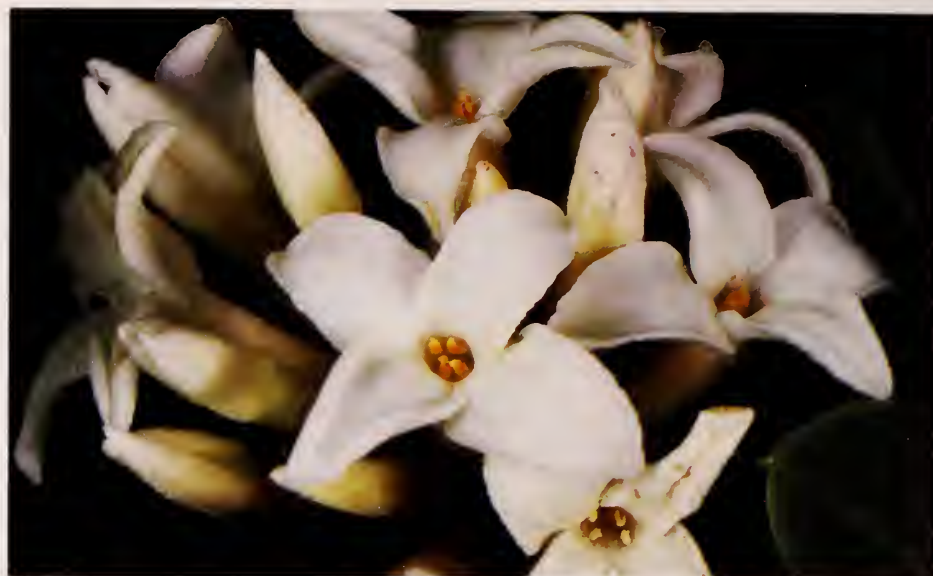
Gordon A. Brandes, a life-long gardener, holds a B.S. degree in Botany from North Dakota State University. He has been a conservationist with the U.S. Soil Conservation Service, a Certified seed potato grower and grain farmer, and for many years an agricultural product development manager for Rohm and Haas Company. Brandes was managing director of the Morris Arboretum for five years. Most recently, he served as a consultant in fungicide use and safety, and on the application of bio-technology in agriculture for a west coast genetic engineering company. Brandes is a Fellow of the American Phytopathological Society and a member of the Potato Association of America.

Daphne caucasica: the ever-ever shrub

 by Kathryn S. Andersen

Seed and nursery catalogs are full of "ever" wonders: everblooming roses, ever-bearing strawberries, everlasting flowers. The roses bloom sporadically from June through September. The strawberry plants may or may not produce scattered fruit during the same period of time. The everlasting flowers although retaining their original form and color are only everlasting as very dry reminders of their original state. *Daphne caucasica* is truly an everflowering shrub that begins to flower in mid-April and does not flag until the blooms are slowed by the second or third killing frost in November. Even in December a few buds continue to open on warm sunny days. During warm weather, milky white terminal clusters of buds and blooms contrast with the rich green foliage. When temperatures drop down near freezing or below, the entire cluster takes on an interesting old rose coloration. Not only is *Daphne caucasica* everblooming, it is eversweet, emitting the most delicious perfume for seven months a year. In the heat of summer, it is impossible to walk past the shrub without pausing a moment to enjoy a few deep breaths of the elegant scent.

In April of 1984, I acquired a small blooming plant (about 15 in. tall in a two-gallon container) at the Wilmington Garden Center Rare Plant Auction. The shrub had been propagated by Environmental of Cutchogue, NY, a wholesaler of choice nursery stock. I planted it near the house in a garden with a southeast exposure. Throughout that first season the shrub continued to bloom, grow and thrive until Thanksgiving. I wondered what the winter



Daphne caucasica flower cluster in October.

photo by Marvin Andersen

would bring. Although listed in *Hortus III* as deciduous, the plant remained green and tidy through March. Minimal die-back was noted in the center of the top and was easily removed. By the end of April new clusters of buds had appeared and the first opened to begin a new cycle of immaculate and ever-so-sweet bloom. Again in the spring of 1986 minimal die-back was removed from the center of the shrub. Late in the fall of 1986, when frost finally brought another flowering season to an end, the plant had grown 32 in. tall and 36 in. in diameter. *Hortus* gives a size of 5 ft. or more. I suspect that 5 ft. is conservative and am looking forward to a huge white fragrant ball in just a few years.



Kathryn S. Andersen is a member of the Rare Plant Selection Committee of the Wilmington Garden Center Rare Plant Auction. She also serves on the Council of the Pennsylvania Horticultural Society.

Sources

One plant will be available at The Wilmington Garden Center Rare Plant Auction, Longwood Gardens on April 13, 1987.

After September, the plant will be available on request at:

Roy Freeman Landscape and Gardern Center
Box 282

R.D. 1
Langhorne/Yardley Road
Langhorne, PA 19047
215-968-4440

Waterloo Gardens
Rt. 30
Devon, PA
215-293-0800

Snipes Farm and Nursery
U.S. Route 1
Morrisville, PA 19067
215-295-1138

For other sources out of the area, contact supplier:

Jim Cross
Environmental
Box 730
Cutchogue, NY 11935
516-734-6439

PLANT SOCIETY MEETINGS in 1987

In the fall of 1986, we invited area plant societies to send us information about one major meeting and one major event they were planning for 1987. We've listed here those Societies that responded. We plan to publish this list annually in the March issue. If you wish to be included in 1988, please send information by November 15, 1987. Please follow the exact format listed below. Write Plant Societies, *Green Scene*, 325 Walnut Street, Philadelphia, PA 19106. This is the only list that will appear in 1987.

AFRICAN VIOLET SOCIETY OF PHILADELPHIA 28th Annual African Violet Show & Plant Sale

May 2, 1 pm - 9:30 pm
May 3, 12 Noon to 4:30 pm
Plymouth Meeting Mall
Germantown Pike
Plymouth Meeting
Admission free

Contact:
Enid Branson,
Sue Hanna
AVSP
2026 Pleasant Ave.
Glenside, PA 19038

KEYSTONE AFRICAN VIOLET SOCIETY

Annual Show and Plant Sale

Nov. 1, 10 am - 4 pm
Penna. Horticultural Society
325 Walnut Street
Philadelphia, PA 19106

NATIONAL BONSAI FOUNDATION

Public Bonsai Auction
March 14, 10 am
U.S. National Arboretum
3501 New York Ave., NE
Washington, DC 20002

Contact:

Mrs. Gladys Souque
KAVS
4356 Penn Street
Philadelphia, PA 19124
(215) 744-6973

Contact:

National Bonsai Found.
3501 New York Ave., NE
Washington, DC 20002

AMERICAN CONIFER SOCIETY

Annual Meeting

July, TBA
Raleigh, NC

DELAWARE VALLEY CHRYSANTHEMUM SOCIETY

Rooted Cutting Sale

May 23 & 24, 10 am - 4 pm
Tyler Arboretum
Lima, PA

DELAWARE VALLEY DAFFODIL SOCIETY

Northeast Regional**Daffodil Show** of the
American Daffodil Society

(sponsored by DVDS/
Longwood Gardens)
April 17, 1:30 pm - 5 pm
April 18, 10 am - 5 pm
Longwood Gardens
Kennett Square, PA
Admission free
Entries April 17, 7 am - 10 am

GREATER PHILADELPHIA DAHLIA SOCIETY

Annual Show - GPDS

Sept. 4 & 5
Exton Mall, Exton, PA
Time: TBA

**Fall Meeting & Annual
Show**

American Dahlia Society
Chicago, IL

DELAWARE VALLEY DAYLILY SOCIETY

DVDS Flower Show

July 19, 1 - 5 pm
Longwood Gardens
Kennett Square, PA

DVDS Plant Sale

September 12
Tyler Arboretum
Lima, PA

HELICONIA SOCIETY INTERNATIONAL

3rd Annual Meeting

June 24 - 27
Harold Lyons Arboretum
Manoa Valley, Hawaii

DELAWARE VALLEY UNIT HERB SOCIETY OF AMERICA

**Annual Herb Sale &
Luncheon**

May 16, 10 am - 4 pm
Prallsville Mill, Rte. 29
Stockton, NJ

PENNSYLVANIA HEARTLAND HERB SOCIETY UNIT H.S.A.

**Herbal Delight
Symposium**

June 24 & 25
Time: TBA
Albright College
Reading, PA

PHILADELPHIA UNIT HERB SOCIETY OF AMERICA

49th Annual Herb Sale

May 7, 10 am - 2 pm
Plants, Food, Light Buffet
Rain or Shine -
Douglas Farm
Poughtown Rd. off Rte. 113
Kimberton, PA

SUSQUEHANNA UNIT HERB SOCIETY OF AMERICA

Herb & Plant Sale

May 2
Time: TBA
Rock Ford Plantation

HOLLY SOCIETY OF AMERICA, DELAWARE VALLEY CHAPTER

Fall Meeting

Nov. 21
Location: TBA

**Meeting, Plant Sale,
Luncheon**

April 4
Fee: Cost of luncheon
Location: TBA

Contact:

Maxine Schwarz
P.O. Box 242
Severna Park, MD 21146

Contact:

William R. McKinney
DVCS
535 Woodhaven Road
West Chester, PA 19382

Contact:

Mrs. Robert R. Rada
DVDS
1125 Kaolin Rd.
Kennett Square, PA
19348
(215) 444-3333
or
Longwood at 388-6741

Contact:

Stanley Johnson
GPDS/ADS
406 Franklin Ave.
Cheltenham, PA 19012

Contact:

Dr. George Forsythe
DVDS
Rte. 1, Glen Road
Landenberg, PA 19350
or
Kjell Christiansen
DVDS
Box 200
Glen Mills, PA 19342

Contact:

Fred Berry
HSI
6450 S.W. 81 St.
Miami, FL 33143

Contact:

Joan Schumacher
HSA
8 Windey Way Lane
Doylestown, PA 18901

Contact:

Barbara Brouse
HSA
2015 Potshop Road
Norristown, PA 19403

Contact:

Linda Madara
Box 143
1319 Hagys Ford Rd.
Narberth, PA 19072

Contact:

Judith Eshleman
HSA
1421 Marietta Avenue
Lancaster, PA 17603

Contact:

E. Elizabeth Kassab
Holly Society
6 E. Brookhaven Rd.
P.O. Box 52
Wallingford, PA 19086

MID-ATLANTIC REGIONAL/AMERICAN HOSTA SOCIETY

**National Hosta
Convention**

June 25 - 27
Longwood Gardens
Kennett Square, PA

IKEBANA INTERNATIONAL PHILADELPHIA CHAPTER #71

Japanese Flower**Arranging Demonstration**

Sogetsu School, by
Haruko Watabe
April 23, 10 am
Memorial Library of
Radnor Township
Wayne, PA

INDOOR GARDENING SOCIETY OF PHILADELPHIA

No major event in 1987. For information on membership:

DELAWARE VALLEY IRIS SOCIETY

Annual Iris Show

May 24
Longwood Gardens

Annual Rhizome Sale

July 18, 10 am - 2 pm
Tyler Arboretum
Lima, PA

MIDDLE ATLANTIC REGIONAL LILY GROUP

Annual Show

July 4 & 5
Longwood Gardens

Bulb Auction

November 8, 1:30 pm
1012 Westview St.
Phila., PA 19119

THE MAGNOLIA SOCIETY, INC.

**Annual Meeting &
Convention**

Last weekend in April
Asheville, NC

MARIGOLD SOCIETY OF AMERICA

Annual Meeting

July 9 - 12
Lompoc, CA 93060

CENTER CITY ORCHID SOCIETY

Monthly Members Meeting

April 20, 6:30 pm
Frank Wolf Company
2300 Chestnut Street
Philadelphia, PA
Mr. Walt Off, Waldor Orchids
on "Orchids of Hawaii"

Plant Sales

April 20, 6:30 pm
May 18, 6:30 pm
(see meeting info. for
location)

SOUTHEASTERN PENNSYLVANIA ORCHID SOCIETY, INC.

Annual Auction

Second Wednesday in
Conshohocken Fire
Company No. 1

SOUTH JERSEY ORCHID SOCIETY

Members Meetings

Third Sunday monthly,
Sept. - June
Wenonah United Methodist
Church
9 S. Jefferson Ave.
Wenonah, NJ 08090

Orchid Auctions

Major - November
Mini - June
Locations TBA

PERENNIAL PLANT ASSOCIATION

**Fifth Perennial Plant
Symposium**

August 3 - 8
Omni International Hotel
Baltimore, MD

Contact:

Warren I. Pollock
AHS
202 Hackney Circle
Surrey Park
Wilmington, DE 19803
(302) 478-2610

Contact:

Lorraine H. Toji
Ikebana International
R.R. #2, Box 110
Sewell, NJ 08080

Contact:

Mrs. Gladys Souque
IGSP
4356 Penn Street
Philadelphia, PA 19124
(215) 744-6973

Contact:

Mrs. Arthur F. Martin
DVIS
116 Meriden Drive
Hockessin, DE 19707
(302) 998-2414

Contact:

Kathryn S. Andersen
Lily Group
7 Perth Drive
Wilmington, DE 19803

Contact:

Phelan A. Bright
Magnolia Society, Inc.
907 S. Chestnut Street
Hammond, LA
70403-5102

Contact:

Jeannette Lowe
MSA Editor
394 West Court Street
Doylestown, PA 18901

Contact:

Ms. Bearley B. Karsch
CCOS
425 S. 13th Street
Philadelphia, PA 19147

Contact:

Mrs. Curtis Cheyney, III
SPOS
205 Whitmarsh Road
Ardmore, PA 19003

Contact:

Mrs. Pat Fitzwater
SJOS
1497 Chestnut Ave.
Gloucester, NJ 08030

Contact:

Dr. Steven M. Still
217 Howlett Hall
2001 Fyffe Court
Columbus, OH 43210

continued

PLANT SOCIETY MEETINGS in 1987

continued

AMERICAN POMOLOGICAL SOCIETY

Annual Meeting in
conjunction with American
Society for Horticultural
Science
November 6 - 14
Hyatt Orlando Hotel
Orlando, FL

AMERICAN PRIMROSE SOCIETY - Doretta Klaber Chapter

Meeting:
Film Presentation
March 14, 12:30 pm
Fairmount Park Horticultural
Center
Philadelphia, PA

AMERICAN RHODODENDRON SOCIETY

**43rd American
Rhododendron
Convention**
Hosted by Eugene Chapter
April 30 - May 3
Valley River Inn
Eugene, OR

AMERICAN RHODODENDRON SOCIETY, PHILADELPHIA CHAPTER

**Rhododendron Flower
Truss Show** in conjunction
with the Valley Forge
Chapter, ARS
May 16, 1 - 4:30 pm
Tyler Arboretum
Lima, PA

Contact:
Dr. L. D. Tukey
APS
103 Tyson Building
University Park, PA
16803
(814) 863-2198

Contact:
Mrs. Frank Schley
President, APS
33 Eglantine Ave.
Pennington, NJ 08534
(609) 737-0088

Contact:
Tom & Emma Bowhan
ARS
27194 Huey Lane
Eugene, OR 97402

Contact:
Brian Keim
ARS
1189 Sewell Lane
Rydal, PA 19046
(215) 576-6494

AMERICAN RHODODENDRON SOCIETY, PINE BARRENS CHAPTER

Plant Sale
May 9
Location: TBA
Contact Ray Rhoads within
30 days of event

Contact:
Ray Rhoads
ARS
726 Upton Way
Somerdale, NJ 08083

AMERICAN RHODODENDRON SOCIETY, VALLEY FORGE CHAPTER

**Rhododendron Flower
Truss Show** in conjunction
with the Philadelphia
Chapter, ARS
May 16, 1 - 4:30 pm
Tyler Arboretum
Lima, PA

**Azalea & Rhododendron
Plant Sale**
May 9, 9 am - ?
Valley Forge Methodist
Church
Route 23, 1/4 mi. west of jct
Rte. 252, Valley Forge

Contact:
Francis Raughley
ARS
2112 Foulk Road
Wilmington, DE 19810

AMERICAN ROCK GARDEN SOCIETY, DELAWARE VALLEY CHAPTER

**Delaware Valley Garden
Tours**
May 1987
Location: TBA

Plant Sale
Annually, June &
September
Members Only
Locations: TBA

Contact:
Fred M. Brown
ARGS
412 Little Egypt Road
Elkton, MD 21921

DELAWARE ROSE SOCIETY

**Delaware Rose Society
Annual Show**
September 13
Christiana Mall
Newark, DE

Contact:
Harold E. Diem
DRS
6137 Telegraph Road
Elkton, MD 21921

DEL-CHESTER ROSE SOCIETY

Annual Rose Show
June 13
Longwood Gardens
Kennett Square, PA
Open entry. Exhibitor and
one guest admitted free to
gardens.

Annual Auction
October 1987
Delaware Valley Church
of Christ
(across from Penn State
Lima Campus)
Lima, PA

Contact:
Earl Brown
DCRS
1018 Centre School Way
West Chester, PA 19382
(215) 696-3595

ROSE SOCIETY

Annual Rose Show
June 6, 2 - 9 pm
Plymouth Meeting Mall
Germantown Pike
Norristown Exit of PA Tpk.
Open to Public

Monthly Meetings
First Thursday, 8 pm
Mary H. Wood Park House
114 5th Avenue
Conshohocken, PA

Contact:
Mrs. Donald H. Pitkin
PRS
923 Springwood Drive
West Chester, PA 19382
(215) 692-4076

WATER LILY SOCIETY

Water Lily Symposium
August 19 - 23
Denver, Colorado

Contact:
Charles B. Thomas
WLS
P.O. Box 104
Frederick, MD 21717

TBA = to be announced

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Green Scene March/April 1986 issue.

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Ellen Platt's drying barn.
See "Getting Down to
Business," page 18.

THE green scene

HORTICULTURE IN THE DELAWARE VALLEY

MAY • JUNE • 1987

\$1.50

Annual Meadow Gardening.
See page 4.



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photo by Peter Brindle

Back cover: Gathering Indian
grass seed at the Brandywine.
photo by F M Mooberry

Volume 15, Number 5

May/June 1987

THE PENNSYLVANIA HORTICULTURAL SOCIETY

325 Walnut Street, Philadelphia, Pa. 19106

Telephone: 215-625-8250

Horticultural Hotline: 215-922-8043

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Charles W. Heuser
Natalie Kempner

Designer: Julie Baxendell, Baxendell's Graphic

Separations: Lincoln Graphics **Printer:** Havertown Printing

THE GREEN SCENE, (USPS 955580) Volume 15, No. 5, published bimonthly, January, March, May, July, September, November, by the Pennsylvania Horticultural Society, a non-profit membership organization at 325 Walnut Street, Philadelphia, PA 19106. Subscription: \$8.50 - Single Copy: \$1.50. Second class postage paid at Philadelphia, PA 19106. • **POSTMASTER:** Send address change to THE GREEN SCENE, 325 Walnut Street, Philadelphia, PA 19106.

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Pennsylvania Horticultural Society

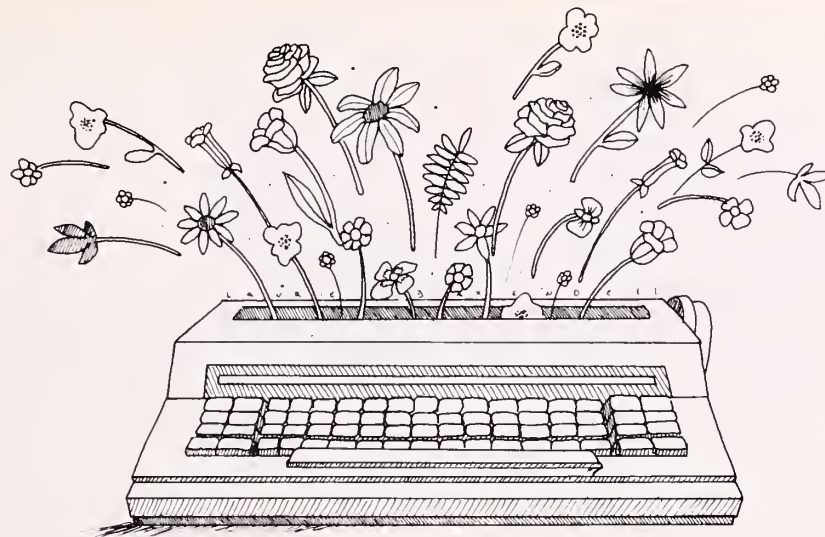
Maryland Horticultural Society

Frelinghuysen Arboretum

Skylands Arboretum

Blithewold Gardens and Arboretum

Hershey Gardens of Hershey, PA



Green Scene Invites 400 Authors

This morning a sparkling manuscript from Fred McGourty, a garden designer and nurseryman in Connecticut, arrived on my desk for the July issue. (No tips about the subject; you'll have to wait to read it.) The opening was so funny and wonderful, I had to call other writers to read it to them. Fred is so in tune with writing and gardening that it's easy to believe the story just rolled right out of him. But I know better. Writing well is a disciplined and often difficult task, but who doesn't know that. Fred knew a year ago that the article was due on March 1 so he said he used the luxury of time to think about, research, write and rewrite the piece.

Many *Green Scene* authors have never written before, and when they come to put their ideas about gardening on paper they do so from an open heart and a wish to share information about an experience that has brought them great pleasure. In the process of preparing our 14-year Index of authors and subjects for *Green Scene*, we counted more than 400 people who have written for *Green Scene* since we published our first issue in September 1972. We thought it might be fun to get them all together to explore more about writing. The event will be in October; we'll have more information about it all later.

WHAT WE WANT NOW, however, is to track down our authors. We have addresses on some, but some have moved away to other cities, perhaps even other countries. If you have ever written for *Green Scene* or you know someone who has, will you please send names and addresses, so we can be sure to send you an invitation. You can use the form below if you wish. We want to invite everyone to this AUTHOR'S ALUMNI EVENT.

Jean Byrne, *Editor*

☐ I wrote for *Green Scene*.

☐ I've listed the name and address of one of your authors who has moved away or who is not a PHS member and might be hard to find.

name

address

daytime phone #

ANNUAL MEADOW GARDENING: *A View from Chanticleer*

 by Christopher Woods



4 An electric combination of flower colors in the Chanticleer meadow.

Creating a meadow garden is easy. It's simply a matter of sowing a few seeds in the right place at the right time and then sitting back to enjoy it.

A meadow is grassland cut for hay, graced by animals or restricted by temperature and altitude as in an alpine meadow. In nature, grasses and wildflowers are but one of the stages of natural succession leading to a community of forest trees. If grassland is left untended, woody plants establish themselves and, in a short time, shrubs and young trees will dominate the landscape. In creating a meadow we are trying to mimic the best of the more natural meadows. In making an annual meadow garden we are moving away from natural grassland toward the annual border or display garden. We are bringing the romance of an alpine meadow into the realm of the

garden. An annual meadow garden is the easiest to create and the most immediately rewarding.

The first step is to determine where to put your meadow. It can be an area of rolling grassland or a few square yards of urban lot; size is not important. What is important is that you choose a site that is sunny and well-drained and where the electric combination of flower colors can be seen to the greatest advantage. At Chanticleer we have a site bounded on three sides by post and rail fencing and on the fourth side by young trees. The area is highly visible from two important locations within the garden and also from a

road that runs down one side of the property. Unfortunately, the site had become an uninteresting collection of poison ivy, perennial grasses and tree seedlings.

Unless you have an area of mowed sod that can be stripped and then cultivated, the next step is to kill off the existing vegetation. If the weeds are tall and thick, first mow them down, remove the debris and then spray with a weedkiller, when the weeds have grown back.

We sprayed our area with a total weedkiller, Roundup, in the second week of August. At that time of the year the weeds are growing abundantly, the weedkiller is rapidly taken into the plant system, and the

photo by Peter Brindle



The first flush of the yellow black-eyed susan also began at the end of June with the bachelor's buttons humming an electric accompaniment. At the beginning of July the poppies returned seemingly stronger in color but less in number. For most of July the black-eyed susans and the bachelor's buttons danced with each other until the hot weather of late July exhausted them both.

weeds die quickly. By the end of August the weeds were dead. We then raked the area removing the dead foliage and clearing the ground for cultivation.

seeding

We are fortunate enough to have a mechanical seeder that cuts a small trench in the ground and sows the seed within

the green scene / may 1987



Chanticleer house from the meadow.

the trench. This enables us to sow seed without having to cultivate the soil. If you don't have one of these you will have to rototill your soil before you sow.

Wildflowers are tough and adaptable; they don't need fertilizer or perfect soil. They do need a little help in getting started however, so tilling your soil to a depth of 6 to 8 inches will better enable the seeds to germinate and establish root systems.

Once the ground is prepared it is time to sow the seed. A number of companies sell meadow mixes, and they appear to be fairly similar. The price of seed can vary greatly. A pound of seed on the retail mar-

ket in 1986 cost around \$50.00. It is an alarming price but you only need to pay it once because you can collect your own seed from your meadow for many years to come. (See F M Mooberry's article following this one.) The highest percentage of seed in a mix is annual seed. In the mix we purchased the dominant species were corn poppy (*Papaver rhoeas*), bachelor's buttons (*Centaurea cyanus*), and scarlet flax (*Linum grandiflorum* 'Rubrum.' The perennials black-eyed susan (*Rudbeckia hirta*), coreopsis (*C. lanceolata*), and yarrow (*Achillea millefolium*) were second in overall seed percentage.

continued



Mowing the herbage before spraying.

Wildflower seed is packaged for particular geographic regions with native and non-native annual and perennial species being somewhat randomly mixed. Annuals do predominate for the good reason that they do so well the first year. There are problems with the random nature of the mixture. Some species may not do very well at all in your particular location, while others may do too well and become invasive.

Seed is best sown in late summer or early fall. We sowed ours during the first week of October. We added sand (10 lbs. of sand to four lbs. of seed) to our bag of seed to help spread the seed more evenly. Poppy seed in particular can be quite fine so the addition of an inert material like sand, sawdust or vermiculite helps to disperse seed evenly. We followed the seeding rates recommended by the seed company. These are certainly generous but until you know what seeding rate suits you, it is wise to stick to the recommendations. Seed should be sown at a depth of $\frac{1}{4}$ of an inch with a maximum of $\frac{1}{2}$ inch. After the seed has been sown, rake it lightly into the surface. Seed to soil contact is very

important; it will not germinate successfully lying on the top of the soil.

Although wildflower meadows can be sown in either late summer/fall or early spring, greater success comes with a fall sowing. The soil is warm and easy to work with, and one can be reasonably assured that it is going to rain sometime in October. Seed should be up and growing strongly by the time the weather turns frosty. September is probably the best time and although variation in timing doesn't seem to make an enormous difference, sowing seed after the middle of October isn't advisable.

the meadow hums

Now comes the really easy part. You don't do anything for six months. In the spring the meadow will come to life and the plants will start to grow. We were able to observe our meadow quite closely. There were a few weeks in early April when I stood looking at the area quite fretfully wondering whether the whole project was going to work. By the end of April signs of life were strong and I was too busy to worry

about much anyway. In the middle of May, flower buds were visible and beginning to break. At the end of May the entire three-fourths of an acre had exploded into a riot of red and pink poppies and blue bachelor's buttons.

By the second week of June we were becoming drunk with color. At the end of that month the poppies had partly faded, but the scarlet flax was moving in to intoxicate us further. The first flush of the yellow black-eyed susan also began at the end of June with the bachelor's buttons humming an electric accompaniment. At the beginning of July the poppies returned seemingly stronger in color but less in number. For most of July the black-eyed susans and the bachelor's buttons danced with each other until the hot weather of late July exhausted them both. By the beginning of August the spectacle was over, a few tired stragglers remaining to the end.

Although proprietary seed mixes do provide both annual and perennial flowers, our interest continues to be in the display that annual flowers give. We will continue to sow the meadow with annual seed every



At the end of May the corn poppies explode into a riot of red and pink poppies.

year. This year we will collect our own seed, keeping the variety restricted to corn poppy, bachelor's buttons and scarlet flax, with a dash of black-eyed susan. In time the needs may change, and we will allow the perennial species to become more dominant. At the moment we are having too much fun enjoying our vibrant dance of blues, pinks and reds.

Whatever your reasons for starting an annual meadow garden, it is an exciting and rewarding experience. It will give you a great deal of pleasure, and I can guarantee that you will never forget the first summer of your first meadow.

For Further Reading, the author recommends:

A Garden of Wildflowers: 101 Native Species and How to Grow Them by Henry W. Art (Garden Way Publishing, 1986. Paperback \$12.95).

The Wildflower Meadow Book, A Gardener's Guide by Laura C. Martin (East Woods Press, 1986. Paperback \$12.95).

Both books are available at the PHS library.

Chris Woods is horticulturist/manager of Chanticleer, the home and garden of Adolph Rosen-garten, Jr.



The seeder cuts a small trench in the ground and sows the seed within the trench.



Collecting Wildflower Seed at the Brandywine

 by F M Mooberry

Volunteer collectors Yvonne Blades and Doris Hunter (hat) gather seed on the Brandywine.

8



Cardinal flower seed pod (*Lobelia cardinalis*)

In late May the volunteer gardeners of the Brandywine Conservancy/Brandywine River Museum in Chadds Ford (Pa.) start collecting seeds from local wildflowers. They won't stop until late November. They collect, during that time, seed from more than 100 species of plants.

The seed collection project was started in 1979 to supply plants for the Brandywine River Museum's newly created native plant garden. Sources for native plants were virtually nonexistent. Another compelling reason was cost; seeds collected from local plant populations were free for the collecting and a large number of plants could be grown at low cost. It would take longer to have plants of flowering size but for a low budget endeavor the economics of growing were very attractive. The project had grown in size and importance each year. Its primary purpose is still new plants for the garden, but the seeds are also used to grow plants for our plant sale, for exchange with other gardens, and for sale in the museum shop.



Seed collections chairman Bob DePuy in the field with the indispensable brown bag, which bears in waterproof ink the name of the plant and date the seed was collected.

We didn't realize it when we started collecting but the plants grown from locally collected seed are much better suited to our region's climatic conditions because they have grown here for hundreds of years. Cardinal flower (*Lobelia cardinalis*) grown from seed collected near Chadds Ford has already adapted, while seed purchased from California might need time to acclimate. We assumed that other gardeners who wanted to grow wildflowers were also having difficulty finding seeds. So in 1979 we started the seed sale with a few packs in the Museum Shop. The sale has grown from the first few seed packets sold in 1979 to 13,000 packs in 1984.

The May collecting starts with the first seed to ripen, the spring favorite, bluebell (*Mertensia virginica*). The gardeners are never able to gather these in abundance, as four green nutlets mature at different times and drop to the ground as soon as they are ripe. "Here today, gone tomorrow" may have originated with the person trying to collect ripe bluebell seed. Fringed gen-

tian (*Gentianopsis crinita*) seed is the last, ripening in November.

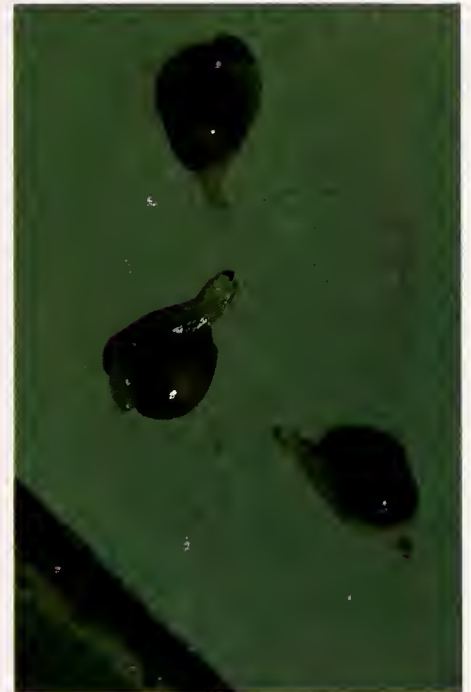
We record the date that each species ripens and is collected. From these dates we develop a planning timetable for the next year's collecting campaign. While most collecting is done from the Conser-

Cardinal flower (*Lobelia cardinalis*) grown from seed collected near Chadds Ford has already adapted, while seed purchased from California might need time to acclimate.

vancy's garden, we occasionally collect from other properties. We secure permission from the landowner before we collect. We do not collect seeds in excess, leaving wild populations unthreatened. No more than 10% of a seed crop should be collected from a wild stand. Leave the remainder for natural dispersal.

Once collected and cleaned, seeds must be stored either moist or dry. Seeds

Some seeds disperse so actively that a bag is needed to catch the flying seeds.



Bloodroot seed germination drops dramatically if they are permitted to dry.

are dried naturally and then stored dry until they are planted, or they are never allowed to dry out. Those needing moist storage are either planted immediately, thus eliminating the problem, or are stored in moist sphagnum until they are planted in the spring. Germination of these seeds drops dramatically if they become dry. Many spring flowering wildflowers are in this group: bloodroot (*Sanguinaria canadensis*), wild blue iris (*Iris versicolor*), and wild bleeding heart (*Dicentra eximia*).

gathering seeds

The perfect time to gather seeds is a bright, sunny day after the morning dew has dried. This makes the rest of the process easier because if seeds are collected wet, they will mold quickly. Rather than lose the seeds of a particularly desirable plant, the gardeners have collected seed in the rain even though this makes the rest of the process more work. Armed with good clippers and a large paper grocery bag with the name of the plant and date written on



Goldenrod seeds are among those collected with the small hand held vacuum shown below.



Bob DePuy assembled this vacuum for collecting seeds; it is powered by a 12-volt battery.

it in waterproof ink, they begin collecting. While most seed is collected from dry land, blue iris (*Iris versicolor*) grows in a swamp and is collected by a volunteer wearing fishing waders.

When gardeners are collecting tiny seeds, they tape the bottom of the bag to insure keeping what has been collected. Lobelia seed is about the size of the period at the end of this sentence. The seed head or the whole stalk is carefully cut, so the ripe seed won't shake out. The stalk is then put in upside down in the bag so that the ripening seeds can fall out. When the collecting is finished the open bag is left outside in a protected place so that the insects that may have been collected along with the seed, have a chance to escape. This isn't so much a humanitarian act as it is practical. It is easier to let them walk, fly, or crawl away than it is to use an insecticide. As much cleaning as possible is done while collecting to make the later fine cleaning easier. Leaves and extra stalks are best left out of the collecting bag.

drying

The next step is drying the seed. Seeds are either spread out in boxes and trays or kept in the paper bags depending on the plant's dispersal method. Tray drying is faster but some seeds disperse so actively that a bag is needed to catch the flying seeds. To guard against mold, we take care not to overfill the containers, to strip off extra leaves and stems and to turn often. Some genera, such as violets, must be kept in a closed bag as they have a dispersal mechanism that expells the seed with such force that they pop out of an open container. Plastic bags are never used for drying because they retain moisture, and usually insure moldy seed.

Hand collecting is fine for small quantities, but ingenuity is required when larger quantities are needed. We now collect most of the fall composites such as ironweed, asters, goldenrods, and Joe-Pye weed with a small hand-held vacuum cleaner powered by a 12-volt battery in a small cart. The vacuum system was assem-

bled and is used by the seed collections chairman, Bob DePuy.

Some of the seed cleaning is done when the seed is collected but many plants do not give up their seeds easily. After all, seed is produced to insure reproduction of the species and nature has evolved many clever devices to protect and disperse seed. Some are the collector's delight. Ripe poppy seed comes in a container similar to a salt shaker. Just tipping the capsule is enough to produce beautiful

No more than 10% of a seed crop should be collected from a wild stand. Leave the remainder for natural dispersal.

clean, chaff-free seed, while others must be wrestled from the seed pod. Butterfly weed (*Asclepias tuberosa*) must be picked just as the pod is about to open and the seeds stripped off the core of still moist parachutes. At this point, it is an efficient way to obtain seeds, but when each silken parachute is dry and ready to fly, perhaps even Job would not have the patience to clean it.

The favorite tools of Jerry Kelley, chairman of seed cleaning, are sieves, screens, paper plates, plastic sheets and paper bags. He and the other volunteers sift, shake, stomp, blow and roll the plants to free the seeds. Static, air, friction and hand shelling are used in the final cleaning procedure. Some species just need to be suspended upside down and clean seed can be collected from the bottom of the bag.

Cleaned seed is stored at room temperature until October and then put into a refrigerator. Glass containers offer an

instant visual inventory. Large quantities of seed are stored in the gardener's unheated shed. They remain in the cold until they are sold.

The seeds that need moist storage are collected and cleaned immediately and either planted or put into a moist medium. Care must be taken not to put too much water into the medium. We prefer milled sphagnum. Moist sand can be used but it must be checked during storage as it dries out faster than sphagnum. Seeds mixed with the medium are stored in glass or plastic containers to retain the desired moisture.

We are now developing records on the longevity of stored seed. For example, we know that Queen Anne's lace (*Daucus carota*) is viable for six years, gaillardia (*Gaillardia pulchella*) for four years if stored properly.

The volunteers do all of the packing under Susan Kile's direction. Susan chairs this operation. Each seed pack has information about the particular species, height, flower color, bloom time, habitat requirement, general growing instructions and additional suggestions for use in the garden. New last year was the red butterfly stamped on packages to tell customers which plants attract butterflies.

Doris Hunter, sales chair, keeps the sales table in the Museum Shop stocked and keeps the financial records of the sale. Most packages sell for 50 cents except for the more unusual seeds. We hope a higher price will encourage people to make a careful decision before purchasing the seeds of Canada lily (*Lilium canadense*) or turks-cap lily (*Lilium superbum*), which are difficult and more exacting to grow.

Seed is also available by the ounce or by the pound and special custom mixes are formulated for customers dependent on specific site requirements. Seeds have been used for Delaware highways, the western portion of the Pennsylvania Turnpike, nature centers, private gardens and meadows. Each year in December a list of all the seeds collected during the year is compiled and printed. The seed list is sent to other gardens and arboreta throughout the United States and Canada. The Physic Garden in London receives one of our first copies.

The volunteer gardeners at the Conservancy have made a significant contribution to the conservation and enjoyment of our native wildflowers. That is the real reason for each seed collected

Brandywine River Museum and Conservancy Wildflower Plant and Seed Sale

Saturday and Sunday, May 2 and 3 in the Courtyard of the Brandywine River Museum – 9:30 to 2:00. The Museum is located on Route 1 in Chadds Ford, Pennsylvania

More than 100 varieties of wildflowers: perennials and annuals to suit meadows, woodlands, wet areas and border planting. Seeds for wildflowers.

For additional information call F M Mooberry, coordinator of horticulture at 215-459-1900 or 388-7601.

Suzanne B. Gochringer
Plant Sale Chairperson

F M Mooberry is coordinator of Horticulture of the Brandywine Conservancy. She is responsible for the wildflower and native plant garden and has co-authored *Grow Native Shrubs in Your Garden*.

Brandywine Conservancy: A Sampling of Seeds Collected in 1986 (more than 100 varieties collected)

Adlumia fungosa
Allegheny vine
*Allium tricoccum**
wild leek
Amsonia tabernaemontana
amsonia or blue dogbane
Aquilegia canadensis
wild columbine
*Aster diversifolius**
white wood aster
Aster novae angliae
New England aster
*Aster patens**
late purple aster
*Aster prenanthoides**
crooked-stemmed aster

Clematis virginiana
virgin's bower
Eupatorium coelestinum
mistflower
Hibiscus palustris
crimson-eyed rose mallow
Iris versicolor
larger blue flag
Lilium superbum
Turk's cap lily
*Linaria vulgaris**
butter-and-eggs
Lobelia cardinalis
cardinal flower
Lobelia siphilitica
blue lobelia

*Penstemon smalli**
mountain penstemon
Rudbeckia fulgida
black-eyed susan
*Scutellaria integrifolia**
hyssop skullcap
Tiarella cordifolia
foamflower
Vernonia noveboracensis
New York ironweed
*Viola sagittata**
arrow-leaved violet

*Small quantity collected, for propagation or exchange only while it lasts.

THE NEW JERSEY PINE BARRENS:

A Personal Rediscovery

 by Rick Darke



View from Apple Pie Hill fire tower over the near-wilderness of the New Jersey Pine Barrens.

12

When we moved to Freehold, New Jersey in the middle 1960s the town was changing rapidly. Once a small sleepy town surrounded by productive farms, it was quickly becoming a haven for commuters, many of whom worked in New York, only 35 miles away. New housing developments were quickly replacing the farmlands.

I'd been accustomed to living surrounded by trees. The streets of my old home town were maple lined, and I'd had the benefit of a turn-of-the-century park nearby. The park contained many magical places — avenues of Carolina silverbells, a ball field bordered with Katsura trees, a large grove of bottlebrush buckeye to wander through, a copse of dark green hemlocks in a hollow fronted by skeleton-white birches (we called it Ghost Canyon). In Freehold, bulldozers pushed away topsoil, exposing clay so sticky you could model with it. The sun baked the displaced earth into a parched moonscape, treeless and truly barren.

Before long I discovered that just south of town, at the edge of the township, the recently abandoned pastures, corn fields and potato fields met with a rather abrupt wall of pines. Within a couple miles the soil changed to a light-colored quartz sand. Narrow sand roads led into the pines, and there were few signs of development, past, present or future. I felt I'd found a substitute for my old park, and I soon realized these woods had a magic all their own.

Travel a mile into these pines and you quickly feel as if you've left civilization behind and entered a vast unpopulated wilderness. Pitch pines (*Pinus rigida*), as they grow in New Jersey, are scrubby and irregular, rarely topping 40 feet. A New Englander favoring ramrod-straight whites might dismiss them as inferior, yet many pitch pines possess the asymmetric beauty of mature white pines, if on a smaller scale. Their picturesque irregularity makes most of these trees memorable if studied individually; however, collectively they create a forest that is at once beautiful and grotes-

que. A brief walk alone in these woods will quickly alert you to how easy it would be to become hopelessly lost.

Charting this strange new territory, my friend and I originally stayed close to the sand roads and trails that criss-crossed the pines. Gradually we identified sections a few square miles in area cordoned off by encircling main trails. We were then free to wander these interior woods with the certainty of eventually emerging on a familiar trail. The inevitable disorientation before we got back on the trail forced us to put all things out of our minds except the immediate atmosphere of the pines.

the whip-poor-will's lure

The land in this area of coastal plain New Jersey is quite flat — a 50 foot change in grade would seem a mountain. The soft sand underfoot is covered with years of accumulated forest litter, mostly pitch pine needles and stubby cones, plus leathery leaves fallen from scattered scrub oaks and bits of charcoal from past fires. This



mat is overtopped by a lichen mosaic, cool grays and gray-greens that contrast sharply with the rusty litter, often climbing to above eye-level on the platy-barked pine trunks. The understory varies tremendously, sometimes offering unobstructed travel, other times forming thickets so dense as to be nearly impenetrable. The canopy formed by these scrubby pines and oaks is sparse and open. There are few deeply shaded places even on a dull day, and on a clear night when the moon is full, it's easy to walk these woods without a lantern. We often camped in the pines, and one bright summer night our evening's discussion was interrupted by a whip-poor-will's call. We left camp without the lantern and attempted to sneak up on the bird by following its sound. The call stopped just as we figured we were on top of it. We soon heard the call start again, this time about 200 yards further into the woods. We followed it again until we realized it might lure us beyond an easy return.

The twisted pines and endless sand give

continued

At left, the grass-pink *Calopogon tuberosus* is one of the elegant wild orchids growing in the pine barrens.

Narrow sand roads lead into and crisscross the barrens. ▼



the overall impression of a dry environment, so dry in July that you can hear brittle lichens crunching underfoot as you move through the woods. Many times, however, an ever-so-subtle lowering of the grade is accompanied by a quick transition to truly swampy conditions, and suddenly your feet are wet. Keep traveling and you may find yourself at the edge of a slow-moving stream of tea-colored water, one of many

After a rainy fall, water would sometimes sit six inches deep on some of the narrow sand roads. If this thin sheet was then frozen, we were in for some of the best skating imaginable.

that traverse the pines. The stream banks are often tea-stained and are usually lined not with the irregular pitch pines, but with coastal white-cedars. The cedars, *Chamaecyparis thyoides*, are shoulder to shoulder along most of the water courses – dark green sentinels standing dramatically against an army of pines. Beneath the cedars, sphagnum mosses squish between your unshod toes.

Though it would still be years before I would awaken to the idea of studying plants in earnest, many of the species we met in these wet areas made lasting impressions. You don't need a botany degree to appreciate ripe blueberries on the rangy bush blocking your forward movement. Similarly, juicy wild cranberries bobbing against your waterlogged shoes are a certainty in late season. We often ran into "swamp candles" (*Lysimachia terrestris*) growing among the low cranberries. Spikes of bright yellow flowers stood bolt upright in drifts, appearing to light up the swamp.

Fragrance is very much a part of the pine swamp in summer, varying from the pungent odor of decaying muck to the sweet scent of "swamp honeysuckle," really an azalea (*Rhododendron viscosum*) or sweet-pepperbush (*Clethra alnifolia*), two regular companions of the cedars at the sunny edge where woods meet water. The long-tubed nectar filled flowers of swamp-honeysuckle give rise to the local common name, which seems appropriate except that the plant is not at all related to true honeysuckle.

Though the winters in this near-coastal area of New Jersey are moderate in comparison to Philadelphia's, we could count on at least a few good freezes each year. After a rainy fall, water would sometimes



Teaberry (*Gaultheria procumbens*) brightens the lichen-covered forest floor.



A riot of fall colors of sweet-pepperbush, blueberries and huckleberries beneath white cedars in late September.

photos by Rick Darke



Waterlilies (*Nymphaea odorata*) float on tea-colored pine barrens waters in early fall.

sit six inches deep on some of the narrow sand roads. If this thin sheet was then frozen, we were in for some of the best skating imaginable. Our blades would be first to cut the surface, and soon we'd be racing down the fast virgin ice on the narrow road, 10 feet wide, with a wall of pines close at both sides accentuating the feeling of speed.

a botanical treasure

I wasn't reading *The New Yorker* when they published John McPhee's articles on the pine barrens, so it wasn't until I started a field botany course at the University of Delaware that I began to realize what a botanical treasure my old stomping grounds were. Professor G. Fred Somers took us on forays into the pines, taught us how to put names on the unique flora, introduced us to the classic pine barrens literature and, perhaps most important, started me on the habit of recording my observations. I began to keep notes on plants I found, on their preferred habitats, as-

sociated species, and flowering and fruiting dates.

From early accounts by stagecoach botanists and later masterpieces such as John Harshberger's *The Vegetation of the New Jersey Pine Barrens* (Christopher Sower Co. Philadelphia, 1916) I began to appreciate the immensity of the barrens in their sheer physical expanse and as both a scientific and natural resource. The wall of pines I first discovered outside Freehold truly is part of a near-wilderness, extending south almost to the end of the state, covering nearly one million acres. An obvious romantic attachment is evident in the work of most who have written about the pines, and the magic of the woods is stronger today than ever, improbably set as they are midst the nation's most densely populated state.

Botanically, areas south of my original haunts are the more spectacular in their flora. More than a decade after my first botany courses, and after many trips to the barrens under the tutelage of retired

Longwood Gardens taxonomist Dutch Huttleston, I've learned of many of the most primeval places in the pines. In summer you can find secluded cedar bogs teeming with thousands of purple pitcher-plants, bladderworts and sundews, overtopped with drifts of exquisite wild pink orchids. In a few spots these gems are joined by other rarities such as the bog-asphodel (*Narthecium americanum*), which in a good year colors the whole bog yellow, then orange in September as its fruits mature. At water's edge the bright yellow and white spikes of golden-club (*Orontium aquaticum*) can be found, and further out fragrant white waterlilies (*Nymphaea aquatica*) float on dark pools.

I now know that the tea-coloring of the pine barrens waters is the harmless leaching of organic matter in a very acid environment, whereas earlier I suspected it might be caused by some insidious pollutant. The darkness of the water is responsible for the mystique of the barrens' aquatic landscapes, and it is comforting to know

continued

that this "cedar water" is some of the purest around. A huge aquifer, estimated to hold nearly 17 trillion gallons, stretches under the vast acreage of the pines. All streams flowing in the barrens arise there, from this aquifer, and the water table is seldom more than 20 feet below the surface, causing the abrupt transitions from dry woods to swamp. The ecological well-being of the pine barrens depends on the health of this aquifer. Philadelphia entrepreneur Joseph Wharton once purchased thousands of acres in the barrens intending to export the water. The New Jersey legislature passed laws forbidding such export, and the state later purchased Wharton's holdings to create the Wharton State Forest.

Protection of the pine barrens solely through land purchase is impractical, however. The area is simply too vast. Recognizing the national significance of the pine barrens Congress, in 1978, established the Pinelands National Reserve, offering increased federal environmental protection. The state of New Jersey followed in 1979 with the Pinelands Protection Act, which includes some of the strongest land use legislation in the country. The Pinelands Commission oversees implementation of a comprehensive management plan designed to preserve and protect the area's natural resources. So far these efforts have proved successful.

revisiting the barrens

Even though I no longer have the barrens so close at hand, I lead field trips each season into the pines as part of my work at Longwood, introducing others to this resource and each time finding things new to me. Years of accumulated notes now enable me to pinpoint the flowering or fruiting times of most of my favorite pine barrens species. I know, for example, that I can count on finding grass-pink (*Calopogon tuberosus*) in flower any June 15th. The spectacular pine barrens gentian (*Gentiana autumnalis*) is a sure bet for the 22nd of September.

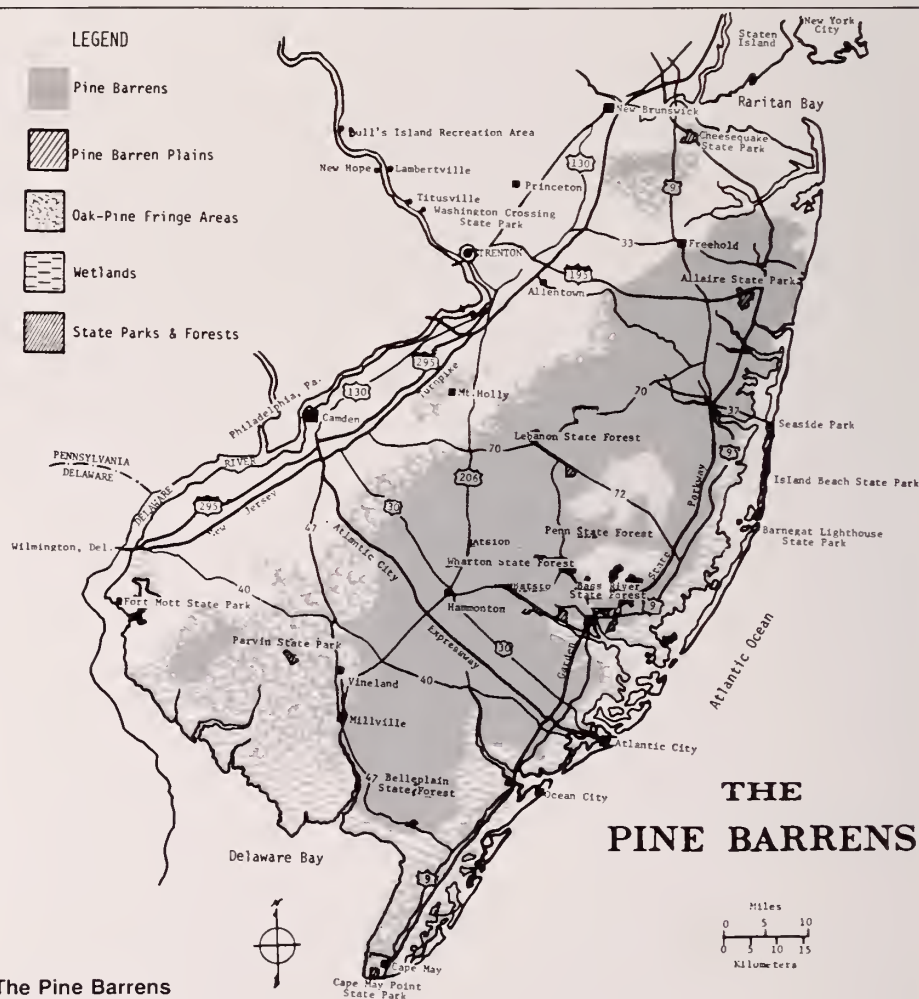
Although many of the showy pine barrens species are undoubtedly difficult to cultivate unless you can provide the sandy acidic conditions of their preferred habitat, the pine barrens flora, much like our greater North American floras, has not been thoroughly researched as to its horticultural potential. I'm trying a small plant of turkeybeard (*Xerophyllum asphodeloides*), which was propagated from seed by the New England Wildflower Society's Bill Brumback. It has doubled in size in two years in average well-drained garden soil. Fetterbush (*Leucothoe racemosa*), a deciduous species with attractive racemes

of pendulous white urn-shaped flowers performs well in the Pennsylvania piedmont garden of Richard Lighty. The delicate coral-red winter coloration of the current year's growth makes this a good all-season shrub. A number of others found in the pine barrens have already proven well-suited to Delaware Valley horticulture. Sweet-pepperbush is a familiar garden subject, quite at home in garden soil of average moisture, although like *Itea virginica*, *Rhododendron viscosum*, and *Viburnum nudum* it is restricted to moist areas in the pine barrens. Inkberry (*Ilex glabra*), found in both wet and dry sites in the barrens, is an excellent, broadly adaptable evergreen holly for informal or naturalistic landscapes. Compact-growing and white berried cultivars are also available.

I grow many native northeastern North American species in my home garden in

Newark, Delaware. I enjoy using my knowledge of the natural habitat preferences of my pine barrens inclusions when choosing sites for these plants in the garden. There is also the undeniable pleasure of successfully cultivating species reminiscent of a favorite natural area. If in summer the fragrance of swamp-honeysuckle or sweet-pepperbush wafting through an open window draws my attention to the garden, the sunlight reflecting off glossy inkberry leaves is sufficient to stir delightful thoughts of walking under white-cedars and pines.

Rick Darke is curator of plants at Longwood Gardens. Part of his job is seeking new plants for use in Longwood's displays, and he has traveled to Japan, South Africa and Brazil on plant collecting trips. He is also an avid home gardener.



The Pine Barrens

The Pine Barrens cover 1½ million acres on the coastal plain between the piedmont and tidal strip in central and southern New Jersey. It's 80 miles long and 30 miles wide and runs through parts of Burlington, Monmouth, Ocean, Atlantic, Cape May, Cumberland, Gloucester and Camden counties and along the fringes of Salem and Monmouth counties.

The five state parks in the Pine Barrens are open to the public and all offer camping facilities.

some offer canoeing, fishing, boating and swimming.

For additional information about the facilities write to:

State Parks
Natural Areas
Division of Parks & Forests
State Park Services
CN 404
Trenton, NJ 08625

For Vacationers

THE PLANT

TENT

Of all the devices that have been dreamt up to deal with the vexing problem of taking care of house plants while you're away from home, the plant tent is the first to offer a simple and practical solution.

All the methods indoor gardeners have tried focus on creating a terrarium environment. The objective is to preserve the water in the soil in the pots and to provide relatively high humidity in a low light environment that prevents plants from growing excessively and conserves available moisture. The most effective solution has been to cover one or more plants with clear plastic film. To do that efficiently, however, especially where the plants are numerous, is a considerable bother and not at all easy. The plant tent is ready-made and can be set up in a few minutes. It lets one leave for as long as 10 weeks and return to find the plants in good condition.

The tent arrives, furled tightly in a narrow carton tube. Pull it out and undo the plastic snap. Spread the plastic covering and the metal ribs like an umbrella. A string hangs out of a hole in a knob at the top. When it is pulled, the ribs expand and a short rod moves up to lock into the hole of the knob. You then have the bell shaped, multi-ribbed tent covered with clear plastic, its bottom also protected by plastic sheeting. The operation is just the reverse of an umbrella.

Between two of the ribs the plastic is held by a zipper that opens all the way to the top, providing easy access. You place the plants inside and close the zipper, creating a terrarium environment.

Plant tents come in two basic sizes, 36 in. and 24 in. high and wide. But there seems to be more than one manufacturer and the dimensions vary slightly. The smaller one, however, is ample enough for lower, more spreading plants and the taller one holds an astonishing number of quite large ones as crowding a bit does no harm. When my wife and I go away, usually in the spring and mid-winter, we have as many as eight of these tents in the middle of the living room, looking like an encampment.

Having recommended the tents for some time, we know a number of indoor gardeners who are so enthusiastic that one



by George Elbert



Reprinted courtesy of Gardener's Eden

might be misled into believing that the method is foolproof. But no method is conceivable at present that does not demand some personal attention to preparation. Failure to consider environmental changes ahead of time can lead to disaster, as with terrariums in general. Here are some suggestions.

Group plants according to environmental requirements. Don't put tender, high humidity plants in the same tent with such cast iron plants as *Dracaena* sp. or *Aglaonema* sp. Even succulents may need a tent because many will not survive complete dryness for four or five weeks when not in dormancy. Separate cool growers from warm growers. And so forth.

Some Sources

Gardener's Eden
P.O. Box 7307
San Francisco, CA 94120-7307
36 in. diam. \$23.95
24 in. diam. \$15.95
(includes shipping)
The Plow and Hearth
500 Main Street
Madison, VA 22727
30 in. high x 33 in. diam. —
approximately \$19.50.

The tents must never be exposed to sunlight even for a very short period; otherwise, you will find boiled greens on your return.

Remove all flowers and buds, rotting stems and leaves from plants and soil surfaces.

Check the plants carefully for pests. Get rid of them before placing the plants in the tent.

If the room temperature stays within the 55°-75°F range, the plants will usually be safe with the zipper completely closed. When temperatures are at 80° or higher, or can be expected to rise to those levels, leave the zipper partly open or have someone come in and open the zipper part way when such temperatures occur. We usually open the zipper six inches when we leave in mid-May and hope that the weather won't turn too hot before we return in the last week of June. It is wise to have someone check the tents once a week during the warm months both for excessive humidity and moisture loss in the soil due to evaporation through the vent. We do not like to leave the tents completely unattended during summer. The chief sufferers from a combination of heat and humidity are the ferns, palms and cool growing plants. Keeping a fan going directed at the tents somewhat reduces the risks. (We use a fan with a timer.) All these warnings would apply equally if you used the other means of enclosing your plants.

After returning home, unload the tent(s), push the rod back into the hole in the top, furl and fasten with the plastic band. As you replace the tent in the carton turn it in the direction of the furling and it will slip in without effort. The tubes are easily stored in a closet.

One final note of caution. Some of the tents are made with a hole in the plastic of the base. This is to prevent asphyxiation if a child succumbs to the temptation to zip itself in. Place a large saucer under the hole to fill in and raise the center; then set your plants all around. This precaution will prevent liquid from leaking onto your floor.

George Elbert is a nationally known author and frequent contributor to *Green Scene*.

Getting a Grip on Vines



by Charles O. Cresson



Experiences become the indelible accents of an education. When I think of vines, I am reminded of my experience pruning vines as a student in England. As an intern at Wisley Garden I had to trim the vines and wall shrubs that scrambled up the two-story walls of the laboratory, a central feature of the gardens. Roses, clematis and other exotics each had their own space but were allowed to intermingle in a way that contributed great romance to the half timbered and narrow brick architecture of the old laboratory. The walls were a constantly changing collage of bloom from early spring to late fall.



From a ladder I had to neaten this jungle without going so far as to create a manicured appearance. The experience taught me to understand vines and deal with them on their own unconventional terms. After making sense of that tangle I found I could deal with vines in any situation.

Most people, I suspect, are frustrated by vines because they don't know how to train them. By their very nature, vines lack stiffness and depend upon other means for support. They can easily become a tangled mass with no apparent way to restore order. Seeking a solution, frustrated gardeners often resort to cutting the poor vine to the ground, which is often the worst alternative.

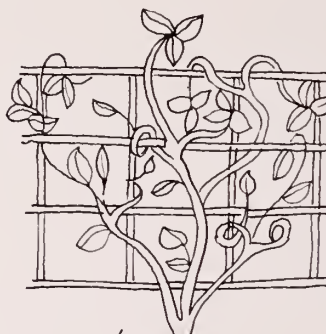
The key to successfully training most hardy woody vines is to establish and maintain a trunk so you can keep the bulk of the vine up off the ground and on its support. In other words, cut the vine back to the trunk but not back to the ground. Several trunks and branches usually add fullness and additional charm through their configuration. Tangled, twisted, aged and even braided trunks can add great character. Vine trunks should be nurtured and cultivated rather than hastily slashed away as useless rubbish.

If you have an "out-of-control" situation, here are some steps to take before you get creative (or frustrated). Remember you can be pretty tough.

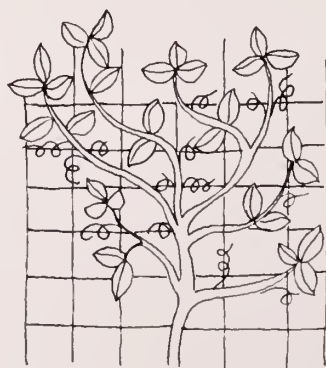
1. Find the main trunk or trunks and branches. Look underneath the mass of foliage, pull out dead wood, even cut away some of the mass of smaller branches. Major surgery is best done in March or early April before growth starts. (Preferred pruning seasons for various species are discussed later.)
2. Cut back to these main trunks and branches. Branches should be fairly



clingers



twiners



grabbers

short and only long enough to reach the areas you want them to fill. Most vines shoot vigorously from the trunks you leave behind. The trunks of clinging vines such as ivy and climbing hydrangea will probably remain firmly attached. Twiners such as honeysuckle and those climbing by tendrils such as grape or clematis will probably become detached by this process. They are flexible and will allow creative alternatives when you reattach them.

3. Clean off all the extra twigs and weak growth.

4. Step back and visualize the training possibilities.

When most people think of vines they either think of ivy engulfing their house or of other types of vines growing on trellises. The possibilities are actually much more varied.

The first step to understanding how to train vines is to understand the different methods by which they climb. From a practical standpoint they basically fit into three groups.

The Clingers. English ivy, Boston ivy, Virginia creeper, and climbing hydrangea can attach themselves directly to any surface such as masonry or wood.

The Twiners. Honeysuckles, *Actinidia*, and *Wisteria* climb by twining their stems around their supports.

The Grabbers. Grapes and clematis grab their supports. Grapes have clinging tendrils. Clematis grab with their petioles (leaf stems), which actually twist around other stems and branches of small diameter.

mismatches

The clingers, such as ivy, have the ability to climb anywhere. Be assured that they will, too. You must physically control them

Illustrations by Laurie Baxendell



Delicate white blooms of *Clematis* 'Alba Luxurians' are set off against the dark green foliage of mountain laurel.



to keep them in bounds. They need no support other than the surface you wish them to cover. This is the group that has the reputation of pulling off stucco or wood shingles and are most safely grown on brick or stone walls.

The twiners and the grabbers such as honeysuckle and clematis can only climb as far as the support that is provided for them. In other words you can control their spread passively, which saves a lot of work.

The secret to success is in matching the vine with the best kind of support. Mismatches are all too common.

A typical mismatch is a climbing hydrangea planted at the base of a wall trellis. The hydrangea wants to cling to the wall and will insist on ignoring the trellis to the last. Another more subtle mismatch is the clematis which must be tied to the trellis because the various pieces of the trellis are too thick for the petioles to wrap around. Clematis in these situations are never tied thoroughly or often enough to avoid the look of the poor vine being hung from a gallows. And what about the work involved in forcing a vine to conform against its will? It's no wonder vines are a frustration, even to many experienced gardeners.

supports that work

The twiners and the grabbers originally adapted themselves to climbing over shrubs, an imaginative and beautiful alternative in many garden situations. Clematis are among the best subjects for this treatment and will find their own way up a low branching shrub, making themselves right at home. We don't intend to have them engulf their host but rather to provide a highlight and additional season of bloom.

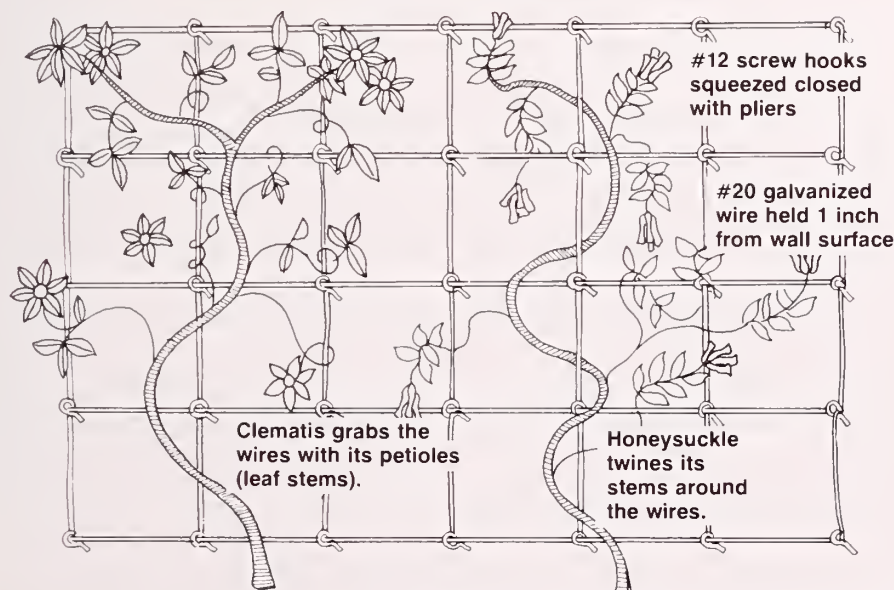
A yearly vine pruning is usually enough to prevent the shrub underneath from being shaded out. I prune summer flowering clematis in very early spring, removing the mass of stems on the outside but leaving those stems that are inside among the shrub's branches. This leaves plenty of buds to grow and provide the coming season's bloom. It also coincides with spring cleaning.

Trellises are well suited to twining vines. The twiners climb up and then branch. You can pinch them or push them around to get a good distribution or framework.

For a trellis that is too coarse for clematis to grab (and most are), a few strands of

continued

Wire Mesh or Grid for Growing Vines on a Wall



Vines



photos by Charles O. Cresson



White-tipped leaves of *Actinidia kolomikta* gradually fade to pink by mid-summer.

wire between the cross pieces will usually solve the problem.

Always use a non-rusting wire such as galvanized or plastic coated. Stainless steel is too stiff. Plastic coated must be an earth color or one that blends with its surrounding. Green and white wire are no-nos. Green never matches the green of foliage and looks odd in winter. White only looks right on a white trellis. Black tends to disappear visually, just what we want. String works fine until it rots and you won't have time to redo it yearly. Besides, your decoratively trained vine trunks need support in winter too!

If you have roses on a trellis or have wall trained shrubs, certain vines such as clematis and honeysuckle make excellent companions. Treat them as described above for growing on shrubs.

Actually, there were no trellises on the two story walls at Wisley garden. Everything was supported by a discrete grid or network of wire mounted on the walls. Both grabbers and twiners can be trained in any position on these wires.

I now use this system in my garden and at Meadowbrook Farm, where I work. I prefer to set up my own network rather than use a prefabricated wire mesh since I have more control and it looks much better. The spaces between the criss-crossing wires should be about 8 inches, and they should be held out about an inch from the wall, which helps the climbers get a good grip. This inch is essential for clematis that need to pass the leaf at the end of their prehensile petioles behind the wire.

Installing the wire network is simple. The ideal would be to have galvanized screw

When pruned rigorously, the short branches of *Wisteria sinensis* bloom abundantly in a limited space.

eyes with a one inch shank between the threads and the eye, but you can't get them. So, I use number 12 screw hooks that I bend closed with pliers. Simply screw the hooks into the wall at 8 inch intervals. In masonry walls use an electric drill with a lead or plastic screw anchor or rawl plug before screwing in the hook. There must be a hook at each point around the outside of the mesh, top, bottom and sides, but they are only needed at enough intervals in the middle to prevent sagging.

String the wire between the hooks, pulling it tight and securing it thoroughly at each point. I use number 20 galvanized wire. Number 18 is easier to work but doesn't last as long. Be sure it is straight and tight. Messy wire shows, straight wire vanishes.

Discrete is the idea here. Choose an appropriate color of rust-proof wire. Galvanized wire blends in well against grey stone, cinder blocks, and earth colors. Obvious hooks can be painted to tone them down. Even before the vines reach the top, the wire should be scarcely visible.

Vines are great for fences too. The climbers will climb almost any fence, particularly a stockade type fence. Twiners and grabbers prefer a wire fence that they can hold on to. Vines are a great way to enhance or hide a fence but remember that covering it may hold in moisture longer and encourage rot or rust, which can shorten the life of the fence.

If you need a vertical accent in your garden or simply haven't any other place for that favorite vine, try a post. A rot resistant wood such as treated lumber is advisable.



An old cedar trunk or log has more character and will last for years. Of course the climbers will go right up to the top. The twiners will too, unless the post is too fat. Each vine has its own maximum diameter that it can twine around. Wisteria can actually go around tree trunks (but this may lead to eventual strangulation).

The grabbers need more help. I find a loose spiral of a fairly stiff wire stapled at intervals does the trick and virtually disappears visually. The best wire of all was a coil of old burned copper wire that had been in our garage when it burned some years ago. The patina on the wire still blends perfectly with the clematis stem and old post it's wrapped around.

My favorite vine on the wall at Wisley and also in my own garden is *Actinidia kolomikta*. This first cousin to the kiwi fruit of local supermarkets is grown for its foliage. In spring when the leaves emerge, a third to a half of the tip is white as if actually painted. For at least a month and a half they remain pure white, exceeding the blooming period of most flowering plants. Then the white gradually fades to pink by mid-summer. *Actinidia* twines and receives only a light pruning of the longest branches in early spring. Of course, I push it around a bit as it grows.

honeysuckles underrated

Probably the most neglected or avoided group of vines is the honeysuckles; avoided because of the reputation of the rampant Japanese species that has strangled thousands of acres in the mid-Atlantic states.

The rest of the honeysuckle clan or *Lonicera* are well behaved and especially suitable for small gardens, particularly since they are moderate in size and everblooming.

Our native coral honeysuckle, *Lonicera sempervirens*, bears tubular orange flowers from late May until hard frost with red berries in the fall. The cultivar 'Sulphurea' has clear yellow flowers. 'Dropmore Scarlet' is a hardy hybrid from Canada with orange scarlet flowers. For softer color schemes another hybrid, the goldflame honeysuckle, *L. x heckrottii*, is just the ticket. Clusters of carmine pink buds open to cream. Like the others, it too blooms all summer.

Golden foliage buffs will want to try a mild-mannered variety of the Japanese honeysuckle, *L. japonica* 'Aureo-Reticu-

lata.' In good light the leaves have prominent gold veins and hang along red stems. It's a shy bloomer but who cares?

Caring for honeysuckle is simple. In early spring they get pruned and cleaned up. Each branch is generally cut back to within two nodes of last year's cut. To cover additional space leave some branches longer. But you remove most of it. The trunks stay where they are. A mid-summer pruning will improve their appearance, and they'll just keep on blooming.



the diversity of clematis

Of course the big group of flowering vines, especially for small gardens, is clematis. The diversity of the group is more important to me than the fact that the most popular ones are those with the largest dinner plate flowers.

In early May the nodding double blue flowers of *Clematis macropetala* will charm you. Also in May, the pink flowers of vigorous *C. montana rubens* are a delight. It can actually reach 25 feet and is spectacular climbing up a tall evergreen.

In summer I have been thrilled by 'Mme. Julia Correvon,' which bloomed for me from June right into September. It's a wine red with moderate sized flowers but lots of them. It is a viticella hybrid.

The viticella hybrids all share the European native *Clematis viticella* in their parentage. The flowers are small, delicate, and generally look down at you. They also tend to bloom later into the summer than most clematis, which I really appreciate.

'Alba Luxurians' is white tipped with green and is set off in my garden by the dark green foliage of the mountain laurel it climbs on. I have the deep purple 'Etoile Violette' climbing through the roses on a trellis. They both like the same high fertility and bloom together. 'Venosa Violacea' is purple with a white band. It climbs on a fence and up into a lilac providing an additional season of bloom there. *C. viticella* 'Rubra' is a wine red. You see, there's quite a selection of colors in this group too.

Most clematis are finished flowering by late June or early July as is true of the moderate flower-sized purple *C. x jackmanii*. You see it everywhere because it always lives, proving it is one of the strongest. A similar variety in maroon red is 'Mme. Eduard Andre,' which puts on a fantastic display in June and seems very tough.

Most clematis are of the June and summer flowering type. Prune them in early spring to clean them up. Cut back at least as far as the first set of fat buds. But if you don't sacrifice those buds and cut further, you will probably have an overgrown looking vine before you want it. They'll grow several feet, just watch. The spring bloomers must not be pruned until just after they flower.

wisteria

Wisteria is my favorite because it is so spectacular, but most people do realize it can take over your shrubbery and your trees and it can strangle. With pruning it can also be kept small and still bloom spectacularly. The method is to prune it as often as four times during the growing season. The flower buds are those at the bottom of the shoot where the buds are close together. Leave the lower six buds and cut off the rest. Over the years stiff trunks and branches will develop and provide spectacular pendant clusters of bloom at eye level where you can enjoy it.

In gardens, particularly small ones, vines provide another dimension and use space that would otherwise be vacant. You need not provide them with a two story wall. They will take what space you give them and thank you for it.

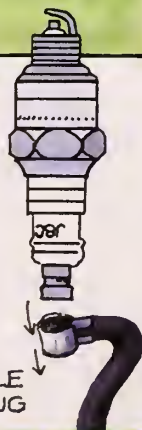
Charles O. Cresson propagates unusual vines at Meadowbrook Farm from his garden in Swarthmore. He and Jeff Ball are co-authors of *The 60-Minute Flower Garden* published by Rodale Press in the fall of 1986.



MOWER MAINTENANCE

BEFORE BEGINNING ANY WORK ON YOUR POWER MOWER, DISCONNECT THE IGNITION CABLE FROM THE SPARK PLUG !!

THE TWO THINGS THAT MAKE A LAWN MOWER WORK ARE THE SPARK AND THE FUEL.



PULL CABLE
OFF PLUG

GIVE YOUR MOWER A TREAT. BUY A NEW SPARK PLUG EACH YEAR. THERE IS A NUMBER ON THE PLUG. BE SURE TO GET THE RIGHT SPARK PLUG, AND THE SPARK PLUG WRENCH THAT FITS IT.

AIR MIXES WITH FUEL IN THE CARBURETOR. THE AIR FILTER GETS CLOGGED WITH DIRT. PAPER FILTERS SHOULD BE REPLACED. OIL-SPONGE FILTERS SHOULD BE WASHED IN DISH SOAP AND RE-OILED.

CHECK THE OIL LEVEL EACH TIME YOU USE THE MOWER. CHECK YOUR MANUAL FOR THE CORRECT TYPE OF OIL.

TRY NOT TO MOW WHEN THE GRASS IS WET, OR DURING THE HOTTEST PART OF THE DAY. CLEAN THE GRASSY GLOP FROM UNDER THE MOWER DECK - AFTER DISCONNECTING THE IGNITION CABLE.

WINTER STORAGE: RUN THE MOWER TILL TANK IS EMPTY. DRAIN THE OIL - THERE IS AN OIL PLUG UNDER THE MOWER DECK. REFILL WITH NEW OIL. CLEAN OFF THE MOWER AND HAVE ANY NECESSARY REPAIRS MADE. THE BLADE SHOULD BE SHARPENED AND BALANCED IF ITS DULL OR NICKED. STORE THE MOWER IN A DRY PLACE.

Sometimes I think about the stunning amount of work required to keep this farm functioning. And almost every time I think about that, I also think how fortunate I am. I am doing what I like to do.

I love to mow the grass. The end result is so pleasing! The sweet green smell and the velvety tidiness of a newly mowed lawn are a summer treat.

I used to hate the job. The mower wouldn't start or, if it did run, the noise would drive me crazy. One day I complained about lawn mowers and mowing to a visiting friend. The friend offered to check out our mowers and explain their various parts and foibles to me. He also suggested ear plugs to reduce the noise.

What a difference! Now I keep the mowers in good working order, servicing them between each use. I change the oil, clean the filters, sharpen the blades, and do minor repairs before major problems occur. I'm no longer at the mercy of a balky mower or the repair man's schedule. When I'm ready to mow, I check the oil, fill the gas tank, put in my ear plugs and pull the starter. Off I go.

I used to hate the mowers, but it wasn't the mowers, the problem was me. If the mower ran at all, I used it very hard and thoughtlessly. The machine got no thanks from me and no maintenance. It was a battle. Now it's a working relationship.

Funny to think of relationships with tools, but I think that relationship is probably the right word. Finding the correct tool for the job, the correct tool for the user, and using that tool properly must all come before getting on with the job. I know that a tree can be planted with a butter knife if you are determined enough, but how futile to waste so much time and effort.

Now when I buy a new tool I "try it on." I hold it in my hands to make sure it fits them. If I will be using the tool wearing work gloves, I "try it on" with work gloves. I lift the tool to feel its weight and balance. I go through all the motions of using the tool.

I've tried shovels and rakes and found their handles too thick for me to hold comfortably. I am sure they are very sturdy, but I am also sure that my fingers won't grow longer to accommodate the extra thick handles.

I've also tried hedge trimmers that looked very fine hanging in a tool display only to find that when I tried snipping an imaginary hedge, the knuckles of my left hand bashed against the knuckles of my right hand. I guess the designer for that tool forgot that hands would be necessary

to hold his neat-looking tool.

Hand clippers, which I use many hours each week, are especially important to me. Once, on the assumption that more expensive was better, I ordered an extremely fancy pair. The wretched things arrived and were very heavy — so heavy, in fact, that they are still in our tool building, years later, almost never used.

A tool is an extension of the hand, or arm, or person that uses it. If it is the right tool for the worker and the right tool for the job, the work is easier and enjoyable.

When I begin a job, if it seems a struggle I stop for a minute and consider the tool. Then I usually walk back to the tool shed and try something else, or a combination of tools.

We have very stony ground here. When it is soft and moist the small stones are pushed aside by the blade of a shovel. If the ground is dry and hard, the shovel bounces off those same stones. Back to the tool building for a grub hoe. The grub hoe is heavier, and its own weight helps carry it down among the stones. If the grub hoe won't do the job, next in line is a pick. The pick is pointed and heavier. It buries itself among the stones and loosens them. But if the pick can't handle the work, there is still the digging bar. It is heavier still, 60 pounds, and its narrow, wedge-shaped end can get down beside a rock while its length becomes a lever to pry the offending rock from its place in the ground.

There is pleasure in the challenge of digging the "impossible" hole. The hole can be dug without superhuman strength and without muscle strain or too much frustration.

We used to admire some of the huge rocks in our woods, saying that when we had a bulldozer come to do other work, we would have the dozer man move a few of them out of the woods and closer to the house. It never happened. But, in the meantime, we have acquired many tools and learned how to use them. We've also collected quite a few of the huge "immovable" rocks and put them where we want them.

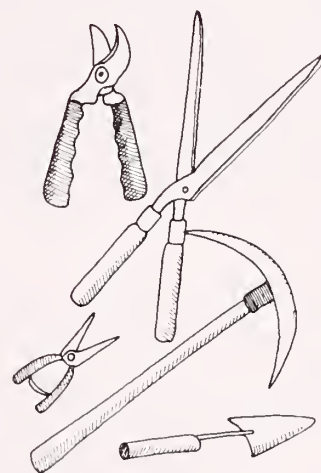
There were no bulldozers at Stonehenge and no superhumans. There were rollers and ropes and levers and determined people. The right tools in the right hands.

This piece was excerpted from Jane Reed Lennon's book *Happier in the Country*, published by Prospect Hill of Baltimore in September, 1987. Jane lives in Morgantown, Pennsylvania where she operates Cherrymont Farm Nursery, devoted to herbaceous perennials.

Tools



by Jane Reed Lennon



I've tried hedge trimmers that looked very fine hanging in a tool display only to find that when I tried snipping an imaginary hedge, the knuckles of my left hand bashed against the knuckles of my right hand.

◀ Honeybee, *Apis mellifera*.

photo by Fred Witt



Above, in his Beltsville Laboratory (United States Department of Agriculture), Dr. Jeffrey Aldrich coaxes a male spined soldier bug into a pheromone trapping apparatus. Once in the apparatus, the male instinctively releases a mate attracting pheromone. Air drawn through the glass tube of the apparatus traps the pheromone in a charcoal filter. The pheromone is extracted and analyzed in development of a synthetic pheromone that also attracts certain yellow jacket species.

At left, queen: Eastern yellow jacket, *Vespula maculifrons*, on pine cone.

Defending Against Yellowjackets

by Amalie Adler Ascher

In a poll to determine how various pests are judged in the garden, the mosquito would probably be named as the most irritating, the slug the most repulsive, and the yellowjacket the most intimidating.

Rather than stand their ground, gardeners would sooner yield to arriving yellowjackets than chance antagonizing them.

Often the yellowjackets are mistaken for honey bees. The confusion is understandable, says Jeffery A. Aldrich, a research entomologist in the Insect and Nematode Laboratory at the Agriculture Research Center in Beltsville, because the two insects so closely resemble each other in

appearance that to all but a trained eye, it's hard to tell them apart. Their behavior is similar too, although the yellowjacket is by far the more aggressive and formidable.

Although you will find bees in your garden that are attracted to specific plants, Aldrich says you're not too likely to encounter a colony of honey bees in your yard. For the most part, honey bees are controlled by bee keepers, but if a queen and her followers do get away, they distinguish themselves by swarming. Yellowjackets don't swarm, and swarming honey bees won't necessarily sting you. If a honey bee does and the sack attached to the stinger

is ruptured by scratching or yanking the stinger out, a substance called pheromone is released, which sends a signal to other bees to come forward ready to do battle. The best way to deal with a swarm of honey bees, Aldrich says, is to contact a beekeeper,* who should be only too glad to remove them to acquire the honey.

In contrast to the honey bee, which loses its stinger after depositing it and then dies, the yellowjacket has a smooth stinger, which it can pull out and use over and over

*Contact your County Extension agent or check in your phone book under Beekeepers or Beekeepers' supplies.

again. And whereas the honey bee prefers pollen and nectar to feed its young, the yellowjacket is a meat-eater. Its carnivorous nature, in fact, is the yellowjacket's one redeeming feature; it can be counted on to help rid the garden of flies, caterpillars and beetle larvae. The yellowjacket also does a little pollinating, but mostly it visits flowers to obtain nectar to sustain it in flight.

Yellowjackets are both ground and aerial nesters. The ground nesters are by far the most numerous and troublesome. They fly in and out of the nest during the day and retire to it at night when they become lethargic. An example of an aerial-type yellowjacket is the bald-faced hornet, which likes to build its conspicuously large grey-football-shaped dwelling in trees or under the eaves of a house. Clusters of busy yellowjackets concentrating their activity at a particular site could indicate the presence of an active underground nest, alerting you to be wary. The entrance to the nest – smaller than a 50-cent piece – would be hard to distinguish. Digging into the nest, stepping on it or running over it with a lawn mower would unleash an attack by thousands of angry yellowjackets bent on protecting their domain.

Because eradicating an established colony is difficult and dangerous (the old method was to pour kerosene into the hole at night and light it), Aldrich recommends trying to keep a nest from forming in the first place. To do that, you have to catch and put an end to the queen.

Queens are at their most vulnerable in the spring when they are emerging from their wintertime homes under leaves or old logs to search for a nest site. The temperature must be at least 65-70°F to rouse them into activity. After finding a suitable dwelling, which is apt to be a hole in the ground dug by an animal, a queen looks for wood sources such as old trees or fence posts from which to take pulp to build an underground nest. Were you to unearth a nest, you would find it similar in appearance in composition to that of a hornet's nest. In size, however, the yellowjacket's nest compares to a soccer ball, whereas the hornet's is on a par with a basketball. Inside the nest would be layers of cones used for rearing the larvae. After building her nest, the queen lays a few eggs. When they hatch, she hunts for insects to feed the larvae. It takes about a month to raise the first batch of workers to an adult stage.

Come mid-July, it's no longer necessary for the queen to find food to feed her brood. She can now stay home and concentrate on laying eggs, which is her role exclusively.

population explosion

By late August or early September, a colony, depending on the species, can be expected to have increased in number to as many as 2,000 or 3,000 yellowjackets. Since this is also the period when they are the most protective of their nest, stumbling

An allergic reaction to a sting, characterized by such symptoms as a generalized rash or welts, difficulty in breathing or a feeling of light-headedness, this last possibly due to a drop in blood pressure, is cause to get to a doctor or a hospital emergency room as quickly as you can.

into one at this particular time threatens the greatest harm. Such a situation is different from meeting up with a single yellowjacket worker out foraging for food. If you don't provoke it, Aldrich says, it will probably go about its business and not bother you.

In late September or early October, new queens and drones are produced. They mate in the air and the drones die, leaving the queens behind to start new colonies in the spring. Winter takes its toll on a good many queens, Aldrich says, but more than enough will survive. An unseasonable warm spell might bring them out, but if the weather turns cold, they'll again take cover and wait for conditions to improve. Short of an out-and-out hard freeze, the cold won't kill yellowjackets; it only slows down their development and movement. In fact, a yellowjacket that's not completely frozen will come back to life. A greater threat to them is spring rains that could flood out a budding colony. Queens can also be killed in the fierce competition for nesting sites. In the woods, Aldrich says, queens are so numerous that you couldn't catch enough to put a dent in the population. In a home garden, on the other hand, you'd at least have a fighting chance.

If a yellowjacket enters your space while you're working outside, pretend you don't notice it and, providing you're not wearing perfume and it mistakes you for a flower, it may go away. Wearing loose-fitting clothing could prevent the quarter-inch stinger

from piercing your skin. If you're wearing pants, Aldrich says, tuck the bottom into your socks so the insect can't fly up the pantlegs.

Whatever you do, never swat at a yellowjacket. If he turns on you, you can't possibly outrun him. Aldrich, who was the Maryland State half-mile champion, tried it and lost the race. If you do get stung, apply ice, he says. Ice, beside numbing the pain, which should subside in an hour or two, retards swelling and the spread of the venom.

An allergic reaction to a sting, characterized by such symptoms as a generalized rash or welts, difficulty in breathing or a feeling of light-headedness, this last possibly due to a drop in blood pressure, is cause to get to a doctor or a hospital emergency room as quickly as you can, says Martin D. Valentine, professor of medicine in the Division of Allergy/Clinical Immunology at the John Hopkins University School of Medicine. Depending on your condition, you might need intravenous fluids, an adrenalin injection or oxygen. If you can't get medical help and you feel faint, lie down and elevate your legs above your heart. Valentine says that should help to restore circulation and improve your blood pressure level. For a breathing problem, there is no immediate self-help measure you can take, since fairly specific treatment is required.

In most instances, Valentine says reassuringly, a victim of a sting will be all right, even without the aid of a doctor. Nevertheless, in a small percentage of cases, patients can become very sick and on rare occasion, die.

The chief reason to seek medical advice, aside from "the acute relief of symptoms," Valentine says, "is to prevent such a reaction from occurring in the future." A person who's experienced one reaction can be presumed to be sensitive, at least for a reasonable period of time, to that kind of insect.

People prone to allergic reactions from the venom of honey bees, yellowjackets, bald-faced hornets, yellow hornets or paper wasps, can take a series of injections to build an immunity. The effectiveness of the shots in preventing future reactions to stings, according to Valentine, is better than 97%.

The number of reported deaths from stings annually in the United States is less than 50. Should you disturb a yellow-

continued



Entomologist Jeffrey R. Aldrich adds a chemical lure to one of his yellow jacket traps. He developed the nontoxic chemical, which is similar to a natural insect pheromone or attractant. The trap is not yet available commercially.

jacket's nest by accident, you probably wouldn't receive more than 20 to 30 stings, and that's not enough, ordinarily, to be life-threatening. Then too, a yellowjacket carries only a certain amount of venom, the supply exhausted after the first couple of stings. Even so, in a sensitive person, just one sting could bring on death. Such a reaction is rare, though, occurring less than one percent of cases, Valentine says.

For people who are in danger of experiencing severe reactions to insect stings, emergency self-treatment kits are available by prescription. They come in two varieties. One, called Ana-Kit, requires the

needle containing the adrenalin to be inserted by hand; the other type, known as Epi-Pen, delivers the medication through an automatic injector set off when pressure is applied.

A number of flies, Aldrich says, closely resemble yellowjackets, but pose no threat at all. Termed syrphid or flower flies, they belong to a family, which in the immature stages (resembling small maggots), feed on aphids and small insects. The adults are harmless. Syrphid flies can be identified by their tendency to hover. They also have two wings — as do all flies — while yellowjackets have four. The confusion

arises because both types of insects have black and yellow bands encircling their abdomens.

a new trap in the making

The yellowjacket's vicious nature has led Aldrich to develop a trap to control them. As bait, he uses a blend of artificial nontoxic chemicals similar in nature to the chemical substance, pheromone, excreted by animals and insects to trigger certain responses in whatever it is they're pursuing. Because the attractant Aldrich has devised resembles the odor produced by the insects yellowjackets feed on, the yellowjackets, expecting to find their prey at its source, are tricked into following the scent and thus land in the trap.

The trap is particularly effective in luring eastern and German yellowjackets, which Aldrich says, are among the most menacing species in the eastern United States. The trap's bait, moreover, is an improvement over the usual cat-and-dog food-type. Best suited to urban and suburban environments where queen yellowjackets are fewer than they are in the wild, the traps produce the best results in the spring and early summer when the sweet-smelling chemicals they contain have the greatest appeal and can therefore divert the queens from building their nests. Another feature of the traps is that they're not apt to entice yellowjackets from further away than three feet. That eliminates the worry that a trap will attract every yellowjacket in the neighborhood. The trap can also be used in late summer and the fall to catch yellowjacket workers after they have established colonies. They can then either be left in the trap to die — which in hot weather, Aldrich says, can happen in a day or two, as their bodies dry out from the heat — or they can be set free in the woods or fields. Aldrich says if you hold the trap above your head when you open it, the yellowjackets shouldn't bother you; they'll merely fly away.

Unfortunately, the trap is not yet commercially available, and until a company decides to manufacture and market the traps, you'll be obliged to rely on your own resourcefulness to protect yourself as best you can. Becoming familiar with the yellowjacket's life cycle and pattern of behavior should make the job a little easier

Amalie Adler Ascher is a frequent contributor to *Green Scene* and garden columnist for the *Baltimore Sun*



Illustrations by Elizabeth Hauck

The Invading Botanical Bullies

 by **Tovah Martin**

The lemon balm had long ago swelled beyond its prescribed borders. In its first season, the pale green shoots conquered the columbines. Then, last year, not content with that victory, the lemon balm began waging a campaign against the lupines. The plant was obviously compelled by some deeply rooted Napoleonic desire to vanquish the garden and claim the entire territory for its own. The plant had to be eradicated.

So, one cool summer morning I set about removing the lemon balm (*Melissa officinalis*) from the garden to a plot where it could dwell the rest of its days in solitary confinement. As I dug, chopped, divided and withdrew the tenacious root mass, I resolved never to admit another member of the mint family into the boundaries of my garden. It was a painful mastering of one of gardening's cardinal lessons. I was now on the alert against invaders.

Such is the education of a gardener. Gardening is a series of trials providing some great successes but also entailing

inevitable errors. We spend hours, rainy days and winter weeks studying what to cultivate and where to place it. And while tomes are written extolling the virtues of innumerable perennials, we learn the hard way that not all perennials are perfect bed-fellows. In fact, some botanicals bully their neighbors unmercifully.

Although it is wise to be alert against potentially invasive perennials, an aggressor is not easily identified. Do not expect a potted plant to offer hints about its latent megalomaniacal tendencies. It is amazing how efficiently container grown plants can mask their true personalities. In a pot, most plants look innocently benign. And garden shop proprietors will rarely warn customers about the invader's capacity to divide and conquer those in its path.

One way to detect a botanical bully is to study its root system. Most invaders expand by means of "runners" or "sucker roots" that travel just below the soil's surface sending up plantlets hither and yon. If, upon checking a potted plant's root sys-

tem, you discover a mass of thick, succulent roots clinging to the pot's edge, begging for freedom, you can be sure that this plant might be capable of monopolizing a garden. Not all aggressors travel underground, however, and not all plants that send out suckers attempt to conquer your plot. Unfortunately, you cannot accurately judge an unknown plant's expansionist tendency before you plant it.

Even in the garden bed, an aggressor's true colors do not become evident immediately. Often, during the first year all goes well, although some truly ambitious aggressors might begin to nudge their neighbors in the initial season. Generally, however, it is not until the following spring that the truth becomes evident. And, by mid-summer, the proof is (quite literally) staring directly at you. My vagrant lemon balm increased from a single plant to a specimen encompassing one yard in diameter in less than a year's time. In two years, it had tripled again. Fortunately, I halted the melissa in its forward march. Left to ramble, it might very well have attempted to take over the entire garden. Although I liked my lemon balm, I was also rather fond of those perennials it displaced.

Perhaps the greatest threat posed by invaders is that they are tempting. It's their pleasing appearance that gains them access to the garden in the first place. Obviously, noxious weeds such as goose grass and its ilk pose no substantial threat to the garden design. A gardener is never tempted to tolerate such plants in the cultivated plot. Beware, however, of benign looking perennials such as lamb's ears (*Stachys byzantina*), which are irresistibly handsome and yet move with lightning swiftness. Such invasive plants armed with

ornamental foliage or showy flowers can insidiously worm their way into your heart and consequently into the garden design.

Every plant that spreads its wings and nestles comfortably into position should not be labelled aggressive. Nor should every perennial that slowly but predictably expands be accused of invasion. By definition, an invader is uncontrollable. A truly invasive plant knows no limits; it cannot be

Beware of benign looking perennials such as lamb's ears (*Stachys byzantina*), which are irresistibly handsome and yet move with lightning swiftness.

pruned, shaped or cajoled into obedience. Long after you have attempted to eradicate that trespasser, its roots persist in sending up progeny to haunt the garden. Although not too many perennials do that, the offenders should be exposed.

the offenders

Widely acknowledged as the most infamous of invaders are the mints. I will not dwell on the many offenses that menthas have committed nor describe in gory detail the magnitude of each transgression. I will simply reiterate the already commonly acclaimed warning never to plant spearmint, peppermint, or any other mentha in a space that may someday be needed for another purpose. Its roots are virtually ineradicable. A mint is a good neighbor to no one. The only way to curb their maleficent tendencies is to plant them safely in containers or hanging baskets.

It might be appropriate to mention a few close relatives of the mint group that display similar tendencies, although their

pendant for encroachment is not nearly as rapid or devastating. Lemon balm and catnip will perform some rather impressive assaults on their more passive neighbors, especially when they are luxuriating in their favorite environment: moist, fertile soil. Bee balm (*Monarda didyma*) also expands with awesome speed, but this vice is inhibited by bee balm's generally limited lifespan.

Lamb's ears (*Stachys byzantina*) ranks close to the mints as energetic expanders. The potential danger of this plant lies, as I mentioned, partly in its beauty, for it is the comeliest of the conquistadors. That velvety soft, white foliage makes stachys tempting for use in a silver border, and its sprawling habit recommends the plant as a groundcover. In fact, stachys will perform admirably as a cover-crop in any situation where it can expand without assaulting other plants in its path. Do not succumb, however, to the temptation to incorporate lamb's ears into the border. Once committed, such a mistake is not easily remedied. The thick roots, which plummet at least six inches into the soil, effectively choke out any other existing plant life. Removing the mass is an exercise in futility, one neglected root segment is easily capable of fostering a new colony. Generally, the arduous chore of eradication must be repeated numerous times.

Ajuga reptans (bugleweed) is often cited for its aggressive misdemeanors. And yet, many a naive gardener has admitted bugleweed into the perennial border on the strength of its ground-hugging growth habit and comely purple foliage. In the spring, when crowned by tufts of blue flowers, ajuga is an impressive little plant. If only it did not spread quite so virulently, bugleweed would be a favorite perennial.



Alas, ajuga can withstand all manner of abuse and still run by leaps and bounds into everyone else's allotted space. Fortunately we need not completely forsake members of this genus. New ajugas on the market move at a more lethargic pace. *Ajuga reptans* 'Multicoloris' boasts ornamental cream, pink and green foliage adorned by blue blossoms in the spring. This cultivar is more visually impressive than its invasive relation as well as being a better neighbor in the garden. *Ajuga pyramidalis* is also reputed to remain semi-stationary rather than wandering into the territory of fellow bedmates.

Yarrow is also well-known as a transgressor. Few gardeners would be tempted to invite the common yarrow into a cultivated situation; it is not sufficiently ornamental to warrant such an honor. Recently, however, we are being enticed by new hybrids such as *Achillea taygetea* 'Moonshine' with large golden floral heads and *Achillea millefolium* 'Fire King' with its fern-like foliage and abundant pink flower umbels. Admittedly, they are tempting, but they share the familial trait of expanding in mass. All yarrows should be cultivated in seclusion or where they have a very generous allotment of space.

Although I have never heard violets lauded for their lightning expansion, I have witnessed some amazing multiplication feats of that genus. In a moist, shaded location a violet can reproduce with such phenomenal fecundity that in short order the garden bed is a sea of tiny heart shaped leaves adorned seasonally with pert blossoms. The effect can be quite lovely; but halting the replication can easily attain nightmarish proportions.

Similarly, sweet woodruff (*Galium*

odoratum) is rarely classified as an invader. Yet, when enjoying its favorite setting of cool shade and moist soil, it will spread very quickly. Thread-like runners expand underground and initiate new colonies throughout the garden. In its second year of occupancy, umbrella-like shoots begin popping up where you least expect or want them. Also beware of galium's close relatives, which also possess wayward personalities: madder, goose grass and lady's

Keep a vigilant eye on *Tradescantia virginiana*, *artemisia* and some *campanulas*; these plants stand accused of being too fleet of foot.

bedstraw. Once planted, you will find them as difficult to remove from the flower garden as Jerusalem artichokes and comfrey are impossible to eradicate from the vegetable patch.

In addition, certain perennials can bear a penchant toward encroachment if given the right conditions. Keep a vigilant eye on *Tradescantia virginiana*, *artemisia* and some *campanulas*; these plants stand accused of being too fleet of foot.

you take the offensive

In our role of "keeper of the peace" between botanicals, the gardener should set and maintain certain ground rules. When planting a garden, provide realistic limits of expansion for each specimen and adhere firmly to these boundaries. When a plant is caught seriously transgressing on another's borders, remove it entirely from the plot where it runs rampant. And do not surrender when first attempts at removal fail — try, try again. Finally, never commit the unforgivable but common mistake of

using an aggressive plant to accomplish a flowing, gapless scene. Of course, you will succeed in achieving such a scheme, but the view will rapidly become a monotonous one.

If you are aware of their vices, invaders can be used to their best advantage. Any of the larger invaders will perform admirably where a cover crop is indicated. If the weeds are removed and the ground is tilled and prepared before planting, a cultivated invader will prevail over the plot's previous inhabitant.

If properly contained, invaders can peacefully co-exist in any garden. A confined space of any description — such as a cement box, a hanging basket or an urn restrain the most virulent aggressors. Invaders' roots, however, run out of traveling space when contained and effectively drain the soil of essential nutrients. Frequent division and replanting is generally necessary to maintain a vigorous specimen. So, you need not necessarily avoid invaders; you can have your lemon balm and your lupines, too, if you manage them properly.

As I gaze out my window, my lemon balm now happily runs rampant in its own separate plot where it cannot wreak havoc with neighboring botanicals. In its vacated spot I have replanted lupines and columbines. The garden has returned to a place of simple peace and harmony.

Tovah Martin is a staff horticulturist at Logee's Greenhouses and a freelance writer. She is currently working on a history of indoor horticulture for Timber Press, to be published in 1988. She won the second place Bedding Plants International (BPI) Award for her article on pelargoniums, and the second place GWAA Award for her article on primroses, published in *Horticulture*.



Detail of the perennial
border: coreopsis,
feverfew and delphinium

photos by Molly Adams



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Gardening on a Windy Hill

 by **Helen Brunet**

When Carol and Bob Henry bought their hilltop farm in Pottersville, New Jersey, 16 years ago, they were delighted with the wrap-around view of the surrounding hills, crisscrossed with old hedgerows and dotted with ancient apple trees.

The wind whistled past their frame house and barn, broken only by a stand of pine trees on the north side of the house. This would make it difficult to have a garden, unless it were placed in the lee of the barn. But Carol, being a gardener, had already made a plan that called for an informal perennial border in full view of the house and terrace. That meant putting it right on the top of the windswept hill.

"I knew it wasn't an ideal location, but I just decided to go ahead and try growing plants that would take the wind," she recalls. The following spring she rototilled the bed, dug in quantities of seasoned manure from a neighboring farm, and started to plant.

That was 15 years ago. Since then, the only flowers Carol has tried without success are asters. Now she can't imagine having anything but a windy garden. She has achieved the ideal of a succession of bloom six months long, in the gently curving border, 18 ft. long and 8 ft. wide.

Looking back on it, she thinks a garden on high, windy ground, especially where



◀ The native dogwood to left of the walk is one of several propagated by Carol Henry.

▼ Late summer garden on a windy hill. The pastels give way to yellow, white and orange: coreopsis, daylilies, zinnias and feverfew.



summers tend to be humid, may be one of the best sites of all, providing certain steps are followed.

The first step would be to provide some screening.

"We knew we needed some wind protection so we extended the pine grove wind-break with a hedge of lilacs. Then we planted fruit trees in the meadow to break the west wind," Carol recalls.

The first surprise was that long before the lilacs and the fruit trees were of a size to do any real good, the garden was thriving. The tall plants in the back row, siberian iris, peonies, shrub roses and baptisia, provided wind protection for the plants in

front of them.

I began planting everything very close, and I think that helped keep the wind out. I really packed them in: annuals as fillers planted just the way they come out of a six pack, and perennials with only a little space in between, except delphinium," Carol explains. "That means dividing more often, but I don't mind because I'm always extending the border."

Some plants do, of course, need staking. Carol uses branches for individual stalks and tomato hoops for tall clumps. Installed in early summer as soon as the plants emerge, the stakes soon disappear from sight in a mass of flowers and foliage ex-

cept the hoops around the delphinium. "These just used to stick out like an eyesore," Carol remembers. "I didn't want to plant anything else too close to the delphinium and crowd them." Finally she found that by planting baby's breath around the hoops it disguised them and still gave the delphinium enough elbow room.

A thick mulch, Carol says, is essential in her hilltop garden. Water drains quickly in the rocky soil and the wind in early summer. Even with the best air circulation, she never waters with a sprinkler, but uses instead the long slow method of soaking, to guard against mildew.



An early summer garden frames the terrace.

Fertilizing the perennial border consists of a dose of 5-10-5 in April on everything except the delphiniums, which gets a teaspoon of superphosphate and a sprinkling of lime instead.

Last year Carol dug a rose bed in the lee of the lilac hedge. She gladly placed it out of direct view of the house and terrace "I love roses as cut flowers," she explains, "but I don't like to look at a whole bed of them."

Hardest hit by a windswept location, Carol has found, are broadleaf evergreens. In the early years she spent hours shrouding them in burlap to protect from icy winds and winter sun. Now she sprays them all with Wilt-Pruf in November and

hasn't had a brown leaf on an azalea or a boxwood in years. Only a fat, round, specimen *Daphne burkwoodii*, growing on an especially windy corner of the house still wears a sturdy cloak of burlap all winter.

The barn, situated northwest of the house, provides wind protection for numerous plantings. Along one wall a hedge of *Viburnum plicatum* 'Mariesii,' all divisions Carol made from a single plant; its red berries in fall almost match the barn siding. When possible, Carol divides shrubs by pulling side shoots and a cluster of roots from the parent plant in spring. She has propagated enough flowering almond (*Prunus triloba*) this way to make a hedge along the driveway.

On the far side of the barn is Bob Henry's vegetable garden. Carol proudly lists her husband's crops, lettuce, corn, radishes, melons, beans and zucchini, but says she stays out of his territory except to pick.

Carol, who does all of the flower gardening herself, cites two periods of intense labor: one in the spring, with cleanup, edging and new planting, and one in late summer when the family returns from a month's vacation. "I don't answer the phone or see my friends until I get it back the way I want it — it only takes a week to 10 days," she says.

Succession of Bloom in the Henry Garden

April

Star magnolia
Spring bulbs

May

Candytuft
Tree peony
Spring bulbs
Geranium endressii 'Wargrave Pink'
Geranium himalayense

June

Peony
Fairy rose
Lupine
Baptisia spp.
Dictamnus spp.
Campanula glomerata 'Joan Elliott'
Oriental poppies
Dianthus spp.

July

Foxglove
Platycodon grandiflorus
Delphinium spp.
Astilbe spp.
Lily

August

Helenium spp.
Achillea - 'Coronation Gold' and 'Moonshine'
Coreopsis 'Sunburst'
Daylilies
Annuals — cosmos, zinnias, marigolds
Artemisia 'Silver Mound'
Phlox spp.
Feverfew

September

Sedum 'Autumn Joy'
Chrysanthemum spp.
Caryopteris spp.

Helen Brunet is a free-lance writer and a member of the Garden Writers of Association of America. She writes a weekly garden column for the Newark Star-Ledger.

Nature photographer Molly Adams has co-authored two books on home landscaping. Her photographs of gardens have been printed in *Audubon*, *House and Garden* and *The New York Times*.

Letters to the Editor

Japanese Umbrella Tree

I have just finished reading "The Uncommon Japanese Umbrella Pine" by Evi Bos-sanyi Loeb in the *Green Scene* (Sept. 1986). She wrote a very attractive account of one of my favorite conifers.

In 1962 I bought a seedling in a 3-in., pot at the Philadelphia Flower Show. It is now about 15 ft. tall and gorgeous, just as she describes. But, contrary to her specifications it is growing in lean, dry, acid, sandy soil in full exposure. It grows in cool to cold moist winds, not hot and dry. I agree it would not stand hot and dry winds. But my acidity is in the 4.5 to 5.3 range and the older tree and five or six other seedlings I grew from Japanese seed are all flourishing at Barnard's Inn Farm on Martha's Vineyard. My seedlings were planted in 1963; now they are probably 6-8 ft. tall and gaining in girth.

Incidentally U.S. grown seeds, although they germinate, do not have enough stamina to survive, while the native Japanese seed gave no problems. It has long been my contention that both the *Cryptomeria* and *Sciadopitys* do better on

our dry, sandy, acid Island soils than on the mainland. Full sun preferred. My large 1962 tree produced cones after about 22 years.

Our water table is fairly high, 17 ft. below a cellar well.

Polly Hill
Hockessin, DE

Pruning Indoors

My, what a joy the January issue was! Having Joanna Reed's gorgeous stuff and Dr. Wherry as well as your "Spelunker" telling about all those thousands of slides. And I had never heard of how he hand-painted them before color photography. I was lucky enough to go on a fern-hunting trip with him when he was visiting down in Maryland at the Stokeses - "cousin Lelia" (Mrs. F. J. Stokes, Sr.) asked me to go, too. I'll never forget it.

"Pruning Indoor Trees" interested me because I'm doing it all the time. I have a *Ficus benjamina* that is also as old as my "Sideways Araucaria" (*Green Scene*, September 1985), but I have kept it pruned in a more pillar-like shape not having room for a "series of ascending vs." I prune it at least twice a year and have not found the "white sticky sap" a problem at all. I have a solution that does not require a dropcloth, only a plastic bag in a scrap basket. I put tiny pieces of kleenex on the stems after I cut, taking them off the next day or even a couple of hours later. I never get it on my skin or clothing, never have to use a dropcloth and never have to wipe it off the leaves. The only thing I have to clean is my clippers, which I do with the

cleaner "Fantastic." I then re-oil them.

Nan Thompson
Chestnut Hill, PA

E. T. Wherry

I have just seen the informative article on E. T. Wherry and the reproduction of his slides. I am so pleased to have this wonderful contribution of the Flocks publicized, in such a carefully worded and accurate description, and thus made known to your audience.

Carol M. Spawn
Manuscript/Archives Librarian
Academy of Natural Sciences
Philadelphia, PA

I thought you would like to see the enclosed letter from my friend Marge Hayakawa. She is involved with *Pacific Horticulture* as you may know.

Marnie Flook
Wilmington, DE

Dear Marnie,

I have just read the January issue of *Green Scene*. My heavens, what a project you and Bill have been engaged in. Copying and cataloging 1800 slides is an incredible accomplishment, as is Dr. Wherry's hand painting of all these. Thanks for your most interesting article. I was glad to learn about so many of Dr. Wherry's accomplishments. When did he sleep?

Please pass on to the editor of *Green Scene* my compliments for the stunning issue.

Margedant P. Hayakawa
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Front cover: Boxed annuals brighten an outdoor garden, part of Eden Restaurant at 37th and Walnut. See page 32: "The Tempting Annuals in The Garden and Eden."

photo by John Gouker

Back cover: Mixed annuals by Derek Fell.



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July August 1987

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Separations: Lincoln Graphics

Printer: Havertown Printing

Circulation Consultant: Anne S. Cunningham

THE GREEN SCENE, (USPS 955580) Volume 15, No. 6, published bimonthly, January, March, May, July, September, November, by the Pennsylvania Horticultural Society, a non-profit membership organization at 325 Walnut Street, Philadelphia, PA 19106. Subscription: \$8.50 - Single Copy: \$1.50. Second class postage paid at Philadelphia, PA 19106. • **POSTMASTER:** Send address change to THE GREEN SCENE, 325 Walnut Street, Philadelphia, PA 19106.

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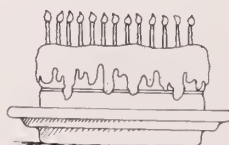
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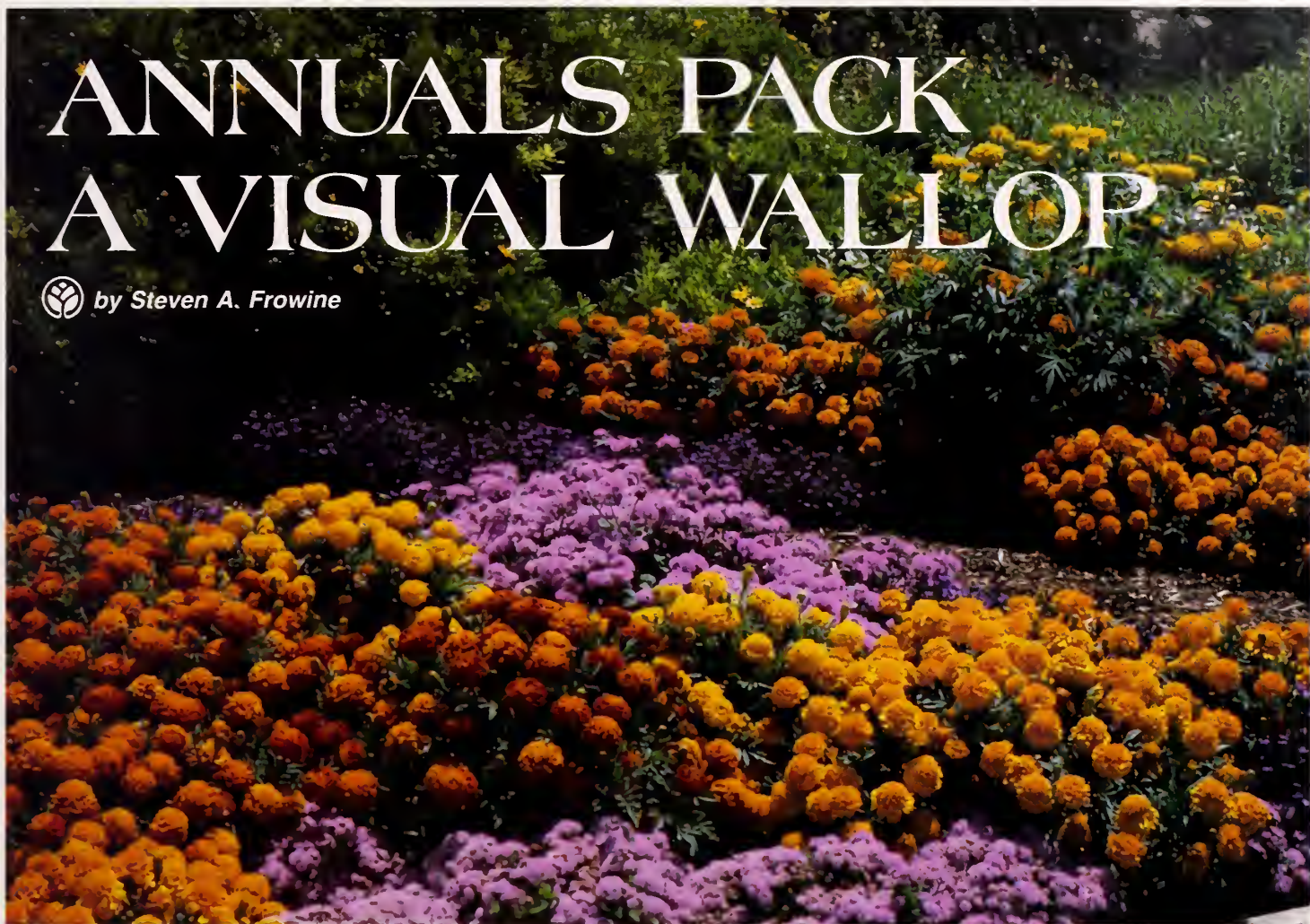
Hershey Gardens of Hershey, PA

Happy 50th Anniversary to Hershey Gardens. Their annual garden is at its peak this month, as part of the celebration, Hershey Hotel guests will be admitted without charge to the 23-acre botanical garden. For information about other special anniversary events call 717-534-3492



ANNUALS PACK A VISUAL WALLOP

 by Steven A. Frowine



Gardeners love annuals. They're a versatile group of plants that, when carefully chosen, can provide a constant display of flowers from early summer to the first fall frost. They offer the gardener a complete palette of colors from bold, bright yellows and hot scarlets to subtle pinks and cool blues, to paint any scene or create any mood.

Easy to grow and useful in so many ways, annuals are perfect for beds and borders. They can quickly "landscape" a new home, fill the gaps in a new planting of shrubs, or extend the season of bloom in perennial borders. Interplanting bulb beds with annuals will give quick color while hiding the unsightly maturing foliage.

Annuals beautify the rock garden, highlight windowboxes, shade a patio, or screen an unpleasant view. For providing armfuls of spectacular, but inexpensive, homegrown cut flowers, annuals can't be beat.

defining annuals

An annual is a plant that completes its life cycle within one year or growing season. Most commonly "annual" describes a plant grown for its flowers, not its fruit or

edible leaves. Vegetables and herbs are not usually referred to as annuals even though many of them grow in our gardens for only one season.

There are a couple of sub-categories of annuals. Ones that can tolerate quite cool temperatures, even light frosts, are called "**hardy annuals**"; for example, cornflowers, larkspur, and calendulas. Annuals that are more sensitive to the cold and should not be planted outdoors until the soil has warmed and danger of frost has passed are labeled "**tender annuals**." Some examples are marigolds, zinnias, impatiens and celosia.

A few other groups of plants are not literally "annuals," but can be grown and used in similar ways. One of these, a **bienial**, is a plant that normally requires two growing seasons to complete its life cycle. The first year it produces stems and leaves; the second year it flowers, produces seed, and eventually dies. This simple definition doesn't always apply because today's horticulturists play tricks on nature by starting seeds of pansies, sweet williams, foxgloves, canterbury bells and other bienials indoors in January to "force" flowers the first year.

The category "**tender perennials**" confuses many gardeners. These plants will survive from year to year if they are grown in a mild climate, like California, but for gardeners in the Delaware Valley, they are grown as annuals. Since most tender perennials are slow growers, it's usually best to start them indoors 8 to 12 weeks before they are planted into the garden. Snapdragons and various salvias belong to this group.

"True" annuals, as well as the variations mentioned above, are star performers in gardens of all sizes from expansive suburban estates to small city balconies. Wherever they grow they create special excitement. Gardening without colorful annual flowers is like watching a movie about the natural wonders of the world in black and white; the show might be well produced and interesting but it would certainly lack visual wallop.

Steven A. Frowine is staff horticulturist and public relations manager at the W. Atlee Burpee Company in Warminster, Pa. and has degrees in horticulture from Ohio State and Cornell. Steve is an avid gardener with special interests in oriental vegetables and orchids.

Annual Flowers

by Richard Craig

To some gardeners in the Northeast, annuals are flowering plants that cannot tolerate freezing conditions and thus generally fail to survive the winter. Horticulturists sometimes accept a broader definition that includes plants that are placed in the garden in the spring, flower, and are usually removed in the fall, i.e., they are used on an annual basis. Botanically, the term "annual" refers to a plant that completes its life cycle (seed, flower, seed) in a single growing season.

Because I like the horticultural definition based on usage, I will include botanic annuals, biennials, and perennials that are normally grown for a single season. Annuals in Philadelphia might be winter-hardy perennials in San Diego; the zonal geranium is an excellent example.

uses of annuals

Some gardeners prefer to have complete beds or gardens of annuals. Others use them to add color to existing landscapes of trees, shrubs, bulbs, and hardy perennials. Annuals are used as specimen plants in window or patio boxes, large containers, or hanging baskets, and they are often planted around specimen trees and mailboxes. I have even used annuals as part of my vegetable garden.

locating the annual garden

Most of us work our gardens into the landscape available to us. Fortunately, annuals exist for almost every location. While gardens are classified as either sunny or shady, some locations have variable light conditions. Most annuals will tolerate all but dense shade and some, such as fibrous begonias, can adapt to a wide variety of conditions.

When locating a garden, consider also these factors:

- Gardens near streets, driveways, or walks suffer from traffic, fumes, dust and pedestrians. Hardy plants like marigolds, geraniums, and petunias are better able to survive these conditions.
- Gardens located under eaves or within the range of downspouts may be subject to extremely dry conditions or soil erosion.
- Pets and wild animals can cause seri-



1987 All-America Selections Winner – Petunia 'Purple Pirouette'

ous damage to gardens, especially in newly planted areas. Fences may be necessary to protect your annuals.

protecting the garden

Most annuals thrive in well-drained soil that contains some organic matter, few disease organisms, moderate pH, and adequate fertility.

After digging a new garden to a depth of 12 to 18 in., I remove all large stones and make sure there's no "hard pan" at the bottom. (A "hard pan" is a layer of soil, rock, or trash, etc., that is impervious to water. For example, once when digging I uncovered a 4 ft. x 8 ft. piece of plywood.) I usually break through the bottom with a

heavy bar to insure good drainage. Once I have dug the garden and moved part of the soil to one side, I put a 2-in. layer of small stones in the bottom and then add some of the soil and some peat moss. I mix the peat moss evenly into the soil to provide organic matter. Other materials such as compost, leaf mold, mushroom compost, and well-rotted manure can also be used. I continue to build the garden in this way until the soil is about 6 to 10 in. above the surrounding terrain. The higher the bed, the better your plants will grow; however, if the bed is too high, the soil will tend to dry out quickly.

I suggest you obtain a soil test kit from your Cooperative Extension agent; they will



1987 All-America Selections Winner – Snapdragon 'Princess White with Purple Eye'

analyze your soil and give you information about fertility and soil acidity/alkalinity. If fertilizer is needed, you should mix it evenly into the root-zone area. I add it when preparing the garden. If lime or aluminum sulfate is required, add it the same way. *Do not use fertilizers that contain weed killers.*

You now have a garden or bed that is well-drained, has adequate fertility and pH control, and a liberal amount of organic matter.

I prefer to irrigate the bed lightly to settle the soil, and I usually do that the day before planting. I would rather spend the time and effort once and have a good garden for a decade than fight problems every year. Good garden construction yields fewer

weeds, better growth, less disease, and, in general, requires less maintenance.

About weed control: if you have severe weed problems, I suggest two alternatives. First, an appropriate chemical herbicide will eliminate some or all of your weed problems. Use it carefully. Second, organic or plastic mulch is effective; I have used both types. In some new gardens, black plastic mulch for the first one or two years reduces the need for weeding during subsequent years. I also mulch my gardens with about 2 in. of peat moss or mushroom compost; this controls weeds and adds organic matter.

When planting arrives, I do not like to sow seeds into a new garden, but prefer

to start seedlings in my greenhouse, transplant them to small containers, and then put them in the garden at the proper time. If you cannot grow your young plants indoors, however, then you have only two alternatives: purchase plants or sow seeds in the garden.

Sowing seeds is rewarding if you remember a few basic rules, most of which are written on the seed packet: when to sow, how close the seeds should be, how deep to plant them, how long it takes for the seeds to germinate and produce seedlings, when to thin the seedlings, and how far apart the final plants should be.

Placing plants in the garden is simple if you have prepared the planting area properly. Annuals should be thoroughly watered before planting; watering is necessary to inhibit transplanting shock. I prefer to water plants the day before planting, which makes it easier to remove the plants from the container. Before planting arrange the annuals on the garden surface, establishing the design of the bed. Make sure that the roots do not dry before planting. The ultimate size of the plant dictates your spacing. Depth of planting is important; use the same depth as in the container. After planting, I thoroughly water each plant to assure adequate continuity between soil and roots. After watering, mulch with organic matter. Do not walk on the wet soil. If the garden is large, either plant it in sections or use a wide board as you move around on the soil. Many people use a fertilizer starter solution after transplanting to enhance root development.

garden maintenance

Weed and remove old flowers and leaves weekly. Cultivate the soil surface only when you do not use a mulch. When you cultivate, do it lightly. You should not expose the plants' roots.

Watering is a critical cultural practice. The rule: water thoroughly and infrequently. This will encourage roots to move deeper into the soil and ultimately the plants will better tolerate greater extremes in the environment.

Additional fertilization may be necessary, particularly if the season has above-

continued on page 8

Earl Jamison's Public and Private Gardens

by Derek Fell

Earl Jamison, owner of the community of country stores known as Peddler's Village, Lahaska (Pennsylvania), appreciates the value of flowering annuals to provide dramatic long-lasting displays of color. Beds and borders scattered generously throughout the Village surround a village green and a magnificent rock garden with a rocky stream coursing through it. The annuals are planted out as soon as the spring bulb displays are finished and are encouraged to flower continuously by timely "dead-heading" of spent blooms. The quality of these plantings is so impressive, Peddler's Village has been designated an official All-America Display Garden and, in the height of summer may resemble a botanical garden more than a shopping complex.

At his home, just a few miles from the Village, Earl Jamison has created his own private garden on 70 secluded acres of sloping ground. Five years ago it was largely a corn field and rough woodland, with not a single structure. Here Jamison began to make his dream garden, often driving the bulldozer himself to get exactly the contour he wanted.

The site today now features a stream with seven waterfalls, a reflecting pond, walled vegetable garden and cutting garden, a garden house, springhouse, grotto, barn gazebo and animal shelters, plus undulating beds and borders crammed with annuals, perennials and flowering shrubs, with such a profusion of color, they are like rainbows. Though Jamison likes the enduring qualities of perennial daylilies, hostas and clematis, he uses flowering annuals extensively to heighten the color impact – and to extend it all summer until fall frosts.

Among his favorite annuals for bedding are pink cleome (spider plants), yellow and bronze French marigolds, pink impatiens, multi-colored coleus, pink and red wax begonias and silvery dusty miller. In the cutting garden, mixtures of zinnias, cosmos, snapdragons and American marigolds flower their heads off well into autumn, producing armfuls of flowers for indoor flower arrangements.

Jamison has such a passion for flow-



Cleome towers over annual border in Earl Jamison's private garden.

ers and gardens, he completed the garden aspect before finishing his house. Although the property does now feature a fieldstone farmhouse to his own design, he built it as a landscape feature to embellish the garden, rather than a place to live in. Indeed, he prefers to live comfortably in a small apartment above the garage, using the house only for occasional entertaining, and admiring it

more for the mixed annual and perennial borders that surround its fieldstone walls.

Peddler's Village Open to Public

Though Jamison's private garden is not open to the public, the floral displays of Peddler's Village can be seen at Lahaska, Pa. – between Doylestown and New Hope on Rt. 202.

photo by Derek Fell



A rainbow view of another part of Jamison's annual garden.



An All-America Selection display garden. See partial list on page 9 for gardens in your area.

average rainfall. Broadcast the fertilizer over the garden surface. Do not allow it to come in contact with the stems of the plants. Watering will help move the fertilizer into the root zone.

disease and pest control

Avoiding diseases and pests is easier and less expensive than combatting them. My first rule is to purchase clean plants — free of insects and diseases. My second rule is to grow annuals that have few inherent pest problems. Geraniums, petunias, and impatiens are but a few examples. My third rule is to practice strict sanitation, which means frequently removing all weeds, old flowers, and damaged leaves. Some of the most effective controls are manual removal and biocontrol (especially for caterpillars). I also tolerate some damage. By keeping the plants well-fertilized and watered, they are often more resistant to pests.

At times I do resort to chemical pesticides. If you do, buy the least hazardous, most effective product. Read and follow the instructions for application, storage, and discarding products and containers; exercise caution.

Spotting your problems early and acting quickly to solve them will keep your flowers healthy and beautiful.

my favorite annuals

Shade Gardens. One of my favorite

shade plants is impatiens, which is available in a multitude of flower colors, in several sizes, including compact types, and with both single and double flowers. Impatiens requires little care, flowers continuously until frost, and can tolerate relatively deep shade or partial sun. Another winner is the begonia. Most people, when they think of begonias, think of the fibrous-rooted types. Also called "semperflorens" or "always flowering," begonias are available with red, pink, rose, or white flowers on green- or bronze-leaved plants. While most begonias are short and compact, several sizes are available. Other begonias, such as tuberous-rooted and hiemalis types, are quite different — flowers are red, orange, yellow, pink, or white and leaves are large and glossy. Begonias are especially adapted to hanging baskets but also grow well in gardens. Some of the fancier forms can also be grown as specimen plants.

Three other annuals are well adapted to shade gardens: lobelia, nicotiana (flowering tobacco), and periwinkle (*Vinca* or *Catharanthus*). Lobelia is dwarf and can be used as a border plant with its crystal blue and white flowered cultivars. Nicotiana is usually a tall background plant, but recently more compact forms have been introduced. *Vinca*, a sleeper, is one of my favorites, with its glossy leaves, compact growth, and bright flowers. Several surprise plants are readily adapted to the

shade. The nostalgic fuchsia, often used in hanging baskets, can also be used in the garden. Capeprimrose (*Streptocarpus*) is usually considered a house plant since it is a relative of the African violet. It is a wonderful specimen plant for pots, however, and I have also used it successfully in gardens.

Plant breeders have improved several shade-tolerant plants. One of these is *mimulus* (monkey flower), available in yellow, orange, and red with and without red spots. Another old favorite is exacum (Persian or German violet); its quaint blue or white flowers are quite adaptable to shade gardens. The once popular Victorian torenia (wishbone flower, Florida pansy) is making a return as a more compact plant, with the colors bright carmine, plum, and a clean white added to the traditional blue or blue and white color forms.

Ivy-leaved geraniums, normally used in hanging baskets and porch boxes, can be successfully grown in gardens (try the balcony types and minicascade cultivars). They will not grow well in dense shade but are excellent for partially shaded locations.

Sunny Gardens. Many gardeners prefer to use one, two, or three different annuals in the same garden, while others prefer to combine many different annuals. Decide on color combinations, plant heights, and whether you wish to include other decorative plants and cut flowers.

Pansies and primroses are usually the

first annuals to be planted in the spring since they can withstand frost. Their bright colors are welcome additions to the landscape.

The most popular annuals for sunny locations are geraniums, petunias, and marigolds. These are basic plants and although not usually combined, form the foundation of most gardens. Geraniums are easily combined with ageratum, alyssum, fibrous begonias, and dusty miller. Petunias, with their wide range of colors, represent the most versatile annual. They can be interplanted with both taller and shorter annuals or different colors can be grown in a single species garden. The versatile marigolds, with a range of colors and sizes thrive under the most difficult conditions.

Several old favorite annuals are coming back, thanks to plant breeders who have developed exciting new cultivars. Calendulas, periwinkle, verbenas, cosmos, cleome (spider flower), phlox, and portulaca are excellent sun plants that have received breeders' attention.

An important annual that deserves greater use is the snapdragon. Cultivars are available to be used as border plants, specimen plants, or cut flowers. Colors are bright and the statuesque floral spikes are unrivaled by other annuals. They are easy to grow and suffer few problems. One should not exclude begonias and impatiens from sunny locations. Fibrous-rooted begonias are equally adaptable to both sun and shade. The traditional impatiens is now available in "sun and shade" cultivars. A newer group, New Guinea impatiens, is designed for full sun. They have bright flowers of white, red, pink, orange and lavender, and attractive variegated foliage. (See "Impatiens: Tried, True & New" by Mary Lou Wolfe, page 24 in this issue.)

Another plant that I enjoy is celosia, especially the plumed forms. Available in gold, dark apricot, and vivid red, they are especially attractive in the early morning and evening. Another old favorite is the zinnia. Although prone to several diseases, such as powdery mildew and alternaria blight, zinnias are excellent border plants and cut flowers.

Your favorite seed catalog will suggest many other annuals for the sunny garden.

choosing the best cultivar

Often the seemingly endless list of cultivars available in seed catalogs and retail garden centers is overwhelming. Many times we do not have adequate information about garden performance, care, or the

best cultivars for our locale. When we purchase plants from reputable flower growers or retailers, we can rely on their advice; however, there is one other important hallmark that can be used in choosing cultivars of seed-propagated annuals — the All-America Selections designation. All-America Selections is an organization, conceived in 1932, that conducts North American trials of annuals developed by the world's best plant breeders. Superior cultivars for the home garden are given awards and promoted in the national press. Currently there are over 200 AAS Display Gardens in the U.S. and Canada, which give you an opportunity to judge for yourself the merits of each award winner.

Unfortunately, no national organization judges and promotes asexually propagated cultivars. Many state universities conduct trials of garden flowers; thus, information for your locality may be available. My advice is to choose cultivars carefully — your gardening success may depend on it.

The author acknowledges the editorial assistance of Tanya Spewock, Penn State Agricultural Information Services.

Some All-America Selection Gardens

Maryland

Cylburn Arboretum, Baltimore, MD
Charles County Community College,
La Plata, MD
Brookside Garden, Wheaton, MD

New York

Cutler Botanic Garden, Binghamton, NY
Brooklyn Botanic Garden, Brooklyn, NY
Sonnenberg Gardens, Canandaigua, NY
Queens Botanical Garden, Flushing, NY

New Jersey

Deep Cut Park Horticultural Center,
Middletown, NJ
Cook College of Rutgers University,
New Brunswick, NJ

Pennsylvania

Pennsylvania State University, University
Park, PA (also AAS trials)
Longwood Gardens, Kennett Square, PA
Rodale Research Center, Kutztown, PA
George Washington Memorial Park,
Plymouth, PA
Peddler's Village, Lehaska, PA

Rhode Island

Blithewold Gardens, Bristol, RI
University of Rhode Island, Kingston, RI
Green Animals Topiary Garden, Portsmouth,
RI

For information about All-America Selection Gardens in your area, contact Nona Wolfram-Koivula, Executive Director, All-America Selections, 1311 Butterfield Road, Suite 310, Downers Grove, IL 60515.

Annuals	Use Code
African Daisy (Dimorphotheca)	F
Ageratum	A,F
Alyssum	A,F
Amaranthus	B,F
Anchusa	A,E
Aster	A,B,C,F
Baby's Breath	A,C,F
Bachelor's Button	A,B,C,F
Balsam	A,F
Basil (ornamental)	B,F
Begonia (fibrous-rooted)	A,E,F
Begonia (tuberous, hiemalis)	E
Bells of Ireland	B,C,F
Browallia	A,E,F
Calendula	A,B,C,F
Candytuft	A,F
Canna	B,F
Carnation (annual)	A
Celosia	B,C,F
Cleome (spider flower)	B,F
Coleus	A,F
Cosmos	B,C,F
Dianthus	A,C,F
Dahlia (dwarf)	A,F
Dusty Miller	A,B,F
Flowering Cabbage/Kale	A,F
Gaillardia	A,B,C,F
Gazania	A,F
Geranium	A,B,D,F
Gerbera	A,B,C,F
Gomphrena	A,B,C,F
Helichrysum (straw flower)	A,B,C,F
Heliotrope	B,F
Impatiens (sun and shade)	A,D,E,F
Impatiens (New Guinea)	A,E,F
Lantana	
Larkspur	A,B,C,F
Lisianthus (Eustoma)	C,F
Marigold	A,B,C,D,F
Mimulus	A,E
Morning Glory	A,B,F
Nasturtium	A,F
Nemesia	A,E,F
Nicotiana	A,B,E
Ornamental Pepper	A,F
Pansy	A,D,F
Petunia	A,D,F
Phlox (annual)	A,F
Portulaca	A,F
Salpiglossis	A,F
Salvia (blue salvia)	A,C,F
Salvia (scarlet sage)	B,F
Snapdragons	A,B,C,D,F
Stocks	A,F
Torenia	A,E
Verbena	A,F
Vinca (periwinkle, catharanthus)	A,E,F
Zinnia	A,B,C,F

KEY:

A - Border Plant D - Most Popular
B - Background E - Shady Locations
C - Cut Flower F - Sunny Locations

Richard Craig is professor of Plant Breeding in the Department of Horticulture, Pennsylvania State University. In 1963 he received special recognition for All-America Selections as co-developer of the first seed grown geranium, the cultivar 'Nittany Lion.'

An Easy-Care Flower Garden With "Perpetual" Color

At Snipes Nurseries, Wrightstown, a Border of Annuals Blooms All Summer and Produces Flowers for Cutting

by Derek Fell

photo by Derek Fell



A bonanza of annuals from easy-care garden.

In spring of 1985, Olga Snipes and I met at Snipes Nurseries, near Wrightstown, to discuss the idea of planting a flower garden using flowering annuals to provide a non-stop display of color from spring until frost. Shown here is part of the garden and a site plan with variety selections. The garden fits into a rectangular plot roughly 45 ft. long by 15 ft. wide – an area most people have at the bottom or side of their property line. The design includes a paved area at one end with a bench. A decorative arbor with seats provides support for flowering vines, and a stepping stone path leads up to the arbor.

The 20 varieties of flowering annuals selected are readily available as bedding plants from garden centers, such as Snipes. All were chosen for their continuous bloom and many have the added advantage of long stems suitable for cutting. After transplants were set in place a wood chip mulch helped to conserve soil moisture and smother weeds.

This easy-care flower garden is now a permanent feature of Snipes' Wrightstown location on Route 413 six miles north of Newtown, Pa.

Derek Fell, garden writer and plant photographer, is author of *Annuals – How to Select, Grow & Enjoy* (HP Books), available through bookstores.

Snipes Easy-Care Flower Garden Plan Size 15 ft. x 25 ft.



Varieties

Ageratum, Blue Munk
Begonia, Cocktail Mixed
Calendula, Mixed Colors
Celosia, Fairy Fountains

Cleome, Pink Queen
Coleus, Rainbow Mixed
Cosmos, Sensation Mixed
Dusty Miller, Silver Lace

Marigold, Queen Sophia
Morning Glory, Heavenly Blue
Nicotiana, Sensation Mixed
Petunia, Mixed Colors

Scarlet Sage, St. John's Fire
Snapdragon, Rocket Mixed Colors
Zinnia, Dwarf Small World
Zinnia, Cactus-flowered Mixed Colors



Tina Fell harvests from the garden at Snipes Nurseries in Wrightstown, Pa., while her father records the dazzling, perpetual color in the 45-ft. strip of annuals.



Cleome 'Helen Campbell,' the author's favorite annual.

ANNUALS FOR PERENNIAL BORDERS



by Frederick McGourty

"Please tell us what your favorite white-flowered plant is for the back of the border," she said. I had just finished speaking to the Outer Humpton Garden Club on "Perennials of Distinction." Perhaps it was the blue corn tortillas with melted yak cheese and slivered pignoli that rarified my taste, but I blurted, "*Cleome 'Helen Campbell.'*" The silence was so still I could hear the Perrier fizz on the other side of the living room. With slight amusement and a flick of her Gucci handbag, the lady protested, "But that's an *annual*, not a serious plant."

This sort of exchange was common with the better clubs I encountered on the lecture circuit several years ago, of course with allowance for different cheeses and their carriers. In Peoria or Paducah perhaps the cleome would never have been questioned, since annuals have always been "in" there, but not so at the Outer Humptons of the East. It is a trendy world, and I am frankly glad to see some annuals emerge again in gardens. Certain kinds are the perfect accompaniments for peren-

nial borders endangered by midsummer lag.

Most perennials, it must be said, have a bloom period of just three weeks, whereas the majority of annuals bloom all summer. I do not feel this is a detriment with perennials, because with careful selection one can have an ever-changing garden scene through the season, but incorporating a few annuals can transform a slightly stodgy perennial border into a fresh, crisp summer blend that will continue to draw the eye until frost.

criteria for choosing the right annuals

Not all annuals are appropriate, and it helps to have a few criteria for choosing ones that will work best. Electric colors, ones of neon intensity that are associated with some of the better known annuals, are best left to those gardeners who like pep rallies in the garden. It is wise to avoid scarlet sage, for example, for this really doesn't go well with much else, though at a once-regal park in Fontainebleau in France I do recall its raucous plebeian

spikes being pleasantly muted by the interplanting of a wispy airy wildflower from Texas, *Gaura lindheimeri*.

But it seems to me there are enough ordinary challenges in displaying colors at their best in the garden that we should avoid the classic trouble-making tints of ruffian red, sunset orange and yahoo pink. Admittedly, there are selections of zinnia, marigold and gazania with subdued colors, but it isn't basically their nature, and that isn't why we grow those plants. In the main, they have "look-at-me, look-at-me" colors, and a shouting match in the garden is inevitable if too many of them are together. In my own garden I prefer no shouting, though in good-sized borders some firmness of plant voice is needed if the whole is to be effective. This is one reason why bright colors predominate in park plantings.

It is better to look to annuals not so much for vivid color accompaniments for perennial gardens, but for those traits that are a bit short in perennialdom. Spiky flowers aren't numerous among the perennials, compared with the rounded or daisy forms



Lobularia 'Carpet of Snow,' *L. 'Royal Carpet,' Salvia argentea, Artemisia canescens*

we encounter increasingly as summer progresses. True there are lots of sentinel veronicas and some cultivars of *Salvia superba*, as well as lythrum and liatris, but no spiky perennial matches *Salvia farinacea* in general garden utility. In mild climates it is more-or-less perennial, but in areas with a real winter it is grown as an annual. 'Victoria,' a good lavender-blue, grows 18-24 in. tall and blooms from June to frost. It supersedes 'Blue Bedder,' whose narrow spikes appear anorexic by

comparison. 'Victoria' combines well with a wide range of perennials with rounded or daisy shapes, including the border yarrows in yellow, such as the long-blooming *Achillea* 'Moonshine' (2 ft.) or *Achillea* 'Coronation Gold' (3 ft.). In the whiskey-tub planters that have become popular in recent years, a single plant of *Salvia farinacea* 'Victoria' makes a fine centerpiece faced down with pale yellow *Coreopsis verticillata* 'Moonbeam,' which blooms all summer, and silver sage (*Salvia argentea*),

a perennial that goes on for only three or four years for us but which has the most sumptuous gray foliage rosette of any hardy perennial I know.

All of the above plants are sun-worshippers, and are drought-resisters, though they shouldn't be pushed to the desert limit, which is a temptation when dealing with such plants. White-flowered selections of *Salvia farinacea* exist, including 'White Porcelain.' Though useful for schemes with silver-leaved perennials, or ones with pink flowers, they are not usually as attractive or floriferous as the typical lavender-blue form of this sage. Bear in mind that they all make excellent cut flowers.

snapdragons and bells-of-ireland

Since we hear a lot more about the importance of low maintenance than beauty as an ultimate aim in gardens these days, I will hesitate for a split second before recommending a plant that needs staking.

With slight amusement and a flick of her Gucci handbag, the lady protested, "But that's an annual, not a serious plant."

However, the tall, full-bodied spikes of the Rocket series of snapdragons, in separate color selections that are quite refined, deserve more than a passing mention and are better performers over a long period than the dwarf strains. Among the Rocket tints are buffered yellow and apricot-bronze, as well as a good soft pink and glistening white. Snapdragon flowers, while occurring sporadically through the season, are at their finest in autumn. They often survive a few hard frosts and are effective some years until early December, enduring after most annuals have become skeletons or dust. They can even yield some good cut flowers then, and it is no great surprise to have a few plants live over winter.

Judicious placement is important for snapdragons, especially the Rocket series, which may be 3½ ft. tall by season's end. A sunny site protected from wind is called for, as with any plant needing support, and it helps to have a solid deep green background such as a yew, which still looks fresh late in the season. For a long-lasting garden scene accompany the snapdragons with gray-leaved perennials

continued

such as lamb's ears (*Stachys byzantina*) or with coral bells (*Heuchera* spp.), whose foliage improves with cool weather and looks nicely marbled until winter descends hard. Late-flowered chrysanthemums in complementary colors help complete the picture.

Incidentally, the taller snapdragons will need less rigid support if the seedlings, when planted out in May, are set an inch or two deeper than normal in the soil so they can develop prop roots. Pinching the tips early also helps them distribute their eventual weight more evenly. Try to support the plants so you won't be unduly conscious of the stakes, which is difficult in the case of a spiky bloom; or, simply place a few twiggy dead stems from birch or blueberry around the base just after planting, to provide support that will become inconspicuous as the snaps fill out.

Bells-of-Ireland (*Molucella laevis*), a sun-demanding annual with attractive green bracts in spikes borne on plants that may reach 3½ ft., is grown more in cut-flower gardens than borders. Frequently it requires light staking, too, but this annual makes a delightful change of pace in perennial borders when planted near the brassy yellow false-sunflower (*Heliopsis helianthoides*), especially 'Gold Green-heart,' a good durable perennial in the same height range. Both bloom the better part of summer.

white flowers and combinations

Good white-flowered plants with a long bloom period are at a premium because they blend well with everything. They also keep possibly warring flower color factions at bay in the garden, and stand out especially at dusk, when many of us have the only moments of the day to leisurely contemplate gardens. New gardeners tend to ignore white; experienced ones regret they don't have more.

The very best low-growing white for the mixed border is sweet-alyssum (*Lobularia maritima*), which usually blooms from spring until heavy autumn frost, some years with an occasional siesta in midsummer when we cut it back part way to encourage greater late-season bloom and compactness. Very few plants are the match of it in defining the front of the border. Its only enemies are shade and gardeners who overzealously water and fertilize. In our own garden a particularly valued long-lasting combination, often at its

peak in October, is white sweet-alyssum, which self-sows from year to year, the purple sweet-alyssum 'Royal Carpet' and *Salvia argentea*. Another good combination is sweet-alyssum 'Rosie O'Day' interplanted with the low-growing perennial *Veronica incana*, whose 12-in. spikes of blue flowers in early summer are incidental to the plant's most enduring trait — good gray foliage mats through the larger portion of the year.

Because a properly planted perennial border of some size may entail an expense that is the match of a new subcompact car

Electric colors, ones of neon intensity that are associated with some of the better known annuals, are best left to those gardeners who like pep rallies in the garden.

(but probably last longer if well maintained), a few annuals of good dimension go far to alleviate the nervousness of the family treasurer. They may also particularly complement the display of perennials, some of which are slower to fill in than others. Space filler is an ignominious horticultural term, but two large-growing kinds of annuals come to the aid when aspiration has exceeded budget. One is *Cleome* 'Helen Campbell,' whose stalks of white flower clusters may attain seven feet by September in well-tended soil with a sunny exposure. Despite the height, plants are neither broad nor heavy-textured but airy and somewhat refined. My friends in Outer Humpton would object to an old vernacular name for the plant, cat's whiskers, an allusion to the conspicuous long stripes from older blooms, which persist below the new flowers as the season progresses.

Cosmos bipinnatus, in its white-flowered selections, is harder to find in garden centers than 10 years ago, but it is worth the search. The numerous small, saucer-like flowers borne above deeply cut foliage are attractive through the season, though a light shearing in midsummer will improve appearance and bloom. Height may be four or five feet, depending on soil and site, and individual plants spread well over several feet. As with most annuals it is best to avoid mixed colors, which give a spotty or busy appearance in a border. There are separate pink-flowered selections too. All are sun-worshippers, and none are fussy about soil.

Want a lower, stockier white for mid-

border? *Lavatera* 'Mont Blanc,' with flowers like a small hibiscus, but more refined, is a sound choice, especially where summers are hot and long. Height is usually three feet and plant habit broadly rounded. The only principal pest in our experience is the Japanese beetle, which afflicts the Mallow Family as badly as the Rose Family. Hand picking the little beasts is the logical control if only several *Lavatera* are planted, and only several are needed for a good display.

Gray foliage is at least as useful as white flowers in the garden, and for the same reasons. There are, of course, perennials that can provide this, but some are going to die if winter is especially wet or drainage is unsatisfactory, and others self-destruct in summer heat. Still others are Cossacks ready to invade their neighbors. One of the annual dusty millers, *Senecio* 'Silverdust,' gets around these problems and always looks fresh, even in November. Don't be surprised if a few plants live over the winter, for it is a tender perennial, though we like to start with new plants each year for uniformity of display. There are more finely cut-leaved dusty millers, but 'Silverdust,' which has a sound constitution, is superior if only because there is more surface area to the gray leaves, and the eye picks it up at a distance. Height varies by season's end, sometimes exceeding 15 in., but 'Silverdust' is basically a frontal plant in the border. It is also very handy for tub or container plantings. In late autumn it makes a nice foil for a month or two with cut twigs of the winterberry holly (*Ilex verticillata*) inserted in the potting soil because their red fruits gleam in its company.

blue flowers

Good clear blue is an uncommon flower color among both perennials and annuals, yet valuable for much the same reason as is white — it complements almost everything. I am more interested in what a plant can do in the garden in relation to other plants than I am in its actuarial table, so I seek the good blues whence they come. The most popular annual lobelia, 'Crystal Palace Compacta,' is an intense, nearly psychedelic blue and perhaps best reserved for bright combinations in containers, but 'Cambridge Blue,' the color of a clear Dakota sky on a spring day, is a delightfully cooling front of the border plant. Even an Oxonian might smile at it. Plants

may not bloom as profusely in dappled light as in full sun, but flower substance is better and bloom period longer. In fact, lobelia usually looks its best early and late in the growing season, as strong summer heat and sun bring about semi-dormancy or worse.

The Chinese forget-me-not (*Cynoglossum amabile* 'Firmament') is a change-of-pace when you are chasing the horticultural blues. The 15-in. plants, with grayish-green foliage and mid-blue flowers about 1/2 in. wide, are best not planted together in large groups because the density of flowers is not great and their bloom period is slightly erratic, whether the summer is hot or cool. Chinese forget-me-nots are better sandwiched in informal drifts between frontal and mid-border groupings of other plants in the sun. If arranged this way, when they are out of bloom they will be inconspicuous; in flower they are a pleasant surprise, even enchanting, especially with white-flowered perennials such as *Veronica* 'Icicle' in the background. Chinese forget-me-nots tend to self-sow, and an occasional plant will overwinter for an early start. *Cynoglossum* 'Firmament' doesn't take up much space, but it is one of those plants that is capable of transforming a plant collection into a garden.

Finally, in the quest for good blues, don't overlook the gentian sage (*Salvia patens*), a tender Mexican perennial that grows roughly two feet tall in the average summer. You may have a better chance of obtaining it from a greenhouse or herb nursery than from a garden center. In autumn before a killing frost you should remember to bring it indoors, to be wintered over in a cool, sunny room, with cuttings taken along the way for thrifty young plants the following season. It is fine in mid-border with the soft pink midsummer perennials such as *Phlox paniculata* 'Fairest One' and the white of shasta daisies or pale yellow of *Coreopsis* 'Moonbeam.' They combine well with roses of white or soft pink hue, too.

Experiment with these and other refined annuals, and your garden will have distinction over the years. Why have it be like all the other gardens?

Frederick McGourty, perennial-garden designer and nurseryman, is co-owner of Hillside Gardens, Norfolk, Connecticut, a firm specializing in uncommon perennials. McGourty co-authored with Pamela Harper *Perennials, How to Select, Grow and Enjoy*, H.P. Books, Tucson, Arizona, 1985. (Available in PHS Library.)



Lobularia 'Royal Carpet,' *Rosa* 'The Fairy'



Lavatera 'Mount Blanc'



Senecio 'Silverdust,' *Salvia officinalis* cv., *Lobelia erinus*



Tuberosus cannas are becoming popular again as annuals. These strong stately plants grow up to six ft. tall in tubs or in garden.

WHY PROPAGATE ANNUALS?

Some Worth the Trouble



by Anne S. Cunningham

The first time we plant a garden, we do it for the end product, the lettuce and tomatoes, petunias and marigolds. But anyone who has planted seeds and nurtured them through flowering maturity probably agrees with Lewis Hill, who says "Propagating plants is ... more fun than mere gardening." In his book, *Secrets of Plant Propagation* (Garden Way Publishing, 1985), Hill gives insight into all methods of propagation. This article deals more with the challenge and unusual opportunities that arise from growing your own annuals. The "why" and "what" of flower propagation have to be determined before approaching the "how to grow" of Richard Craig's story on page 4 of this issue.

In this era of instant satisfaction, propagating annuals ranks with the vending machine for ease and quick results. Some seeds sprout almost overnight; the majority are up within a week or two. The better seed catalogs warn gardeners about seeds that require special care or take a long time to germinate.

Seeds grow best under constant temperature, water, and light conditions; huge variations produce uneven growth and affect the root structure. In *The Secrets of Plant Propagation*, Lewis Hill recommends putting flats of seeds under grow lights "for twenty-four hours a day, initially, [so] the seeds sprout rapidly and grow speedily. The new plants, consequently, are healthy, and usually resist damping-off disease." Other growers suggest plant lights run for 12 or 13 hours a day.

The planting medium should be sterile, weed free and light, such as the artificial soil, Pro-Mix. Some gardeners use peat pellets for growing annuals because they go directly in the ground, the roots are not disturbed, and fewer plants suffer transplant shock. A popular but expensive alternative is to plant seeds in Pro-Mix in Fertile Pots, pots made of pressed sphagnum and wood fibers lightly treated with fertilizers that are released when they come in contact with water. Like pellets, Fertile Pots are planted directly in the ground, but they are larger than pellets and thus provide more room for root growth.

Hill recommends putting fine grade perlite on top of newly planted seeds indoors "because it dries out quickly after watering and keeps the surface of the planting medium dry, thus inhibiting disease."

The two most common mistakes with

seed propagation are sowing the seeds too thickly and not thinning seedlings sufficiently to give them room for full development. Seedlings in flats should be transplanted as soon as the first true leaves are out. When transplanting, it's best to hold seedlings by one of the first (false) leaves to avoid bruising or crushing the tender stems or delicate roots. Then the tiny plants should be lightly fertilized and pinched back on a regular basis to encourage good root structure and full, bushy plants.

"Why bother growing your own, when so

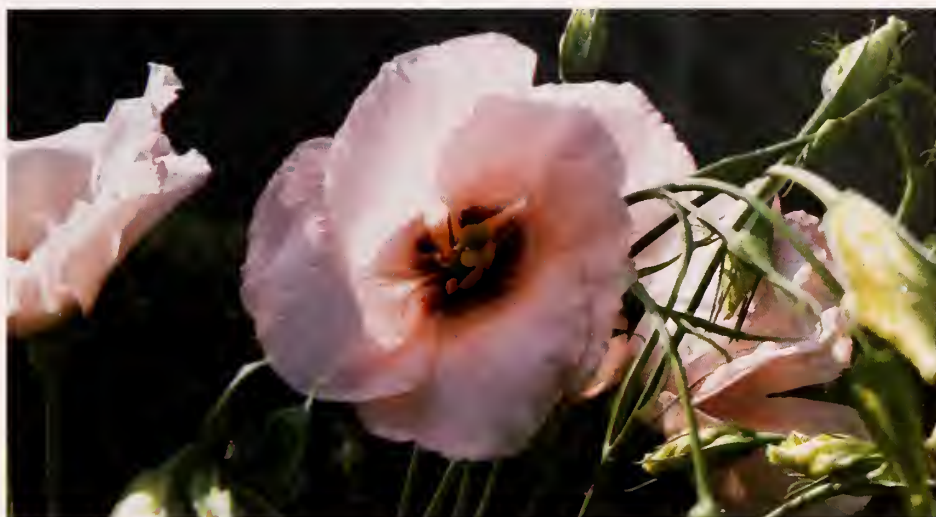
In this era of instant satisfaction, propagating annuals ranks with the vending machine for ease and quick results.

many are available commercially?" asks an observer. The answer: unusual varieties, favorite colors, flexibility, cost savings and pride in a garden that is truly personal.

variety

The bedding plant industry produces about three million flowering annuals each year, and the range from ageratum to zinnia is fairly predictable. The industry dictates: "easy to grow, popular colors, standard sizes." A gardener might find as many as a dozen different snapdragons available in the local nursery; while a good catalog features seed for up to three dozen. The nursery might have market packs for three foot yellow snapdragons, 18 inch pastels, and dwarf mixtures. The discerning gardener who wants three foot white snapdragons needs to be armed with good catalogs and an affinity for propagation.

Any fan of seed catalogs will confirm that with careful reading, a gardener can find the right annual for any spot, the perfect solution to any problem. *Viscaria*, a popular European annual, boasts nearly 100 impatiens-like flowers per plant on 9-18 in. stems but grows in full sun. It has narrow, blue-green leaves and the flowers range from pastel pinks and blues to deep purple and magenta. Best of all, like impatiens, *viscaria* grooms itself — the flowers fall off as they fade. *Sanvitalia*, or creeping zinnia, is another relatively unknown annual gaining popularity for its mass of flowers and full, spreading habit similar to a ground cover. Resembling miniature sunflowers with one inch yellow or orange



The prairie gentian (*Eustoma*) is slow growing but well worth the wait. Cut flowers last up to one month in water.

semidouble flowers, *sanvitalia* is easy to grow on sloping ground or in hanging baskets for a cascading effect. S. 'Mandarin Orange' is the 1987 All-America Selection winner.

Other varieties of unusual or just generally unknown annuals are listed in the box with this article.

colors

Colors for annuals are as important to the gardening industry as they are for the clothing industry on Seventh Avenue. The trends among flowering annuals usually start in California and move East. For the past few years, pastels have been the rage, particularly a peachy-pink. "No one" liked red, so red annuals were difficult to find; white was equally scarce, even though it is the color that shows up best in a garden at night. Orange was totally out — "too garish" — and so on. At a glance, a visitor can tell whether a gardener has propagated from seed by the unusual range of colors, the choice of plants that coincide precisely with the feeling and needs of the garden, rather than featuring just what's popular.

Bedding plant spokesmen say the patio furniture manufacturers come to them for insights about next year's favorite colors; patio furniture spokesmen claim their furniture fabrics dictate what annuals will adorn the patio in coordinating colors. This summer, 1987, white, red and even blue flowers are making a strong comeback, though pastels still find a stronghold in the mid-Atlantic states.

flexibility

Flexibility is a key point about seed prop-

agation that's often overlooked. Anyone who has bought sixpacks of annuals during an April burst of enthusiasm, then watched them get crowded or leggy while waiting for May 15 to plant them outside, understands the importance of timing annual seeds. Even though spring fever may have us planting seeds all timed for May 15, common sense suggests staggering their "ready dates" according to time available to plant them. By propagating our own, we can have annual seedlings ready for transplanting at the right time — when the plants, the weather and the gardener have their acts together.

Most seeds have a reasonably long period during which they can be stored then planted when the gardener is ready to attend to them. Master gardener Joanna Reed, of Malvern, Pa., knows from experience that spring is her busiest time of year, so she doesn't plant annuals like nasturtium until late May or even June. She uses special annuals, like *Tagetes* 'Lemon Gem' (9 in. high) as bright, mounded accents in her garden where the spring-flowering perennials have "gone by." Their marigold characteristics also make them valuable as insect repelling companion plants.

cost savings

Beyond the obvious cost differences in seed vs. plants are the exciting "deals" offered in some catalogs. Most of us have fallen into the trap of ordering more seeds than we can properly care for, but with a little planning, package deals can be an inexpensive way to try new varieties. Just for ordering before February 28, 1987, Burpee (Warminster, PA 18974) offered its customers four free packages of vegetable

continued

Some Unusual Annuals to Propagate

(With thanks to Lee Lefkoff Alyanakian of Robert W. Montgomery Nursery in Chester Springs for her suggestions and propagating information.)

Name	Height Range	Color	Comments
<i>Abelmoschus moschatus</i> (musk mallow)	8-10 in.	red & white	Related to hibiscus. Profuse bicolored blooms, 2½-4 in. across, on compact bushy plants. Seeds are best soaked overnight in hot water. Germinates in one week at 70°-80°F.
<i>Browallia speciosa</i> (amethyst flower)	8-12 in.	blue	Greenhouse plant used more frequently in the garden. Uncovered seed germinates indoors in two to three weeks at 68°F. Softwood cuttings easily root in spring or fall.
<i>Clarkia hybrida</i> (godetia)	var. between 9-24 in.	white, purple, pink	Showy herb; flowers good for cutting. Best in mass plantings. Frost tolerant annual, sow outdoors in early spring. Seed germinates in one to two weeks at 54°-70°F.
<i>Cleome hasslerana</i> (spider flower)	3 ft. to 5 ft. w/o support	white, yellow, pink	Showy screen or border flowers. Important bee plant. Seeds germinate in one to two weeks at 54°-70°F, may be started indoors for even earlier blooming. Reseeds readily in the garden.
<i>Crepis rubra</i> (hawksbeard)	12 in.	white, rose, orange	Annual good for cutting & border; though perennial var. can be a tenacious pest. Blooms quickly from seed. Propagate indoors in early spring.
<i>Eustoma</i> (prairie gentian)	15-30 in.	pastels to deep blue	As cut flowers, these gorgeous 3-in. blossoms last up to a month in water. Singles & doubles.
<i>Exacum affine</i> (persian violet)	1-2 ft.	purple-blue	Seeds sown indoors in March will bloom profusely on compact bushes by August in shade. Covered seed started indoors in early spring, takes two to three weeks to germinate at 70°F.
<i>Gaillardia lanceolata</i> (blanket flower)	15-24 in.	yellow to wine-red	Extremely long flowering, deep colors impressive in flower arrangements. Seeds germinate in two to three weeks at 68°F. Start indoors for earlier blooms.
<i>Gazania</i> spp. (treasure flower)	8-15 in.	yellow to crimson	Recent developments make them neat & compact. Brilliant color range, suitable for bedding, containers & cut flowers. Covered seed germinates in 10 days at 60°F. Cuttings may also be taken in summer from new basal shoots.
<i>Godetia</i>	10-36 in.	white to pink to lavender	Kaleidoscope of colors & combinations on showy flowers. Arranger's delight. (See <i>Clarkia</i> .)
<i>Heliotropium arborescens</i> (heliotrope)	18-24 in.	lavender to purple	Very fragrant. Good with marigolds. Propagated by softwood cuttings in spring or fall, or started from seed. Takes three to four weeks at 68°-86°F to germinate.
<i>Kochia scoparia</i> (summer cypress)	24-40 in.	silvery white	Soft fern-like foliage with tiny silver flowers can provide excellent contrast as a hedge behind bright annuals. Sow seed indoors in very early spring. Germinates in one to two weeks at 68°-86°F. Reseeds profusely in the garden.
<i>Malcolmia</i> (Virginia stock)	8 in.	mixed	Sweet smelling. Flowers within a month of sowing.
<i>Mentzelia</i> (bartonia)	18-36 in.	yellow	Brilliant, showy, 3-5 in. blooms.
<i>Nemophila menziesii</i> (baby blue eyes)	trailing	white with blue	Easy to grow, good for rock garden, bedding or containers in some shade. White petals have "blue eyes" at tips. Sow this frost tolerant annual outdoors in very early spring.
<i>Nicotiana glauca</i> (flowering tobacco)	16 in.-4 ft.	white to green to red	New varieties are fragrant, open all day & flower all summer. For earliest flowering sow indoors four to six weeks before last frost. Seeds germinate in one to two weeks at 68°-80°F.
<i>Nierembergia hippomanica</i> (cup flower)	8 in.	purple w/ yellow eye	Blooms freely all summer; continues if brought inside for the winter. Propagate in spring from softwood cuttings from new growth or sow seed indoors in very early spring. Takes two to three weeks at 68°-80°F.
<i>Nigella damascena</i> (fennel flower)	6-18 in.	full color range	Easy care. Unusual stamens in often contrasting color, followed by attractive seed pods. Sow this frost tolerant annual outdoors in very early spring in a sunny location, easy.
<i>Ricinus communis</i> (castor bean)	3 ft. to 11 ft.	yellow, maroon	Gigantic, fast growing ornamental for borders. Flowers in a dense terminal cluster often one to two feet high. Poisonous. Soak seed overnight in hot water, or nick seed coat before sowing indoors or out. Seeds are poisonous.
<i>Salpiglossis sinuata</i> (painted tongue)	18-24 in.	mixed	Rich colors, good for cutting. Tolerant of poor conditions. Needs a headstart indoors. Seeds are difficult and erratic to germinate, some begin in two weeks at 68°-86°F.
<i>Sanvitalia procumbens</i> (creeping zinnia)	6 in. x 12 in.	yellow or orange	Dwarf, neat, spreading plants covered with sunflower-like blooms with black centers. Sow seed in early spring indoors, or outdoors after all danger of frost is past. Germinates in one to two weeks at 68°-70°F.
<i>Torenia fournieri</i> (wishbone flower)	12 in.	grey-blue, yellow, mauve	Profusely flowering pot plant, like browallia, used in garden. Best started early indoors. Germinates in two weeks at 68°-86°F.



Cup flower (*Nierembergia hippomanica violacea* 'Purple Robe') has needle-like foliage unknown in other annuals. It is a good contrast plant for a sunny location.



The colorful bracts of *Salvia patens* keep the plant attractive long after the flowers have fallen. Notice there are only a few left.



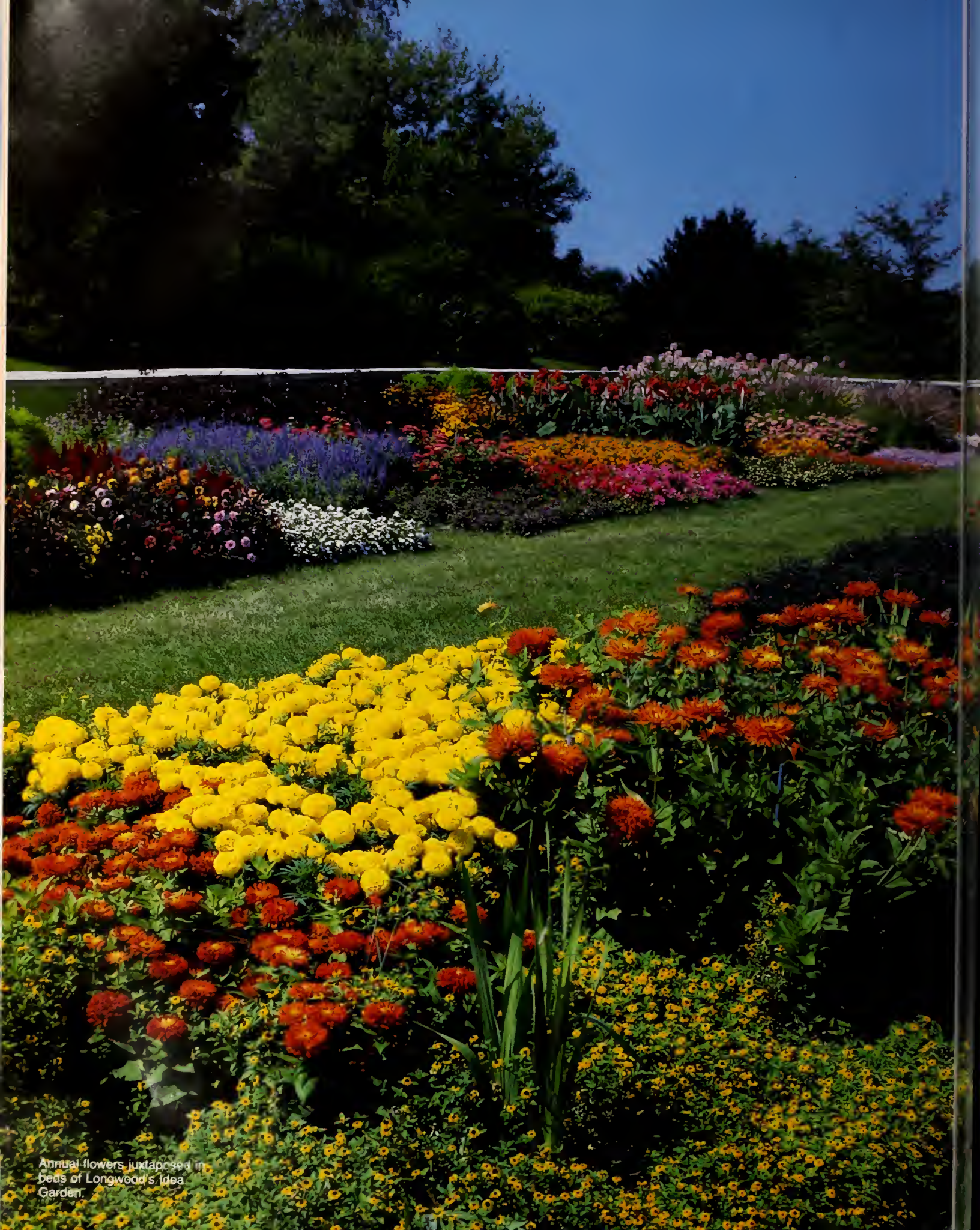
The delicate purple *Exacum affine* blends with pink gerbera.

varieties not commonly grown, like Rad-dichio Marina, Lei Choi and Pak Choi.

Ornamental vegetables used in the flower garden are perhaps the ultimate in cost savings: decorative plants you can eat. Deep red rhubarb chard, multi-colored rainbow chard, and ornamental kale make thick, colorful borders that add interest to almost any annual garden.

Advocates say the best reason to propa-gate annuals is to make the garden truly personal. Annuals reflect the gardener's ability to grow from seed, individual choice of color and of material, talent at planning and design (happily able to change every year), and probably how many snowy days the gardener spent reading seed catalogs.

Anne Cunningham is a writer specializing in hor-ticultural subjects. She has written for the Phila-delphia *Inquirer*, several national magazines and is a frequent *Green Scene* contributor.



Annual flowers juxtaposed in
beds of Longwood's Idea
Garden.



Annual Flowers in Longwood's Idea Garden



by Darrel Apps

Annuals are a significant portion of the Idea Garden at Longwood Gardens, Kennett Square, Pa. Besides annuals there are perennials, herbs, vegetables, small fruits, tree fruits, and, next year, new sections for roses, vines, and groundcovers. Staff members often refer to the area as a living catalog of plants.

Most of the annuals that are grown represent those that bloom over a long period of time, are disease and insect free, and can be easily grown. The display is usually effective from late June until early October. Last year the early annuals (petunias, zinnias, ageratums, and portulacas were best the third week of July and the late annuals (begonias, scarlet sages, peppers, and marigolds) the second week of September.

The annuals' pervasive color is the recurring design feature that leads visitors from one section of the Idea Garden to the next. Last summer *Petunia* 'Light Pink Pearls' combined with *Verbena bipinnatifida* greeted visitors at the entrance. In the food garden they saw the annuals *Catharanthus roseus* 'Magic Carpet Pink,' *Lobularia maritima* 'Royal Carpet,' *Lathyrus odoratus* 'Royal Family Mix,' *Dolichos lablab*, and *Ocimum basilicum* 'Dark Opal.' The main vegetable garden fence displayed *Convolvulus* sp. on the vertical plane with a mass planting of *Tagetes* x sp. 'Yellow Boy' and *Salvia farinacea* 'Victoria' in a three-foot-wide strip at the base. And the herb garden had spots of annual flower color from *Calendula officinalis*, *Papaver rhoeas*, and *Catharanthus roseus*.

The "critical mass" of annual flower color, however, is located at the far southwestern portion of the Idea Garden. It is in

this area that large blocks of annuals are juxtaposed in pleasing compositions.

Landon Scarlett, Longwood's planning and design manager, selects the annuals to be used in the 14 sun beds and two shade gardens. In the fall, Scarlett looks over the blueprint for these gardens, marking in the cultivars that according to her observations will do best. She considers first color hue and then height variation, bloom time, foliage texture, foliage color and the form of each plant selection. She then turns the plans over to Robert Pyle, foreman of the Flower Garden, who figures the number of plants needed. His seed orders are in as early as December to ensure getting what's written into the plan. Joe Hannas, production foreman, handles most of Longwood's seed germination. Joe determines when to plant the different seeds so they're ready to transplant when the beds are ready in mid-May. Slow-growing seedlings like *Catharanthus*, *Verbena*, and *Begonia* are started in February or early March while the more rapid growers *Tagetes*, *Zinnia*, and *Celosia* are started nearer to when they can be put outdoors. The planting and day-to-day care of the annuals is Eugene Fragale's responsibility. Because of his meticulous care – fertilizing, watering, insect and disease control, and deadheading – plants perform to perfection and still look good in early October.

research yields high scorers

Another important part of Longwood's annual flower plant program is preliminary research. Each year Dr. Robert Armstrong, research horticulturist, tests many of the

continued

new annual flower cultivars available from commercial and retail sources. In 1986 he tested 241 cultivars. Each week during the summer cultivars are rated. A score of 1 to 5 (5 being the best) is given for both foliage and flowering on a weekly basis. Last summer the ratings were made over a 17-week period. By reading across the columns of the resulting report one can quickly pick cultivars that have the highest ornamental value. (See box for best picks in 1986.)

Once a plant has proven itself in the trial, it may be considered for the Idea Garden. Actually only a few new plants enter the garden each year. To be selected they must be equal to, or better than, cultivars selected in previous years. A few are excluded because their color hues will not complement most of the "tried-and-true" compositions.

When the big blocks of annuals reach their peak the Idea Garden is one of the favorite spots at Longwood. It is the epitome of the bedding-out concept so popular in Victorian England and still seen at Hampton Court. The Englishman William Robinson so despised this concept that he devoted his entire career to perennials and the natural garden. Somehow this bit of history is forgotten as hundreds of visitors enjoy their walk through these wide aisles of glorious annuals. Everyone is convinced that there is a place for a few annuals in every garden.

If you come to the Gardens during the summer be sure to bring paper and pencil. No doubt you'll want to take a few notes

on compositions that fit your color scheme. If you become really interested in annuals, you may want to take Longwood's six-week annual flowers course that will be taught by Pat Christopher of Newark, Delaware in September 1988.

Some Best Rated Annuals, 1986 Idea Garden

plants with good foliage display

Ocimum basilicum 'Green Ruffles'
Ocimum basilicum 'Purple Ruffles'
Caladium 'Carolyn Whorton'
Caladium 'White Christmas'
Chrysanthemum pacificum (a perennial treated like an annual)
Helichrysum argyrophyllum
Crucianella spp. shade plant

flowering plants

Lobularia maritima 'Wonderland White'
Begonia x *semperflorens* 'Eliza'
Begonia x *semperflorens* 'Verdo Type Scarlet'
Impatiens wallerana 'Sunshine Dawn'
Tagetes patula 'Early Queen Sophia'
Tagetes patula 'Forever Red'
Tagetes patula 'Hero Red'
Petunia x *hybrida* 'Deep Rose Pearls'
Salvia farinacea 'Argent'
Salvia farinacea 'Mina Blue Fonce'
Salvia farinacea 'Victoria Blue Fonce'
Verbena x *hybrida* 'Cleopatra'
Zinnia elegans 'Dasher Scarlet'
Zinnia elegans 'Dreamland Coral'

Darrel Apps is departmental head of education at Longwood Gardens. One of his responsibilities is providing leadership for the overall development of the Idea Garden. While an assistant professor at the University of Kentucky he was an official annual flower judge for All-America Selections.

The Best Compositions in '86 Garden at Longwood

compositions with two annuals*

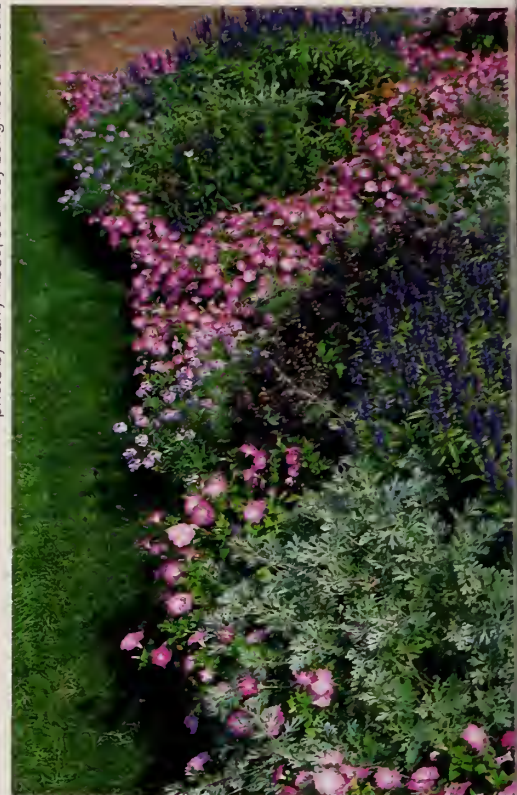
Marigold 'Primrose Lady' / *Canna* 'Mohawk'
Zinnia 'Red Sun' / *Kochia childsii*
Begonia 'Thousands Wonder Pink' / *Salvia farinacea* 'Blue Bedder'
Celosia 'Pink Floradale' / *Dusty Miller* 'Hoar Frost'
Marigold 'Doubloon' / *Tithonia* 'Torch'
Capsicum 'Candlelight' / *Canna* 'The President'
Zinnia 'Pink Ruffles' / *Cleome* 'Helen Campbell'

compositions with three or more annuals*

Salvia 'Tally-ho' / *Zinnia* 'Torch' / *Zinnia* 'Red Sun' / *Kochia childsii*
Celosia 'Pink Floradale' / *Zinnia* 'Cherry Ruffles' / *Cleome* 'Rose Queen'
Petunia 'Happiness' / *Gomphrena* 'Buddy' / *Salvia farinacea* 'Carabiniere Purple'
Setcreasea 'Purple Queen' / *Salvia farinacea* 'Victoria' / *Pennisetum setaceum*
Verbena 'Amethyst' / *Canna* 'Pfitzer's Salmon Pink' / *Begonia* 'Pink Charm'
Ageratum 'Blue Blazer' / *Dusty Miller* 'Diamond' / *Hibiscus* 'Coppertone' / *Canna* 'Mrs. du Pont'
Verbena rigida / *Begonia* 'Gin' / *Salvia* 'Blue Bedder' / *Canna* 'Pfitzer's Salmon Pink'
Begonia 'Pink Charm' / *Dusty Miller* 'Silver Cloud' / *Perilla frutescens* 'Crispa'
Petunia 'Light Pink Pearls' / *Salvia farinacea* 'Victoria' / *Verbena bipinnatifida*

*Cannas are treated as an annual but started from rhizomes.

photo by Larry Albee, courtesy Longwood Gardens



Idea Garden entrance design by the author.

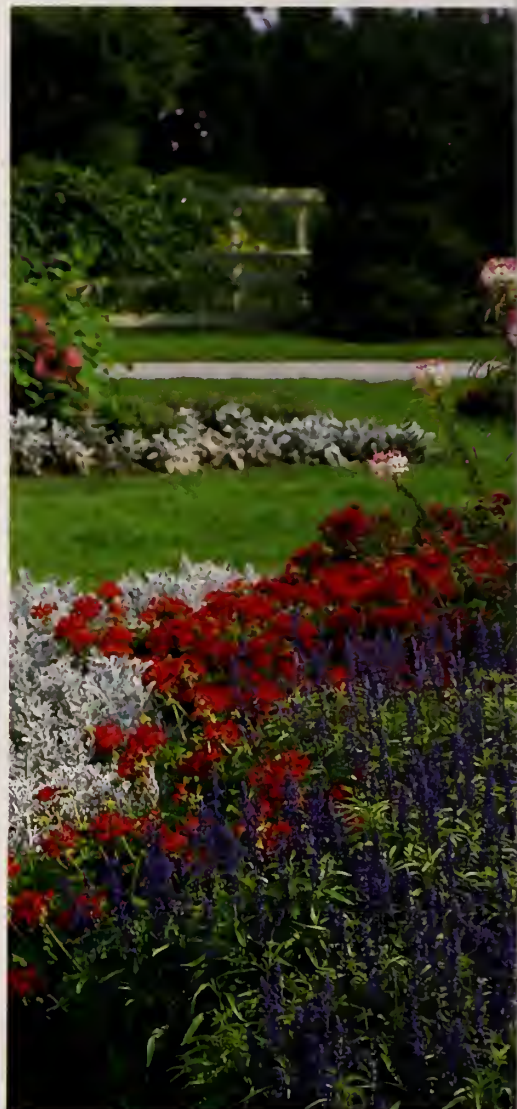


photo by Larry Albee, courtesy Longwood Gardens



▲ A bed featuring Dahlia 'Red Skin,' *Pennisetum setaceum*, Zinnia 'Small World Cherry,' and Capsicum 'Purple Fiesta.'



◀ The form of the inflorescence enhances a color composition: (from left to right) Dusty Miller 'Hoar Frost,' Geranium 'Picasso,' Cleome 'Rose Queen,' *Salvia farinacea* 'Victoria,' and *Pennisetum setaceum*.



Impatiens F₁ Hybrid 'Imp' (salmon)

IMPATIENS: TRIED,

24

At the time, I took my friend George's comment as a put-down. My woodsman partner and I had just moved that spring to a challenging woodland property and needed instant color in our shady garden while we made our long-range plans. Relying heavily on my favorite annual for that instant garden, I shouldn't have been surprised when George visited and clucked "My, my. What *would* we do without impatiens." We had used it everywhere, spotlighting the terrace with huge pots of salmon pink, defining the stone step landing with containers of white, softening the leggy branches of mature rhododendron with clumps of pastel pinks. I felt very much at home, and I had become a statistic validating impatiens' rise in popularity to first place in annuals sales. For George, who seldom "bothers with" annuals, and whose perennials come from plant society seed or divisions, impatiens was too common, simple and easy.

In the years since our move we've planted a perennial background garden with shade tolerant linoleum, astilbe, ferns and hemerocallis, but I still rely on impatiens to carry a colorful unifying theme all through summer and until frost. The impa-

tiens that is my standby, the sultana (*I. wallerana*), has a century of breeding behind it. With intensified hybridizing during the last 15 years, the sultana impatiens now offers an exciting range of colors, growth habits and flower size. The 'Elfin' was the first major breakthrough producing well-rounded dwarf plants that branch naturally from the base and bear attractive medium size flowers. The 'Elfin' series has

Joan Marano at the Fort Washington Garden Mart treasures an older type of sultana impatiens with smallish pale salmon flowers she's dubbed Chestnut Hill Pink.

been superseded by 'Super Elfin' with flowers 30% bigger that bloom earlier. Another hybrid, the 'Futura' series, works well for hanging baskets, having a base-branching pendulous habit and 1½ - 2 in. flowers in clear, bright colors.

Although their camellia-like blooms are very attractive, I have not had as good results with the double F₁ hybrids like 'Fancy Frills' or 'Double Confection.' The buds tend to drop before opening but those that persist are intriguing. Doubles

were formerly available only as plants grown from cuttings. Now a number are available from seed.

All the impatiens I've mentioned can be grown from seed sown 8-10 weeks before outdoor planting time (mid-May in the Delaware Valley). Plants are also available at nurseries and garden centers in market packs, pots and hanging baskets. It's always fun to poke around a nursery to find the unexpected. I visited a Lancaster grower whose business, the Plant Place (Neffsville, Pa. off Route 501, north of Lancaster), supplies bedding plants to both wholesale and retail trade. I wanted to see how impatiens were grown in quantity, and I was on the trail of a tiny flowered impatiens whose name I had lost. It was one that I had nursed through the winter because I loved its petite form and long-spurred pink flowers. There it was, just a few pots of it, among the thousands of 'Elfin' and 'Futura.' Vic Vanik identified it as *Impatiens* Hawaiian series 'Oahu.' Joan Marano at the Fort Washington Garden Mart treasures an older type of sultana impatiens with smallish pale salmon flowers she's dubbed Chestnut Hill Pink. It's available occasionally as plants grown



Impatiens Hawaiian series 'Oahu' in container in author's garden.



Sunset. New Guinea Hybrid *Impatiens*, Sunshine series.

TRUE & NEW by Mary Lou Wolfe

from cuttings by one or two growers.

One can hardly go wrong with the *impatiens* palette of pinks, whites, apricots, oranges and violets but one year I did. After a winter trip to Mexico I decided to mix *impatiens* colors on my small terrace as Mexicans mix their zinnias – pink, red, orange and fuchsia. What looked stunning in Oaxaca's brilliant sun against dazzling white adobe walls was frenetic in suburban Philadelphia. The fuchsias and oranges were banished to far corners of our property as solo accent plants. I was more successful with a planting at the foot of a diminutive (26 in.) St. Francis statue; a container of my recently identified *I.* Hawaiian series 'Oahu' is in perfect scale and its clear pink is lovely amongst ferns and clipped hemlock. The *impatiens* plantings I depend on most are in two huge clay pots that frame a view of the woods. Last year they were planted with a pale salmon pink F_1 Hybrid 'Imp' that grows 1-2 ft. tall in good proportion to the pots. With these I use a variegated ivy, *Hedera helix* 'Glacier.'

finding and introducing the new guinea hybrids

The *impatiens* I have not succeeded with

are the New Guinea hybrids, available to amateurs for 15 years now and getting better every year. The story of their discovery, though familiar now, is still exciting. In 1970 plant explorers Harold Winters and Joseph Higgins went to New Guinea on a collecting expedition jointly sponsored by the Agricultural Research Service of the USDA and Longwood Gardens. They were looking for a number of ornamental plants that might be introduced into horticulture.

What looked stunning in Oaxaca's brilliant sun against dazzling white adobe walls was frenetic in suburban Philadelphia.

Among these was *impatiens*. Winters and Higgins found several species and probable hybrids of *impatiens* in New Guinea, Java and the Celebes Islands. Both collecting seed and transporting cuttings back to the United States were challenges. Seed capsules exploded scattering seed as it was collected and the succulent stems and leaves of cuttings were hard to transport even in the jet age. Nevertheless, 25 cuttings and some seeds arrived intact

at the Plant Introduction Station at Glen Dale, Md. Soon, Longwood received its share of propagations from these cuttings. They were quite different from the widely grown balsam and sultana types. Dr. Robert J. Armstrong, geneticist at Longwood, said "The first look at the *impatiens* was not exactly overwhelming." After a season outdoors some of the showier plants were moved into the greenhouse where a breeding program was begun. Similar research was being carried out in Ames, Iowa under Jack Weigle and by T. Arisumi at USDA. Claude Hope in Costa Rica, Paul Mikkelsen in Ohio and other commercial growers also began breeding programs.

In 1972 the introduction of the early crosses of New Guinea hybrids caused a real flurry among growers and amateurs. The flowers were large and showy. The foliage of some was attractively variegated while others had bronze or dark lustrous green leaves. They were tempting even as foliage plants. Like many other gardeners, I tried a few New Guinea hybrids for summer container growing. They were a flop, failing to bloom, losing lower leaves, getting lankier month by month and by August

continued

CULTURAL DIRECTIONS FOR GROWING IMPATIENS

Sultana (*Impatiens wallerana*)

From seed:

Sow indoors 8-10 weeks before frost-free date. Germination in 20 days at 70-75°. Water, do not cover seed as it requires light to germinate. Place seed tray in polyethylene bag and seal until germination.

From cuttings:

Root in perlite, sand, or in water (preferably distilled).

Culture - outdoor

Plant 12-15 in. apart in reasonably fertile, well-drained soil in part shade avoiding mid-day sun. Plants do not like to dry out.

In fall, covering plants with newspaper or plastic trash bags protects from light frost and extends bloom.

Pests

Practically none

Indoor culture

Under lights or in east or south window or in greenhouse. Temperatures 65-70°.

Susceptible to red spider. Spray foliage with water or use miticides according to directions.

New Guinea Hybrids

From seed:

Only 'Sweet Sue' (a Celebes type cross) and Thompson & Morgan's *I. oncidoides* are presently available. Germination rate lower than Sultana type. Complete instructions accompany seeds.

From cuttings:

Root in sterile medium preferably under mist system or purchase young plants grown commercially from cuttings.

Culture - outdoor

Plant in a rich, well-drained soil in abundant (at least 70%) sunlight. Space 16 in. to 24 in. apart. Water generously and regularly. Flowers best when temperatures are in low 70s.

Give a complete fertilizer twice a month.

In fall, cover plants to protect from light frost and extend bloom.

Pests

Somewhat susceptible to red spider and cyclamen mite. Spray with strong stream of water on both upper and lower leaves. Avoid planting near other plants that attract red spider and mites.

Indoor culture

Difficult unless in greenhouse with minimum night temperatures of 65°, bright light.

Water generously and provide good air circulation.

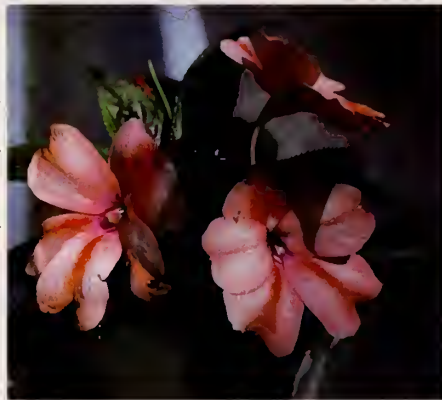
Fertilize regularly.

Susceptible to red spider and cyclamen mites. Miteicide sprays available to amateurs are tricky to use on New Guineas. Use when leaves are dry and with good air circulation. Regular spraying with strong spray of water and high humidity helps prevent infestations.

I chucked them on the compost heap. Robert Armstrong, reminiscing about those early introductions, says the problems were twofold: defining the cultural requirements of the New Guinea hybrids and educating the grower/purchaser. These impatiens didn't like extremes of heat or cold, needed frequent watering, did better in cooler temperatures (65-70°) and required a lot of light to flower. In other words, they did not perform well in the heat of summer but began to look great as September's cool arrived and continued to shine until frost. In a 65°-70° greenhouse with lots of light, they blossomed all winter. Most of the early hybrids introduced in the 70s have been supplanted by newer crosses. Longwood completed its New Guinea impatiens breeding program in 1978 but uses the newer crosses of these plants in its display gardens. The Sunshine Series pictured here is stunning in hanging baskets. These newer varieties had been bred for more tolerance to heat, compactness, self-branching and earlier, larger flowers. They're appropriate for bedding out, hanging baskets and use in tubs.

I am trying the New Guinea again because they are irresistible and because I want to see whether the improved hybrids will now perform well in our garden. I am particularly taken with some of the colors

photos by Mary Lou Wolfe



Sunglow. New Guinea Hybrid *Impatiens*, Sunshine series.



Twilight. New Guinea Hybrid *Impatiens*, Sunshine series.

in the Sunshine Series produced by Mikkelsen. 'Enterprise' is a dark pink and 'Sunglow' and 'Twilight,' shades of pale orange salmon. Just a touch of Mexico over the border? I will resist any impulse to compost them in August and will hope for a spectacular show in September.

Impatiens research continues. Thompson and Morgan, seed suppliers, report on a 1985 expedition to the Cameron Highlands in Malaysia in search of golden impatiens. At 6400 ft. the explorers found a colony identified as *Impatiens oncidoides* "with racemes of up to 6 brilliant golden blooms from each leaf junction above deep green foliage. T & M will be using this lovely flower in future breeding programs to endeavour to incorporate this golden colour into our much loved Busy Lizzies." Thompson and Morgan confirms that *I. oncidoides* is a New Guinea type. If they are successful in crossing it with the sultana, which are of African origin, this will be a real breakthrough. Seed of *Impatiens oncidoides* is available for the adventurous with complete cultural instructions. It sounds like just the thing for my friend George.

Mary Lou Wolfe, former PHS horticultural librarian, gardens, photographs and writes in Montgomery County.



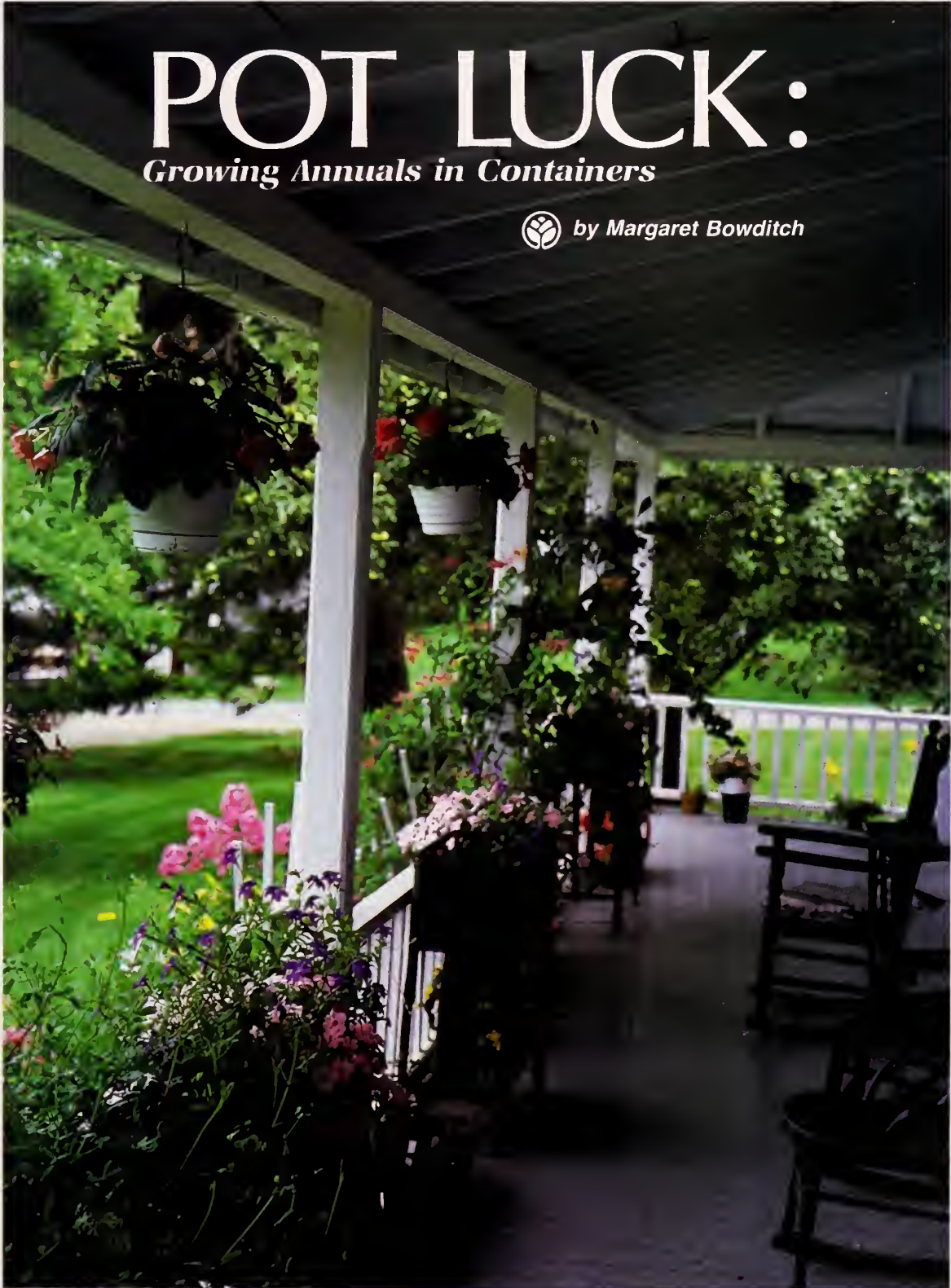
POT LUCK:

Growing Annuals in Containers



by Margaret Bowditch

photo by Margaret Bowditch



After working in the garden the author often enjoys sitting on her porch in the midst of her container garden.



Growing annuals in containers provides you with a colorful portable garden from early summer until frost. Well-grown plants can beautify entryways, balconies, porches, decks, and terraces. Choose the annuals that do well in the conditions you have. Trying to grow sun-lovers in deep shade doesn't work. Planting and maintaining a container garden isn't difficult if you know how to go about it.

You need to decide on what kinds of containers to use. Containers can be utilitarian or elegant, homemade or purchased. There are lots of different sorts of containers available; clay, plastic and wooden pots and tubs come in many shapes and sizes. Your setting influences your choice of container: redwood tubs may be perfect for a modern deck but not at the entrance to a colonial home. Be sure that all containers have drainage holes; it's too easy to overwater plants in undrained pots. Containers must be large enough to hold the roots of mature annuals as plants crowded into small spaces cannot reach their potential.

Grow-bags combine an inexpensive container and potting soil. They are popular in England but you seldom see them here. To create a grow-bag, take an ordinary bag of potting soil (soiless mix) and poke a few drainage holes on the bottom. Make slits in the top for seedlings. Plant seedlings but leave a slit in the center unplanted for easy watering. As the seedlings grow they almost hide their container. Use less colorful soil bags for less obtrusive containers. If, however, you are longing to see photographs of your container garden in the fancier home and garden magazines, avoid grow-bags. The magazines just don't seem ready for them. Outdoor container specimens and house plants require similar cultivation. For example, don't use garden soil as a growing medium. It lacks the desirable balance of water-holding and drainage materials provided by the soiless mixes. For added weight, mix in some sand (not beach sand) or garden soil. Many growers feed container plants with water-soluble house plant fertilizers. A 15-30-15 formulation gives both flowers and leaves a boost. Use frequent dilute doses of fertilizer to keep plants flourishing. Or, if you find mixing fertilizers and water a chore, try a slow-release fertilizer, which, applied just once, lasts all season.

Whenever you water, be sure to use enough water to wet all the soil. How frequently you water depends on weather, what plants are being grown and size and type of container. Unglazed clay pots are



Ivy-leaved geranium 'King of Balcon' cascades from a raised container.



Individual pots of impatiens and browallia are massed together in a raised wicker planter.



Portulaca is a good choice for a dry, sunny and windy site.

15 ANNUALS* FOR CONTAINERS

Full Sun

Geraniums (<i>Pelargonium x hortorum</i>)	bedding geraniums – upright growers with red, pink or white flowers
Ivy-leaved geraniums (<i>P. peltatum</i>)	more pendulous than above geraniums useful in hanging baskets
Heliotrope (<i>Heliotropium arborescens</i>)	purple, lavender or white flowers intensely fragrant
Lantana (<i>L. camara</i>)	orange, yellow or white flowers; white fly alert
(<i>L. montevidensis</i>)	lavender flowers, semi-pendulous habit
Marigolds (<i>Tagetes</i>)	choose low-growing varieties for pots; orange or yellow flowers
Petunias (<i>P. x hybrida</i>)	every color of the rainbow; smaller flowered multifloras are less damaged by rain than the bigger grandifloras
Portulaca (<i>P. grandiflora</i>)	can take tough, dry, windy conditions
Verbena	pink, red, white, purple color range; semi-pendulous habit, white fly alert

Partial Shade (half day sun)

Browallia (<i>B. speciosa</i>)	semi-pendulous habit, purple, lavender or white starry flowers
Vinca (<i>Catharanthus roseus</i>)	neat low plant with pink or white flowers, attractive glossy foliage
Trailing Vinca (<i>V. major</i>)	variegated vine for raised or hanging containers
New Guinea Impatiens (<i>Impatiens hyb.</i>)	large flowers; many have variegated foliage, needs frequent watering
Pansies (<i>Viola</i> sp.)	solid color or "faces", bloom from March to summer
Wax Begonia (<i>B. x semperflorens</i>)	red, pink or white flowers; plants with brown leaves can take more sun, those with green leaves can take more shaded conditions, occasional mildew problem

Shade (little direct sun but plenty of light)

Coleus (<i>C. blumei</i>)	great range of foliage color look for lower growing varieties
Impatiens (<i>Impatiens wallerana</i>)	workhorse of the shady garden, reds, pinks, oranges and whites, use shorter varieties; thirsty
Wishbone flower (<i>Torenia fournieri</i>)	small purple flowers; less widely available but worth seeking out

*or plants commonly grown as annuals in our climate

porous so plants growing in such pots dry out quickly.

Pests and diseases aren't usually major problems. Good sanitation practices lessen chances of fungus disease problems. By taking off dead leaves and flowers and other debris you keep plants healthy. Deadheading, removing spent blossoms, has an added benefit, it keeps the plants producing new flowers throughout the season.

In the fall resist the temptation to prolong the season by bringing plants inside. A few bugs on the annuals can desert their temporary homes and set up permanent residence on your house plants; you'll be battling them all winter.

How do you choose the right annuals for containers? First, the amount of light you have is the most important consideration. Almost any low-growing annual is appropriate; those taller than 18 in. tend to look gawky in most pots. Plant height should relate to container size, especially depth. Pick plants with flower (or foliage) colors that please you and won't war with each other. Bright, deep colors stand out by day. Pale flowers are showy in the evening so include whites and yellows if you plan to enjoy your container garden at night. Fragrant flowers are welcome at any time of day.

In spring, raise your own seedlings if you have excellent growing conditions. Or head out to some of the many well-stocked garden centers in your area. Look for stocky, healthy, well-branched seedlings. Hardening-off, a gradual acclimatization to outside temperatures and light, is necessary unless the plants are already graduates of that process. The safe date for putting tender plants outside is the last frost-free date in your area. Transplant them into your chosen containers, nurture them, and enjoy the results of your efforts.

Some container gardens are better described as a clutter of pots at floor level. Take advantage of plant habit and whatever ways you find to have plants at several heights. Pendulous plants are pretty in hanging baskets while upright growers look best when seen from above. For the space between floor and hanging baskets, use raised planters, plant stands or attach containers to a wall or post. Your container garden will surround you with greenery and flowers.

Margaret Bowditch is a member of the PHS Council, a horticulturist, teacher and award winning exhibitor at the Philadelphia Flower Show. She was co-chair of the Horticulture Class at the 1987 Flower Show and will chair Horticultural Passing at the '88 Show.



Proprietor Peter Skiados plans and plants the sweeping flower beds at Longwood Inn in Kennett Square.

LONGWOOD INN

Kennett Square, PA



by Cheryl Lee Monroe

The goals of a commercial garden differ in many ways from those of public gardens and one's own home landscape. Consideration for a commercial garden range from provisions for constant displays of color, to choosing plants that have the ability to tolerate the most adverse conditions. Peter Skiadas, owner and manager of Longwood Inn in Kennett Square, is a gardener at heart who uses the ground surrounding the Inn to provide guests and passers-by with a profusion of summer and fall color.

Skiadas, a native of Nafpaktos, Greece, grew up in a family that gardened to sustain themselves and for the love of gardening itself. Amongst the many vegetables, lemons, oranges and herbs grew delightful quantities of annuals that flourished by the Corinthian Gulf. When Skiadas purchased Longwood Inn several years ago, he directed the architect to include walls with planting pockets, a sweeping front flower bed, terraced areas at the entrance and niches for planting throughout the parking lot. Lights allow visitors to view the display well into the evening hours.

Planting times, quick results and longevity of flower displays are the guidelines for Skiadas's decisions when planning his garden each year. In addition, he enjoys experimenting and tries many new varie-

ties each year mixing them with the old varieties that continue to perform well. Marigolds (*Tagetes* spp.) and geraniums (*Pelargonium* spp.) remain the backbone of the gardens providing summers filled with color that lasts well into the fall. *Kochia scoparia*, a new plant in the garden last year, proved how important planting times are as the plants were not mature enough to provide a grand splash of autumn color when fall arrived. In the future *Kochia* will be included in the gardens with special care given to early sowing.

Skiadas's annuals are started from seed in cold frames in the early spring or chosen from local greenhouses where an eye for color and a mental picture of the end result allow him to choose the annuals that look best together. Experience has taught him that annuals sown directly outperform all others, particularly in withstanding summer weather hardships. On the other hand, plants purchased in market packs from the greenhouses have the advantage of providing quicker color and all planting is finished as early as possible in May. Transplants and early planting schedules allow plants to become well established before the onslaught of tough summer conditions.

Soil preparation tops the list of priorities, and when the flower beds were created care was taken to provide optimum condi-

tions. Each subsequent year Skiadas adds sterilized mushroom soil. Mixed thoroughly to a depth that allows for good root growth, aged mushroom soil also provides slow release nutrients for plants during the season.

In addition to the many flower beds, lavish hanging baskets provide color where asphalt and concrete meet, delighting the overnight guests as they make their way to hotel rooms. *Vinca major* 'Variegata' trails to the ground in abundance with geraniums and petunias falling over the top edges. New Guinea Hybrid Impatiens have proved successful in recent experiments and have earned a place in the baskets in future planning.

The hanging baskets constitute the largest part of the maintenance throughout the summer as spent blossoms are constantly removed and sufficient water provided. Spaghetti tubing irrigation running to each basket allows watering as necessary. Skiadas prefers Osmocote for baskets as the fertilizer's slow release of nutrients ensures plants are continually fed. Skiadas does run into problems: notably, dry summers. Water is carefully monitored and sprinkler systems provide efficient use of time and water. Another problem, the proximity of Route 1 and subsequent build-up of salt and road pollution make growing conditions less than optimum at the edge of the front flower beds. Salt is particularly hard to remove from the soil, and planting edges are not easy to maintain if plants do not perform well.

With so many flowers to occupy the eye one might not consider what is behind the scenes but surprises await those venturing around to the back of the Inn. Directly off the kitchen are gardens with annuals of another sort. Beds are filled to overflowing with vegetables and fine herbs used to prepare meals for the restaurant. Peter Skiadas plants and maintains his gardens by himself as much as possible given the demands of his business. Visitors and passersby at Longwood Inn join him as beneficiaries of these abundant annual gardens.


Cheryl Lee Monroe is administrative coordinator for the Pennsylvania Horticultural Society and a freelance floral designer. She is a graduate of the University of Maryland with a B.S. in horticulture.

photos by Larry Albee



The hanging baskets delight the guests at the entrances to their rooms. The baskets require continual maintenance throughout the summer.

The Tempting Annuals in THE GARDEN AND EDEN

 by Jean Byrne

Before I opted for a mortgage on a small Center City apartment two years ago, I used to eat out — a lot. When the Garden restaurant opened back in May of '74, I was often there three times a week. Dining alfresco in that lovely garden behind the apartments at 16th & Spruce was so serene that the staff often had trouble getting rid of me for the next seating. In the early years a rose trellis spanned the width of the garden, some evergreens were planted along the wall on the left and a veritable jungle in a neighbor's yard behind a fence alongside where I sat reminded me of a Rousseau painting. Even those early minimal plantings lifted the spirits of the guests who thronged there.

After a long absence, I recently went back to the Garden on a gray drizzly evening this past April. Although we were to eat indoors, I walked down to the french doors overlooking the garden and gasped at the radiance thrown off by the containers of yellow pansies lining the steps and a wall. The evergreen plantings to the left were impressively large now, and the rose trellis was still there waiting its delicate freight in late June. I was perfectly happy to eat indoors that night, knowing I would return on a warm spring night.

I visited another enchanted garden about a year ago when I happened to be on the University of Pennsylvania campus: Eden. Eden is hidden away behind a high concrete wall at the base of International House at 37th & Chestnut streets. Passers-by might glimpse the tops of trees festooned with tiny lights, but until you walk into the garden you can't imagine what charm lies here, mostly wrought with annuals put in by gardener John Cozza. Cozza, a Penn graduate in biology, worked in the restaurant while a student and talked Harry Wood, one of the proprietors, into letting him tackle the garden; John was itching to augment the predictable geraniums at the base of the trees.

Over the last four or five years, Cozza has created a small Shangri-La: box gardens encircle nine locust trees at bench height, a strip of wall along Chestnut Street dazzles with an eruption of color and tex-



Yellow pansies line the entrance from the dining room into The Garden's outdoor area on Spruce Street in Center City.

tures even in shady areas, and barrels along the building's walls hold a succession of elegant plantings — one a water garden with snails and a few fish. When I first saw the barrels, John had planted moon flowers the size of saucers that were climbing the walls.

Occasionally when I stopped by Eden, John was there digging, planting, cutting — a cart full of garden supplies in tow. His concentration when he is in the garden is

quite intense. Small wonder, more than 100 varieties of plants thrive in a series of microclimates. I glimpsed his notebook, with his small tightly scripted history of each plant, growth, placement and maps and diagrams on the scale of a garden two or three times its size. The rigorous thought and planning that go into the garden all testify to John's graduate training and discipline.

John propagates many of his plants



Gardener John Cozza planted more than 40 varieties of scented geraniums at Eden.



photos by John Gouker

▲ Students, faculty, neighbors and visitors enjoy Eden Restaurant's outdoor plantings on the University of Pennsylvania campus. Nine boxes planted with annuals add color to the concrete area at the base of International House's highrise.

► Containers with yellow pansies line The Garden as well as the steps; container grown pansies add to the festive country air in this city restaurant.





Eden gardener John Cozza tends the beds along the Chestnut Street wall. Several microclimates comfortably coexist in the 100 ft. strip.

under lights in the basement of his West Philadelphia apartment in early March, April and May, supplying bottom heating for those that require it. He then switches to a cold frame constructed from scraps in his backyard. He does his own propagating because so many of the unusual annuals he wants are not easily available at garden centers.

problems

John's biggest problem in the garden was to create a sense of unity tying together the nine boxes under the trees yet deal with the differing light conditions. One solution was to thin out the inside of the crowns of the trees. The tree boxes are shallow, 8 in., deep. He feels they should be deeper; they would require less watering.

Wind is another problem; it whistles through the alley at the end of the garden, occasionally toppling plants in a storm. He just lives with it. The city insect problem is exacerbated because John will not use sprays in the restaurant setting. He has controlled aphids with 10 drops of Ivory detergent to a pint of water. He increased the Ivory when necessary, but was careful because it can burn the leaves. John said the soap "brutalized the petunias and geraniums in '85." In '86 he used biological controls: shipments of ladybugs, lacewing eggs and praying mantis eggs set out days apart eventually controlled the three or four kinds of aphids that infested many of the

plants. Caterpillars, similar to the cabbage worm, were eating the petunia and geranium blossoms; the first year John picked them off. The following year he got rid of them with *Bacillus thuringiensis*.

Mulching brought slugs, which he controlled with saucers of beer, but now that John doesn't mulch, he doesn't have the problem.

planting the tree boxes

When selecting the plants around the nine tree boxes, John is concerned about creating a setting for the diners that is not only visually pleasing but one that introduces scents (e.g., the Sugar Daddy petunia) and also demonstrates the great possibilities of city gardening in small spaces. Four of the boxes are devoted to scented geraniums with labels identifying the plants and inviting the visitors to rub the leaves releasing the minty, lemony, nutmeg and other scents of the 40 varieties of geraniums there.

John never stints on color and textures. In one of his first years he worked with equal proportions of red, salmon pink and hot pink geraniums, setting up corner contrasts in the boxes of orange and yellow nasturtiums ('Alaska') with round, variegated leaves. The nasturtiums were not shade tolerant and hosted black aphids so the following year he replaced them with sweet alyssum. The alyssum created a nice edging as well as a pretty trailing con-

trast in the corners. A bonus: it threw off a pleasant scent during the day.

Each box has some varied plantings, dependent on its microclimate. All of the boxes include some of the new colored petunias running from cherry red to fuchsia to burgundy to purple, blending with red and pink geraniums, dusty miller and other plants. The early johnny-jump-ups are behind the petunias and they are later replaced with browallia.

barrels

John plants barrels throughout the seasons, occasionally interspersing the annuals with a few perennials. His succession plantings allow for bloom throughout the season. He plants carefully, allowing for different levels: the front, low, mid-height and then taller plants, many of them vines in the back. He's planted tulips, lilies, daffodils, peacock orchids, all kinds of morning glories including the saucer-sized night blooming morning glories (moon-flowers), black-eyed susan vines and the tall white tuberoses that throw their scent a few feet across the courtyard.

the beds

The long bed, running 100 ft. against the wall on the Chestnut Street side, is broken into four sections according to the light in each section. In spring he keeps color from late March til early May using bulbs: daffodils, tulips, crocuses, narcis-

sus and other smaller bulbs. He includes the perennials bleeding hearts, anemones and grape hyacinths. As the trees leaf out and the microclimates change, John plans for the summer garden, working to keep color in the shady areas particularly.

Full shade: coleus, impatiens and torenia.

Dappled light: caladium, impatiens and the old-fashioned orange butterfly begonias introduce contrast with the violet torenia in the shade.

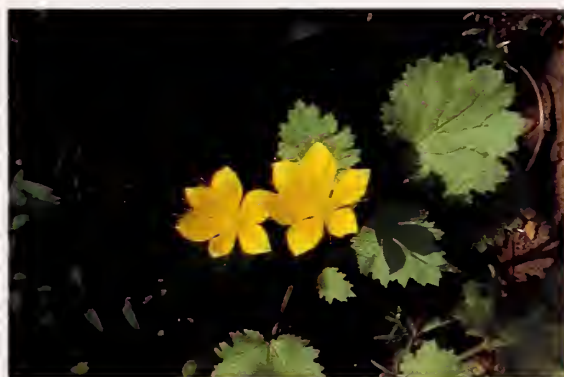
Two hours of sun: John used at least four kinds of salvia, balsam and cleome. He interspersed these plants, which he bought rather than propagated, with asters. The asters performed poorly with a short and meager bloom.

Half-day sun: yellow four o'clocks, ageratum, snapdragons, petunias and dahlias.

Full sun: ornamental sunflowers, kochia, several kinds of zinnias and marigolds, portulaca, and nicotiana, one of John's favorites because of its lovely night scent. Ornamental vegetables: eggplants, scarlet runner beans, corn, swiss chard, chili peppers, hyacinth pole beans, pumpkins and amaranth.

Like so many gardeners, John was generous with his time when I went out to talk to him about Eden's garden. He is passionate about the plants and concerned that they thrive; he is patient about the propagating and the experimenting, and he has a long range view. When we toured the garden, after two hours I realized he intended that I meet each and every variety of plant. Some he lingered over longer than others, their performance detailed much as a parent proudly recounts the good, bad and eccentric behavior of their offspring. When my head could hold no more, he pulled me back to show me one more favorite, a small yellow flower, *Eucnide*, which is frost tender in this area (native to Texas and Mexico). The *Eucnide* is a metaphor for his garden in West Philadelphia. Against all odds, this little public gem of a garden thrives and brings pleasure to Eden's patrons, Eden's managers and most of all to Eden's gardener.

When Jean Byrne isn't visiting Eden or the Garden, she eats croissants on her Center City balcony and watches her morning glory blossom. Below is the condominium garden, which could use a few annuals. Evergreens and pachysandra are the most the residents seem to agree on for the moment.




▲ Cozza's barrels are planned for continual bloom throughout the season. The climbing moonflowers to the rear are a big attraction in the early evening when they open to the size of small saucers.

◀ The frost tender *Eucnide* thrives under John's watchful care.



Seaside Gardening with Annuals

36

 by Antoinette C. Serrell

Although picturesque and attractive to bathers and sailors, the seashore is challenging and frustrating to the gardener. Sudden storms, full of wind and rain, take their toll of beds and borders. To describe growing annuals at the New Jersey seashore first it's necessary to differentiate between places where the mainland meets the sea and there is soil, such as Spring Lake, and places that are on the low-lying sandy barrier strip such as Bay Head and Mantoloking. On the barrier strip the ocean is on one side and the bay is only 1,000 yards or so to the west. On the ocean side, nothing grows until some distance behind the protective dunes. On the west side there is risk of flooding when the wind blows the water up the bay. Annual gardens do find a place between these extremes, although they generally require constant care.

The thin sandy soil lacks nutrients and trace elements. It has inadequate body for plant growth. Topsoil can be imported or existing soil can be developed in place with a combination of chemical fertilizers and such builders as compost and manure. In either case severe leaching mandates annual testing and correction.

The main consideration in gardening-by-the-sea, however, is the matter of protection. Very little but American beach grass (*Ammophila breviliqulata*) can survive on the dune facing the ocean. Behind that generally comes the Japanese black pine (*Pinus thunbergiana*) and bayberry (*Myrica pensylvanica*), which begins to provide the protection that a garden with annuals must have.

Protection is also required from the occasional hot desiccating southwest wind that can rob plants of their life-sustaining mois-

ture in a matter of hours unless the garden is situated to minimize the impact. Fences, buildings, walls and trees must be used appropriately to create microclimates in which annuals can survive.

After all this, why struggle to garden by the sea? The color of flowers and foliage take on deeper colors; the blues seem bluer; the pinks, pinker; and the grays, softer. Against a stand of *Pinus thunbergiana* that has been distorted by the elements, a flower bed can be a lovely thing.

Pictured here are some successful seashore gardens.

•
Toni Serrell gardens in Mantoloking, N.J. and Valley Forge, Pa. She is technical advisor for Thompson & Morgan seed company, and lectures and presents workshops on germinating seeds.

◀

A 120-ft. border along a driveway protected from the bay by the house and a fence faces south. The bed is scalloped, from 4 feet to 2 feet, and outlined with river stone to hold the soil. The soil is maintained yearly by a mixture of compost, dehydrated cow manure, peat moss, lime and 5-10-5. The petunias and alyssum are cut back three times during the growing season to encourage good blooms.

The scalloped edge of the border shows a combination of annuals and perennials. The annuals are argeratum, yellow marigolds and sweet alyssum in front with the taller annuals in the rear, such as snow-on-the-mountain, *Euphorbia marginata*, zinnias, cosmos and marigolds.

The tall annual euphorbia is used extensively, adding a cool color to the garden. This annual is self-sowing.



A small garden protected by a fence features cosmos, coreopsis and sweet nancy.


▼

▲ A small border 10 in. in width against a fence includes cleome, pink geraniums, salvia and rudbeckia.



Annuals at the Shore:

Understudies to the Stars

 by Ed Heitman

Around August first the last of the day-lilies are about to fold and drop. These and other perennials, that have sparked the garden from early May, leave behind a lot of green foliage. I always have some annuals on hand ready to understudy the stars.

Here at the shore everything is possible as long as you are willing to give it your all. Time is critical, so is water. The warmth of the season is there, the sun at its best, so you can be sure annuals will put on a good show.

The house has been here for 100 years. The grounds have undergone many changes. An old photo shows the house in barren surroundings. Now cedars, junipers, hollies, black pines, bayberries, shadblow and an old apple tree among others are growing in profusion.

Flower beds have been planted where they will add a spot of color for views from within or outside.

The soil is sandy as you might guess. I have added top soil, compost, and cow manure. This has been an ongoing project over the years, not one big effort.

Of all the annuals, begonias and marigolds are the winners for show, durability and care. Sandy soil drains rapidly; winds are with us all year round, drying and playing havoc with tall or fragile plants. Dead-heading is not a problem with either of them.

Sweet alyssum is rewarding. Geraniums and marguerites are dependable and ever blooming. The intensely blue lobelias, while beautiful, require constant watering.

Petunias, coming in such a wide range of colors, are good but need pinching and deadheading regularly.

I have had poor results with impatiens in the garden; best results have been container grown.

Next year is a whole new ball game, but you can be sure my old faithfuls, marigolds and begonias, will star in my next garden production.


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Ed Heitman is a graduate of the Philadelphia College of Art, later earning a Master's Degree from Temple University. During a study sabbatical from teaching Heitman attended the Ambler campus. He taught art education in the Philadelphia Public School system and retired 13 years ago to enjoy his interest in art, plants, travel and to work at the Pennsylvania Horticultural Society's Harvest and Flower shows.



art by Ed Heitman

Annuals in the Mountains

 by **Susan Stauffer**

Container gardening is the ideal solution for vacation gardening in the Poconos. After you have worked hard all spring weeding, pruning and planting the last thing you want is to spend your summer doing the same. Containers are so easy to plant and maintain. In the Poconos we tend to have a lot of rain and with all the trees a container will not stay too wet or mildew. A bonus is to bring some of these containers home. They always look better than their Philadelphia relatives.

I've found that the traditional annuals do the best — geraniums, marigolds, ageratum and impatiens. Wooden window boxes work very well. They come in all sizes, they are easy to move and give a woodsy feeling. Best of all, they won't break if you do forget to bring them inside for the winter. A tip: don't plant your window boxes and containers too early and then leave for several weeks. I planted mine Memorial Day and then left for three weeks. When I returned the deer had eaten the tops of all the impatiens. They didn't seem to like the geraniums.

●
Susan Stauffer was chair of the Competitive Classes for the 1986 and '87 Philadelphia Flower Shows. She serves on the Pennsylvania Horticultural Society Council.



Geraniums do very well in the Poconos. They flower profusely until frost, when in full sun. The foliage is lush and deep green. Don't forget your dock, a perfect place for a pot or window box.



Marigolds mixed with variegated ivy will bloom until frost. However, marigolds seem to attract a lot of bees so they shouldn't be next to your outdoor dining area.

photos by Susan Stauffer

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compiled by Peggy Devine

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York, 1977.

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Gardeners' Reminder

Summer is upon us and it's now time to reap the rewards of spring's work. Some tips so we get the most enjoyment ...

July

- Lawns require a generous amount of water at this time. Water long but infrequently. Set lawn mower high.
- Remove old flowers from annuals and perennials.
- Be alert for appearance of mildew on lilac, phlox and zinnias. Spray with fungicide as needed.
- Beware of mites and remaining beetles. Take curative measures.
- Beware of chinch bug and sod webworm in lawns.

August

- Feed roses and annuals for best fall blooms.
- Keep watering. Summer heat can be a killer.
- Prepare lawns for fall renovation. Clean up, loosen bare areas. Apply lawn food and reseed bare or sparse areas. Warm days, cool nights and late summer's dew make for optimum results.

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