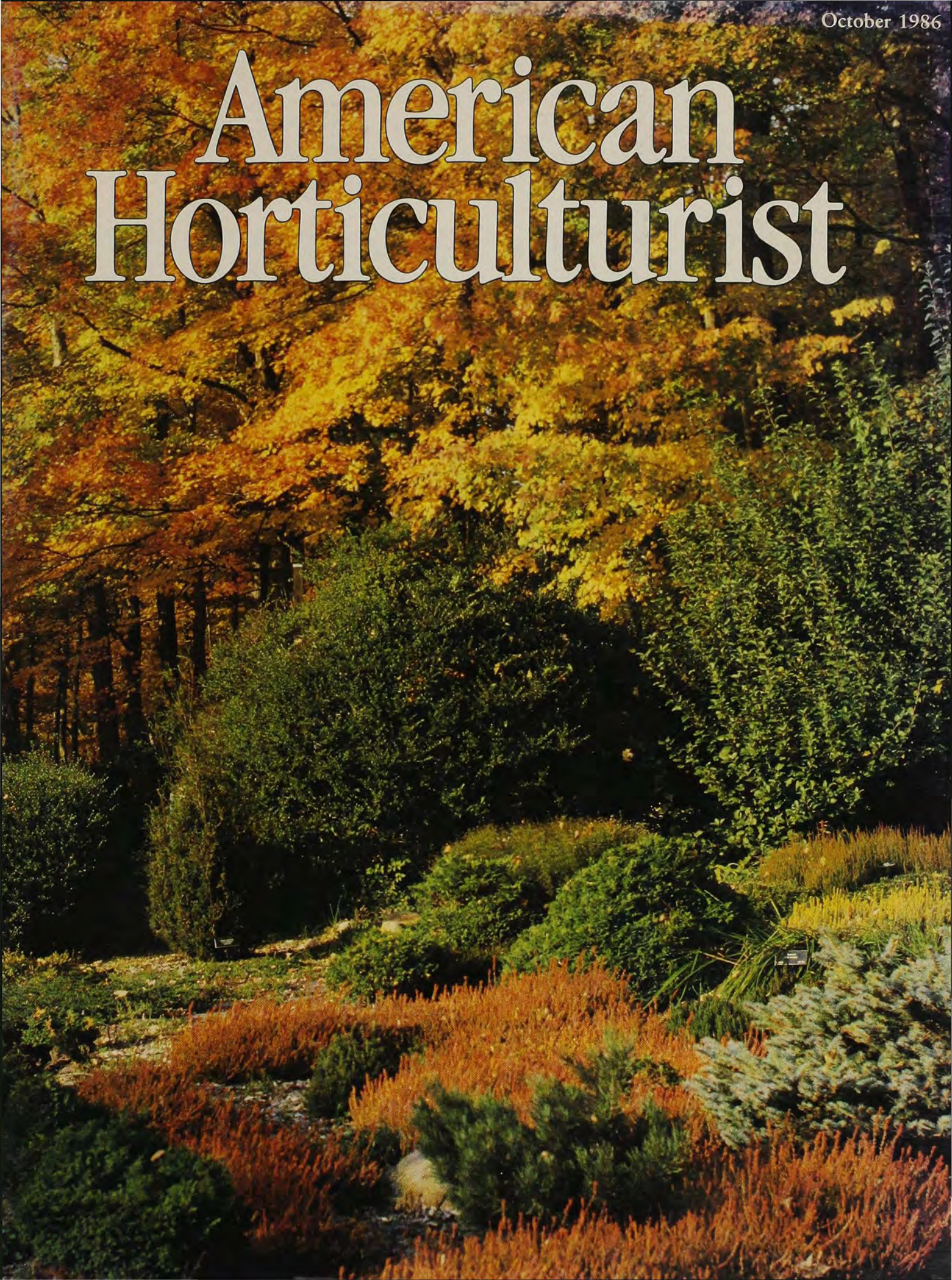


October 1986

American Horticulturist



Help Save America's Endangered Wildflowers



Mark W. Skinner

Hummingbirds are the primary pollinators of *Lilium bolanderi*, which is just one of the spectacular native plants featured in the American Horticultural Society's 1987 *Endangered Wildflowers Calendar*.

Many of America's most treasured wildflowers are threatened with extinction. In fact, experts estimate that 10 percent of the species and varieties native to the United States are in jeopardy. Over 50 taxa have already disappeared.

Help save our endangered wildflowers by purchasing the American Horticultural Society's 1987 *Endangered Wildflowers Calendar*. Funds raised from sales will be used to support conservation projects. To order your calendar, turn to page 39.

Contents



Hard working horticulturists like Timothy Lang, pictured here, hope their efforts will be rewarded with healthy plants and a satisfying career in the field of horticulture. To learn how Timothy and other horticulturists—both young and old, male and female—make their living in this tough but rewarding field, turn to “Careers in Horticulture,” part one of a three-part series on page 23. Photograph by Richard M. Adams.

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On the Cover: Sunlight sets the spectacular golden-orange hues of autumn ablaze in the Leonard J. Buck Gardens, located in Moggy Hollow, in Somerset County, New Jersey. Visitors to this remarkable garden may enjoy the result of one man's fascination with the interrelationship between plants and the unique geology of Moggy Hollow. Buck matched a myriad of alpine plants with the various microclimates created by the many rock outcrops found here, and the result is a garden with year-round interest. Turn to page 16 and explore the nooks and crannies of “The Gardens at Moggy Hollow.” Photograph courtesy of the Somerset County Park Authority.

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Replacement issues of AMERICAN HORTICULTURIST are available at a cost of \$2.50 per copy. The opinions expressed in the articles that appear in AMERICAN HORTICULTURIST are those of the authors and are not necessarily those of the Society. Manuscripts, art work and photographs sent for possible publication will be returned if they are accompanied by a self-addressed, stamped envelope. We cannot guarantee the safe return of unsolicited material.

AMERICAN HORTICULTURIST, ISSN 0096-4417, is the official publication of the American Horticultural Society, 7931 East Boulevard Drive, Alexandria, Virginia 22308, (703) 768-5700, and is issued monthly. Membership in the Society includes a subscription to AMERICAN HORTICULTURIST. Membership dues start at \$25.00 a year, \$12.00 of which is designated for AMERICAN HORTICULTURIST. Copyright © 1986 by the American Horticultural Society. Second-class postage paid at Alexandria, Virginia and at additional mailing offices. Postmaster: Please send Form 3579 to AMERICAN HORTICULTURIST, Mount Vernon, Virginia 22121.

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As many of you know, the American Horticultural Society's August Annual Meeting in San Francisco, California, marked the beginning of the term of office of our new President, Everitt L. Miller.

Miller has devoted almost 40 years to his interest in promoting horticulture in America. A native of Brooklyn, New York, he graduated from the State University of New York in 1939 with a degree in landscape design. After serving in the United States Army in Italy during World War II, he worked for over 10 years as the manager of the W. R. Coe estate, Planting Fields, on Long Island, New York. Miller has maintained an interest in Planting Fields—now a public arboretum administered by the State University of New York—and presently serves as a trustee for the Planting Fields Foundation.

In 1956, Miller went to Longwood Gardens in Kennett Square, Pennsylvania, to serve as head of the Department of Horticulture. In February 1963, he was promoted to the position of Assistant Director of Longwood. He became Director of the gardens on September 1, 1979.

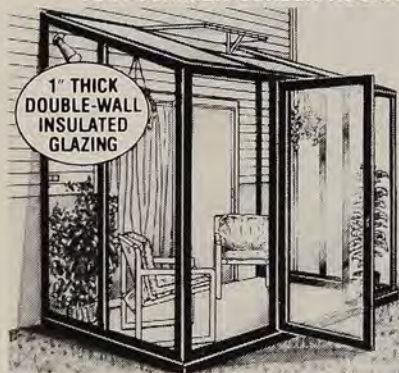
As Director of Longwood, Miller was responsible for overseeing the operation of the 1,000-acre gardens, which were originally created by the late Pierre S. du Pont. In addition to a historic arboretum and four acres of conservatories and greenhouses, Longwood contains an outdoor theater, spectacular fountain "gardens" and extensive specialized plant collections that range from rock gardens, topiary displays and demonstration vegetable gardens to perennial and annual borders. Longwood, which has a staff of approximately 200 employees, is one of the best-known gardens in the United States and attracts 850,000 visitors annually from all over the world.

According to *Nursery Business*, Miller "epitomized what was nearest and dearest to the [heart of the] garden's founder, Pierre du Pont, using ordinary plants grown extremely well to create beautiful pictures." Miller retired from his position at Longwood in October 1984.

In addition to his administrative contributions to horticulture, Miller has written many articles of interest to both professional and amateur horticulturists. He has delivered lectures throughout the country and is an accredited horticultural judge who has judged numerous flower shows both in this country and abroad. Miller has also served on the board of directors of several national organizations, including the American Camellia Society, the American Association of Botanical Gardens and Arboreta, the Administrative Management Society and the American Rhododendron Society. Currently, Miller is co-authoring, with Dr. Jay Cohen, a book entitled *The American Garden Guidebook*, the first volume of which describes 320 gardens in the Eastern United States. He is also a consultant for various horticultural organizations, including Cypress Gardens in Florida, and Live Oak Gardens in New Iberia, Louisiana. Miller's contributions to public horticulture have been recognized by many organizations, including the Pennsylvania Horticultural Society, which awarded Miller its Distinguished Achievement Medal in 1981. In 1983, Miller was awarded the American Horticultural Society's prestigious Liberty Hyde Bailey Medal.

Miller joined the American Horticultural Society's Board of Directors in October 1982, and has served on both the Awards and Education committees. He has also served as Chairman of both the River Farm Grounds Committee and the Membership Committee. Miller was elected First Vice-President of the Society in October 1984. The Society is extremely fortunate to have such a distinguished and experienced horticulturist serving as its President.

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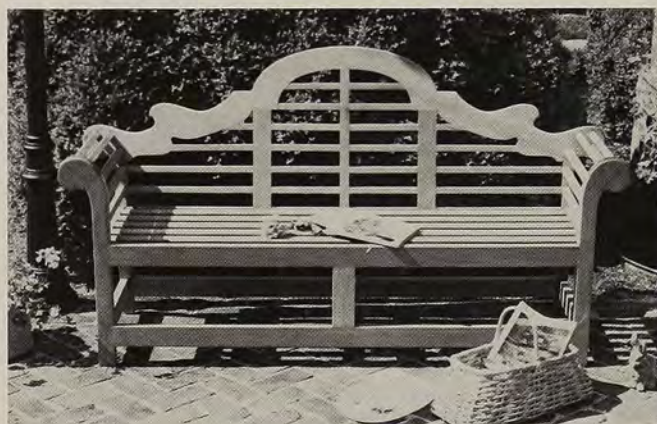
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Jessie M. Harris

The Elusive Blues

On a balmy August evening in 1913, Mrs. Arthur Curtiss James staged the social event of the season with the dedication of the blue garden at her Newport, Rhode Island, mansion, Beacon Hill House. The guests were seated at dusk, and, as the shadows deepened, they watched actors dressed as nymphs, gods and goddesses flitting around the garden beds filled with blue-flowering plants.

All was blue that evening. Mrs. James greeted her guests in a stunning sapphire gown, while the shadows of dim blue lights danced merrily on the garden paths. The actors danced and dipped in the deep, blue-tiled lily pool. The audience sat on a blue-cloaked throne surrounded by classical statuary that rested regally on blue pedestals. It was a magical evening.

Mrs. James's garden was destined to become the talk of the town. Blue was a popular theme for Victorian gardens, and Beacon Hill House had a blue garden beyond compare. Lush green paths led the visitor past beds filled with a profusion of ageratum, anchusa, baptisia, campanulas, delphiniums, heliotropes, hydrangeas, Siberian iris, lobelia, Swiss-blue pansies, plumbago and veronica. If a plant ceased to blossom, it was immediately removed.

The color blue has always fascinated gardeners. Blue flowers are the stuff from which dreams are made. Like the sky and the ocean, blue gardens have depth and mystery, and are filled with intrigue. If well planned, a blue garden is also quiet and restful. Shades of blue blend in subtle harmony, and a blue garden flows with a hushed fluidity. Reds and pinks tend to be vivid, busy colors, while yellows and oranges set the garden afire. But blues are cool and refreshing.

Blue flowers are all the more precious because there are so few of them. Truly blue flowers are rare. Apparently, blue attracts only a very select group of long-tongued insects that are specifically adapted to probing the innermost reaches of a flower for hidden pollen and nectar. (Most blue flowers have recessed sexual organs.) In fact, most insects find the color blue rather boring.



Pamela Harper



Jerry Pavia

LEFT: Purplish-blue *Iris cristata* is an excellent choice for a spring-flowering perennial border, and blends well with many other selections for a blue display. TOP: The small blue flowers of *Convolvulus mauritanicus*, or bindweed. ABOVE: Delicate *Myosotis*, or forget-me-not.

Bees are both equipped for and attracted to blue flowers. A bee is not only capable of seeing blue and violet, it can perceive these colors when we cannot. For example, *Potentilla reptans*, creeping cinquefoil, appears yellow to us but looks purple to a bee. This difference in perception is due to the fact that ultraviolet light is visible to an insect's eyes, but not to the human retina. The only blue that is perceived iden-

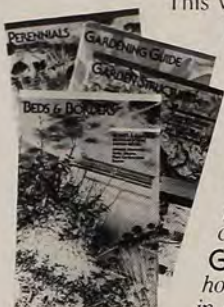
tically through both human and bee eyes is the pure cornflower blue characteristic of such flowers as forget-me-nots. This shade of blue is a favorite not only among bees, but also among collectors of blue flowers.

A true "blue garden" includes only clear cornflower blues. In my predominantly blue garden, however, any shade of blue is gratefully admitted, including purple, baby blue and lilac. Like many gardeners, I am fascinated with blue, but not faithful solely to that color. Here and there among my beds is a smattering of white and pink, as well as yellow thrown in for good measure.

During the summer, I wade and weed among beds dominated by blue flowers. In winter, I spend the icy days poring over catalogues in search of new additions for my garden. Ever wary, I watch with breathless anticipation for new blue flowers. I suspect my winter ritual is duplicated in the homes of countless fellow collectors.

More than any other color, blue can bring the gardener many moments of sheer bliss as well as abysmal disappointment. Red and pink flowers generally perform as predicted. Yellow blossoms usually display some golden hue. White flowers are almost invariably satisfactory. But blue blossoms are often an utter disappointment. Nothing is more disillusioning than

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waiting for blue blossoms to appear, only to be greeted with a display of washed-out mauve petals.

Faced with a dearth of truly blue flowers, and an overabundance of collectors eager to possess blossoms of that hue, commercial greenhouses are tempted to bolster the ranks with a few flowers of questionable "blue" shades. Often, flowers that are really off-white are portrayed in catalogues as blue. As a result, from early spring through late summer, many blue-flower aficionados clench their fists and mutter as they discover that their *Catananche caerulea* or *Scabiosa caucasica* is anything but blue.

The mouth-watering photographs of stunning azure blossoms that adorn many plant catalogues are certainly tempting. If you fail to succumb to the written descriptions, you can easily fall prey to the amazing array of pictures that document the claims. Remember: if the colors surpass your wildest expectations or if they look too fantastic to be bona fide, they are probably not accurate.

The practice of doctoring the blue hues of flowers in photos started quite innocently. Years ago, in an attempt to counteract the pink effect caused by film's sensitivity to infrared light, commercial photographers began using filters when photographing blue flowers. (For more on photographing the color blue, see "Capturing the Elusive Blues" on page 8.) However, the practice of using filters not only permitted photographers to capture shades of blue, it also opened up the possibility of intensifying the hue of naturally pale flowers. Photographers discovered that with the addition of a dark blue filter, they could effectively upgrade the color white to a stunning blue. Thus, we now find pictures of passionflowers, which have very pale lavender-blue flowers, transformed into raging French-blue flowers for the benefit of buyers.

The better companies never stoop to these means in order to make a sale. However, if you suspect that a flower's color is not accurate, it is fairly easy to identify bogus shots. Keep in mind that when a catalogue is filled to the brim with pictures of deep blue flowers of equal brilliance and identical hue, chances are excellent that a filter, not Mother Nature, is responsible for the color. If in doubt about a particular picture, study the foliage and background of the scene. A filter affects the entire shot, so you will notice telltale signs of blue-



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green foliage and a dark, shadowy cast.

Not all disappointments are the fault of the firm from which the supposedly blue-flowered plant was obtained. For one thing, blue is an unstable color. Also, the hue of a flower can be affected by both the growing conditions and the weather when the bud is opening. Before passing judgment on a blue flower, evaluate its environment. Powder-blue flowers will often look pink when grown and viewed in a polyester greenhouse. Shade-grown plants will also show more pink in their blossoms than will plants cultivated under full sun. Furthermore, any flower viewed under artificial light will appear differently in the sunlight.

Fortunately for the blue-flower devotee, many garden writers also have a passion for blue, and have devoted entire chapters of books to the subject of blue flowers. These books tend to be restrictive in their recommendations, limiting the list of blue flowers to those of pure gentian blue and similar hues. Even within these color bounds, however, there are many plants from which to choose—for example, *Lithospermum*, *Veronica* (especially *V. latifolia*), *Lobelia*, *Muscari*, and *Anchusa*, all of which are highly recommended for the front of the border. Taller traditional blue plants include the delft-blue *Adenophora*, *Mertensia*, *Salvia patens* and many cultivars of *Delphinium*.

Like all other arts, garden design is affected by changes in fashion. At present, purple is a popular color, and I see no reason to exclude it from the blue garden, since it is completely in keeping with the overall cool, restful mood. With this broadened definition of "blue" in mind, I would like to add a few personal favorites to those flowers considered by garden writers to be "true blue."

Myosotis (commonly called forget-me-not), *Iris cristata* and *Ajuga reptans* 'Burgundy Glow' (the standard *ajuga* is much too invasive for polite society) are all appropriate for a low-growing, spring-flowering perennial border and make excellent ground covers for moist spots. *Aquilegia* 'Hensol Harebell' and *Aquilegia flabellata* are also suitable additions to a blue spring display. They match the purplish-blue of *Iris cristata* perfectly, and the appearance of their flowers coincides magnificently with the blossoming of *Phlox subulata* 'Blue Emerald', a ground cover of legendary fame.

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and should be given a suitable position of prominence. Midsummer is also marked by the appearance of deep blue *Aconitum* (monkshood), *Linum perenne* (blue flax) and, of course, tall blue-and-white lupines. (Beware: monkshood is notoriously poisonous.) Simultaneously, Canterbury-bells (*Campanula medium*), balloon flower (*Platycodon*), royal-purple Siberian iris and silver-leaved lavender burst into bloom. Less floriferous but of a rarer blue color is the exotic-looking American cornflower, *Stokesia laevis*.

Nigella 'Moody Blue' is also worthy of consideration for the blue garden. I once acquired seed of this lacy-leaved annual through Thompson & Morgan. When it first opened its buds, I was convinced that I was the victim of another heinous blue misrepresentation. Fortunately, time proved me wrong. As the flowers matured, they

were transformed into a splendid solid blue. The six-inch-tall plants never stopped blooming from June until the first frost.

Yellow is the complement of blue, and these two colors make happy bedfellows in the garden. In fact, Gertrude Jekyll would never have dreamed of excluding yellow from a blue border. My favorite combination occurs in spring. I combine the magnificent, royal-blue primroses with golden eyes with yellow-and-blue violas and pansies for a spectacular display.

Plants with golden foliage and compact growth are perfect for tucking into blue flower beds. *Origanum vulgare* 'Aureum', the golden-leaved oregano, is edible and makes a fine edging mat for a blue garden. Another companion herb is *Salvia officinalis* 'Aureum'. Its green-and-yellow mottled foliage is more compact than the common sage but of equal culinary value.

Capturing the Elusive Blues

Most blue flowers are tempting to photograph. Unfortunately, however, blue is a notoriously difficult color to capture on film. According to David M. Stone, a professional horticultural photographer, "Film is sensitive to infrared light, while the human eye is not." Therefore, film often records blue flowers as bright pink.

Although professionals have yet to develop a truly satisfactory solution to the blue dilemma, they do use a handful of moderately successful tricks when photographing blue flowers. Their suggestions will aid anyone attempting to capture the floral bounty of the blue garden on film.

First, when photographing blue flowers, you should use Ektachrome 64 film. Ektachrome records blues better than most films do, because it is less sensitive to ultraviolet rays. According to Stone, a second choice for a good film for photographing blues is Fujichrome 64. A third runner-up is Agfachrome, although its colors are muted overall and tend toward the pastels. Kodachrome is a poor choice, since its blues are bright but not accurate.

Stone often uses photomacrography color film, which requires special developing procedures. However, few photographers will go to these pains for accuracy. The simplest method of counteracting the pink effect is to photograph with a blue filter. Using an 80A filter when shooting blue

flowers will result in a fairly accurate representation of a flower's color as we see it.

Blue flowers should be photographed in early morning or late afternoon, but never in full sun. The brighter the light falling directly on the flower, the more pink will show up on film. You can obtain the truest results if you shoot in the shade or on a cloudy day.

Flashes are notorious for altering the true color of blue flowers. In fact, a pure-white blossom photographed at night with flash will often show an eerie blue tint on film. Hazy or indirect light is your best bet for accuracy.

Try photographing flowers when they are young. As a blue blossom ages, it shows more infrared color, which appears on the film. (Anyone who has ever watched a morning-glory flower carefully over time will attest to the fact that the blossom becomes pinker as it ages.) Many successful photographs of blue flowers are merely the result of sheer luck. Some blues are more easily recorded than others. Among the most difficult subjects are gentian blues, powder blues and some shades of purple, such as those characteristic of *Muscari* and *Lobelia*. If you aren't successful at first, don't give up. Try taking the shot from several different angles and at different times of day. Photographing blues successfully requires patience and persistence.

Euphorbia epithymoides (sometimes listed as *E. polychroma*), with its bright golden floral bracts, is stunning in spring, although its color fades later in the summer.

There are a number of blue-flowering vines and bushes that serve admirably as focal points and backdrops in the blue garden. Clematis is a favorite perennial vine for such a garden. I am partial to *Clematis* × *jackmanii*, with its deep purple blossoms. However, any clematis can be mixed and matched to fit a blue theme.

Morning-glory 'Heavenly Blue' looks magnificent in any blue garden, providing such a clear blue background that no one could find fault with your choice of colors. Morning-glories are easy to grow, and their blossoms will remain open all day if protected from full afternoon sun.

Wisteria adds an air of intimacy to any garden. The graceful branches bear languid chains of purplish-blue flowers, which dangle and dance in the spring breezes.

Exotic potted plants can also be used to accent a blue garden. For instance, *Agapanthus africanus* makes a nice showing in tubs. Its grassy foliage will fill even the largest tub and is entirely in keeping with the mood of an informal garden.

Mrs. James used huge tubs of *Laurus nobilis*, sweet bay, set on blue pedestals at Beacon Hill House. In my garden, I have surrounded pot-grown sweet bay with scandent *Convolvulus mauritanicus*, which blossoms continually throughout the summer until early frost. The wiry foliage spills over the rolled edges of the terra cotta and is bedecked with countless miniature purple trumpets.

Heliotrope provides a more formal accent, reigning over the garden with an aristocratic air. Bushes can be trained into standard (tree-type) form and overwintered indoors. When ready, they can be displayed in pots.

Mrs. James chose heliotrope to be the focal point of the garden at Beacon Hill House. On the evening of the garden's dedication, the actors flitted and danced among the flower beds, raising the scent of the heliotrope so that its delicious aroma would envelop the spectators. It was a magical evening, and everyone present discovered what many gardeners have since learned: blue is not just a color, it is a mood. ☼

—Tovah Martin

Tovah Martin is a frequent contributor to *American Horticulturist*. She is the begonia specialist at Logee's Greenhouses in Danielson, Connecticut.



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April 10-26, 1987



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Capability Brown's England

May 18-June 1, 1987



The name Capability Brown is synonymous with the magnificent open parks and woodlands of England. His influence is also felt in some of the great houses and surrounding gardens which he was responsible for architecturally and aesthetically. Our two weeks which will include Press Day at the Chelsea Flower Show, will include visits to some of these Treasure Houses, with private tours conducted by the owners or head gardeners, as well as tours of some smaller and more private estates, little known to the general public.

In an Irish Garden

June 3-17, 1987



The Emerald Isle is not as well known for gardens as her English neighbor, but Irish gardens have a wild and wonderful glory all their own. This trip is a romantic journey to some of the lost domains of Irish landscape as well as to the flourishing estates of today. The changing mood and character of the landscape will surprise us as much as our discovery of the variety and richness of the gardens we plan to visit. We begin in the Southwest with its dramatic views of sea and mountain. The second half of our trip finds us visiting gardens in Dublin and County Wicklow, "The Garden of Ireland". This specially designed tour for the AHS has been a collaborative effort between Serendipity Tours and Passages Unlimited.

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Gardens and Insects

Gardeners have been waging an undeclared war against insects ever since mankind first learned to garden. Typically, we gardeners view all insects as enemies, even though most species do not present a threat to our plants. It may therefore seem like heresy to advocate permitting—even encouraging—all sorts of insects to make their homes in your garden. No matter what you do, insects will inevitably find their way into your garden, but once you understand the relationships that draw insects, plants and animals together—and how you can take advantage of these relationships—you will *want* to encourage a healthy insect community.

Many of us are familiar with a few of the more prominent beneficial species, such as ladybugs and praying mantises, but few gardeners know how to use their beneficial behavior to best advantage. For example, if you purchase ladybugs to release when aphids are rampaging through your vegetables, the majority of the spotted beetles will probably fly off to the neighbor's garden. And if you set out praying mantis egg cases in hopes that these fascinating creatures will fan out to rid your garden of plant-eating pests, you will undoubtedly end up with the newly hatched mantises feeding eagerly upon one another, leaving few survivors to patrol the garden.

Establishing Beneficial Insects

If you want to establish beneficial insects in your garden, you must first understand what their needs are. Basically, all insects need a reliable source of food, a place to breed and, in the case of non-migratory species, a place to overwinter. Food heads the list. Praying mantises, ladybugs or other beneficial insects that do not find an adequate food supply in your garden will certainly head for greener pastures.

In natural settings, an ongoing cycle of “eat and be eaten” prevails. Plants serve as the initial hosts to the insects we label as pests. These insects, in turn, serve as the meals for predatory and parasitic insects. All insects serve as food for birds, mammals and other animals. The final con-



Jessie Harris

sumers in this chain return food—in the form of manure and uneaten portions of the prey—to the soil, where it is decomposed by microorganisms. The end products can then be used again by plants.

For this cycle to function, plants must be able to withstand a certain amount of feeding injury without ill effect, while predatory and parasitic insects must be present in sufficient numbers to prevent their plant-eating relatives from consuming more than the plants can bear. Furthermore, each participant in the cycle must receive a steady supply of food. If the pests were to suddenly disappear (following an application of pesticide, for example), the many predators and parasites that depend

upon those species for food would also vanish. In time, the pests would return and—without the limiting influence of the beneficial insects—would eat until their food supply was exhausted. This chain of events leads to a serious decline in the health of the plant community. Since most insect pests can multiply at alarming rates, the plant kingdom would slowly vanish if it were not for the population control exerted by the pests' natural enemies—dis-

ABOVE: A monarch butterfly enjoys the nectar of *Aster* ‘*Novae Angliae*’. Unlike many other insects, butterflies are appreciated for the aesthetic benefits they bring to the garden.

Insects, Integrated Pest Management and Pesticides

If you would like a well-balanced insect community to inhabit your garden, you will have to resist the urge to reach for the sprayer every time you see an insect crawling on one of your plants. Your pest control efforts should focus on keeping pest populations small enough to allow their plant hosts to remain healthy, and large enough to permit a resident population of beneficial species to establish itself—no easy task.

It is not always easy to decide when an insect population poses a genuine threat to its plant host or hosts and what measures are best suited to handling the situation without disrupting the cycles of natural controls or harming non-target wildlife. Fortunately, researchers and field technicians have been studying these questions and have suggested a number of pest management strategies designed to enhance the effectiveness of natural controls. In addition, scientists are studying the degree to which plants can withstand injury, and how these injuries affect the plants' economic and aesthetic value. They are also carefully monitoring resident insect populations as well as the rates at which these insects injure their plant hosts. These studies have resulted in the development of new measurements, called "thresholds of injury" (for example, so many insects per leaf), that will tell the observant gardener when natural controls are failing and his or her intervention is needed. These new yardsticks will enable a gardener to assess the potential for serious injury before taking action. Last but not least, researchers are devoting time to studying the best ways to use pesticides as pest management tools.

These many fields of research represent a multi-faceted approach to pest control known as Integrated Pest Management, or IPM. By encouraging the use of naturally occurring pest control systems and stressing the importance of recognizing plant tolerance to insect attack, IPM lessens the need for pesticides. In an IPM program, pesticides are used only when necessary, to help re-establish faltering cycles of natural control. IPM is the most economical and environmentally sound way to control pests, and allows the gardener to adopt a more benevolent attitude toward the insect world.

To implement an effective IPM program at home, you need to know more than just

the identity of a potential pest. You must also know the tolerance of your many plants to insect feeding and the potential for disease transmission, as well as the many factors that influence the growth and decline of pest populations (for example, types of predators, diseases and so forth). IPM will require careful observation on your part to spot changes in these many areas that may alter the balance between plants, pests and natural controls.

A pesticide derived from a plant is not necessarily safe. . . . A truly safe pesticide affects as few living organisms as possible.

To implement an IPM program successfully, you must also have a thorough knowledge of pesticides. There are "safe" pesticides, which are generally derived from naturally occurring substances, and "unsafe" pesticides, which are usually synthetic. Unfortunately, the qualities that define a "safe" pesticide are often misunderstood. A pesticide derived from a plant is not necessarily safe. (Nicotine is a deadly poison, for example.) A truly safe pesticide affects as few living organisms as possible. It should be safe for the user to apply and should break down quickly into harmless components. Insect-tolerant gardeners, especially those who wish to rely upon the benefits of natural controls, should avoid broad-spectrum pesticides that are lethal to a wide range of insects and have a long residual effect.

In a well-managed garden, a pesticide should be used only when other methods of pest suppression have failed. If it becomes necessary to use a pesticide, choose the least toxic, most target-species-specific material available, and be sure it has a short residual effect. Using pesticides safely and appropriately demands a great deal of the gardener, but is a matter of extreme importance. After all, pesticides are poisons and should be treated accordingly.

There are a few pesticides from diverse sources that usually provide satisfactory results when used according to their label instructions as part of an IPM program in

the home garden. When other methods of pest control fall short, you might try one of the following materials.

The plant-derived pesticides rotenone, pyrethrum and ryania are considered to be environmentally safe when used according to label instructions. All three have low toxicity to wildlife, break down rapidly and are safe to apply—all commendable traits in a pesticide. However, as broad-spectrum pesticides, they should be used only when necessary, because they will kill beneficial as well as pest insect species.

Two pesticides that rely upon their physical properties rather than toxicity to kill pests are highly refined oils and diatomaceous earth. The so-called dormant oils (and the more recently developed summer oils) work by suffocating insect eggs, larvae and adults. Unless additional pesticides are added to them (such as ethion), oil sprays are considered to be non-toxic. Diatomaceous earth, frequently sold as a filter medium for swimming pools, is a powder applied as a dust, and is made up of razor-sharp particles that were once the bodies of minute, sea-dwelling plants called diatoms. In powdered form, this pesticide punctures an insect's moisture-preserving cuticle, causing it to die of desiccation. It should not be inhaled.

Insecticidal soaps are a recent development in the commercial trade. Composed primarily of fatty acids, they can be very effective against soft-bodied insects. They can also harm fish, and therefore should not be used near streams and ponds.

We still have much to learn about the diseases of insects and their possible application as pesticides. The best-known material currently in use is *Bacillus thuringiensis*, or Bt, variants of which are used to control caterpillars and mosquitoes. *Bacillus popilliae*, the organism that causes milky spore disease, which is fatal to Japanese beetles, is also available.

In short, implementing an IPM approach to pest management at home calls for a close relationship between the gardener and his or her domain, and an orientation away from simple eradication techniques. (For resources to help get you started, see "Sources" on page 35.) Perhaps the greatest benefit of this approach is the new appreciation we develop for insects—specifically, the realization that, by and large, insects are neither harmful nor hard to live with in the garden.

SEASONABLE REMINDERS

eases, predators and parasites.

A walk through a meadow or woods, where the plant life is prospering and the insect life is both abundant and diverse, will provide sufficient proof that this chain of interdependency is indeed effective. In these natural surroundings, the dynamics of "eat and be eaten" tend to establish a balance between the plants, pests and predators that enables each species of plant and animal to survive. Gardeners can adopt this approach to pest control by maintaining a stable pest population that is too small to wreak havoc in the garden, yet large enough to maintain a prospering community of beneficial insects that would control the growth of the pest population.

The smaller the area involved, the more difficult it is to establish an insect population that is balanced enough to discourage rampant pest populations and the serious plant injuries that often result from such infestations. Furthermore, the balance of pests and predators found in natural surroundings cannot be duplicated in the home garden without the gardener's active participation.

The first step in stabilizing and main-

taining a balanced insect community is to suppress and hold pest populations at a level where they do not harm plants. At the same time, there must be enough pests to entice a resident population of beneficial insects. To control pest populations, you can combine some or all of the following methods: hand-pick pests and their eggs wherever possible; temporarily suspend the use of plants that are particularly susceptible to insect injury; selectively prune out heavily infested portions of stricken plants; rogue out severely infested specimens where possible; diversify your plantings to discourage widespread infestations; and selectively and *carefully* use pesticides. On those occasions when the balance between pests and predators breaks down, these same methods will enable you to set things right once again.

Keep in mind that eradicating pests in the garden is not a good way to start a balanced insect community. Pests can multiply rapidly once they locate sources of food to their liking. Predatory and parasitic insects, on the other hand, build slowly in numbers, since they must first locate their highly mobile prey. To speed things

along, you can introduce desirable insects, but remember: only those that can locate sufficient food will stay with you.

Pesticides can be an indispensable tool in regulating insect populations, although they should be used only as a last resort. Be sure to select the least toxic and most selective product available. Time your applications so that they will effectively reduce pest populations without greatly affecting the populations of beneficial insects. Learn at what point in its life cycle a given pest would be most likely to respond to control measures—specifically, measures (including non-chemical ones) that would not harm other insect species. For example, an oil spray in early spring is preferable to a mid-summer series of doses of malathion for controlling scale on pines. The scale would be susceptible to the oil, while in midsummer, its protective shell would help shield it from the effects of the malathion. Furthermore, fewer non-target and beneficial insects are likely to be in the line of fire during the early days of spring, when oils are used. (For more on the use of pesticides, see "Insects, IPM and Pesticides" on page 12.)



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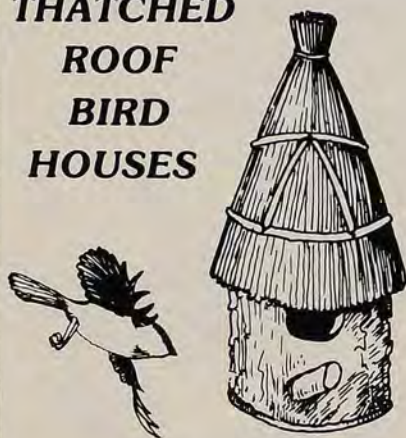
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SEASONABLE REMINDERS

Maintaining Balanced Communities

With luck and your assistance, plants and insects will coexist happily in your garden. However, the balance between the various camps of insects can be disrupted by the forces of both man and nature—for example, weather, disease or a sudden loss of food. Although such disruptions are also common in the wild, this balance is more delicate in our cultivated gardens and thus more susceptible to changes. A faltering balance frequently results in the appearance of a booming pest population in subsequent weeks. Although the balance will eventually return naturally, your intervention will often be needed to hasten its re-emergence and to prevent your plants from being injured too severely. In addition, even in a balanced community, there may be certain pests that cannot be controlled—particularly those of foreign origin whose natural enemies have yet to reach these shores. Therefore, you will often be called upon to step in and tinker with the lives of your resident insects if the fragile balance is to be maintained in your garden.

Unfortunately, no gardener can simply sit back and rely upon natural control mechanisms alone to protect a manmade garden. Although you can benefit greatly from adapting these mechanisms to your garden, you must monitor your insect populations on an ongoing basis, and learn how to maintain order without destroying the balance you have established.

To maintain a balanced insect community, then, you must keep a watchful eye over events in the garden. You must also have a knowledge of which insects are disease vectors and should not be tolerated, as well as an acquaintance with pest suppression methods designed to stabilize rather than eradicate pest populations. In addition, you should know the extent to which plants will tolerate insect feeding. (Recent studies have found that plant tolerances to insect feeding are higher than we might imagine.)

Habitat management is an important factor in nurturing a well-balanced insect community. For example, food for your insects will have to include pollen and nectar from both wild and cultivated plant species; these plant materials will serve as the main course for the adult forms of many of the insect species you will be hosting. Many beneficial insects, such as the lacewings, hover flies and lightning bugs, are predacious only as larvae. As adults,

those that do feed depend upon a diet of pollen and nectar.

Habitat management also includes providing areas in which the insects can breed and develop. A familiar example of poor management is standing water found in shallow depressions, storm gutters and discarded receptacles, all of which create havens for mosquitoes. Unfortunately, these same spots rarely attract water dwellers such as the immature dragonflies and damselflies, both of which feed eagerly upon mosquito larvae. The result of such management is a poorly balanced community of insects in which the pests have the upper hand. However, a marsh or a bog with a stretch of still, open water is another matter altogether. Here, all kinds of water- and shore-dwelling insects and plants will find a home, thereby encouraging the diversity that fosters a balance between the noxious and the welcome. Successful habitat management involves preserving areas that permit the widest variety of insects to settle while eliminating spots that prove inhospitable to the majority of desirable insect species.

As a gardener, one of your long-term priorities should be to identify the type or types of habitat your property encompasses and to work to augment those features that favor a varied insect population. For example, a well-trimmed lawn will not attract the diversity you are seeking. Various pests, including chinch bugs, sod webworms and Japanese beetles, will find a home there, but few predatory species will find either the protection or alternative food sources they require. To balance the available habitat, allow a strip of land along the lawn's edge to become wild. The rich variety of plant life found in most natural meadows attracts a multitude of insects, including pests, predators and innocuous species.

An undisturbed piece of ground is also important as a place for many insects to pupate or overwinter, or both. Just beneath the soil line and among the litter covering a forest or meadow floor, all kinds of insects change from larva or nymph to adult. Hordes of ladybugs spend the winter months under fallen debris, while firefly larvae overwinter in pupal cases just beneath the soil's surface.

You do not have to be familiar with the individual preferences of each and every insect species to provide the varied habitats needed to encourage a broad spectrum of species to share your piece of land. Keep

in mind, though, that most insect pests can multiply rapidly and are often less fussy about their immediate surroundings than are beneficial insects, who are usually slow to move in and rather finicky. Thus, sudden, short-lived changes in habitat or a severely limited variety in the resident plant life will probably attract undesirable species while discouraging welcome species from moving in. Nowhere is this phenomenon more apparent than in the vegetable garden, where we grow a limited number of plant species for a limited period of time each year. Most of us (myself included) mulch or cultivate to discourage weeds from competing with our vegetables for the available nutrients and moisture in the soil. Areas surrounding most gardens are also kept free of weeds. It should come as no surprise that in such an unnatural environment, only the most opportunistic insects will readily find a home, a fact that accounts for the preponderance of insect problems in our vegetable gardens. Rotating crops helps to break up any one pest's grip on a specific spot, but overall,

the pests will find ways to multiply quickly, while the beneficial insects usually lag well behind.

While there are sound reasons for continuing to follow the common procedures for growing vegetables, permitting a bit of meadow to border a fenced vegetable plot will help to overcome the garden's habitat deficiencies. Such an area can serve as an undisturbed repository where pests and predators can square off, possibly striking a balance that, if encouraged, could spill over into the vegetable plot.

Insects not only benefit the garden, but they also bring simple aesthetic pleasures. The wings of dragonflies, the golden eyes of lacewings, and the colorful backs and wing covers of bugs and beetles all add to our enjoyment of the garden. Of course, the many colors and the delicate appearance of butterflies are always a welcome sight.

Unfortunately, butterflies seem to have suffered disproportionately from loss of habitat and the use of pesticides—something to remember when planning for their

inclusion in the garden. The adults delight in feeding on nectar, and the flowers of *Buddleia*, *Salvia*, *Monarda* and *Lobelia* are among their favorite eateries. Be sure to keep the plant-eating larvae of butterflies in mind when deciding what plants to include in the garden. Swallowtail butterflies are fond of the foliage of a wide variety of native plants, including birch, ash, spicebush, sassafras and carrot family members. The monarchs are noted for their love of milkweed foliage, while honeysuckle will attract the delightful hummingbird moth. As a general rule, the greater the diversity of plant life in and around your gardens, the greater the variety of insect life you will attract.

Most insect species do not present a serious threat to the well-being of our plants if their populations are kept in check. In the case of butterflies, the leaves the larvae consume are a small price to pay for the insects' company in the garden. ◉

—Michael B. Trimble

Michael B. Trimble is a gardener and writer living in Rhinebeck, New York.

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THE GARDENS AT Moggy Hollow

BY RUBY WEINBERG

Moggy Hollow is a gorge located in Far Hills, a town in north-central New Jersey. The hollow was formed 11,000 years ago when the Wisconsin Glacier receded from eastern North America. The floor of the gorge became an outlet for a 30-mile-wide lake created by the glacier. In time, the lake disappeared, leaving the meadows and hillsides of the gorge dressed in a thick and varied mantle of plants.

The movement of all this earth and water caused the base of the gorge to become walled in by a series of basaltic rock outcrops. The outcrops display a variety of shapes and forms: some are groupings of giant blocks; others are sprawling, convoluted ridges.

It was a mining engineer who first became enamored with the beauty and possibilities of this place. His name was Leonard J. Buck, and he and his wife Helen purchased a house and a little less than 50 acres of land here in 1934. The estate eventually became the site of their gardens.

No doubt cultivated gardens were not foremost in Buck's thoughts as he first explored the property. An international importer of iron ore, magnesium and other raw materials, he must have been magnetically attracted to the fascinating geology of his estate. As he wandered downhill from his house through heavy woodland, Buck was intrigued by the rocks and by the relationship of the flora to the mineral deposits that were found there. Buck's interest in the subject led him to write a paper (published in *The Garden*, the journal of the New York Botanical Garden, in 1949), in which he described how plant species serve as indicators of worthwhile mineral deposits worldwide. He hoped that investigations in this area would someday lead to the development of an exact science.

Although Buck was especially interested in the geology of Moggy Hollow, he was



also amazed and inspired by the gorge's many natural plant colonies. He called his place "Allwood," and noted that the hills, grassy patches, brook and bogs were all distinct habitats for wild plants. Buck envisioned preserving the best displays and adding other species that would increase the floral impact. He decided to build a garden that would be, in his own words, "ecologically correct and visually appealing."

In the late 1930's, Buck met Zenon Schreiber, a renowned landscape architect and rock garden authority, at a New York Flower Show. He brought Schreiber home to see the site, especially the rock formations, and the germ of an idea took shape. Schreiber not only agreed that the hillsides and valley floor could support many more interesting ornamentals, but determined that the rocky outcrops in this naturalistic setting could be used for extensive, specialized alpine plantings—in short, a massive rock garden. The two men decided to work together toward this goal.

Any gardener who has ever attempted to grow alpine plants in north-central New Jersey knows it is a difficult undertaking. Alpine collectors consider the shortest, most prostrate plants—particularly those with large, brilliant blooms—to be the most precious. These plants can be found at high altitudes throughout the world's great mountain ranges. Many taller lowland plants often "climb" mountains and become shorter as the altitude increases. Although the topography of alpine communities varies enormously, the climate is generally temperate, and there is almost always a heavy snow cover lasting for much of the year. After the snow melts and the spring rains begin, the plants take full advantage of their short growing season by quickly flowering, setting seed and return-

ABOVE: Rhododendrons provide bright bursts of color in the Leonard J. Buck Gardens from April until June. RIGHT: This meandering stream was dammed to create the two ponds that provide water for the garden.



ing to their dormant state in preparation for the coming winter.

The mean altitude of Far Hills is only 300 feet above sea level, and the climate is far from temperate. Temperature extremes occur in both winter and summer. In the Moggy Hollow area, snow sometimes covers the ground all winter long; other winters, there is only an occasional carpet of snow. Spring brings heavy rains, or sometimes little more than an "April shower." Then there are the frequent "mugs"—typical New Jersey summer days marked by excessive heat and humidity. Under such erratic conditions, true alpine plants are, at best, short-lived.

Luckily, there are many lowland plants that are short in stature and remain compact in rock garden soils. Cultivars of many alpine plants have also been developed that adapt readily to lowland garden conditions.

The Moggy Hollow garden planners began by creating special microclimates within the existing rocks in order to help prolong the lives of the plants. After searching far and wide for appropriate selections, they began to collect and propagate an interesting assortment of alpine plants.

When Schreiber first arrived on the scene, only one large rock formation was plainly visible. Close examination revealed that other formations—13 major ones in all—were partially hidden beneath a covering of loose trap rock. The surfaces of these outcrops were covered with a thin layer of humus.

As a mining engineer, Buck was highly

skilled in working with rock. Under the watchful eye of designer Schreiber, he used chisels, crowbars, high-powered hoses and dynamite to blast the trap rock loose and expose the rock faces. Sometimes rocks were split or entirely removed; at other times, ledges were created. In one place, the men brought additional rock in from outside to create a continuity in design. In some areas, they extended the rock clearings well into the forested hillsides.

Once each formation was exposed, soil was needed to plant the beds. To simulate alpine soils, the men painstakingly prepared various combinations, including stone chips, gravel, sand and humus. Excellent drainage was a major consideration.

After 10 years, Buck and Schreiber had developed about 15 acres of the site. The brook was dammed to create a lower pond, an upper pond and a stream in between. According to Schreiber's plan, each of the rock formations was to act as a pivotal point in the garden and would be seen from a lawn or a series of paths. Several bridges were required for the paths to cross the stream. When major construction was finished, each of the many distinct habitats became clearly identifiable.

The care and planting of the gardens at Moggy Hollow became an obsession for Buck, and occupied much of his energy over a period of 40 years. Buck studied the flora and brought in plants that would grow harmoniously with the native plants on his property. Business trips to South Africa, Russia, Great Britain and many

other countries, as well as to various states in this country, provided him with opportunities to seek out interesting ornamentals. His thirst for new plants was unquenchable. For example, one day he was driving through Pennsylvania when he spotted a stand of wildflowers along the roadside. He was not satisfied until he had written to the Pennsylvania Highway Department to have the plants identified so that he could procure them for his garden.

During his travels, Buck became acquainted with plant experts in many fields, especially in the cultivation of alpine plants. Buck himself became a proficient horticulturist, and was eventually elected to the Board of Trustees of the New York Botanical Garden. He was also an active participant in the American Rock Garden Society and, for a time, acted as its director.

As Buck became more involved in outside horticultural activities, he continued to add alpine treasures to the Moggy Hollow plantings. Under Schreiber's guidance, and with the assistance of only two gardeners, he tested both species and hybrids of rock plants to see how well they would grow in his gardens. Like gardeners everywhere, Buck had his share of failures as well as successes.

In 1974, Leonard Buck died. Although his wife Helen had never been as enthusiastic about plants as her husband, she recognized the value of his lifetime project. She knew that without constant care, the Moggy Hollow plantings would deteriorate. Two years after her husband's death, Mrs. Buck deeded 27 acres of her property to the Somerset County Park Commission. She still lives in her home on top of the hillside overlooking the gardens, and maintains a more-than-casual interest in the preservation and enhancement of the plantings at Moggy Hollow.

The metamorphosis from private to public status has brought substantial changes to the gardens, including a new name: the Leonard J. Buck Gardens. Walkways have been redefined and hardened to provide for use by large numbers of visitors. An old carriage house on the property has been rebuilt to serve as a Visitors' Center. It has become a meeting-house for many plant societies, including the Friends of Horticulture, a group interested in fostering the Park Commission's horticultural projects. The Visitors' Center also houses a growing library, which



LEFT: *Primula juliae*, or Julia primrose.
RIGHT: "Bit o' Rock," draped with *Filipendula vulgaris* (also known as *F. hexapetala*), commonly called dropwort, and other greenery.



includes a collection of books on alpine, rhododendron and wildflower culture. The library's collection will eventually be catalogued, and a limited inter-library loan service will be available through the county's library system.

As workers and others associated with the gardens have become familiar with the property's features, they have invented names for each of the outcrops—for example, Big Rock, Horseshoe Rock, Circle Rock, Fern Rock and Reno Rock. Though of limited use to casual visitors, the names are familiar to the guides who work at the gardens and are helpful in identifying plant locations.

Over the years, workers at the gardens have encountered several difficult problems, one of which has been irrigation. Buck had installed a sprinkler system for irrigating the gardens. Although the ponds—the source of the water—contain four million gallons of water, the system delivers only 12,000 gallons per hour, which is considered minimal in a dry season. Garden employees are now investigating other potential water sources.

When the pond water was discovered to be highly alkaline, it was treated with acidifying agents before it was used on rho-

dodendrons and most of the alpine. Now, the soil itself is being treated with aluminum sulfate where necessary.

Another problem that has developed within the last few years has been the insatiable appetite of herds of deer, which are especially fond of azaleas. Far Hills, like so many other semi-rural areas, is becoming more heavily populated, and the deer naturally seek the seclusion and vegetation within Moggy Hollow. Thus far, repellents have not worked satisfactorily to keep the deer away; electric fences may be installed in the future.

Despite these problems, visitors find the gardens generally lush and green. As they leave the Visitors' Center, they pause briefly at the top of a gentle flight of gravel stairs with railroad tie treads, and then descend into the gardens. Big Rock, which is about 20 feet tall, hugs the north wall on the left. Geologists have surmised that this outcrop must have been the site of an ancient waterfall. It is now planted with an enormous variety of alpine. In April, several dwarf rhododendrons bloom, including *Rhododendron glomerulatum*, with its small purple flowers, and *R. racemosum*, which bears tiny white flowers tinged with pink. The flowers of the low-growing *R. 'Dora*

Amateus' appear in early May, along with the blossoms of several other hybrids. These broad-leaved shrubs provide blooms on into June, when *R. 'Late Love'*, a sprawling, late-blooming azalea, comes into flower.

In all seasons, areas on Big Rock are covered with the gray foliage of *Arabis caucasica* (formerly *A. albida*), which blooms in April, along with yellow-flowered *Aurinia saxatilis* 'Sulphurea' (formerly *Alyssum saxatile*). A host of other plants carpet this rock, from *Phlox bifida*, commonly called sand phlox, to diminutive *Primula sieboldii* 'Alba'. Colonies of columbines, thymes, sedums, gentians, geraniums and pinks also thrive here. At the base of the hill is an especially fine specimen of *Coreopsis auriculata* 'Nana'. The top of the hill is curtained with the flowers of *Campanula portenschlagiana*. Specimens of *C. portenschlagiana* and *Corydalis lutea*, which has fern-like foliage and flowers that look like tiny yellow bleeding-hearts, fill all the upper rock crevices.

At the base of Big Rock—separated from it by a grassy path—is a small ground-level rock formation called Bit o' Rock. Positioned here, it looks like a footstool sitting before a giant's chair. Bit o' Rock is planted



with low evergreens such as *Buxus microphylla* 'Compacta'. Amid the rocky fissures are some tiny species of iris, such as *I. cristata*, as well as the miniature *Primula juliae*. Blending nicely with this grouping are clumps of a slightly taller plant, *Filipendula vulgaris*, which bears ferny foliage and dainty white flowers.

From this location, across an expanse of lawn, visitors can see the waters of Lower Pond, but a path beckons to the left, opening onto an area with wet ground. Here, a fine stand of *Primula japonica* produces pink, white and red blooms in May. Beyond this point, a path to the right brings visitors to Fern Rock, where one shady ledge is covered with fine-textured sweet woodruff, *Galium odoratum*. A path near the pond is bordered with drifts of *Epimedium* \times *rubrum* and *E.* \times *versicolor* 'Sulphureum', both of which flower in early spring, but whose narrow, heart-shaped leaves are pretty throughout the growing season. *Epimedium* is one of the few perennials that will thrive not only in shade, but also where there is root competition from nearby trees.

From here, a bridge crosses the path to a rock formation called Polypody, named after the fern. When Buck uncovered the upper level of this formation, he brought in rock from other places to create a lower level. Polypody is the home of many delicate wildflowers, including large yellow lady's-slipper orchids, *Cypripedium calceolus* var. *pubescens*. (In another border across the path is a second stand of lady's-slippers, but it has been slow in spreading.) Here amid the rocks, the lady's-slippers—planted by Buck himself—have thrived. Below them, off to the side, is a large colony of the native foamflower, *Tiarella cordifolia*.

Backtracking across the bridge, visitors find themselves at Little Rock. This formation was the first outcrop Buck planted. It is especially pretty in early May, when a white form of *Phlox nivalis* contrasts nicely with the deep green needles of spreading mugo pines (*Pinus mugo*). Also included in this planting is *Geranium sanguineum* var. *prostratum*. Pink-, white- and purple-flowered selections—about 10 in all—are scattered throughout the gardens. In the fall, Little Rock takes on added color when the crocus-like flowers of meadow saffron (*Colchicum*) appear.

One broad, flattish outcrop located in a dry, open area is called Horseshoe Rock. Within its crevices thrive bearberry (*Arc-*

Photo courtesy of Somerset County Park Commission

LEFT: The exposed rock outcrops at the gardens are covered with flowers, which seem to spill from their crevices to the ledges below.

tostaphylos) and a host of succulents, including sempervivums.

Two other formations, New Rock and Reno Rock, face each other and are separated by a lawn. The latter was so named, as the story goes, when Helen Buck threatened to go to Reno to divorce her husband if he continued the incessant dynamite blasting to clear the rock faces.

The plants growing on New Rock and Reno Rock provide an interesting contrast. New Rock, the shadier of the two, wears a fuzzy mat of moss, *Saxifraga* and *Androsace*. Sunny Reno is like a wind-swept mountain, although it is actually protected by the distant hills. In spring and early summer, it is aglow with helianthemums, geraniums, alliums and penstemons, and highlighted with both white and pink flowering dogwoods (*Cornus florida* and its cultivar 'Rubra'), which bloom in May. Native mountain laurel, *Kalmia latifolia*, continues the shrub display into June.

Also in this formation (and elsewhere in the gardens) are several Gable and Nearing hybrid rhododendrons. Buck corresponded with the developers of both strains, and received many plants from them. Unfortunately, the rhododendrons are only numbered, not named, and identification has largely been lost.

There are some rare surprises at Moggy Hollow. *Iris erisographes*, a shade-loving, fibrous-rooted species with small, purplish-blue flowers, is one of them. Each bloom looks as though it has been stenciled with gold. Other unusual plants found at the gardens include a variegated form of lily-of-the-valley, and *Arisaema sikokianum*, a Japanese species of Jack-in-the-pulpit.

Entering a spacious, grassy dell called Azalea Meadow, the visitor can see Upper Pond on one side and a steep hillside on the other. The margins are bordered with azaleas and rhododendrons. Here, also, are some unusual ornamental trees: the red-flowered horse chestnut (*Aesculus* × *carnea*) and the fringe tree (*Chionanthus virginicus*). The latter is sometimes called old-man's-beard; its white flowers, which appear in early June, are as full and frothy as Santa Claus's beard.

Over the years, more than 4,000 rhododendrons have been planted in the gardens. Unfortunately, severe winter temperatures in recent years have taken their toll. However, abnormal lows have not killed all the plants, and many are making a comeback. Of the many rhododendrons that have done well are the evergreen natives, *Rhododendron catawbiense* and *R. carolinianum*. A spectacular tall Chinese plant, *R. discolor*, bears pale pink, almost

white trusses into July. Interesting deciduous forms include some of the Ghent hybrids, some of which display brilliant pink flowers. Another rhododendron that can be seen in several plantings is *R. indicum* 'Balsaminiflorum', which is low and spreading. Its luscious salmon-rose-colored blooms appear in mid-May and look like double roses. A Japanese evergreen, it is at home amid the gray boulders and is most effective when viewed from below.

Several elevated paths provide the visitor with a broad view of the garden. Beyond Azalea Meadow, a steep walk hugs Circle Rock. This path affords a splendid view of the valley below. Elsewhere, a small plateau is the home of Quaker-ladies, *Hedyotis caerulea*. Another slope is covered with wild sweet William, *Phlox divaricata*. Gardeners seeking flowering ground covers for specific locations can learn much from these plantings.

Returning to the entrance of the gardens, the visitor gravitates to the waters of Lower Pond. A small bridge overlooking a waterfall is a pleasant place from which to observe bog and water plants. In May, strap-leaved clumps of *Iris pseudacorus* at the water's edge bear yellow flowers. Later in the season, the outer edges of the pond brighten with cardinal flowers (*Lobelia cardinalis*), swamp candles (*Lysimachia terrestris*) and sneezeweeds (*Helinium autumnale*). In early autumn, the flowers of *Sagittaria latifolia*, commonly called arrowhead or duck potato, are reflected in the water. The attractive male flowers sport snowy-white petals with golden centers.

Buck had a special interest in primroses, and planted from 20 to 30 species in the gardens. Not all have flourished, but new ones are constantly being introduced. Two charming woodlanders are *Primula heucherifolia*, a diminutive species with round leaves and deep pink blossoms on four-inch stems, and the slightly taller *P. saxatilis*, a multi-stemmed species that bears scalloped leaves and a profusion of purple flowers.

Ascending the staircase and returning to the Visitors' Center, visitors can see one final garden, off along a side pathway. Elevated within a small rockery, it was designed by Rudolph Van der Goot. As Senior Horticulturist for the Somerset County Park Commission, Van der Goot became the first supervisor of Buck Gardens in 1977. He discovered that Buck had been an ardent collector of dwarf conifers. Some, such as *Tsuga canadensis* 'Prostrata', had been planted in the gardens, while many others remained in a nursery area. The conifers were slowly maturing into unique

and interesting specimens. Van der Goot transplanted some, added others, and created a pleasing garden around them.

The dominant feature of the dwarf conifer garden is a 20-foot-tall Alberta spruce, *Picea glauca* 'Conica'. It is a dense, conical plant estimated to be about 75 years of age. Among the most interesting dwarfs are a rare Japanese umbrella pine (*Sciadopitys verticillata*), Moser's Scotch pine (*Pinus sylvestris* 'Moseri') and variegated Sawara false cypress (*Chamaecyparis pisifera* 'Compacta Variegata'). Heaths and heathers were also added to this garden, but suffered winter damage in January of 1984.

The Park Commission's new administrator, Edwin Toth, and its garden supervisor, Toni Tosco, are constantly devising ways to cope with nature's vicissitudes in an attempt to grow an ever-widening variety of plants. Toth is sensitive to another problem: "Increased public enjoyment is our goal, but not at the expense of rampant overuse," he notes. "At all times, we must guard the delicate ecological balance that has been created here." In 1985, approximately 2,700 people visited the Leonard J. Buck Gardens, and the number is expected to increase as the gardens' reputation grows.

For the garden visitor—the generalist as well as the specialist—every season at Moggy Hollow is full of interest. And for the nature lover, the gardens remain a sanctuary of peace and serenity. It is a tribute to Leonard Buck that although he was an avid plant collector, there is nothing formal or arboretum-like about the way he preserved his treasures. The labeled plants can be studied individually, but they are interwoven into a free-flowing naturalistic setting to create a pleasant blending of design and horticulture, two elements without which no garden is ever really complete. ☐

The Leonard J. Buck Gardens are open to the public on a daily basis. Hours are 10 a.m. to 4 p.m., Monday through Saturday (all year), and 12 noon to 5 p.m. on Sunday (summer). In winter, Sunday hours are 12 noon to 4 p.m. Admission is free but contributions are appreciated. Guided tours for groups can be arranged at a modest fee. For further information, please write or call Mr. Edwin J. Toth, Supervisor of Horticulture Services, Somerset County Park Commission, Horticulture Department, RD 2, Layton Road, Far Hills, NJ 07931, (201) 234-2677.

Ruby Weinberg is a gardener and writer living in Califon, New Jersey.



CAREERS

IN HORTICULTURE

BY RICHARD M. ADAMS, II

If you like plants, should you consider a career in horticulture? Perhaps you're thinking about attending a vocational program in horticulture, or you're trying to decide whether to major in horticulture in college. Or you may be a college graduate thinking about pursuing an advanced degree in horticulture, or a parent or grandparent trying to help your child or grandchild decide on a career. You may even already be established in another career but are considering changing to horticulture. Although you may never have considered turning a satisfying hobby into a profession, perhaps you have always wondered what working as a horticulturist or as a volunteer at a local botanical garden would be like.

If you have read job descriptions or brochures about horticultural careers, you have probably encountered vague expressions like "responsible for all phases of production" or "oversees workers in individual jobs." It is no wonder many plant lovers are not sure what it is really like to be a professional grower, a manager of a horticultural business, a florist or a scientist in the field of horticulture.

I interviewed a number of different people who make their living as horticulturists—people who work for nurseries, botanical gardens, universities, other people or themselves—in an effort to help answer questions about horticultural careers. I spoke with people who plant and prune, as well as people who grow and sell plants, develop budgets to buy plants, supervise planting and pruning, write and lecture about plants, and research new ways of planting and pruning.

LEFT: Energetic Timothy G. Lang combines a part-time job in a nursery with the full-time pursuit of an undergraduate degree in horticulture.

These profiles, which begin in this issue of *American Horticulturist* and continue in the December 1986 issue, will provide some insight into the many career opportunities available in the field of horticulture. Part Three of the series, which will appear in the February 1987 issue, will focus on educational opportunities in horticulture, including what to consider when choosing a non-degree, undergraduate-degree or graduate-degree program. A descriptive sampling of horticultural courses will provide the reader with a taste of the educational experience.

Since the following is just a small sampling of people and careers in horticulture, you may want to conduct your own series of interviews. As Richard N. Bolles points out in *What Color is Your Parachute?*, most people who enjoy their work are happy to talk about it with others.

If you talk with horticulturists about their work, one of the first things you'll notice is that plants are just one part (sometimes a small part) of a horticultural career. As you read the horticulturists' profiles that follow, consider what other skills and interests are important to you. You may want to ask yourself some or all of the following questions:

How much education is required? Some of the people profiled here have spent two years or less in college in order to earn a vocational certificate or an associate's degree. Others have spent four years earning a bachelor's degree, six years for a master's degree, or eight or more years working toward a doctorate.

What other skills or training do you need? Some of the interviewees must be able to speak in public, take photographs for books and magazines, write articles for publication, or perform non-horticultural tasks such as budgeting, bookkeeping and personnel management. Others have found

that their jobs require more nebulous attributes like common sense, charisma or creativity.

What kinds of plants would you like to work with? Some of the horticulturists I spoke with grow diverse collections, while others work with monocultures.

Do you like to work alone or with others? I spoke with some people who work by themselves all day and feel lonely, and others who are often exasperated by "people problems" and wish they were lonelier!

What kind of working conditions do you prefer? Do you burn easily in the hot summer sun, perspire in greenhouse humidity or hate sitting at a desk all day? Are you refreshed by the outdoors, inspired by contact with others or dependent on the praise of admirers? Would you mind lifting heavy objects or getting dirty if you had to? Are you bothered by a stressful environment? Do you like to work under tight or loose supervision? Some of the people I interviewed are told what to do every minute, while others have considerable freedom to act independently.

What kind of income do you expect to receive? Most of the people I spoke with agreed that the horticultural profession generally brings more in the way of job satisfaction than of monetary gain. The jobs of some people are governed by profit and loss, while the benefits of other jobs are more abstract, such as the satisfaction derived from beautifying the environment. In some cases, the interviewees receive a regular paycheck; the income of others I spoke with depends on how well the business is doing.

The profiles begin with a horticultural neophyte who is combining a college education with a job at a nursery in order to gain practical experience. An interview with a professor whose years of study have earned him considerable academic free-

dom follows. Next are interviews with two growers, both of whom work with the same kinds of plants most of the time. We also take a look at the job of a botanical garden director, whose management skills are more important to her career than her ability to grow plants.

Three nurserymen were interviewed for this series, and two of those profiles appear in this issue: one, whose extensive business experience and efforts to stay profitable have helped his family's business survive in spite of rising costs; the other whose business failed and who now enjoys plants more as a hobby.

Part II of "Careers in Horticulture," which will appear in the December 1986 issue of *American Horticulturist* magazine, includes profiles of a horticultural therapist who is more concerned with helping people than with growing plants, as well as a freelance writer who shuns teamwork in favor of operating her own "one-man band." Also represented are a botanical garden curator who earns his living doing much the same work as an advanced amateur gardener, a nurseryman whose relatively young business is already thriving, and a former florist who has designed the floral decor for four presidents and, like many former White House officials, enjoys fame and independence.

Timothy G. Lang

Undergraduate Student, University of Delaware, and Part-Time Nurseryman, The Gooseberry Bush, Downingtown, Pennsylvania.

This student is launching a horticultural career by combining practical experience with theoretical knowledge.

Many of the students in botany class seem sleepy and a little bored on Friday morning. But Tim Lang leans forward in his seat and eagerly catches the instructor's every word. The 8:00 class means a lot to Tim, who has gotten up at 5:30 a.m. for the 45-mile commute to school. After classes are over, he'll drive another 45 miles back home and work all afternoon at a retail nursery. On Saturday and Sunday, when most of the other students relax or study, Tim will put in a full day at the nursery, starting at 8:00 a.m.

"Sure, it's hectic," he says, "but to me, it's a question of how badly you want it." Obviously, Tim, who is 22, wants a career in horticulture badly enough to work toward his bachelor's degree full-time and hold down a part-time job simultaneously.



Photos by Richard M. Adams, II

Just three years earlier, Tim was hoping from one undergraduate program to another, unable to decide what he wanted to do. An outdoorsman, he knew he wanted to study biology or a related subject, but he was unsure of what to major in. A part-time job at a large retail nursery near Philadelphia, The Gooseberry Bush, helped him make up his mind. "I took courses in greenhouse management and herbaceous plants at the same time I started working, and that's when it all came together," he explains. "The nursery became a focal point, and it helped me appreciate the classroom material."

Tim's ambition is to own a large nursery that does mostly wholesale business. Ultimately, he'd like to do large-scale landscaping, using plants such as perennials that require considerable skill to site properly. Tim realizes the need for practical experience, and plans to work in the business for awhile before starting his own operation. When that time comes, he plans to have his wife, who is good at accounting and office work, help him so he'll have more time to devote to the plants.

Tim's job at the nursery is ideal for a

busy student. "The owners realize my education comes first," he says. Tim's hours are flexible enough to accommodate his class schedule. And, in his two years at the nursery, he has been given increasing responsibility and steady raises, both of which build his experience and strengthen his résumé.

Richard Slaybaugh, Tim's boss, says he looks for some experience and aptitude when he hires part-time employees, but he is impressed mostly by enthusiasm.

Acquiring both hands-on experience and theoretical training makes for a busy schedule, but the two elements combined are good preparation for a horticultural career, as Tim Lang well knows. On the last day of Tim's herbaceous plant materials class, he not only submitted his term paper on bonsai, he also turned in a live specimen!

ABOVE: Dr. Kenneth Mudge, who left a position as a pathology lab technician to work toward a doctorate in horticulture, is now an assistant professor at Cornell University. RIGHT: John Testorf tends a fuchsia plant in the conservatory at Longwood Gardens, where he is a production grower.

Kenneth W. Mudge, Ph.D.

Assistant Professor of Floriculture and Ornamental Horticulture, Cornell University, Ithaca, New York.

A boring job as a lab technician convinced this biologist to go for his doctorate and enjoy the higher academic level and greater freedom of scientific research.

A fascination with natural history leads many people to study biology in college. But one of the few available jobs biology majors can find upon graduating is often that of laboratory technician, a job that can become routine and offers little chance of promotions, raises or career advancement. After working as a lab technician, what should the biology major do next? For Ken Mudge, the answer was to go back to school for a doctorate in horticulture.

After graduating with a degree in biology from Penn State University, Mudge worked as a technician in a pathology lab. Bored with the work, he quit and began working for a landscape contractor. "I enjoyed the work a lot more, but I could see I wasn't going to be happy pushing a wheelbarrow forever," he says.

Mudge decided to get a master's degree in horticulture at Colorado State University. He studied for two years, did research on the propagation of woody plants, and wrote a thesis entitled *The Effects of Ethephon on the Rooting of Cuttings*. (Ethephon is a plant growth regulator.) Then he went on for his doctorate at Washington State University, where he studied for four more years and wrote his thesis on *Auxin Binding to Membranes from Developing Fruits*. (Auxin is another plant growth regulator.)

After graduating, Mudge was appointed an assistant professor of floriculture and ornamental horticulture at Cornell University. His job consists of 75 percent research and 25 percent teaching. Specifically, he teaches one course a year (plant propagation) and devotes the remaining time to research in plant propagation and plant physiology.

Mudge is an expert on plant tissue culture and mycorrhizal fungi, the fungi that help increase the ability of many plants to absorb water and nutrients by causing changes in the roots' structure. In an effort to explain the role of natural hormones in this process, Mudge is studying how synthetic growth regulators can mimic these structural changes. Mudge is also working on isolating those clones of the fungus that

are most beneficial in helping plants tolerate drought. Results of this sophisticated research may eventually lead to the development of new methods for growing more vigorous plants.

Generally, students who undertake graduate study can expect higher salaries than those students with a bachelor's degree. However, advanced degrees do not guarantee a greater income. For example, many garden center managers earn a comfortable salary with a bachelor's degree.

To Mudge, however, going for his Ph.D. made much more than business sense; it has meant greater professional freedom and job satisfaction. No one tells him when to come in to work or when to leave, what to do while he is there or how many hours of leave he is entitled to. He is evaluated only on his productivity—for instance, how many papers he publishes, how much of a contribution he makes to university affairs, and how his students rate his course. Still, he typically works 50 to 60 hours a week and often brings work home.

In his five years at Cornell, Mudge has taught four students who received master's degrees and one who was awarded a doctorate. He is now working with two master's candidates and one Ph.D. candidate. "Working with students at such a sophisticated and mature level is one of my greatest satisfactions," he says.

One problem professors like Mudge face is that much of their research is funded by agencies outside the university. Recent

government cutbacks have reduced the amount of funding available through many of these agencies. Many students interested in plants and horticulture find better funding in more "practical" fields like agronomy, plant breeding and plant pathology.

Along with a decrease in funding, there has also been a decline in the number of academic jobs available in plant-related fields. However, ornamental horticulture students stand a better chance of finding jobs than do graduates in some of the "pure" sciences, such as botany, biology, ecology or plant physiology. In the case of the latter fields, hundreds of qualified candidates may apply for each advertised professorship.

For Dr. Kenneth Mudge, graduate work in horticulture paid off. By devoting himself to six years of study beyond the bachelor's degree, he was able to get out from behind the wheelbarrow and into a very rewarding career.

Wayne Barber and John Testorf

Section Heads, Longwood Gardens, Kennett Square, Pennsylvania.

These two production horticulturists manage greenhouses and fields full of all the same kinds of plants. One takes horticulture home with him; the other prefers to leave it at the office.

Amateur plant enthusiasts often have a diverse collection of plants: a windowsill with all different kinds of foliage plants; a home greenhouse or fluorescent light



garden with various orchid species; a vegetable garden with lettuce, broccoli and tomatoes; or some outdoor flower beds with perennials and annuals. Professional horticulturists, on the other hand, are often responsible for monocultures—crops of plants of all the same species. For instance, a grower might manage an entire greenhouse full of poinsettias or a field of nothing but chrysanthemums. Is growing a monoculture monotonous? How does such horticultural production work affect a grower's attitude toward plants?

Wayne Barber and John Testorf are both production growers at Longwood Gardens, located near Philadelphia. Longwood is renowned for its massive conservatory displays. Several three-story greenhouses, each of which could easily hold an average suburban house, encompass over 83,000 square feet. Changing the floral displays four times a year requires hundreds of chrysanthemums, poinsettias, fuchsias, bulbs and other plants, all of which are grown in 58 production greenhouses and over three acres of field space.

Wayne Barber grows mums and other display crops in an outdoor field. Among his many charges are 27 igloo-shaped frames over which he trains climbing mums for fall display. The mums grow out of big hanging baskets of sphagnum moss on top of the wire forms. After they are tied and sheared over a period of four months, the mums form hollow spheres that measure 4½ feet in diameter and 18 feet in circumference. "These wire baskets, with the growing medium exposed to the air, often require watering three times a day," says Wayne. In addition to frequent watering, he is responsible for daily pruning and training.

"When you've been tying and shearing them from May to Labor Day, it gets a little old," he admits. "But the thing I love about working here is the people. When we do the final shearing, some of the other section heads and part-timers come over and help, and, with teamwork, we do the job in a few hours instead of a few days."

When Wayne goes home after seven hours a day of tending these outdoor plants, he says he "likes to head for the shade," which means that he doesn't garden much at home. "I used to be a salesman for a seed company, and I got a kick out of landscaping my yard," he says. "But now I work with plants all day, and sometimes it's ninety-two degrees Fahrenheit in the shade."

John Testorf, another section head at

Longwood, goes home after working in several production greenhouses and tends a hobby greenhouse. "Fortunately, the orchids I grow don't need much care," he admits. "I mist them every day, but probably spend no more than a couple of hours a week in the greenhouse," he says. "But I also have a vegetable garden, and that takes a lot of work."

What kind of background is necessary to work in production horticulture? Joe Hannas, Display Foreman at Longwood, says, "There are no hard and fast rules, but we look for people with an associate's degree, a vocational-technical educational background, or experience in a gardening certificate program—such as the two-year Practical Gardener course offered at Longwood."

Els Benjamin

Director, Brookside Gardens, Wheaton, Maryland.

A love of plants and a love of people are combined in the career of this horticultural chief executive.

Professional horticulturists who work mostly with plants sometimes wish they had more input in the decisions of their business or organization. But promotion may mean sacrificing the opportunity to work directly with plants.

"Less than half of what I do is horticultural," says Els Benjamin with a slight Dutch accent, "but I love what I do." Much of her time is spent behind a desk planning the budget, hiring personnel, scheduling work, ordering supplies, approving trips and performing other administrative tasks for her staff of 24.

Mrs. Benjamin grew up in the Netherlands, where people keep flowers in their homes all the time. She came to the United States as a young adult, got married and had two children. After awhile, she felt the need for a change. She visited Brookside Gardens one day and talked with the greenhouse supervisor about careers in horticulture. "The next day, I signed up as a volunteer, because I became so interested," she says. Later that year, she enrolled at the University of Maryland to study ornamental horticulture. After graduating, she was hired as an educational horticulturist at Brookside. Four years later, after earning a master's degree, she was promoted to Director.

The responsibilities Mrs. Benjamin enjoys the most are setting goals and

coordinating the staff. "Brookside is only a small part of the Maryland National Capital Park and Planning Commission," she says, "but we have considerable independence."

Mrs. Benjamin and Curator Philip Normandy walk the grounds every year and take an inventory of all the woody plants. They then decide—in consultation with Hans Hanses, the landscape architect—which plants should be removed or replaced. "We change the displays from year to year, trying to emphasize new and superior cultivars," she explains.

Mrs. Benjamin's many diverse skills—not just her ability to grow plants—account for her success as a director. "Horticulture may be my *least* important skill," she says. "You have to be able to work with people, to organize and to use common sense and good judgment. Sometimes you have to be willing to be unpopular, because, with any decision, half the people may applaud and half may be disappointed."

Walter Off

President, Waldor Orchids, Inc., Linwood, New Jersey.

This horticulturist's efforts to reach all possible markets help ensure the continued success of his family's 60-year-old orchid business.

Walter Off puts in 14 to 15 hours a day at his family orchid business and says there is nothing he would rather be doing. But he got into the business reluctantly. Says Walt, "I wanted to be an architect, but my father needed my help."

Walt, his father George, and his brother Bill run Waldor's 15,000 square feet of greenhouse. They prefer to look after the 50,000 orchid plants themselves rather than trust the specialized care of this expensive commodity to hired help. (The business does employ a deliveryman, a secretary and a plant tissue culture technician.)

Waldor's main business is selling cut orchid flowers to florists. On the holidays when flowers are popular (Valentine's Day, Easter and Mother's Day), they sell about 20,000 orchids to over 100 florists. They often stay up all night packing boxes.

The company was started in 1928 by Walt's father, who is now over 80 years old but still puts in 12 hours a day repotting plants. He began by selling cut flowers through the local flower market. Later, he realized he could make more money



Els Benjamin, Director of Brookside Gardens in Maryland, working with her Administrative Aide, Betty Rouse.

and offer higher-quality flowers by selling directly to the florists, thereby avoiding the middleman. He also began to promote the use of novelty orchids such as miniature cymbidiums and phalaenopsis, not only for corsages but also for flower arrangements.

When indoor gardening became popular, Waldor began offering orchid plants for sale. Recently, the company began renting orchid displays to casinos in nearby Atlantic City. "People can't make it in the orchid business today without being into all three areas—wholesale cut flowers, retail plant sales and plant rentals," says Walt.

Starting a retail nursery business is difficult because of the large investment required for inventory and the time necessary to develop customer contacts, Walt cautions. Even for established businesses, the increasing costs of fuel, labor and real estate make it difficult to stay in business. "We have to keep working to stay at the leading edge," says Walt. For example, he is beginning to offer a new type of orchid, the miniature cattleya. Its compact size makes it popular with orchid hobbyists and also profitable for Walt to grow. He has figured out that one square foot of

greenhouse space costs about \$15 a year in overhead, so anything he can do to maximize the use of that space will increase his profit.

In spite of Waldor's long history and success, the business pays Walt only a modest salary. But when one sees Walt drop everything to help a retail customer, there is no doubt he truly enjoys what he does.

Owen H. Tallman

Former Owner, Carnivorous Gardens Nursery.

After his business failed, this former nurseryman landed a job as a computer programmer. He now realizes he enjoys horticulture much more as a hobby than as an occupation.

Although many people dream of owning their own business, the experience can be fraught with many unforeseen nightmares, as was the case for Owen Tallman, who eventually gave up his mail-order nursery business for a computer job with a big corporation.

An amateur naturalist since childhood, Owen became interested in carnivorous plants. As a conservationist, he was ap-

palled by the wholesale collection of Venus's-flytraps from the wild, many of which, ironically, were sold to schools to demonstrate the wonders of nature and the importance of conservation.

After working for two years in a retail plant shop, Owen set up a mail-order nursery specializing in carnivorous plants that had been propagated rather than collected from the wild. Visitors to Carnivorous Gardens' plastic greenhouse would marvel at the benches full of thriving sundew plants, pitcher plants and tissue-cultured Venus's-flytraps.

Carnivorous Gardens published a color catalogue explaining the basics of growing carnivorous plants. Owen received so many inquiries about the plants that he started publishing a magazine about them called *Carnivorous Plants Digest*, which had a circulation of several hundred.

Although Owen enjoyed running the business, it earned no money. The business also had other problems. When a greenhouse gas heater was lost in transit, Owen slept in the greenhouse and tended a kerosene heater all night. When his plants suffered from hard water, he had to shell out \$3,000 unexpectedly for a water purification system. And when a tissue-culture laboratory failed to deliver plants as promised, he realized he should have asked the lab for references before doing business with them. Ultimately, Carnivorous Gardens went bankrupt when the price of heating oil peaked in 1979.

Everything has turned out well, though. Owen now works for Digital Equipment Corporation as a software engineer, a position that makes good use of his organizational and communication skills. All that remains of Carnivorous Gardens is a plastic tray of carnivorous plants on a windowsill. But since getting out of the nursery business, Owen has had much more time to enjoy gardening. He has worked on a vegetable garden, some perennial borders and an herb garden. He also has plans to set up a fruit orchard in his back yard. "I'll tell you one thing," he says, "if I still had the business, I could set up a great computer system to handle all the paperwork!"

Richard M. Adams, II has a Ph. D. in horticulture from Cornell University. He is the former curator of the University of California Botanic Gardens. A frequent contributor to *American Horticulturist*, his series of profiles will continue in the December 1986 issue. He is currently managing a retail nursery in Pennsylvania.





Live Oak Gardens

TEXT BY ROSALYNE DOBBS

PHOTOGRAPHY BY JOHN A. DOBBS

Live Oak Gardens is a paradise filled with azaleas, camellias, roses and a profusion of other delightful plants set in a woodland on the Louisiana Gulf Coast. The lush green gardens are perched on a hill overlooking the depths of a salt dome, and the grounds sweep down to the tranquil waters of Lake Peigneur. A magical array of plants highlights each season, but most striking are the magnificent live oaks (*Quercus virginiana*), hung with the soft, swaying strands of Spanish moss.

The beautiful gardens differ markedly from the wilderness existing when the famous 19th-century stage actor Joseph Jefferson owned the property. Jefferson bought the land in 1870 during a trip to Louisiana for a performance in New Orleans. He found the "island" fascinating, with its woodland, pecan groves and thousands of orange trees. (Early explorers called the land an island, although it is only partially surrounded by water.) A former owner had operated a sugar plantation, and a few houses had sprung up, but most of the land was undeveloped. The road was barely usable, and for eight years Jefferson had to ride to the end of the railroad line and board a small stern-wheel boat to reach the secluded area.

Jefferson was fascinated by the trees on his property. In his autobiography, he describes the live oak as "the king of the forest." He loved to sit under the trees' massive branches, and the live oaks were

a choice subject when he pursued his pastime of landscape painting. Native cypress, cut on the grounds and hauled in by ox cart, was used to build a "Steamboat Gothic" house, which served for 35 years as a winter retreat for the actor.

In 1917, J. Lyle Bayless, Sr., of Kentucky purchased the Jefferson Island property from the Jefferson heirs and initiated a salt mining operation on the land. J. L. Bayless, Jr., sold the mine after he inherited the property. A lover of plants, he preferred to focus on landscaping and garden development. When Bayless returned from military service after World War II, he cleared and landscaped portions of the woodland, adding a multitude of camellias and azaleas, as well as a two-mile live oak avenue and a pond where native Louisiana iris grew.

Yet Bayless envisioned far more for his property. In particular, he dreamt of beautiful subtropical gardens like those he had admired in England. In 1966, he commissioned Geoffrey Wakefield, an English horticulturist, to develop the grounds. He had heard about Wakefield through the Royal Horticultural Society and decided he was the right person for the assignment.

LEFT: The massive branches of a live oak, draped with Spanish moss, create a hauntingly beautiful scene. ABOVE: Built by actor Joseph Jefferson in 1870, the restored plantation house was first opened to the public in 1984.

A huge whirling vortex formed and swallowed everything in its path. . . . Sixty-five acres of Live Oak Gardens disappeared into the whirlpool, along with entire pecan groves, 350-year-old live oaks and countless other plants.

Wakefield was then estate manager of Stonehurst in Sussex, England, and had a wide knowledge of plants, particularly camellias, azaleas and rhododendrons. He had studied the plant life in the Himalayas, and had been a student of Jeanne Holgate, an associate of the famous floral designer Constance Spry of London.

Wakefield, who now owns a horticultural service in Conroe, Texas, was given free rein to plan the development. During his first weeks on Jefferson Island, he spent countless hours exploring the grounds and deciding on the design. "I kept coming back to the idea of creating a series of small gardens, each with its own character, plants and points of interest, each joined to the next by interesting paths wandering casually through a circuitous route to bring the viewer back to the point of origin," Wakefield said. This is the design he finally adopted. His objective was to entertain the visitor, to have something new come into view around every corner. In order to accomplish this goal, he planned for great variety in design and a wide range of plants.

Wakefield began implementing the design, and the Rip Van Winkle Gardens (as they were first known) opened in December of that same year. For three years, he continued to enhance the project, introducing new plants from all over the world. "My idea was to introduce as many new plants as I could and, by using them in the gardens, demonstrate their possibilities, beauty and garden worthiness to visitors," he said. Among the plants he added were a number of camellias, including *Camellia williamsii* hybrids. Michael Richard, who started working at the gardens as a protégé of Wakefield, continued to introduce new plants after he became Director of Horticulture.

In 1978, Bayless donated the 400-acre tract, along with the Jefferson home, to Live Oaks Foundation, which has managed the gardens ever since. He then built a new home for himself on the lake front.

Within the next two years, the gardens were renovated and a new Visitors' Center was added. But the peace and beauty of this unusual garden oasis were shattered on November 20, 1980. In the half-light before dawn on that day, the ground began to shiver at Live Oaks, and an ominous rumbling broke the stillness, jarring the



After disaster struck Live Oak Gardens, "Old Rip's Oak" was located on the new shoreline of Lake Peigneur.

residents awake. Early that morning, a crew on an oil rig had drilled a pipe far down into the bottom of Lake Peigneur and pierced the salt dome roof, located about 1,300 feet below the surface of the water. The dome contained enormous glistening caverns where millions of tons of salt had been removed during 60 years of mining. These caverns extended under the lake and below the grounds of Live Oak Gardens on Jefferson Island.

At first, water drained slowly down the hole and into the caverns, but it soon gained momentum. A huge whirling vortex formed and swallowed everything in its path—two oil rigs, a tugboat and 11 barges, plus a large portion of the lake bottom and nearby land. Sixty-five acres of Live Oak Gardens disappeared into the whirlpool, along with entire pecan groves, 350-year-old live oaks and countless other plants. The Delcambre Canal, which runs from the lake to the Gulf of Mexico, started flowing backwards as the water was sucked down into the dome.

The local sheriff ordered all residents to evacuate the area, and by mid-morning, most of them had gone. The last to leave Live Oaks were Bayless and Richard, who had devoted 11 years to managing the gardens. The two men watched the devastating progress of the whirlpool from the second floor of the Jefferson home, high on the hill. Despite increasing danger and ad-

ditional warnings, they did not leave until about noon. Soon after they left, the reception center split in half, and the Bayless home on the lake front fell into the water.

By mid-afternoon, the entire 1,300-acre lake had drained into the salt mine. The disastrous event ended with a mud geyser that erupted near the ruins of the Bayless home, shooting mud about 200 feet into the air. Miraculously, no one was killed. Even the men working in the salt mine managed to escape unharmed.

By 4:00 p.m., when Richard and Bayless returned, there was a crater in the drained lake about half a mile wide, and cracks were opening up all over the grounds where land was still shifting. According to Richard, "In the greenhouses, stresses were continuing, and they were gradually being pulled apart. You could hear the glass popping as the ground was relaxing." Two days later, a larger, deeper and calmer lake filled the hole. Because of the dangers posed by unstable ground, people stayed away from the area for an entire month.

When it was safe to return, those who surveyed the damage found what appeared to be the result of a mighty earthquake. The new Visitors' Center, office complex and parking lot were all destroyed. A half-acre glass conservatory displaying plants collected by Bayless from around the world was reduced to a heap of jagged glass, debris and broken greenery—a total loss. "A lot of the things we lost took years and years to collect; those in the conservatory, 20 years," said Bayless. His home was underwater, its location marked by the chimney jutting out of the lake. Bayless later hired scuba divers to salvage a few of his belongings and records. The Jefferson home fared somewhat better; although the structure sustained damage, the house could be repaired. However, the Live Oaks Foundation wholesale greenhouses, which were located on adjoining land, were demolished and thousands of plants were lost.

The main water line running through the area was ruptured, and several landscaped gardens—where great chunks of ground had broken off into the lake—were lost. Fortunately, however, a large amount of the destroyed land had been undeveloped wilderness, and some portions of the gardens suffered only minor damage or none at all. The live oaks that remained

were shaken but unharmed, as were the magnolias and most of the camellias. The crucial question was whether the grounds were safe to redevelop.

At first, experts feared that water in the mine would dissolve the huge salt columns and collapse the entire dome. These fears subsided when the lake refilled. Early in 1981, the Mine Safety and Health Administration (MSHA) informed Richard that the chances of additional land movement were 20 percent. According to Frank Gorman, the MSHA public information specialist, there was a small possibility that some land adjustment would occur where the grounds had dropped off about 20 feet into the lake.

The immediate concern of the Live Oaks staff was to try to keep the plants growing, to maintain the grounds and to prevent the gardens from disintegrating. The area could not be rebuilt until scientists studied the ground stability thoroughly. Several lawsuits involving the accident also had to be settled.

The long wait stretched from months into years. Finally, almost three years after the mishap, Live Oaks Foundation received a sizable award and approval was given to rebuild the grounds.

Richard directed the restoration, which took nearly a year. Truckload after truckload of rubble, broken glass and mangled plants was hauled away. Many deep land cracks had to be filled and leveled, and the jagged shoreline had to be evened out and recontoured to fit the site. Then there was the massive task of rebuilding, repairing and replanting the 20 landscaped acres that had survived the accident. In restoring the gardens, Richard preserved the original design whenever possible. He smoothed over rough ground left by the accident, added new plants and refurbished or replaced existing ones.

By July 1984, Richard and his staff had completed most of the restoration work, and the gardens were reopened. The struggle to rescue Live Oaks from the disaster was over.

Today, the complex includes a new reception center, gift shop, theater and restaurant, with a porch overlooking the lake. The Jefferson house has been restored and is open to the public for the first time. Visitors can view a film that includes original footage from the Library of Congress collection showing Jefferson portraying Rip Van Winkle in the Washington Irving play.

The film also describes the accident and provides interesting facts about the gardens. Both the house and the gardens are on the National Register of Historic Places.

There are still many live oaks on the grounds. Some of the oldest and most picturesque grow on the gardens' eastern side, where they line the path leading up to and beyond the Jefferson home. According to Wakefield, "The superb live oaks on the eastern side are something at which I have never ceased to marvel or admire. Nothing like them exists anywhere in Europe, much less England." Among the most notable trees on the grounds is "Old Rip's Oak," which was planted by Jefferson and is located on the lake front behind the restaurant. The "Cleveland Oak" was named after Grover Cleveland, who visited Jefferson and hunted and fished in the area.

Two other live oaks were named after the notorious French pirate, Jean Lafitte. According to legend, Lafitte set up headquarters and buried treasure on Jefferson Island. Three boxes of gold coins were found buried under the "Lafitte Oaks" in 1923. No one knows whether the pirate actually buried them, but the coins were dug up by Daynite, a voodoo doctor who served as the straw boss for a work crew when Bayless's father owned the property. (Bayless later inherited some of these coins, which his father had purchased from Daynite.) Today, the "Lafitte Oaks" are surrounded by lush tropical plants, including cannas, *Hibiscus*, bananas and beds of colorful annuals. An informal tropical trail winds through the trees.

In Jefferson Island's mild climate, the live oaks sport a green canopy all year

long. Their leaves fall only as new foliage is emerging and blooms are forming—during March, when the azaleas begin to blossom. The pendulous branches spread to about twice their 50-foot height and create a vast expanse of shade below. Richard has planted these shady areas with mondo grass (*Ophiopogon japonicus*), azaleas and spring-flowering bulbs. Caladiums, coleus, hydrangeas and impatiens provide summer color.

Live oaks generally have a long life span. Some of the trees at the gardens have endured for well over 350 years. They resist insects, diseases and damage from winds. In the Gulf Coast area, they must be able to withstand hurricane winds. To protect them, Wakefield has thinned substandard wood, filled cavities and provided support for far-reaching low branches. He has also installed a series of counter-balance support cables.

Besides the spectacular walks and trails under the live oaks, there are curved pathways that offer a variety of captivating scenes, many areas of dappled shade, and benches on which to relax along the way. Visitors can see squirrels scampering about, the scarlet flicker of cardinals and the interesting guinea fowls that meander over the grounds. Planted along the path behind the Jefferson home is *Magnolia grandiflora*, with its huge, white, fragrant blossoms. Nearby, the drooping cascades of wisteria lend their lavender hue to the early-spring scene. Crape Myrtle Alleé blooms in summer, its crinkly blossoms creating a rosy glow overhead and a soft carpet underfoot.

Providing color late in the season are



RIGHT: The trail near the "Lafitte Oaks" has yielded more than just a treasure of tropical plants; three boxes of gold coins were unearthed in this area.

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LIVE OAK GARDENS

plantings of *Crimum*, *Amaryllis* and *Hy-menocallis*. The crape myrtles (*Lagerstroemia indica* 'Rosea') have replaced a citrus grove bordered with a bamboo hedge. *Cycas revoluta*, Japanese sago palm, is planted along the cycad walk near the lake and in front of the Jefferson home.

The hill adds another dimension to the overall effect of the gardens. Though hills are scarce in Louisiana, this one formed millions of years ago when the salt dome forced the land upward. (The dome on Jefferson Island is the northernmost of five salt domes in the state's coastal marshes.) Wakefield took advantage of the 38-foot elevation when he laid out the gardens, and Richard has preserved the effect. The difference in elevation is especially effective on the sloping trails and the sweeping lawn of the Jefferson home, and it serves as an accent in various individual gardens as well. In the Rock Garden, for example, the slope is used to simulate a mountain stream.

The original development of the Rock Garden presented an unexpected stumbling block to Wakefield, who was accustomed to a surplus of rocks in England. When he asked his assistant to find some rocks to start the project, all he got was "a small handful of small gravel." He was surprised to discover that southern Louisiana has no natural rocks. Nevertheless, he was determined to carry out his plans. Eventually, he improvised "rocks" by texturing and dyeing concrete, a process that took a great deal of practice but eventually worked very well. Today, the plantings in the Rock Garden include azalea, yucca, wood fern, holly fern, *Ilex* species, *Fatsia japonica* and *Nandina domestica*. The trees are native oak and pine.

Sugar kettles, which were once used on plantations to boil down the cane juice over open fires to make raw sugar, accent the gardens. Most of them are no longer used in the cascading fountains, but they still add a colorful touch.

There are more than 300 camellias—Bayless's favorite flower—blooming from October through March in three adjoining gardens at Live Oaks. Most of them are *Camellia japonica*, but the extensive collection also includes hybrids of *C. sasanqua*. Many of the bushes that thrive today were planted by Bayless over three decades ago. The Japanese Tea Garden includes hybrid camellias from England, Australia and California that were originally grafted on Jefferson Island. Other hybrids on the

grounds come from Japan, China and France, as well as the United States. Typical of the blossoms is the lovely 'Francie L', a cross between *C. saluenensis* and *C. reticulata*. Both the Alhambra Garden—patterned after a landscape design in Granada, Spain—and the old-fashioned camellia garden feature *C. japonica*.

As the camellia blossoms disappear, hundreds of azaleas all over the grounds burst into bloom. There are Indica, Belgian, Kurume and Glenn Dale hybrid azaleas.

A modern rose garden complements the plantation home. Richard completely re-landscaped this garden, which is located near the patio and now boasts about 200 bushes in raised beds. The tapestry of color includes the hybrid teas 'Brandy' and 'First Prize', the floribundas 'Europeana' and 'Bahia', plus a shower of blossoms from miniatures. New roses are added each year.

The predominant feeling at Live Oaks is relaxed and informal, befitting Louisiana's long growing season and warm, rainy climate, in which plant growth is luxuriant and often rampant. Yet an occasional sculptured garden pleases the eye. The Knot Garden, inspired by a landscape feature in Hampton Court outside London, is Elizabethan in design. It features beds of annuals and clipped dwarf yaupon (*Ilex vomitoria* 'Nana' and 'Schillings'), which is a cultivar of the native species.

The natural beauty of the "island" attracted Jefferson and, later, Bayless, who painstakingly transformed the wilderness into a series of beautiful gardens. Despite the destruction of much of his paradise, Bayless had the pleasure of watching it blossom again. He died at age 75 on August 21, 1985, having twice fulfilled his dream for Live Oaks. ☐

Live Oak Gardens on Jefferson Island is open to the public daily from 9 a.m. to 5 p.m., except on Christmas and New Year's Day. Tours of the Jefferson Home and the gardens are available at the following rates: Senior Citizens, \$3.50; Adults, \$5.00; Children (5 to 16 years), \$2.50; Groups (15 or more), \$3.50; Season Ticket (12 months), \$15.00. For further information, write or call: Live Oak Gardens Foundation, Inc., 284 Rip Van Winkle Road, New Iberia, LA 70560, (318) 367-3485.

Rosalyn Dobbs is a writer living in Baton Rouge, Louisiana. Her articles have appeared in *American Horticulturist*, *Garden* and *Organic Gardening*.

Book Reviews

DEERFIELD: AN AMERICAN GARDEN THROUGH FOUR SEASONS.

Derek Fell. Pidcock Press. Gardenville, Pennsylvania. 1986. 96 pages; softcover, \$35.00. AHS member price, \$29.75.

This is a beautiful picture book about a very beautiful private American garden. The photographs—taken by both Derek Fell and the garden's creator, H. Thomas Hallowell, Jr.—depict the garden throughout the seasons. Azaleas are perhaps the major color feature throughout the gardens, but Deerfield is as beautiful when covered by a blanket of leaves in autumn or snow in winter as it is when bedecked with spring's azaleas. The book contains very little text—photo captions, a history of the garden, an introduction written by Hallowell and brief introductions to the chapters on each season—since the breathtaking photographs speak for themselves.

Although this remarkable garden is beyond the means of many Americans, it is inspirational to know that great private gardens still exist in this country. Although Deerfield is not open to the general public, individuals who purchase *Deerfield: An American Garden Through Four Seasons* are invited to write for an invitation to visit the garden during the height of the azalea season in early May.

GARDENS BY DESIGN: STEP-BY-STEP PLANS FOR 12 IMAGINATIVE GARDENS.

Peter Loewer. Rodale Press. Emmaus, Pennsylvania. 1986. 224 pages; hardcover, \$19.95; softcover, \$12.95. AHS member price, \$15.95 (hardcover), \$10.35 (softcover).

Peter Loewer's newest book is a delightful collection of ideas for theme gardens—gardens devoted to nothing but grasses, annuals or bulbs, as well as plots designed for autumn color, moonlight viewing or use by the handicapped. Surprisingly, it is also a book about the author's own garden, for he actually planted each of the gardens he describes.

Each chapter includes a map of the particular garden covered, directions on how to prepare the beds and descriptions of all the plants specified in the design. The



In this illustration from *Gardens By Design*, written and illustrated by Peter Loewer, white poppies (*Papaver orientale* 'Barr's White') are shown growing in a night garden.

chapters conclude with relevant notes and a close-up look at a particular plant. For example, the chapter on the night garden contains a brief discussion of lighting fixtures, a look at night-flying insects and a profile of the moonflower. Lengthy source lists, extensive bibliographies, a list of plant societies and an index provide the reader with the opportunity to learn more about particular topics of interest.

Gardens by Design is illustrated with Peter Loewer's artistic line drawings. All in all, this is a delightful book that is not only fun to read but also contains many interesting ideas that could be incorporated into future garden plans.

GARDENING BY MAIL: A SOURCE BOOK.

Barbara J. Barton. Tusker Press. San Francisco, California. 1986. Approximately 260 pages; softcover, \$16.00. AHS member price, \$14.00.

Gardeners who enjoy purchasing plants and supplies by mail will appreciate this useful source book. The author has included lists of seed companies, nurseries and garden supply dealers, along with an

indication of what material each company offers. There is also a product index so users can look up sources for humidifiers or hammocks, for example. Lists of plant societies and garden-related organizations and publications are also provided. Finally, the author has included a list of botanical libraries as well as a bibliography.

TAYLOR'S GUIDE TO PERENNIALS. TAYLOR'S GUIDE TO ANNUALS. TAYLOR'S GUIDE TO BULBS. TAYLOR'S GUIDE TO ROSES.

Houghton Mifflin Company. Boston, Massachusetts. 1986. Approximately 465 pages each; softcover, \$14.95 each. AHS member price, \$13.45 each.

These are the kinds of books that can cause otherwise rational gardeners to abandon thoughts of beautifully designed borders and beds. My initial reaction to any comprehensive encyclopedia picturing fascinating plants from all over the globe is to want to grow each and every one of them, and the *Taylor's Guides* produced exactly that reaction. Like many of the newer field guides, these books contain a photographic encyclopedia in which the pho-

BOOK REVIEWS

tographs of plants are organized by flower color or other outstanding features such as foliage. The photographs are linked to a section in the back of the book with more extensive descriptions. Each photograph is accompanied by brief notes on cultural preferences, height and flower size. Although the more extensive text descriptions in the back of the book provide the reader with more information, most gardeners will probably want to consult an additional reference before deciding if a particular species is right for their garden.

The color-coded flower charts that appear at the beginning of each volume are extremely useful. They provide an easy-to-use guide to the hundreds of plants included in each volume, allowing the user to select plants for flower color, hardiness, soil requirements, blooming season, exposure and height. Such a guide makes it easy to narrow down the appropriate choices for a particular garden situation. Each book also contains a section entitled "How to Use This Guide," as well as a glossary, information on basic botany, notes on getting started, a discussion of pests and diseases, a guide to buying plants, and an

index. These four books would be a useful and welcome addition to any gardener's library.

GARDENS OF NORTH AMERICA AND HAWAII: A TRAVELER'S GUIDE.

Irene & Walter Jacob. Timber Press. Portland, Oregon. 1985. 367 pages; hardcover, \$24.95. AHS member price, \$21.20.

Travelers will not want to be without this useful guide to gardens throughout the United States (including Alaska and Hawaii) and Canada. This book has an extremely useful format; each chapter is devoted to a particular state or province, and begins with a map locating the gardens that are described. The book provides short descriptions of over 1,400 gardens in all. A series of symbols indicates major plantings as well as handicapped access, and brief text descriptions (five or six lines each) include information on hours, entry fees, the garden's history and other major features. Addresses and phone numbers for each garden are also provided for the reader's convenience.

MANUAL OF CULTIVATED CONIFERS.

Gerd Krüssmann. Timber Press. Portland, Oregon. 445 pages; hardcover, \$65.00. AHS member price, \$55.25.

This is an essential reference work for the serious conifer enthusiast. Translated from German, *Manual of Cultivated Conifers* includes descriptions of over 600 species and 2,100 varieties and cultivars of conifers. Line drawings and black-and-white photographs are used to illustrate many of the taxa. For the species with many varieties and cultivars, the author has provided convenient lists of taxa with similar characteristics (for example, cultivars and varieties with conical habits or variegated foliage) to help the reader understand the wide variety of forms available. Also included are hardiness zone maps of Europe, North America and China, as well as a key to the coniferous genera, an index to invalid plant names and a list of prominent conifer collections throughout the world.

—Barbara W. Ellis

Barbara W. Ellis is Publications Director for the American Horticultural Society and Editor of *American Horticulturist*.

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For more information on Integrated Pest Management, see "Integrated Pest Control" in the February 1981 issue of *American Horticulturist* and "Biological Control of Insect Pests," Part 1 and Part 2, in the February 1982 and April 1982 issues of *American Horticulturist*, respectively. For copies of all three articles, send \$3.00 to cover postage and handling to Assistant-to-the-Editor, American Horticultural Society, PO Box 0105, Mount Vernon, VA 22121.

The following companies offer beneficial insects, safe pesticides and other materials useful to gardeners interested in Integrated Pest Management.

W. Atlee Burpee Company, Inc., Dept. AH, 300 Park Avenue, Warminster, PA 18974, catalogue free.

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Nature's Control, Dept. AH, Box 35, Medford, OR 97501, catalogue free.

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Organic Control, Inc., Dept. AH, 5132 Venice Boulevard, Los Angeles, CA 90010, catalogue free.

Reuter Laboratories, Dept. AH, 8450 Natural Way, Manassas Park, VA 22111, catalogue free.

Rincon-Vitova Insectaries, Inc., Dept. AH, Box 95, Oak View, CA 93022, catalogue free.

Safer, Inc., Dept. AH, 60 William Street, Wellesley, MA 02181, catalogue free.

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Adenophora ad-en-OFF-er-ah
Aesculus × *carnea*
 ESS-kue-lus CAR-nee-ah
Agapanthus africanus
 ag-ah-PAN-thuss af-rih-KAN-us
Ajuga reptans ah-JEW-gah REP-tanz
Alyssum saxatile
 ah-LISS-um sacks-ah-TILL-ee
Amaryllis am-ah-RILL-iss
Amsonia tabernaemontana
 am-SO-nee-ah
 tab-er-nee-mon-TAN-ah
Anchusa an-CHEW-sah
Androsace an-dro-SAY-see
Aquilegia flabellata
 ak-qui-LEE-jee-ah fla-bell-AY-tah
Arabis albida AIR-ah-biss al-BIDE-ah
A. caucasica a. caw-CASS-ih-kah
Arctostaphylos ark-toe-STAFF-ill-ose
Arisaema sikokianum
 air-iss-SEE-mah sih-koe-key-AY-num
Artemisia abrotanum
 are-tem-EASE-ee-ah
 ab-row-TAY-num
Aster × *frikartii*
 ASS-ter frih-CAR-tee-eye
Astrantia ah-STRAN-tee-ah
Aurimia saxatilis
 aw-RIN-ee-ah sacks-ah-TILL-iss
Brunnera macrophylla
 BRUN-er-ah mack-row-FILL-ah
Buxus microphylla
 BUCK-sus my-crow-FILL-ah
Camellia japonica
 kah-MEAL-yah jah-PON-ih-kah
C. reticulata
 c. reh-tick-yew-LAY-tah
C. saluenensis c. sal-yew-en-EN-sis
C. sasanqua c. sah-SANK-quah
C. williamsii
 c. WILLIAMS-ee-eye
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C. medium c. ME-dee-um
C. portenschlagiana
 c. por-ten-schlag-ee-AY-nah
Catananche caerulea
 cat-ah-NAN-kee see-REW-lee-ah
Centaurea hypoleuca
 sen-TAW-ree-ah hy-poe-LEW-kah
Chamaecyparis pisifera
 kam-ee-SIP-er-us piih-SIFF-er-ah
Chionanthus virginicus
 kie-oh-NAN-thuss vir-JIN-ih-kus
Clematis × *jackmanii*
 KLEM-ah-tiss jack-MAN-ee-eye

Colchicum KOL-chih-kum
Convolvulus mauritanicus
 con-VOL-view-lus
 maw-rih-TAN-ih-kus
Coreopsis auriculata
 core-ee-OP-sis aw-rick-you-LAY-tah
Cornus florida CORN-us FLOR-ih-dah
Corydalis lutea
 core-ID-al-iss LOO-tee-ah/loo-TEE-ah
Crinum CRY-num
Cycas revoluta SY-kus rev-oh-LUTE-ah
Cypripedium calceolus var. *pubescens*
 sip-rih-PEE-dee-um kal-see-OH-lus
 pew-BES-enz
Delphinium del-FIN-ee-um
Epimedium × *rubrum*
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E. × versicolor e. ver-sih-KOL-er
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 air-RIN-jee-um jy-GAN-tee-um
Euphorbia epithymoides
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 e. paul-ee-CHROME-ah
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Muscari mus-CARE-ee
Myosotis my-oh-SO-tiss
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Nigella ny-JELL-ah
Ophiopogon japonicus
oh-fee-oh-POE-gun jah-PON-ih-kus
Origanum vulgare
or-IG-ah-num vul-GAIR-ee
Phlox bifida FLOCKS BIF-ih-dah
P. divaricata p. die-vair-ih-KAY-tah
P. nivalis p. nih-VAL-iss
P. subulata p. sub-yew-LAY-tah
Picea glauca PIE-see-ah GLAW-kah
Pinus mugo PIE-nus MEW-go
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Potentilla reptans
poe-ten-TILL-ah REP-tanz
Primula heucherifolia
PRIM-yew-lah yew-ker-ih-FOE-lee-ah
P. japonica p. jah-PON-ih-kah
P. juliae p. JEW-lee-ee
P. saxatilis p. sacks-ah-TILL-iss
P. sieboldii p. see-BOLD-ee-eye
Quercus virginiana
QUER-kus ver-jin-ee-AY-nah
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row-doe-DEN-dron
care-oh-lin-ee-AY-num
R. catawbiense r. cah-taw-bee-EN-see
R. discolor r. DIS-kol-er
R. glomerulatum
r. glow-mer-oo-LAY-tum
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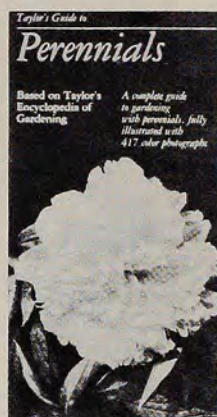
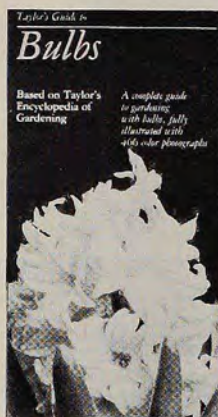
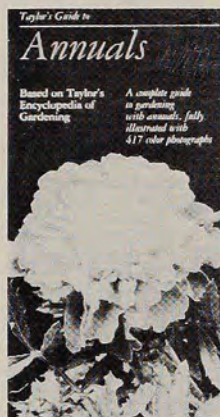
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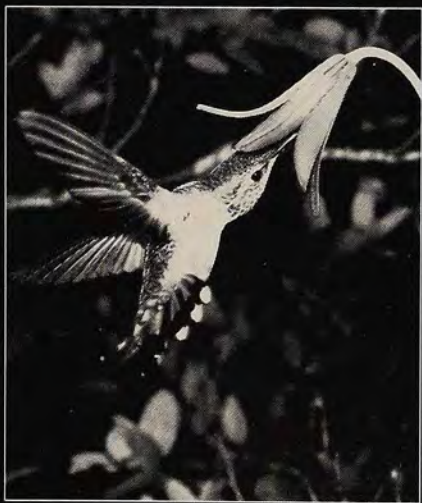
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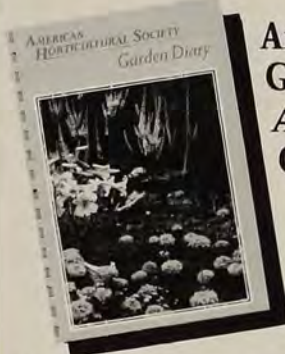
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In an Irish Garden (June 3-17). Come take a romantic journey to some of the lost relics of the Irish landscape as well as to the flourishing estates of today. You will discover the surprising variety and richness of these gardens, and the changing mood and character of the landscape as well. We begin our tour in the Southwest, with its dramatic views of the sea and mountains, and continue to Dublin and County Wicklow, "The Garden of Ireland." Leader: Pa-

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Perennial Experiments



Margaret Hensel

I have a small plot on the banks of the Housatonic River in Massachusetts. Tucked in between an old silver-sided barn and sloping lawns, it offers a steady diet of insects for leopard frogs hidden in the shade of hardy geraniums, and an occasional drop of nectar for ruby-throated hummingbirds and swallowtail butterflies. For me, it is a source of ideas, spiritual renewal, worries and disappointments, successes, and indescribable peace and beauty. In short, it is a garden.

Originally used as a “holding spot” for a collection of perennials while I was away in England, this 30- by 40-foot plot has become a kind of idiosyncratic trial garden over the years. In one corner are six specimens of *Salvia argentea*, a species I first saw in the White Garden at Sissinghurst

in England. Back in the United States, I discovered a few of these silvery-woolly plants on the back benches of a small-town garden center. For the last two years, I have watched the specimens in my garden progress from singularly lovely rosettes to plants with surprisingly beautiful blooms.

In the shade of a large *Artemisia abrotanum* are clumps of a single yellow primrose, which I received—in exchange for some deep red sweet Williams—from a woman who gardens on a farm up the valley. Amid 14-foot rows of *Stachys byzantina* and *Geranium platypetalum* grow a dozen different veronicas and as many campanulas and hardy geraniums.

Each year, I manage to squeeze in a couple dozen new species and varieties. Some are plants I’ve always wanted to grow;

others, I start from seed or self-sown seedlings in order to better understand as many plants as possible in every stage of their lives before I put them in a landscape or border.

I want to know the color, height, shape and texture of flowers and leaves, as well as what each perennial looks like in mid-April, May and June. I also want to know if anything respectable is left of the plant by the end of summer. For example, if a catalogue says *Catananche caerulea* will bloom all summer provided it is dead-headed, I want to see it for myself. I also want to see what happens when the dead-

ABOVE: Margaret Hensel’s “experimental” garden, tucked between her barn and the Housatonic River.

heading is neglected, as invariably happens in midsummer.

When I order a new plant I haven't seen growing in a local garden, I must frequently accept the nursery catalogue's estimated bloom time, which is nothing more than an average, based on such factors as geographic area and performance in past years. But in the case of a herbaceous perennial that blooms for about two weeks, an average bloom time doesn't help me very much if I am planning a tight succession of blooms and am coordinating perhaps a dozen other plants for the same time slot. So each year, as various plants bloom in my trial garden, I take photographs and jot down a few quick notes on the weather and how long the blooms last.

In this experimental plot, I'm not concerned with creating complementary or contrasting combinations of color and texture or sequence of bloom, as I would be if this were a perennial border. Here, I can plant *Geranium sanguineum* var. *prostratum* right next to *Eryngium giganteum*, or those dozen veronicas side by side in neat little squares. And while space is often limited in established perennial borders for such plants as self-sown *Brunnera macrophylla* and *Campanula carpatica*, or for the inevitable by-products of periodic division, all of these go into my trial garden by the river. I've also found this garden extremely useful for propagating expensive or hard-to-locate items such as *Astrantia* 'Margery Fish', which sells for more than \$5 per plant.

For gardeners in the North or Far South, where a good number of plants are questionably hardy, a trial garden is also a good place to test the hardiness of prospective plants for the garden. Then you can see for yourself if the zone ratings in the catalogues can be pushed a bit. This year, for example, I've planted the ever-useful *Aster* × *frikartii* in hopes that it will survive the winter in Zone 4 if it is mulched. I've already had success with unmulched *Sidalcea malviflora*, usually listed as hardy to Zone 5.

Except for an occasional meandering *Viola cornuta* intermingled with self-sown *Brunnera macrophylla* and campanulas, my trial garden is planted in rows and blocks of single species and varieties. This "design" allows me to get plants in the ground as quickly and efficiently as possible, and has turned out to be the most practical configuration for weeding and for digging up plants for other gardens.

This arrangement also makes keeping track of the plants much easier.

Without clever combinations of textures and colors, this garden will never look spectacular. A four-foot square of newly divided *Geranium* 'Johnson's Blue' is not prime material for the cover of a glossy gardening magazine. But paradoxically, I have found that this prosaic arrangement stimulates my design instincts as well as my appreciation for each plant's unique qualities. Without the support of a neighboring plant with contrasting foliage or complementary colors, each plant has to stand on its own—rather like the specimens in a botanic garden, where you can concentrate on the form and growth habit of individual plants while building up your plant vocabulary.

Many gardeners I know don't care for the botanic garden approach; they'd much rather see herbaceous plants, trees and shrubs in more aesthetic garden settings. Many of these same people are satisfied to "oooh and aaah" their way through a garden and snap a few fuzzy photographs, without ever noting the elements—including texture, color and form—that go into creating the scene they like so much.

Each year my garden by the river is full of surprises—unexpected combinations I never would have planned for. Last fall, for example, motivated more by curiosity than by any long-standing, unfulfilled desire, I planted half a dozen specimens of *Centaurea hypoleuca* 'John Coutts'. This spring, the blossoms appeared—a kind of hot, bluish-pink, and not all that exciting. But a few rows away, the rather short, violet-blue *Iris sibirica* 'Perry's Pygmae' was in bloom, and the combination of the blossoms was definitely worthwhile. By the end of the summer, I have usually noted about two dozen new seasonal combinations that will become part of my design vocabulary.

This fall, when the ducks are drifting along the river and the tall grasses are withering to yellow and gold, maybe I'll give away that row of *Stachys byzantina* and plant some new selections—things like *Artemisia* 'Valerie Finnis', *Iris pumila* 'Commencement' (a very early white dwarf with spotted, yellow falls) and *Amsonia tabernaemontana* (a willowy, two-foot, pale blue flower)—just to guarantee a few surprises next year. ● —Margaret Hensel

Margaret Hensel is a landscape designer and writer living in western Massachusetts.



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"THE photograph of the family group that appears at the left was taken in 1914 by my father, Hans Heistad, at the Weatherend estate in Rockport, Maine. (I am the little girl behind the dog!). My father worked as the landscape architect at Weatherend over a period of several years, designing and building its extensive gardens, and then creating lawn furniture to fit within his circular, stone-wall 'sitting rooms.'

"He was a man who had an unusual understanding of combining natural elements — wood and stone — in his work, and that's probably why so many examples of his designs have survived so gracefully to the present day. You can see his craft at the Camden Hills State Park and the Bok Amphitheatre in Camden..

"As I sat there today, on a reproduction of the same furniture that I was seated on in 1914, I felt surrounded by the beauty that my father had created — and I thought, too, of how proud he would have been to know that he had inspired a young Maine craftsman to continue making such fine furniture. I know he would have been thrilled to see two of his great-grandchildren sitting on Weatherend furniture at the Statue of Liberty celebration on July 4, 1986 — as an emigrant, he was forever grateful to The Lady! What a tribute to my father — and a big Congratulations to Weatherend!"

Gudrun Heistad Kononen

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