

American Horticulturist

February 1992

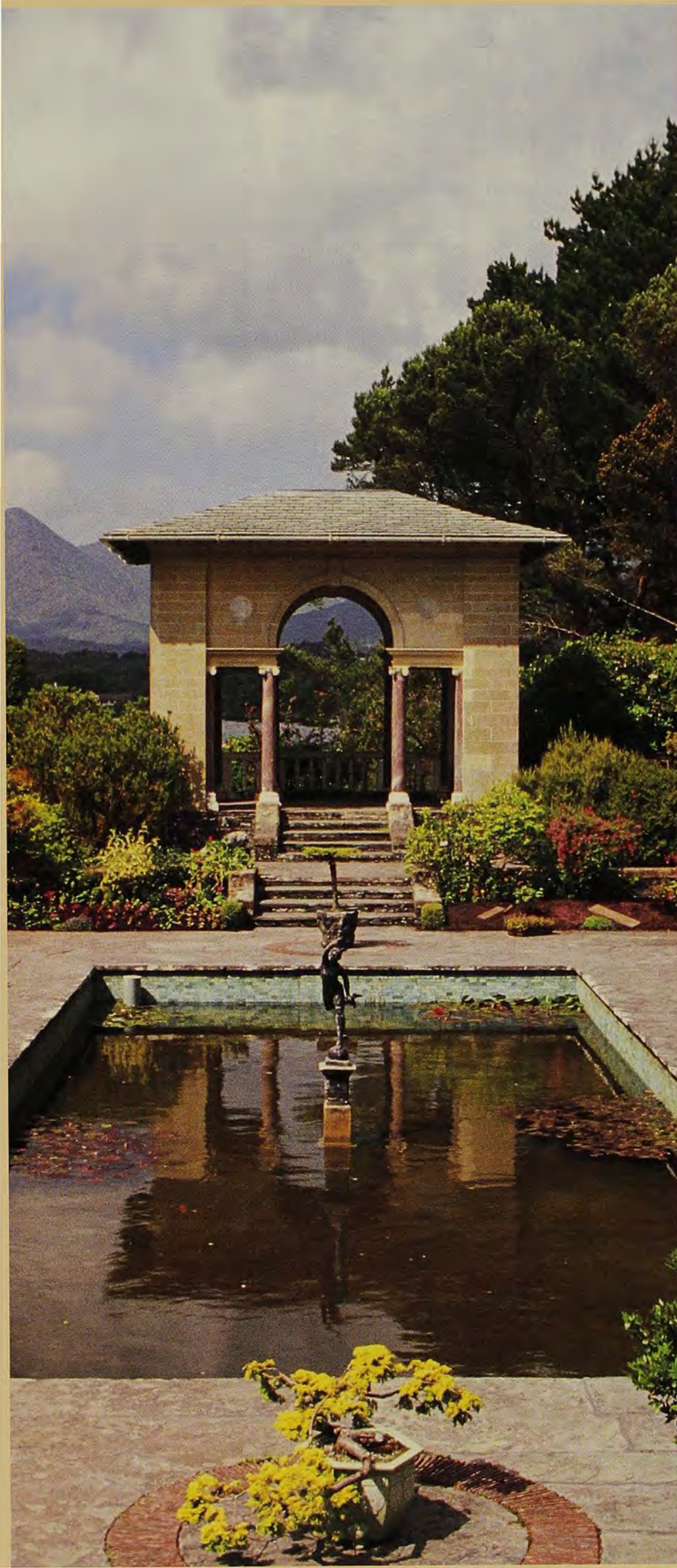
A Publication of the American Horticultural Society

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THE BEST CACTI, HOLLIES, AND PRIMROSES
CREATING A GARDEN JOURNAL
A VISIT WITH PLANTSWOMAN POLLY HILL





STUDY TOURS

TRAVEL/STUDY TRIPS FOR THE AHS GARDENER

APRIL 29-MAY 3, 1992 GARDENS OF BERMUDA

This once-in-a-lifetime program, offered in connection with the Bermuda National Trust, will feature numerous private historic homes and gardens, where our hosts will be inviting us for special luncheons and dinners. Included in the program will be Ramsbury, Mount Pleasant, Orange Valley, Aberfeldy, Orange Grove, and Greenfield, home of Lt. Col. Sir Jeffrey Astwood and Lady Astwood, whose garden contains specimens of almost every plant known to grow in Bermuda.

MAY 7-21, 1992 IRISH COUNTRYSIDE GARDENS AND THE ROYAL CHELSEA FLOWER SHOW

Join BBC celebrity David Wilson on an exploration of the finest public and private gardens in the Republic of Ireland including Glin Castle, Powerscourt Gardens, Lismore Castle Gardens, and a side trip to subtropical Innacullin Garinish Island. The program concludes in London for Members Day at the Royal Chelsea Flower Show.

JUNE 18-27, 1992 GARDENS OF THE COLORADO ROCKIES AND THE GRAND TETONS

The Denver Botanical Garden's former director, Dr. William Gambill, and its senior horticultural advisor, Andrew Pierce, will lead a most unusual program that begins in Denver, Colorado, and concludes in Jackson, Wyoming. The itinerary includes private gardens, the Colorado Rockies National Park, Dinosaur National Park, the Grand Teton National Park, Yellowstone National Park, and a most exciting float trip on the Snake River.

JULY 12-21, 1992 SUMMER GARDENS ALONG THE OHIO

A steambot voyage on board the magnificent *Mississippi Queen* along the Ohio River from Cincinnati to Pittsburgh. We are indebted to AHS members and friends who have opened their homes, gardens, and clubs to us. And what a splendid collage of gardens they are, ranging from the unique collections of trees and shrubs of Mr. and Mrs. Morse Johnson in Cincinnati to the artful use of native plants of Mr. and Mrs. Arthur Motch in New Richmond to the English gardens of J. Judson Brooks in Seickley. Leading this program for AHS will be Mrs. Harry Van de Kamp of Paso Robles, California, a former AHS Board Member.

AUGUST 8-19, 1992 GARDENS OF FRANCE

A most unusual program created around the great private gardens of France located in the regions of Brittany and Normandy. Here you will find gardens ranging in style from Prince Wolkonsky's Mediterranean terraces in Keraldo to Princess Sturzda's wonderful use of ground covers at Le Vestervil. Each garden you will find different, yet throughout the incomparable French style has been used to provide an accommodating home for many rare species of trees, plants, and shrubs. Leading this program will be long-time AHS Board Member Richard Angino.

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Members and friends of AHS will take an unusual side trip to subtropical Innacullin Garinish Island during a May trip to Ireland and the Chelsea Flower Show.

American Horticulturist

Volume 71, Number 2

February 1992

ARTICLES

Proven Performers

For the fourth year, we asked national plant societies to name their favorites.

Cacti

by Peg Spaete 13

Hollies

by Fred Ebersole 16

Primroses

by Cyrus Happy 20

Jujube, the Chinese Date

by Lee Reich 25

Plant hunters were touting this fruit eighty years ago, but Americans have yet to catch on.

Constructing and Keeping a Garden Journal

by Jean Starr 28

How to keep that New Year's resolution to get your gardening more organized.

Polly Hill: An Unerring Eye

by Marty Carlock 34

She has fifty woody cultivars on the market, thirty more in the wings. Experts praise them all.

DEPARTMENTS

Commentary 4

Letters 5

Offshoots: *A new column of personal essays* 9

Book Reviews 11

Classifieds 42

Pronunciations 46



FEBRUARY'S COVER

Photographed by Cyrus Happy

Peter Klein operated a small nursery in Tacoma, Washington, until his death in 1957. Talented at growing and crossing difficult plants, he was generous in teaching these skills to other gardeners. According to an article in the fiftieth anniversary issue of *Primroses*, the quarterly publication of the American Primrose Society, he was not especially happy with the seedlings that resulted from a packet of auricula seed he purchased from England around 1950, but crossed the best, a gray and a green, to produce this green-edged show auricula 'Peter Klein'. More favorite plants of the society are described in an article beginning on page 20.

American Horticultural Society

The American Horticultural Society seeks to promote and recognize excellence in horticulture across America.

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COMMENTARY

At a recent Board of Directors meeting, we reaffirmed the importance of the role that the AHS plays in educating new gardeners, whether they are preschoolers or retired seniors. We perform this function through such activities as publishing our magazine, sponsoring lecture series (such as the AmeriFlora '92 speaker program beginning in April in Columbus, Ohio), and answering telephone and written queries through our Gardeners' Information Service.

Last year we initiated a series of programs that will allow us to reach segments of the population that we haven't served in the past. Our Education Coordinator, Maureen Heffernan, is bringing children from urban communities around Washington, D.C., to River Farm to learn about plants and gardening. (You may have seen some of them on our Annual Appeal greeting card.) Also, she is planning a program through which grade school teachers, as well as students, will participate in our Intern Program. These progressive steps and fresh new approaches to opportunities have encouraged the Board to increase the Society's educational activities.

These new gardeners present the AHS with two primary challenges. First, they hold a secret for us. Why do they choose to garden? We are seeking ways to find out if there are any patterns to the many answers to this question. This information will enable both the education and horticulture communities to focus their resources more effectively on teaching and promoting gardening to the nongardener. Second, because environmental responsibility is a key part of the Society's mission, we have a special relationship with new gardeners, who will need to understand the ecological role gardening plays in their home area. Our Program Director, Joe Keyser, will broaden our compost initiative in the next year, building a nationwide program to teach composting and solid waste recycling in a garden context to gardeners and horticulturists throughout America.

These are some of the ways your Society is responding to the increasing interest in plants and horticulture, the need for education among the public, and the protection of the environment against excessive human intervention.

Finally, we at the AHS hope to create relationships over the next several years with other countries in the Western hemisphere, in order both to learn what they are doing and to introduce some of our concepts to them. Developing countries in Latin America have rich experiences with plants over many generations, and challenging problems resulting from both climatic and economic circumstances.

I close this "Commentary" with a special note. After three years of loyal and dedicated service, our Executive Director, Frank Robinson, has left us to join the Lewis Ginter Botanical Garden, in Richmond, Virginia, as its executive director. His leadership brought to the Society a sense of order, balance, and respect for nature. He is a fine horticulturist and a savvy administrator. We wish him a fond farewell.

George C. Ball Jr., President, AHS





LETTERS

Fernwood Memories

I would like to compliment you on a very fine publication. I was especially interested in June Hicks's article, "A Legacy of Ferns," in the August edition as I was a student at Andrews University in Berrien Springs, Michigan, in the early 1960s. There was not a month that went by during my four years there that I did not drive the ten or so miles to see Kay and Walter Boydston. From the very first visit I was made to feel like family and we would spend hours sharing plant photographs, pulling weeds, making plans for new planting areas, and discussing where to place the more difficult ferns so they would do their very best. I always looked forward to the first visit to Fernwood after returning from a summer of hard work.

It was lovely people like Walter and Kay who contributed so much to my interest in plants that continues to this day. It is very comforting to know that Fernwood, which resulted from the Boydstons' countless hours of dedication to making it a special place for so many interesting plants, has not been allowed to disintegrate with their passing but has become a lasting memorial to a very lovely lady who loved plants, people, and the arts.

I certainly look forward to a trip to Michigan again and you can be sure Fernwood will be on my list of places to visit, although it will seem very strange indeed to have to pay admission.

*Del L. Knowlton
Langley, British Columbia*

Brugmansia Fan

I certainly enjoyed Tovah Martin's "A Little Night Music" (August). I bought a *Brugmansia* thinking it was *Datura* and planted it in my garden, where it has grown for eight years. It dies back to the ground each year, but the roots have survived temperatures of zero to 10 below several times. It is now six feet tall and blooming beautifully.

*Larry Gulley
Sparta, Georgia*

Deviled by Angel's-Trumpet

I was somewhat shocked to see the angel's-trumpet (*Brugmansia* spp.) featured in an article on suggestions for plants to be planted near enough windows for the scent to waft through the house!

The author says the "essence has no obvious analogy." I remembered its description in the *AMA Handbook of Poisonous and Injurious Plants* as "offensive." Other authors on poisonous plants describe it as "repulsive" and "nauseating." Mitchell and Rook in *Botanical Dermatology* cite Morton (1969, "Some Ornamental Plants Excreting Respiratory Irritants") as saying "systemic symptoms can occur from proximity to the plant." All authors of the poisonous plants references I have at hand caution against handling any part of the plant due to the potent toxic alkaloids abundant in this genus.

As for *Cestrum nocturnum*, Morton ("Ornamental Plants with Poisonous Properties II") states that "respiratory symptoms can occur from proximity to the plant." Perhaps the author was correct in her statement that the nocturnal flowers are "sufficiently potent to take any mortal's breath away."

From close experience with the angel's-trumpet, I can vouch for its ability to cause headache, nausea, and dizziness. I take it to poisonous plants lectures I give in the community and have recently had to start stashing it in the trunk as even a twenty-minute ride with this plant in the car makes me very ill. I have since found that this is a common reaction. Some people have even thought they had a long-term flu or chronic fatigue syndrome until the offending plant was removed from their yard near a window.

If I had ever wondered if this was psychosomatic, I had a chance to prove this wrong two years ago when taking a final exam in a botany class where assorted fresh plant specimens were placed around the classroom. Since I was taking the lengthy written portion first, I did not even look at the lab samples. Soon I was over-

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come with nausea, headache, and an unexplained rapid pulse. As I turned to leave the room, I noted that the angel's-trumpet plant had been placed directly behind my seat on the lab table.

While this was perhaps one of the most beautifully written articles I have ever seen, I would hope that you print a warning to your readers that planting these beautiful plants too near a window could make some people in the household seriously ill.

Shirley B. Gerum
Haleiwa, Hawaii

Tovah Martin responds:

I am very grateful to Ms. Gerum for bringing the issue of plant allergies to the attention of American Horticulturist's readers. And, from her description of symptoms, it does seem that Ms. Gerum must certainly be suffering from an extreme allergic reaction to Brugmansia.

Although allergies to certain plants (such as poison ivy, etc.) are common, virtually anyone can have an allergic reaction to any plant. It is just one of the dangers inherent in being a gardener. According to the experts that I consulted, an allergy to Brugmansia or Datura is by no means common.

It is little wonder that Ms. Gerum finds the scent of Brugmansia's blossoms to be distasteful considering the severity of her allergic reaction. But apparently I am not alone in finding the fragrance pleasant. Stephen Lacey described Brugmansia as "powerfully and sweetly scented" in Scent in Your Garden and Rosemary Verey remarked that "the scent is intoxicating—reminiscent of narcissus and lilies" in The Scented Garden. In fact, when Kenneth Lampe called the scent offensive in the AMA Handbook of Poisonous and Injurious Plants, he was referring to the foliar aroma, not the floral scent.

In our greenhouse we have a huge tree of Brugmansia that produces dozens of blossoms with great regularity. Hundreds, probably thousands, of customers have witnessed the show, and to our knowledge, no one has suffered unpleasant aftereffects. Brugmansia has been used as a house plant since the nineteenth century.

*I spoke to Melvin Shemluck, a specialist in the nightshade family. Dr. Shemluck had heard of a legend cautioning against sleeping under a Brugmansia in full bloom. But he knew of no actual instance of harm from mere proximity to the plant. Ms. Gerum quotes Julia Morton, the ethnobotanical compiler of folk plant usage. Morton wrote in Atlas of Medicinal Plants of Middle America concerning *B. × candida* that "flowers are placed beneath one's pillow at night to induce sound sleep." Morton does*

document tales that "sleeping in a hammock near a tree in full bloom has caused such deep slumber that the subject was awakened only by dousing with water. . . ." I found that the symptoms that Ms. Gerum described—nausea, headache, dizziness, etc.—are mentioned in texts solely in connection with cases of ingestion. There is no doubt about it, this plant is very poisonous, and I did warn readers against eating any part of the plant.

*I could find no reference to a skin reaction caused by Brugmansia. I have personally handled the plant daily with no problems and my coworkers at the greenhouse have never complained of a rash associated with this plant. I checked several texts on contact dermatology and could not find Datura or Brugmansia listed. In fact, Morton wrote of *B. × candida*, "the leaves are bound to the head as a sedative to relieve headache." And, in the case of *Datura metel*, "a poultice of the mashed leaves was applied to the soles of the feet to draw fever out of a patient."*

*Ms. Gerum briefly mentioned *Cestrum nocturnum*. Apparently, allergy to this plant is more common. When I questioned the elder members of our family about their experience with reactions to *Cestrum*, they could recall two instances in their sixty years of leading tours through our greenhouses when customers reacted with dizziness or sneezing when *Cestrum* was in blossom. And, of course, eating this relative of Brugmansia can prove lethal for anyone—especially a child. In regard to contact dermatology, Morton reports that in Cuba, a leaf decoction of *Cestrum nocturnum* is "used as a lotion for skin eruptions."*

Plant allergies are a serious matter—especially for those who suffer from them. Any plant may induce an allergic reaction in someone. But the majority of us can grow Brugmansia without fear. Furthermore, fragrance is a personal matter. As I mention in the introduction of The Essence of Paradise, from which the American Horticulturist article was excerpted, scents that I find pleasant might be fetid to another nose. Every nose is opinionated.

Extension: Not All Is Bleak

Art Ode ("Whatever Happened to the County Agent," October) has written a wonderful tribute to Cooperative Extension's commitment to "bringing the university to the people." With its emphasis on county-level educational programs linked to university expertise and research, our Extension system has been a uniquely American invention. It has been effective

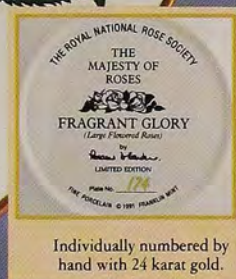


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and strong because it has stayed close to the people, listened to their needs and responded to them. But now, as Mr. Ode points out, that grass roots legacy is in jeopardy in some parts of the country.

It is appropriate to be concerned about the fiscal stresses that have forced some states to consolidate county offices into regional extension centers. In many places these fiscal problems and resulting budget cuts are not directed at Extension alone, but are the result of state budget deficits that have affected support for higher education across the board. However, the picture for Extension education is not entirely a bleak one.

In Wisconsin, the University of Wisconsin-Extension and Cooperative Extension programs remain strong, diversified, innovative, and forward looking. We have strong relationships with our county partners, the Extension Education Committees of seventy-two county boards. Based on advice from 1,849 citizens serving on Strategic Planning Advisory Committees, we have shifted some of our priorities to emphasize education on three major issues facing our society: youth and families at risk, the quality of water, and management of wastes. But we are still strongly committed to our traditional high-priority programs. Our county structure is intact. The budget for the federal partner, Extension Service/USDA, has increased by 4 percent in each of the last two years, and funding for national initiatives such as youth-at-risk, food safety, and water quality has increased by 8½ percent in fiscal year 1992. The state of Wisconsin's commitment to higher education has resulted in stable funding for Extension. In addition, UW-Extension plays critical educational roles in new state projects—in recycling, hazardous waste management, agricultural technology assessment, sustainable agriculture, and nutrient and pest management—that have resulted in increased state support.

Our vision for Cooperative Extension in Wisconsin is to be true to a commitment to excellence in our programs. This excellence is possible only if we are actively responsive to people's needs; if we continue to change with the times; if we employ the best educators; and if we use and adapt the best new communication technology for reaching people with educational programs. But the key to excellence—and to retaining the support of the people we serve—continues to be our "front line," the county Extension office and our county agents.

Ayse Somersan
Dean, UW-Extension
Madison, Wisconsin

Chimeras and Beech Leaves

As a lifetime gardener, I write to tell you that I greatly enjoy *American Horticulturist*, especially on cold, nongardening days like today. In particular, I really enjoyed Robert Geneve's article on chimeras (December), and have included much information from his article in a book that I am writing on biological terminology.

I note in the December "Letters" column the warning of Ron Carrow and his botany instructor about identifying plants from photographs. However, I still wonder about the branch on page 39 of that issue. Is it really *Fagus grandifolia*? It does not look like the branch of this tree outside my study window in the warm season. The tree in your picture does not have long, pointed buds and leaves with large teeth.

Edward M. Barrows
Washington, D.C.



Nyssa sylvatica.

Not surprisingly, we heard from a number of readers on this. Experts identified the leaves as those of *Nyssa sylvatica*, commonly called sour gum or black gum.

Correction

In our October article on Louisa Yeomans King, two dates were incorrect. The Garden Club of Michigan was founded in 1911, and Mrs. King was asked to be garden advisor to Montgomery Ward in 1936.

American Horticulturist welcomes letters concerning the magazine or activities of the American Horticultural Society. Letters may be edited for accuracy, clarity, or length. In writing to us, please include a daytime phone number.



OFFSHOOTS



BILL FIRESTONE

Land, It's the Only Thing Worth Dying For

By Katherine Grace Endicott

Breathes there a soul, either South or North, who does not love *Gone With the Wind*? Like everyone else, I'm fascinated by both the book and the movie version. So I confess to more than a little curiosity when I learned that Margaret Mitchell's heirs gave permission for a sequel to a Southern historical novelist named Alexandra Ripley. I suppose most people wondered whether Scarlett would lure Rhett back, but the way I figured it, there wouldn't be much of a plot if she didn't get him back at least temporarily. So I worried about other details—like what Ms. Ripley would do with the landscape at Tara.

If you'll recall the Mitchell book, Gerald O'Hara won a burnt-down plantation in a card game. It was in a wilderness area in the middle of Georgia that had been ceded by the Cherokees only twelve years earlier. The Irish immigrant establishes a successful cotton plantation complete with a whitewashed brick house and calls his plantation Tara.

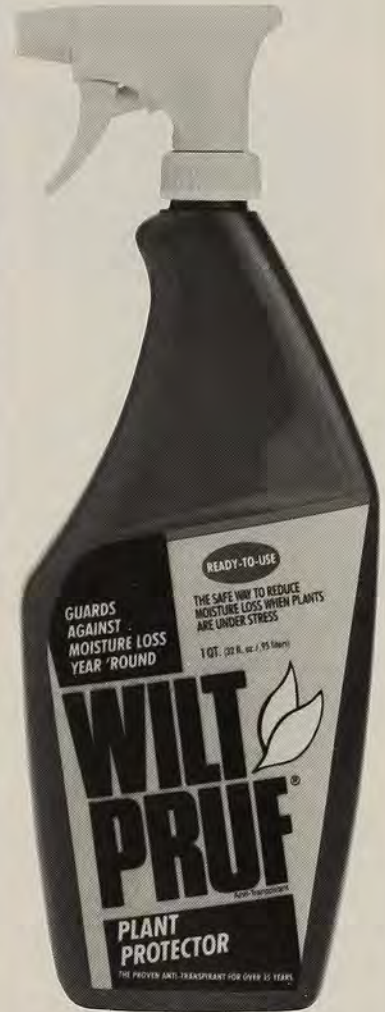
When Gerald O'Hara brings his young bride, Ellen, to Tara from the more sophis-

ticated Savannah she finds the rolling red hills and gaunt pines wild and untamed after the long flat vistas of sandy land studded with palmetto and palm. She makes Tara more gracious by planting wisteria to tumble over the veranda and by growing pink crape myrtle bushes by the front door. She also adds white-blossomed magnolias, cape jessamine, and beds of zinnias. As a final touch she stations a succession of young boys by the front steps to shoo her husband's beloved turkeys and geese to the back yard.

To my mind Tara is basically a country house. The ornamental garden, while charming, is definitely secondary to the vegetable garden and the fruit orchard that sustain a sizeable household. The author indicates that Tara is part of the young and lusty rural South. Cotton was its heartbeat. Its wealth, newly won, came from the curving furrows and acres of fleecy white.

Now consider how Hollywood recreated Tara on screen. David Selznick bought the movie rights to *Gone With the Wind* in 1936. By that time it was already one of America's best-loved novels; over the years it has sold more than 25 million copies. Selznick decided to make Tara the central figure in the movie. Several times he

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repeats his theme that land is the only thing that matters; it is the only thing worth working and dying for; it is the only thing that lasts. At the end of the film, Scarlett loses Rhett, but she will return to Tara.

Mitchell also has Scarlett thinking of Tara at the novel's end. She remembers its cape jessamine and dark cedars, but the emphasis is on her strength: "The spirit of her people who would not know defeat." Selznick began filming without a Scarlett. He did, however, have Tara.

The story of how Tara's landscape was created for film is related in *Landscaping the American Dream* by James J. Yoch (Abrams/Saga Press, 1989). The book is about the gardens and film sets of Florence Yoch, a landscape architect who worked from about 1915 to 1965 on various landscapes from Pasadena to Carmel. In 1934, Yoch designed the landscape of Selznick's Beverly Hills home—a gracious suburban design more comfortable than grand.

Selznick gave Yoch a sizeable budget for Tara and much smaller sums for landscaping Twelve Oaks and Rhett's Atlanta house. Yoch traveled to Georgia where she studied plants at a plantation like Tara. The trick, as she saw it, was to make California trees, shrubs, and vines look like they came from Georgia. Toward that end, Metro-Goldwyn-Mayer's property department fabricated hundreds of dogwood blossoms that were later tied to greenery. That same department made venerable oaks out of telephone poles, chicken wire, and plaster. Particular attention was paid to the positioning of oak leaves so they could cast the appropriate shadows on the set.

The film had several directors. One of them, George Cukor, asked Yoch what plants would show that Scarlett's mother, Ellen, had come from a cultured family on the coast. She replied: 'Maréchal Niel' roses and cape jessamine. Now considering that 'Maréchal Niel' is a rather floppy yellow rose that was introduced in England at the close of the Civil War—about the time Ellen O'Hara dies—this may seem a rather eccentric answer. But the name has an elegant French sound to it that surely must have satisfied Cukor.

Finally, the plantation took form. Two real magnolia trees were set in position as were various bushes and vines that gave Tara a look of elegant country life. Yoch balanced masses of greenery rather than working with simple symmetry. The result was impressive. The audience cannot help but admire the floral splendor.

In the opening shot, Scarlett sits on Tara's veranda holding several yellow daffodils. Two peacocks strut on the front lawn. Great balls of fire, peacocks? In the book,

Gerald O'Hara raised turkeys. There's a sizeable difference between a turkey and a peacock. But never mind, I suspect that Hollywood was afraid the nongardening world might not notice the refined air that daffodils and magnolia blossoms lent to Tara. After all, the film's white-columned version of Tara was at considerable odds with Margaret Mitchell's clumsy, sprawling rural estate of the same name.

Now we have still another Tara to return to in Ripley's *Scarlett*—one more glimpse of a lost dream. Sure enough, Ripley begins her novel with the line, "This will be over soon, and then I can go home to Tara." In fact she expresses that same sentiment twice on the first page and again on the next page and two pages later. As I read, I began to fear the longing for Tara was all we were going to get of Tara. And considering that this is an 823-page book, it is.

Scarlett imagines Tara's "glistening green leaves of cape jasmine bushes studded with perfect waxen white blossoms." But when she arrives, Tara is covered by vines—ugly cords hung with dead leaves. Oh fiddle-dee-dee. I had once read that Ripley's bathroom in her Virginia farmhouse was stacked with flats of sprouting heliotrope and gardening literature. Surely she could do more with our beloved Tara.

Ripley does write convincingly about the fields behind Tara. "They were weedless, newly harrowed, and there was a faint, rich smell of the manure tilled in to prepare them for the next planting. The red earth looked warm and fertile, and she relaxed. This was the heart and soul of Tara." Later Ripley has Scarlett think, "Funny how in the city manure was so smelly and messy, while in the country it was a farmer's perfume." The writer obviously has a feel for the earth. But alas, the revived Scarlett, barely thirty-seven pages into the novel, thinks, "Tara's not home for me any more, no matter how much I love it. It's time for me to go."

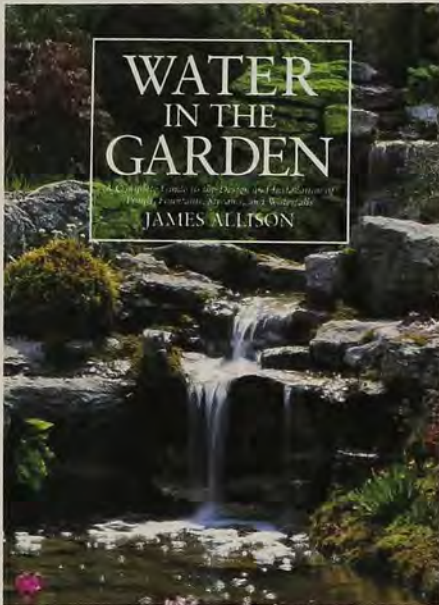
You can guess where she will go: after Rhett. That's about it for Tara except for the longing, which persists as a subplot.

Those interested in the landscape of Tara will have to wait until the miniseries version of *Scarlett*. Better still, I read recently that Betty Talmadge, ex-wife of former senator Herman E. Talmadge, bought the plywood facade of Tara that was built on MGM's back lot. There is talk of using it in a 600-acre "Gone With the Wind" theme park twenty miles south of Atlanta. One way or another we're bound to get another glimpse of Tara. Frankly, I still give a damn.

Katherine Grace Endicott is a garden columnist for the San Francisco Chronicle.



BOOK REVIEWS



Water in the Garden
James Allison. Bulfinch Press, Boston, 1991. 160 pages. Color photographs and drawings. Publisher's price, hardcover: \$29.95. AHS member price: \$25.50.

Here is an up-to-date book of particular interest to anyone considering a pond for the garden. It covers pond building from the planning stage to the final landscaping and stocking with fish.

There is an extensive chapter on pool construction methods, including liner,

preformed, concrete, clay, and brick ponds, and combinations of these. The advantages and disadvantages of each are covered as are options of constructing streams, fountains, and waterfalls. These are accompanied by many colored figures and photographs to illustrate details and give examples of the final results.

This book originated in England, which is made obvious by the British spellings (tonne, tyre, odour, colour, centre, etc.). Consequently there is a bias toward the plants, fish, and pond equipment that are found there. Fortunately, the author has consulted experts in America to include pertinent items available and applicable to U.S. and Canadian gardeners. He helpfully translates most metric units into our cumbersome inches, feet, and gallons, but does leave the reader up in the air on some of the more obscure conversions.

Under the chapter on water quality the author describes methods by which the pond water can be kept clear naturally by proper pond design and plantings. Alternatively, he also describes the design and use of water filters necessary where the water is excessively rich in nutrients (a situation becoming increasingly common in the United States) or where the pondkeeper introduces more fish than the pond can naturally sustain. The book also contains a good section on water chemistry, easily understood by the uninitiated.

The chapter on water garden plants is extensive, with many colored illustrations, but again with emphasis on hardy plants grown in England. The advantage for American readers is an introduction to many fine aquatic plants not yet readily available on this side of the ocean. With the ongoing cooperative efforts of the commercial members of the International Water Lily Society, this disparity may soon be rectified.

I have very few criticisms of this book, but by searching diligently one can always find a few items to carp about. Aside from a few minor editorial oversights (some page references misplaced, the method of testing for nitrite not covered, gallons

sometimes not clearly defined as U.S. or British measure), the size of planting containers could be more clearly discussed. The author states that for large plants the largest containers possible should be used but he illustrates the use of an eight-inch basket for large water lilies. Since some of these plants have a normal leaf spread of thirty square feet, a planting container in excess of two feet in diameter is none too large. (Water gardening books printed at the turn of the century for estate gardens recommend containers four feet on a side; water lilies haven't changed, but garden practices have.)

Aside from these small caveats, I highly recommend this book for anyone contemplating building a garden pond.

—Walter Pagels

Walter Pagels is the founding president of the International Water Lily Society.

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STORY BY PEG SPAETE

Cacti

FROM SOUTH AMERICA TO Canada, cacti grow in hot deserts, coastal plains, agate beds, salt flats, and high mountain ranges. To adapt to their various habitats, many of which are very harsh, these succulent plants of the Cactaceae have developed mechanisms to store water and nutrients—sometimes for months at a time—in their stems or tuberous roots. There are over 150 genera and several thousand species, forms, and varieties of cacti.

The spines of cacti, which appear in several different colors—white, gold, rust, black, gray—serve to reflect intense sunlight and discourage animals from eating them. Spines vary in shape, and can be appressed (pressed flat against the cactus), curved, straight, hooked, short, long, in combinations of these, or nonexistent. Dense hair like that on *Cephalocereus senilis* or the wool on *Parodia schwebsiana* or the powdery cover on *Stenocereus beneckeii* also help to protect the plant body. All of these variations provide the cactus collector with many attractive designs to study and enjoy.

Flowers appear in various shades of red, yellow, orange, white, magenta, and green, but no blue. Sizes and shapes of the flowers vary according to species. Many *Mammillaria* species have flowers one-half inch wide; *Epiphyllum* hybrids can have flowers eight to nine inches across. Blooming periods are at different times as well. For instance, some *Parodia* and *Notocactus* species will begin blooming in February and March; most other cacti bloom in the

spring and summer. However, *Neoporteria* species are fall bloomers, and the *Schlumbergera* bloom in late fall and early winter. Most are day bloomers, although a few genera such as *Selenicereus* are night bloomers. Some flowers, like those of the genus *Astrophytum*, develop at the crown of the plant; others, like the small-flowering *Mammillaria* species, form a halo around the body; and others develop laterally, as on *Cleistocactus* species. There are even some with scented flowers, such as *Mammillaria surculosa* (lemon), *Echinopsis leucantha* (violet), and *Discocactus alteolens* (pineapple).

The difference between cacti and other succulents is that cacti stems have areoles, which are like small bristle pads from which spines emerge. Many other succulents, such as *Euphorbia* and *Pachypodium* species, have armature or spinelike emergences that protrude from the epidermis, but since there are no areoles, they are not cacti. There are many more succulents than cacti.

The following plants combine ease of culture, willingness to flower, a variety of flower colors and sizes, wide availability, and beauty.

Gymnocalycium species are prolific bloomers. Most of them produce flowers in shades of white, but there are some with shades of pink, red, peach, and yellow. *G. friedrichii* has long-tubed, pretty pink flowers that enhance the red- and green-dappled body that is responsible for its common name, the plaid cactus. It has another common name, chin cactus, because of its rounded tubercles (conical protuberances) that look like numerous chins. Like most *Gymnocalycium* species, it performs very well in indirect sunlight. Most forms offset within three to four years, so starting more plants is easy. Raising them from seed presents no problems either.

The genus *Notocactus* provides many fine blooming species with handsomely spined, spherical bodies. Most of the flowers are a satiny yellow in various sizes; however, there are a few peach-colored species and a purple one (*N. uebelmannianus*). The regions in Argentina, Brazil, and Uruguay where *Notocactus* species are found have more rainfall than most cactus habitats, so they can use more water than recommended for container-grown cacti, and will do with a shorter rest period in winter. Two months is fine.

N. magnificus has two forms. The white-

GIVE CACTI GOOD LIGHT, WINTER REST, EVENING-TIME ATTENTION

Most cacti will grow and bloom well if you remember that they are living things out of their habitat and need a good diet and sufficient rest. Generally speaking, they will grow and bloom in the spring and summer, some into fall, then rest during the coldest months. By resting (being dormant), they will have the strength to add new growth and bloom well when the warmer weather begins.

To rest, cacti should have a location with good light, good air circulation, cooler temperatures (40 to 50 degrees), and dry soil. If they are too warm, they will continue to grow and this lack of rest will be evident in poor growth and little bloom.

After cacti have rested for two to three months, begin watering the plants on the soil surface, not overhead or from the bottom. For most cacti, begin a feeding program in April; feed every other time you water. Since the cacti are dry when you water and fertilize, feed only one-quarter to one-half strength with either a balanced fertilizer (20-20-20) or with a 15-30-15.

It is important not to feed for two to three weeks after a plant has bloomed. The plant needs this rest since it is exhausted from producing flowers. Trace elements are important for cacti, so either add them to the fertilizer or purchase one with trace elements such as boron, magnesium, and calcium. Blotchy scars on cacti may indicate a lack of trace elements.

The stomata of cacti open in the evening. This is another mechanism that helps cacti and succulents survive in their native habitats. For this reason, the plants are better able to absorb water, fertilizer, and pesticides that are applied in the late afternoon or evening. This makes them perfect plants for people who are gone from home during the day.

The type and color of their planting containers also affect how often cacti should be watered. Plastic pots will obviously hold moisture longer than clay pots. Dark pots will absorb heat, so when the sun shines directly on them and the soil is wet, the root system can be injured. This is an important concern when growing plants on the windowsill—light-colored containers should be used.

Most cacti have shallow root systems to absorb the mist and



Echinocereus pectinatus var. *rubrispinus*.

moisture that appear near the surface of the soil. A deep pot is not necessary for cacti with fibrous roots. A few genera, such as *Sulcorebutia* and *Turbinicarpus*, have a thick, long root system and consequently require deeper containers and less frequent watering.

When sowing cactus seeds, spread them evenly over a moist, sterilized soil mixture, then press them gently into the soil, but don't bury them. The seeds need light to germinate. Cover the container with a clear plastic wrap and place it in a well-lighted, warm area (about 72 degrees). When watering, water from the bottom to avoid disturbing the seed. Once the seedlings are established and the plastic is removed, watering can be done on the surface.

When taking cuttings or offsets from cacti, allow the ends to callus over before placing them in a soil mixture to take root. Callusing prevents rot. Remove offsets and cuttings during the growing period of the plant. Cut the

offset with a sharp knife dipped in alcohol; twisting it off may pull out the core of the plant.

Cacti need a porous soil mixture that drains well. If the soil remains wet for a week after watering, then add some pumice or small smooth gravel or charcoal to aerate the soil mixture. Most potting soils break down within a year, so if plants are not repotted every year, the old mixture will no longer hold moisture and nutrients will be depleted. If plants are not repotted annually, it is especially important to have a regular watering and feeding program.

Many growers use a top dressing of #2 aquarium-sized gravel for a number of reasons. The most important is to keep the moisture away from the base of the plant to avoid rot. When potting up the plant, cover the root system completely with the soil, then add the top dressing up to the base of the plant. Then when you water, the water will quickly drain through the gravel and into the soil where the roots can absorb it. The top dressing also helps to support the plant.

When growing a grafted plant, place it in an area with good air circulation without direct sunlight and away from accidental misting or watering. Water and feed it according to the needs of the stock, not the scion.

—Peg Spaete

spined one will offset within two to four years. The bluish green form has distinct ribs with comblike spines; it grows solitary for several years before sending out offsets. Many *Notocactus* species are self-fertile, so it's easy to collect seed and start new ones.

Two forms of *Mammillaria zeilmanniana* are frequently referred to as blooming fool because of their halos of flowers that seem to last all summer. The three-

fourths-inch flowers on *M. zeilmanniana* are magenta and the flowers of *M. zeilmanniana* var. *albiflora* are a brilliant white. Both have dark green, oval-shaped bodies covered with short white and reddish brown spines and both cluster easily. Since this is the second largest genus in the cactus family, totaling over 170 species, there are many other flower colors and sizes. While the smaller-flowering *Mammillaria* species

have halolike blooms hovering around the body, the larger-flowering species such as *M. theresae* and *M. longiflora* have a less symmetrical display. Most are easy to grow from offsets or seed.

The genus *Neoporteria* has several species with dark to light green and purple to purple-black cylindrical bodies. Some, like *N. gerocephala*, are completely covered with spines. Others, like the short,

black-spined *N. napina*, are nearly bare. The dominant flower colors are magenta or soft creamy peach. *N. rapifera* has a purple body with black spines accenting the white woolly crown from which numerous magenta flowers emerge in the fall. This genus is easy to grow from seed or offsets.

The *Parodia* genus is one of the most diverse. Species come in a variety of flower colors, including shades of pink, red, orange, yellow, white, and combinations. Spines are colored rust, black, yellow, or white and can be straight, curved, hooked, appressed, or combined. The number of spines can be few or so many that the body is completely hidden, as with *P. catamarcensis*. The presence of wool on these species (for example, *P. schwebsiana* and *P. tafiensis*) is another spectacular characteristic. Some species, like *P. laui*, have ribs that spiral up the elongated globular body.

Most *Parodia* species are excellent bloomers, with flowers rising from the crown and lasting for days. Beginning as early as February, *P. mairanana* displays orange flowers unfolding from the brown woolly buds. These, added to its dark green body and white woolly areoles, give it a warm and earthy appearance. Most species cluster, providing offsets for starting new plants. They are also easy to raise from seed, but a little slow growing the first year.

The genus *Rebutia* boasts a variety of flower colors and colorful spines as well. *R. narvaecense* is a soft, white-spined species that produces a bouquet of long-lasting light pink flowers. Flower colors on other species include yellow, gold, magenta, white, and combinations; many flower in their second or third year. They are clustering plants and several species produce flowers that are self-fertile. *Rebutia* species also have soft skin, so it is important to provide good air circulation and to avoid long dry spells, a condition that invites mites. A light misting will help to discourage that pest.

Oreocereus hendriksonianus is a three-foot-tall columnar plant, draped with long, soft, white hairs. It sends out offsets from its base, which serve to frame the majestic sculpture. Red tubular flowers appear on the sides and amber-colored, straight, central spines emerge through the white hairs. The spines of *O. hendriksonianus* var. *densilanatus* are shorter and less conspicuous. Columnar cacti do not flower as early as the globular types.

Another beautiful columnar cactus is the

GRAFTING CACTI

Grafting is used to save a cactus that has become too weak to grow on its own roots, to host crests and other fasciated forms or plants without chlorophyll, to promote faster growth from seed to flowering stage, and to ensure the life of very rare, prone-to-rot cacti.

The flat graft is probably the most frequently used method for grafting cacti. Prepare the well-rooted stock by slicing off the top, leaving two to four inches of the stock (more if grafting a larger crest). Bevel the sides, since the center will retract as it dies. Prepare the scion by slicing off the bottom and beveling it. Carefully match the vascular rings in the center of the plants, or overlap the rings so there are at least two points of contact. Use a clean, sterile knife.

To hold the scion onto the stock, take a #12-gauge solid coated wire and cut it to reach from the pot base to the top of the plant plus a couple of extra inches to form a horizontal halo. Insert the straight end into the soil and allow the halo end to rest on top of the scion. Drape a piece of yarn with a small weight on each end over the wire halo to ensure light pressure to hold the two plants together. After three to four days, check to see if the union was successful. If not, repeat the procedure.



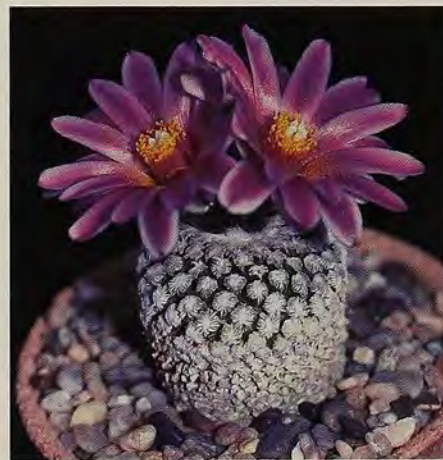
Aporocactus flagelliformis.

old man cactus (*Cephalocereus senilis*) with long, coarse, grayish white hair. The whitish wool-covered area (called the cephalium) is where the three-inch, yellow-white, night-blooming flowers develop. This species will reach a height of fifty feet in its natural habitat in Mexico. Most columnar cacti are easy to grow from seed.

A great basket specimen for a sunny location is the *Aporocactus flagelliformis*.



Parodia mairanana.



Turbinicarpus valdezianus.

The long, pendant stems, which can reach six feet in length, are covered with short yellow spines. These "tails"—which give the plant its common name of rat-tail cactus—grow quickly and root easily. The red trumpet flowers open in early summer. The intergeneric crosses between *Aporocactus* and *Epiphyllum*, which are called × *Aporophyllum* hybrids, provide a wider variety of flower colors. Use a light mix for

PHOTOS BY JOHN N. TRAGER

potting up these plants and during the growing season water them before they dry out completely.

Ephyllum hybrids are larger hanging plants that provide an array of magnificent blooms in the spring. There are also a few that bloom in the fall, such as the orange-flowering *E.* 'George's Favorite' and the yellow and white *E.* 'Vista Star'. These flat-stemmed, tropical cacti, commonly referred to as orchid cacti, produce enormous saucer- or trumpet-shaped flowers. Many of the newer hybrids have smaller but more prolific blooms. One of the miniatures is *E.* 'Blushing Belle', which has light lavender, bell-shaped flowers. *Ephyllums* need to be trimmed every year or so, thereby producing new stems and more flowers. They also need a little chill in the fall and enough water in the winter to keep the soil moist so the roots do not deteriorate. The soil should be porous since these

CACTUS SOURCES & RESOURCES

The Cactus and Succulent Society of America (CSSA) is dedicated to promoting a better understanding and appreciation of these spectacular, easy-care, water-saving plants. It publishes the bimonthly *Cactus and Succulent Society Journal* with cultural and scientific articles and a bimonthly newsletter and holds regional and national conventions. Other membership benefits include the use of its slide library, a seed exchange, round robins, shows, and sales. If you are interested in learning more about the society or want to join (dues are \$30), send your name and address to CSSA, Mindy Fusaro, Business Manager, P.O. Box 35034, Des Moines, IA 50315-0301. For a free list of seeds, send a self-addressed, stamped (52 cents), long envelope to CSSA Seed Depot, 27821 S.E. Sun Ray Drive, Boring, OR 97009-9411.

Commercial sources of cacti include:

Abbey Garden Cacti and Succulents, 4620 Carpinteria Avenue, Carpinteria, CA 93013. Catalog \$2.

Grigsby Cactus Gardens, 2354 Bella Vista Drive, Vista, CA 92084. Catalog \$2.

Lauray of Salisbury, 432 Undermountain Road, Salisbury, CT 06068. Catalog \$2.

Mesa Garden, P.O. Box 72, Belen, NM 87002. Send two first-class stamps for catalog.

Rainbow Gardens Tropical Cacti, 1444 East Taylor Street, Vista, CA 92084. Catalog \$2.

are epiphytic in nature, not terrestrial.

The genus *Echinocereus* has many colorfully spined plants with deep yellow, lavender, or white flowers. Even without the oversized, lavender flowers with green stigmas, *Echinocereus pectinatus* var. *rubrispinus* would be worth growing for the burgundy spines that hug the plant's cylindrical body. Some of the species are hardy, growing in regions that reach sub-zero temperatures. *E. reichenbachii* var. *baileyi* and *E. viridiflorus* do well in outside rock gardens. They are known to be hardy into Zone 4. Plants of this genus grow easily from seed, and since they offset, can also be vegetatively propagated.

The genus *Turbincarpus* includes a large selection of small, slow-growing, large-flowering species. Some, like *T. pseudopectinatus*, have truncated or anvil-shaped tubercles, with white appressed spines on the tips. Some have curved spines (*T. schmiedickeanus*), twisted spines (*T. pseudomacrolele*), or straight spines (*T. lophophoroides*) that emerge from the flattened, puffy tubercles. Spines vary from white to yellow to black. The flowers are large, long-petaled saucers in white, white with pink stripes, or pearly pink. *T. valdezianus* has truncated tubercles with small white spines on their tips. The large flowers are a lovely lavender or white. This genus has thick roots for storing moisture, unlike the fibrous root system of most cacti, so they should be watered less frequently.

Another thick-rooted genus, *Sulcorebutia*, has many splendid flowering species. The spherical bodies are quick to offset; during the blooming period they look like a bouquet because the flowers of all the plants are so numerous and long lasting. One of the most distinctive species, *S. arenacea*, has bone-colored, short, appressed spines rising from woolly areoles that spiral around a mocha green body. Golden yellow flowers have brush strokes of yellow-orange at the tips. Since the plants of this genus are mountain growers in Bolivia, they enjoy fresh air, cooler temperatures, and plenty of light. They tend to suffer when it is very hot, so good air circulation and shade are essential. After they bloom in July, watering should be reduced until cooler temperatures arrive in the fall, which is when they resume growing.

Peg Spaete is a board member of the Cactus and Succulent Society of America.

Forget the stereotype. Pick a prostrate form, yellow berries, or variegated leaves.

BY FRED EBERSOLE

TWO OR THREE GENERATIONS AGO, most Americans thought of hollies only as Christmas decorations. But World War II brought hundreds of thousands of Westerners, including knowledgeable gardeners and future homeowners, across the Pacific, where new shapes and sizes of hollies were everywhere. Later, plant tours for amateurs and plant hunting expeditions by professionals followed up on these initial observations and contacts, fueled by the growing demand for attractive housing and landscapes for returning service personnel.

Today, there are hollies to fulfill almost any requirement or desire of the home landscaper. There are upright tree hollies, weeping forms, and dwarf mounded types that all grow reliably and fit well in an infinite number of situations. There are large-leaved, spiny hollies and small, smooth-leaved hollies. The leaf color ranges from a solid dark green to green with a white or golden edge, and some have white or yellow blotches in the center. There are berries of red, orange, yellow, black, or white to add seasonal color. Hollies are invaluable companion plants, complementing viburnum, witch hazel, jasmine, daphne, and cornelian cherry as well as azaleas and rhododendrons.

Hollies are also a good choice for those to whom environmental concerns are paramount. They are extremely tolerant of air pollution and serve as excellent barriers

HOLLIES



to noise pollution and eyesores. They stand up well against the winter salt treatment of snowy roadways and against the baking summer sun of shopping centers and similar concrete islands. They take pruning with aplomb, so that they are excellent subjects for hedges, screens, and foundation plantings, as well as topiaries.

At midcentury, the U.S. National Arboretum held that there were approximately 500 species of *Ilex* worldwide. Succeeding plant tours to the orient have indicated that there may be several hundred more scattered throughout far eastern Asia, Malaysia, and the South Pacific. In the United States, there are nine known evergreen species and ten to twelve deciduous species, the latter depending upon a couple of subgroupings to which some plant researchers give full species status. Though *Ilex* species tend to be concentrated toward the milder southern portion of the United States, the hardy and prolific American holly (*I. opaca*) grows as far north as USDA Zone 4b.

Among the first oriental hollies catching the interest of American home landscapers was the Japanese holly, *I. crenata*, with its compact, low-growing habit and flattish dome. But its fruit was black and uninteresting. There are now many cultivars hardy to Zone 5b, which, while their berries are still black, are unobtrusive. Good cultivars are 'Dwarf Cone' and 'Hoogendorn', dwarfs that will remain under three feet; 'Helleri' and 'Hetzi', which reach six feet; the taller 'Glass' and 'Sentenil', up to fifteen to twenty feet; and 'Highlander', which can reach well over twenty feet at full maturity in twenty-five years. In the more immense of these, the flat-headed dome shape can become unattractive in old age, but they can easily be trimmed back for many years to forestall this.

Chinese species—primarily *I. cornuta*—with their bright red fruit took us another step forward. From this group have been selected the Burford type of *I. cornuta*. Visitors to Callaway Gardens in Pine Mountain, Georgia, marvel over the roadside hedge of thirty-foot-tall *I. cornuta* 'Burfordii', which in late fall and early winter is ablaze with red berries. These are not vest-pocket candidates to be sure, but man and nature have also yielded *I. cornuta* 'Dwarf Burfordii'. This dwarf, unlike other plants to which that word is applied, makes a beautiful plant at any stage of its growth, from twelve inches to ten feet, the height it will attain at fifteen years if left

MICHAEL S. THOMPSON

Ilex aquifolium is among the fastest regenerating, easy-to-prune hollies.

GOOD DRAINAGE PARAMOUNT FOR HOLLIES

Most hollies prefer fairly light soil and good drainage. A planting hole dug in heavy clay is likely to form a catch basin unless gravel-filled drainage lines are dug or drain tile installed at a lower level, or unless sufficient clay can be carted away to bring in an overlay of lighter soil at least eight to ten inches deep. In display areas not immediately adjacent to a dwelling, a simple solution has been to bring in light soil and plant the holly on top of the clay, making sure that the planting mound is sufficiently broad and not too sharply sloped. These flattened mounds, when covered with heavy mulch, meld into the background of the larger planting area. They would



Ilex glabra.

JESSIE M. HARRIS

not do well close to a house, not only because of the drainage difficulties but for aesthetic reasons: the confines of the building do not allow the mulch hump to be balanced out by distance and hence it is obvious and unsightly.

Under all conditions, thorough mulching—with material such as forest debris, coarse or ground bark, peat moss, dead grass, spoiled hay, or compost—will be beneficial. Avoid a thick layer of fresh grass clippings, which will rot and form a heavy mass impervious to good drainage, and reduce air circulation in the upper layer of soil. A three-to-four-inch layer of any of these other mulches will also enhance the holly's color, and partially compensate for irregular watering or fertilizing. Stirring the mulch once or twice in the growing season will redistribute fertilizer scattered on top in early spring.

Hollies should be fertilized in February or March in Zone 7 and south, and about one month later in the North. Use one pound of 10-10-10 commercial fertilizer (with the six or seven trace elements) for each inch of the trunk's diameter, up to four inches. For spreading shrub types, a plant two and a half to three feet in diameter will need one pound. Ideally, some of the nitrogen should be an organic or slow-release type, such as urea-formaldehyde or composted manure. In very sandy soil, with attendant loss through leaching, a second light fertilization in late spring is helpful. In areas of severe winter weather, new growth should not be encouraged past July 15, when the second growth flush is taking place. Beyond this date, extra tender new growth will be winter-killed and spring flowering reduced.

For prevention of scale, 2 percent horticultural oil should be sprayed on hollies in early spring, after night temperatures will not fall below 45 degrees. Leafminers can afflict *I. opaca*. They can be combated with some powerful sprays such as chlordane and cygon, but check with your Extension office first to make sure the sprays are legal in your area. Do not use cygon on *I. cornuta* or its cultivars as it will retard the growth of some branches or possibly kill them outright. Spraying should be done soon after spring growth begins, but avoid spraying during the period of bloom or bees will be killed.

Pruning is opportunely done during the dormant season, which is also the holiday season when you can use the beautiful greens and berries. Those forced to prune severely after storm damage or for drastic correction of shape will see the quick healing power of *Ilex*. The tree forms of American and English hollies are especially regenerative. Many of these, if sawed off six inches above ground level, will send up vigorous new shoots, one or more of which can be selected as the basis of the new shrub or tree. Since holly leaves grow spirally around the branches, pruning for directional growth can quickly fill in a vacant portion of a formal specimen. Select a cut-off point just beyond the leaf stem and pointing in the desired direction. Those with the skill and time for topiary will be amply rewarded by choosing holly for their subject.

—Fred Ebersole

untrimmed. It can easily be kept pruned to any suitable intermediate height. The profusely produced leaves are much smaller than those of 'Burfordii'. Its leaves tend not to be sharply spined, except at the tips, and its fruit is not as heavy or as prominently displayed. But its generally round, plump shape makes it a magnificent, year-round shrub. Both are hardy to Zone 6 with some protection, but the foliage will be more luxuriant in Zones 7, 8, and 9.

Another *I. cornuta* of interest is the spreading 'Rotunda', which has large glossy leaves. It is hardy in Zones 7 to 9. *I. 'China Girl'* and *I. 'China Boy'* are the first *I. cornuta* hybrids to be tested in colder climates, but the claims of their hardiness to Zone 5 still have to be proven.

A novelty holly from the South Pacific is *I. dimorphophylla*. For its first few years, it has beautiful, finely toothed leaves. This foliage gives way to less attractive, almost spineless circular leaves one-half to three-quarters of an inch in diameter. Its size makes it a standout: so far, there are no examples of it growing higher than approximately thirty inches. It is not hardy in areas north of Zone 8b unless well-protected.

From the Liukiu Islands in the South Pacific comes *I. liukiensis*, which shows tremendous promise in Zone 8 in the holly collection of Sandhills Community College at Pinehurst, North Carolina. It has a beautiful, slim triangle shape, and requires little or no pruning to maintain its almost perfect geometric lines.

Before World War II, a few nurserymen attempted to adapt the native American holly, *I. opaca*, for intimate home landscapes. Until then, it was classed as a woodland tree and used mainly in large areas like parks and other public spaces. It was difficult to take such a forest-bred tree, somewhat thin and irregular and not especially glossy, and expect it to compete successfully in the rapidly growing home landscape market dominated by the West Coast-grown English holly, *I. aquifolium*, and its companion, *I. × altaclarensis*. But these two have restrictions, as they go dormant in Southern coastal areas in July and August, then bloom sparsely in late fall instead of spring, thus producing fewer berries.

The *I. opaca* cultivars 'Lady Alice', 'Cumberland', 'American No. 2', 'Jersey Princess', and 'Xanthocarpa' overcame these drawbacks—they have been used to enhance landscapes from Maine to Florida. In a small landscape, one or two can be used as specimens in the front yard



Ilex × *meserveae* 'Blue Girl'.

ANN REILLY: PHOTONATS



Ilex 'Autumn Glow'.

FRED GARRETT



Ilex 'China Girl'.

JEAN M. FOGLE: PHOTONATS

or as border accents in the rear. 'Jersey Princess' remains a beautiful front yard specimen for twelve or fifteen years before it begins to appear out of proportion. Then it can be relocated. All *I. opaca* cultivars are hardy to Zone 5.

In the American section of the Sandhills Community College collection are several specimens of the unusual, spreading *I. opaca* 'Maryland Dwarf'. At twenty-five years of age, the three dwarfs, planted in a group, provide a giant *Ilex* ground cover, flowing over an area some thirty feet in diameter and rising in three mounds some four to four and a half feet high. They produce a modest amount of red fruit. The northern and southern limits of 'Maryland Dwarf' are still being determined.

An *I. opaca* with exceptional promise is 'Clarendon Spreading', developed and named by the late Francis Howe near Pinehurst, North Carolina. It is an ideal hedge plant because it grows slowly and densely, remaining full foliated within six inches of the ground. In twenty to twenty-five years, it rises to an adult height of seven and half to eight feet and a diameter of ten feet, sustaining a flattish crown that requires no pruning for years at a time. The occasional wild shoot that takes off in an unruly

fashion can be pruned off at the end of that year's growth. Its one demerit may be that it sets a light fruit crop. 'Clarendon Spreading' is now being tested for hardiness at Schenectady, New York (Zone 5). So far it is not doing as well as it does farther south; it should probably not be used above Zone 6b.

Yellow-berried cultivars of *I. opaca* include 'Goldie', with profuse large berries and lustrous foliage; the compact 'Xanthocarpa', growing to fifteen or twenty feet; and 'Canary', which can reach forty to fifty feet.

I. × meserveae cultivars are the well-known "blue" Meserve hollies. Nice plants for the small landscape, their hardiness seems confined to Zones 6b through 8a. Cultivars include the most dwarf 'Blue Angel', which with light pruning can be used for a hedge under three feet tall; unpruned it may still remain under six feet. 'Blue Boy', 'Blue Girl', 'Blue Prince', and 'Blue Princess' are all intermediates, three to six feet tall. 'Blue Prince' and 'Blue Princess' put on a heavier growth and fruit. All the Meserve hollies have slightly wrinkled leaves with a bluish sheen and produce generally brilliant red fruit.

The native *I. glabra* has flat, glossy leaves and is used as a hedge or background screen

as it remains compact and three to six feet tall. It has a white-berried cultivar, 'Ivory Queen', with a more open-branch habit. Its fruit is more off-white or ivory than white, something like the color of a dried popcorn kernel. Both are hardy to Zone 5.

After American yards opened up to many of the oriental species, we suddenly became aware of the landscape potential of deciduous hollies, which had been selling in the limited holiday market for generations under such common names as winterberry and possum haw.

Those who thought that hollies had to be evergreen soon learned that there are ten species of native deciduous hollies, scattered all over the Eastern United States, from Maine and southern Michigan to Florida and Texas. All are of a generally shrubby form. After ten years the majority will become multi-stemmed and reach five to six feet in height or more in southern zones. The deciduous hollies are hardy through Zone 5.

The most prolific and hardiest deciduous holly is the winterberry, *I. verticillata*, found

HOLLY SOURCES & RESOURCES

The Holly Society of America, Inc., is a national membership organization that encourages a broader use of holly, disseminates information, promotes registration and the introduction of new cultivars of holly, and supports holly research programs. Annual dues start at \$15 and entitle members to the quarterly *Holly Society Journal* and to attend the annual meeting. They also sell for 50 cents a very useful eight-page pamphlet, "Hollies—Versatile Beauty for the Intimate Landscapes," with a wealth of information on cultivar selection, holly culture, and holly arboreta and test centers. Write to the Holly Society of America, 304 North Wind Road, Baltimore, MD 21204.

Commercial sources of holly include:

Holly Haven Hybrids, 136 Sanwood Road, Knoxville, TN 37923. Send self-addressed stamped envelope for catalog.

Hollyvale Farm, P.O. Box 69, Humptulips, WA 98552. Send long, self-addressed stamped envelope for catalog.

Roslyn Nursery, 211 Burrs Lane, Dix Hills, NY 11746. Catalog \$2.

Simpson Nursery Company, P.O. Box 2065, Vincennes, IN 47591. Catalog free.

Woodlanders, Inc., 1128 Colleton Avenue, Aiken, SC 29801. Catalog \$1.

with both northern and southern adaptations. Its colorful red fruit and fall foliage appear earlier in the Southeast than farther north; in my former Piedmont area home in Hickory, North Carolina, it displays its prominent, sparkling fruit beginning in early September. If left untrimmed, *I. verticillata* will approach ten feet in height.

Simpson's Nursery of Vincennes, Indiana (Zone 5), has selected one cultivar of *I. verticillata* that they call 'Winter Red'. After amending my Carolina clay soil, I have watched mine spring up, untrimmed, over the course of twelve to fifteen years, to a feathery globe nine to ten feet tall and some ten feet in diameter. With less fertilizer and judicious trimming, 'Winter Red' may be kept in a globular shape six to seven feet high and possibly somewhat broader. In good soil, it may ultimately grow to ten or twelve feet.

Dr. Elwin Orton of Rutgers University has given us the low-growing *I.* 'Harvest Red' and *I.* 'Raritan Chief'—hybrids of *I. serrata* and *I. verticillata*. They are easy to maintain at three feet if not fertilized too heavily. 'Harvest Red' has large shiny dark green leaves and very bright red fruit. Another hybrid of the same species is *I.* 'Autumn Glow', which has bright red fruit with a trace of orange.

I. decidua (possum haw) is a bit erratic and may shoot up to twenty feet or more. There is a yellow-berried cultivar, 'Byer's Gold', that also reaches twenty feet. *I. decidua* 'Warren's Red' has heavy, dark green foliage that it retains late into fall after the red fruit has set; it too can reach twenty feet in good soil. These are not for the small scale landscaping of the average-size urban lot. Bon Hartline of Alma, Illinois, has developed the more moderate *I. decidua* 'Hunter' and 'Sundance'. They will reach twelve to eighteen feet in good soil and retain their fruit into early spring.

A brochure available from the American Holly Society (see Sources and Resources page 19) characterizes hollies according to eleven different shapes (as well as other characteristics). The shapes are not totally inclusive, but will serve as a helpful guide when visiting nurseries and garden centers, where junior-sized sales specimens rarely reveal what they will look like years later.

Fred Ebersole is a member and former board member of the Holly Society of America. He developed the Ebersole Holly Collection at Sandhills Community College in Pinehurst, North Carolina.

*Rich in folklore,
these perennials are
beautiful in bogs and
colorful in shade
gardens.*

BY CYRUS HAPPY

IN THE ENGLISH-SPEAKING WORLD there lingers an air of nostalgia and almost-forgotten folklore about the primrose and its cousin the cowslip.

*Tisty-tosty, tell me true
Who shall I be married to?*

Country maidens in a circle tossed the tisty-tosty, a ball of cowslip blossoms, as the names of possible mates were spoken. The name uttered as the tisty-tosty fell apart was to be the husband of the eligible maiden who stood in the center of the circle.

*I call, I call. Who do ye call?
The maids to catch this
cowslip ball.*

— Robert Herrick,
"I Call and I Call"

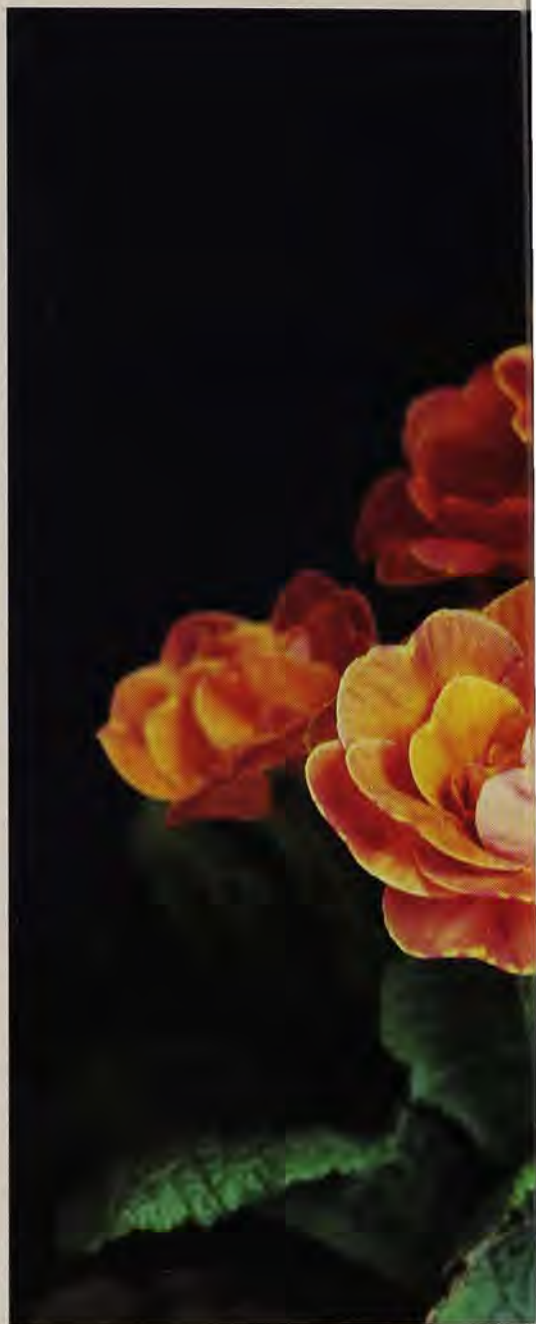
The name *Primula* is a contraction of the medieval Latin word for daisy, *primula veris*, which means "firstling of spring." Botanists were and are continually adding and subtracting species and rearranging the genus *Primula*. Currently the genus has been divided into thirty-three sections (a subdivision of a genus encompassing related plants that will hybridize with each other) and more than 800 species with new ones still being discovered. Although there has been a nomenclatural revolution with primulas in the last forty years—sections have been renamed, and species rearranged and renamed—I find the old system, if not perfect, at least workable and simpler. It is

Primroses

still used extensively and it is the basis for most of the primula literature.

Primulas are found all around the Northern Hemisphere, in locations on the southern tip of South America and on the Falkland Islands. Species grow in Outer Mongolia, under sandstone cliffs in the Utah desert, in mountainous bogs of Burma, and in the tundra of the Aleutians. Therefore, there is a primula for nearly everywhere, whether the winter low is 40 degrees below zero or 50 above.

The rule that primulas like half shade and a continuous supply of moisture is far too general, although you can start there. Even in our mild Pacific Northwest, dedicated primrose growers often build lath houses to modify the climate. But some of





CYRUS HAPPY

Orange double Primula vulgaris.

the species and hybrids are very adaptable. Drawing from the hardiness research done by Trevor Cole at the Ottawa Research Station, we find primulas that tolerate or even prefer extremely hot summers and cold winters. Undoubtedly there will be one for you.

The Auricula section is composed of several species native to the mountains of Europe. Most grow naturally on rocky open or lightly wooded slopes. Smooth-leaved evergreen auriculas (*P. auricula*) are generally very hardy (USDA Zones 4 to 8) and can stand a fair amount of sun as long as they have an adequate water supply. They need to be protected from dehydration during a prolonged winter freeze—snow cover is ideal. The yellow,

one-inch-wide flowers are often pleasantly citrus scented. Although auriculas grow wild in Europe, some of these may be of hybrid origin.

For those who cherish only species or natural hybrids, *P. rubra* is ideal and very adaptable. The delightful one-half- to one-inch-wide bell flowers are rose pink, lilac, mauve, or white. A tiny pinch of water-holding polymer gel in the soil will get these and most primulas through stressful periods. You might even consider joining the cult that grows the British show auriculas in unheated greenhouses, which protects them from winter dampness. Zones 4 to 8.

The Candelabra section includes some of the most spectacular primulas. Coming

from the Himalayan region and Japan, they do best in rich, moist, slightly acid soil in part shade; many will actually grow in bog or marsh conditions. The height varies from bright orange *P. cockburniana* at fifteen inches to yellow *P. helodoxa* at seven feet. All have the characteristic multitiered circles of flowers progressing up the stems, pagoda style.

P. japonica will grow wherever it gets enough moisture, but like the rest of the Candelabra section, it prefers streamside or bog. Flowering usually extends from May to July and colors range from purple magenta through pink to white. Orange-red and copper shades show up in the hybrids. Seeds of this species germinate readily, but young seedlings need a steady

PRIMROSES WANT FRESH SOIL, NOONTIME SHADE

Fresh soil—or at least refreshed soil—is important to the successful cultivation of primroses. Primulas tend to exhaust their bit of soil after two years in the same spot. Refreshing old soil means adding organic material, such as manure or chippings from the shredder, plus sand for better drainage around roots. Bits of super phosphate and wood ash are good in moderation.

Plants should be divided at the same time but only during a growth period in spring or early fall. The best time to divide is just as the flowers fade, while you can still sort out the colors. Dividing during summer or winter dormancy is often fatal.

Hardiness information for primulas is often imprecise. With a snow cover, hardy primulas will survive into Zone 1. Freezing is usually not the killer if the plant is nearly dormant, but dehydration during a long freezing spell with no snow (or mulch) can be deadly.

Most primulas want protection from summer midday sun. Provide summer shade with airy annuals, such as cosmos, nigella, and bachelor buttons, or dwarf fruit trees, whose roots do not compete. Eastern and Midwest growers use primulas mainly in a shade garden. In the South, grow the tender primroses such as *P. malacoides* and *P. obconica* as annuals or in a shade house with excellent air circulation. Microclimates can determine success or failure.

Candelabra primulas and all the other moisture-loving primulas like *Primula chionantha* and *P. florindae* may be grown successfully in open borders by using water-retaining polymer gel. The gel will provide weeks of water supply if a pinch is dug in under each plant. A little goes a very long way.

Seed of most new strains of primroses will germinate at around 60 degrees, although seed of most hardy *Primula* species need a bit of weathering to break dormancy. I've had good results by preparing an outside seed bed in February, covering it with a half inch of peat moss, sowing the seed on top, and then covering the bed with window screens. Freezing, thawing, being washed with rain and warmed by sun are nature's way of removing inhibitors that prevent species seed from germinating. Even then the seed may take another year or two to germinate. Don't give up too soon.

Primulas can also be reproduced by division of the crowns on a mature plant, which can range from two to twenty.

—Cyrus Happy

flowered umbels, one over the other. *P. obconica* (Obconica section), the top primrose, is also known as the poison primrose because its four-inch long, hairy leaves give some people skin irritations. Its flowers are blue, purple, rose, pink, salmon, or white, displayed in large, sturdy-stalked umbels held well above the foliage. There is a cultivar, 'Freedom', that is nonirritating. *P. sinensis* (Sinensis section) has pink, orange, red, or white flowers with notched or fringed petals. All can make colorful subjects for the shady border or planter. All are Chinese natives and hardy to Zone 10.

The Cortusoides section has two plants that are very easy to grow if provided with sufficient moisture, leaf mold in the soil, and light shade. The first is *P. saxatilis* of northern Asia, which sends up many six-inch flower stems bearing clusters of pink flowers. The leaves are roundish with wavy margins, and the plants are ground hugging. This is a neat plant that can be a repeat bloomer. It is hardy in Zones 4 to 8.

The other, the Japanese native *P. sieboldii*, is similar but larger. The showy one-and-a-half-inch-wide flowers come in rose, pink, white, or lavender blue. The petals vary from entire to almost a snowflake pattern. This is a popular exhibition plant in Japan with hundreds of cultivars. It dies back completely in summer, so mark where the plants are. Zones 4 to 8.

P. denticulata (section Denticulata)—a native of the Himalayas—is a great survivor in cold winter areas. Sometimes called the drumstick primula for its ball-shaped flower head that resembles a bass drumstick, it starts to show its lavender, rose, or white flowers as soon as the snow disappears. A vigorous plant will send up many solid, round flower heads up to two feet tall. Don't forget to give this one a little shade during the heat of the day. Zones 4 to 8.

A great companion to *P. denticulata* is another Himalayan alpine, *P. rosea* (section Farinosae). This one does like running water—I've seen it blooming happily in midstream, where it had caught onto a rock—but will do well in any moist location. The shocking pink clusters of flowers precede the leaves and start blooming just as the snow departs. Its paler pink hybrid *P. 'Peter Klein'* (crossed with *P. clarkei*) is every bit as easy to grow. Both are hardy in Zones 3 to 8.

P. vialii (section Muscarioides) is one of the best and easiest of all. The long cone-shaped flower head emerges in July with

supply of moisture. When the plants are dormant, winter cold does not affect them. Hardiness Zones 3 to 8.

Southern gardeners should turn to primroses of the section Verticillata, which are hardy to Zone 9. The tender evergreen species all produce yellow flowers in late winter or spring. *P. verticillata* is found in damp shady spots in mountains of 6,000 to 9,000 feet on both sides of the Red Sea. Its foliage, bracts, and calyxes are coated with a white meal (tiny balls of wax on the ends of the plant hairs). *P. floribunda*, the buttercup primrose with half-inch-wide gold to sulphur yellow flowers, is native to the Himalayas. *P. × kewensis*, an intermediate hybrid between *P. floribunda* and *P. verticillata*, originated in 1897 as a chance seedling at the Royal Botanical Gardens at Kew. Its fragrant flowers are bright yellow.

Other tender primroses are suitable for the South. The fairy primrose (*P. malacoides*, Malacoides section) has rose, pink, lavender, or white flowers in many-



CYRUS HAPPY

Most primulas need protection from midday sun. In the South, tender primroses can be grown in a shade house with excellent air circulation.

bright red overlapping calyxes followed by a lilac flower opening first at the bottom of the head and gradually covering all but the tip. It can and often does die after blooming, but a liquid feeding in late July will keep it growing. It grows easily from seed and will bloom the second year from a spring planting. Zones 3 to 8.

Two large primulas that like boggy conditions but will do well in any moist location are yellow *P. florindae* (section Sikkimensis) and off-white *P. chionantha* (section Nivales). *P. florindae*—a Tibetan native—sends graceful drooping flower heads up to five feet tall. The flowers are dusted on their backs with meal and emit a delightful fragrance that is sweet-fruity with a touch of nutmeg. *P. chionantha*—native at high altitudes in China—smells of vanilla and flowers shoot up at least two feet. Zones 4 to 9.

At last we reach the common primrose, the cowslip, and other closely related *Vernales* section plants from Europe and western Asia. These are the plants of British and northern and central European folklore—the plants that have been used to flavor wines and divine the future. They are easily cultivated garden plants, growing in light shade in all except the heaviest or sandiest soils.

P. vulgaris, the common primrose with pale greenish yellow flowers, grows on banks and in open woodlands from Ireland eastward into Russia. There are many local variations. In Pembroke, South Wales, it is purple, and other colors are occasionally found elsewhere. Zones 6 to 9.

The modern hybrids of *P. vulgaris*—with vivid and varied colors and uniform sizes—go on sale in late winter. They are long-lived perennials, but hardiness varies. The survivors will need to be divided during a growth period and put into fresh soil every other year. They come fairly true from seeds, but I can't resist the few that revert and come up with true primrose color.

P. veris, the cowslip, is hardy and tough. It is found from Ireland eastward into Siberia and should survive in all but the deep South of the United States. Normally the cowslip has nodding, one-sided umbels of yellow flowers and a pleasant fragrance. In the wild it seldom exceeds ten inches tall, but in rich soil it will double in height. Zones 2 to 9.

Color variations in cowslips occur in Turkey and Romania—mostly orange and red shades. *P. veris* var. *hortensis* from Germany is bright red. It is naturalized in



Primula denticulata is sometimes called drumstick primula.



Primula veris var. *hortensis*.



Primula chionantha.

PHOTOS BY CYRUS HAPPY

INTERNATIONAL SYMPOSIUM TO MARK FIFTIETH YEAR

An international primula symposium, "Primula Worldwide," is scheduled for April 10-12 in a suburb of Portland, Oregon. It will be a historic global journey, taking participants on an audio-visual botanical exploration from the deserts of the Middle East through the valleys and mountains of Europe and the Soviet Union and the rugged peaks of the Far East and North America.

Primula enthusiasts from around the world will convene at the Greenwood Inn, Beaverton, Oregon, to celebrate the diversity, beauty, and rich heritage of the primula and to honor the American Primrose Society (APS) on its fiftieth anniversary. Growers and experts will describe native habitats of primulas and share ways of growing the plants successfully in the garden.

Featured speakers will come from England, Scotland, the United States, Canada, and Japan. Also included in the symposium will be plant sales by regional specialty nurseries, the APS national primrose show, and garden tours. Primula and other horticultural books will be offered for sale along with souvenir sweatshirts, pins, and other gift items.

Cosponsors of the symposium—the first of its kind since 1928—are the APS, the Royal Horticultural Society of England, and the Berry Botanic Garden of Portland. Others assisting are the American Rock Garden Society, the Alpine Garden Club of British Columbia, Matsumoto Sakurasoh and the Primula Club of Japan, the Scottish Rock Garden Club, the Alpine Garden Society of England, and the Northern, Midlands, and Southern English sections of the National Auricula and Primula Society.

For more information about the symposium, contact Ann Lunn, Registrar, 6620 N.W. 271st Avenue, Hillsboro, OR 97124, (503) 640-4582.

some areas of Germany, and would be my choice as the best primula for harshly cold climates. Zones 3 to 8, perhaps 9.

The large, brightly colored polyanthus primrose (*P. × polyantha*) is a supermarket favorite. The multiple flowers ("polyanthus" means many flowers on one stem) come in a wide range of colors. There are varieties with double flowers, some called a hose-in-hose (one corolla is set inside another) and others, called Jack-in-the-greens, whose flowers are backed with a ruff of small green leaves. Some strains are much hardier than others, but typically they are limited to Zones 6 to 8. All will need cool moist shady summer quarters. One tough old strain, probably 'Munstead', which was popular from 1910 to 1940, grows in a few old gardens across the country. It is as hardy as a cowslip and holds up a good head of light yellow flowers. Watch for it and beg a piece.

Hybrids of *P. juliae* are popular with rock and container gardeners. They are dainty but sturdy, spreading by stoloniferous roots just under the surface. The longstanding favorite is the reddish purple 'Wanda', which survived for many years in Trevor Cole's Ottawa garden. Do not confuse it with the *P.* 'Wanda Hybrids' being offered these days, which are pink, lilac, and purple with large leaves. Zones 5 to 8.

There are many named hybrids referred to as *P. × juliana*. Not all of them are totally hardy, but they tend to outlast the *P. vulgaris* hybrids and *P. × polyantha*. Many have round thumbnail-sized leaves and make a cushion of nearly eyeless flowers. Their special charm has attracted many collectors.

But then primroses have been collected for hundreds of years, from the time when peasants would return home with an unusual wild plant that they had found by chance and dug up. Some of these unusual plants with Old World names like gallygaskins, pantaloons, and jackanapes are still grown. Several naturally mutated double primroses found in the wild—white, yellow, and lilac ones—have been propagated for more than 500 years. Modern doubles now come in a full range of colors.

One final note: The term "primrose path" should be used with great discretion. Shakespeare plugged it out of antiquity and used it properly in *Hamlet*: "Himself the primrose path of dalliance treads." The primrose path is the path of debauchery and degradation. I marvel at committees that insist on selecting it as a flower show theme.

Cyrus Happy is the president of the American Primrose Society.

PRIMULA SOURCES & RESOURCES

The seed exchange of the American Primrose Society distributes collected and garden-grown seed from a worldwide membership. Its seed list also includes experimental strains and old favorites from commercial hybridizers, including the tiny *Primula × juliana* seldom commercially available. Annual dues are \$15 and include a subscription to the quarterly *Primroses* and access to specialists worldwide. For more information or to join write to Jay G. Lunn, Treasurer, 6620 N.W. 271st Avenue, Hillsboro, OR 97124.

The American Rock Garden Society lists many primulas in its seed exchange. Annual dues are \$20 and include a subscription to the quarterly *Bulletin*. Contact them at P.O. Box 67, Millwood, NY 10546.

Other seed exchanges that offer primulas include:

The Scottish Rock Garden Club, K. M. Gibb, 21 Merchiston Park, Edinburgh, Scotland, EH10 4PW.

The Alpine Garden Society of England, E. Michael Upward, Lye End Link, St. John's, Woking, Surrey, England GU21 1SW.

The Alpine Garden Club of British Columbia, G. Gibbens, 803 Old Lilloet Road, North Vancouver, BC V7J 2H6, Canada.

The National Auricula and Primula Society of England has three regional sections:

Southern Section, Lawrence E. Wigley, 67 Warnham Court Road, Carshalton Beeches, Surrey, England.

Midland Section, P. Green, Primrose Hill, Bell's Bank, Buckley, Worcester, England.

Northern Section, D. G. Hadfield, 146 Queens Road, Cheadle Hulme, Cheadle, Cheshire, England.

Commercial nurseries with diverse primula selections include:

Chehalis Rare Plant Nursery, 2568 Jackson Highway, Chehalis, WA 98532. Send long self-addressed stamped envelope for catalog.

Colorado Alpines, Inc., P.O. Box 2708, Avon, CO 81620. Catalog \$2.

Mt. Tahoma Nursery, 28111-112th Avenue East, Graham, WA 98338. Catalog \$1.

Siskiyou Rare Plant Nursery, 2825 Cummings Road, Medford, OR 97501. Catalog \$2 (refundable).

Thompson & Morgan, Inc., P.O. Box 1308, Jackson, NJ 08527. Catalog free.

Jujube, the Chinese Date

*The candy is popular at movie theaters,
but the fruit has yet to catch on.*

BY LEE REICH

Say “jujube” and most Americans think of a fruit-flavored gumdrop. But the Chinese have been growing and eating jujube fruit for more than four thousand years. As late as the middle part of this century, China had more jujube trees than any other type of fruit tree. (Persimmons, incidentally, were second on this list.)

Beyond China, jujubes (*Ziziphus jujuba*) sometimes go under the sobriquet of “Chinese dates.” Though botanically unrelated, jujube and date fruits resemble each other in appearance, texture, and flavor. Jujube fruits range in size from that of a cherry to that of a plum, have a high concentration of sugar (22 percent) and one elongated pit. When just ripe, the skin is the color of mahogany and as shiny and smooth as if buffed with a cloth. At this stage, the flesh is crisp and sweet, reminiscent of an apple. If the fruit is left to ripen a bit longer, the skin begins to wrinkle as the fruits lose water, and the flesh changes from light green to beige and becomes spongy, i.e., more datelike.

Jujube plants traveled beyond Asia centuries ago. The Roman scholar Pliny recorded that jujubes were brought from Syria to Rome sometime near the end of Augustus’s reign. Plantings subsequently spread throughout southern Europe and northern Africa. The olive-sized fruits from seedling trees still find their way onto desert trays in southern Europe today.

The first jujube plants to reach America crossed the Atlantic in 1837 and were planted in Beaufort, North Carolina. The plants evidently aroused some interest as ornamentals, for in 1854 the U.S. Patent Office distributed jujube throughout the



ROGER MEYER

The ‘Lang’ jujube is one of the most commonly planted in the United States.

middle Atlantic and southern states.

Interest in the gustatory value of jujube was spurred when U.S. Department of Agriculture (USDA) plant explorer Frank Meyer began sending propagating wood of superior fruiting types from China to America in 1908. Because jujubes also tolerate drought, Meyer’s chief in Washington, David Fairchild, saw great promise in this plant for developing agriculturally bar-

ren regions of the Southwest. In his enthusiasm, Fairchild would show up at social events in Washington—a get-together hosted by Alexander Graham Bell (Fairchild’s father-in-law) or a banquet for the

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PAUL LYRENE

Above: Each jujube branch node produces one to ten branchlets, most of which will fall off in autumn. Right: The tree is rarely more than thirty feet tall with branches that droop when heavy with fruit.



ROGER MEYER

National Geographic Society, for example—with jujubes for everyone to sample.

In part because of the tree's handsome appearance and its adaptability to many soils, jujubes today are not uncommon dooryard trees across America's southern tier. Jujube breeding continued through the 1950s at the USDA's research station in Chico, California, and jujubes were used for one of the Tennessee Valley Authority's reforestation projects. The International Tree Crops Institute even studied the possibility of converting the fruit's abundant sugar to alcohol to be used as fuel. But the fruit never caught on.

Jujube is a small tree—rarely more than thirty feet high—with small, glossy leaves and a naturally drooping habit accentuated when the branches are weighed down with fruits. Plants send up suckers from their roots, and these suckers can appear many feet from the mother plant.

Branches on some clones are armed with intimidating spines over an inch long. Fortunately, other clones and older trees have few or no spines.

As the growing season commences, each node of a woody branch produces one to ten branchlets, with older branches producing more branchlets. Most of these branchlets are deciduous, falling from the plant in autumn. Here and there a robust

shoot might appear instead of a branchlet and this shoot becomes part of the permanent structure of the tree. Shoots of intermediate vigor are half-deciduous, losing only their distal portions at the end of the season.

Small, inconspicuous, yellow flowers grow in clusters of one to half a dozen or more in leaf axils of the growing branchlets. The plants have an extended blossoming period that continues sporadically throughout the growing season. However, individual flowers are receptive to pollen for only a day or less.

Pollination needs of the jujube are not clearly defined. Some cultivars need cross-pollination and others do not, but these needs might change with climate. Even allegedly self-fertile clones set more and larger fruit with cross-pollination.

Three hundred years ago, the Chinese writer, Li Shi Chen, described forty-three varieties of jujubes; today, China has over 400 varieties. Most jujube plants in Europe and America are seedling trees with fruits of variable quality. My first introduction to the fruit was not favorable: I joined a Chinese couple in gathering fruit from beneath a tree growing in the shadow of the Capitol in Washington, D.C. This tree evidently was not one of the better clones, for I found the fruits insipid. Years later, the fruits of a tree at the Brooklyn Botanic Garden in New York, though small, were tasty enough to renew my interest in the plant.

Frank Meyer sent to America eighty-three varieties that he collected in China, but only a few are available in this country today. The most commonly planted cultivars in the United States are 'Li' and 'Lang'. 'Li' has round fruits two inches in diameter, among the largest of any jujubes, and with excellent flavor. 'Lang' is an upright tree with pear-shaped fruit two by one-and-a-half inches. The skin is shiny and the flavor sweet with a hint of caramel.

Also available are 'Silverhill' and 'So'. 'Silverhill' is a large tree with relatively few suckers or thorns, and a prolific bearer of elongated fruits about an inch across. The fruit flesh is solid and sweet. 'So' is slow growing and ornamental with downward curving branches and moderate crops of good quality fruits.

Though the jujube is native to hot climates where temperatures range from 20 to 120 degrees, the tree will survive winter cold to at least 22 degrees below zero. The plant revels in summer sun and heat, and in northern states, the lack of

either will limit fruit production more than winter cold will. Northern gardeners should site the plant in their sunniest and warmest microclimate, such as near a south wall.

Jujubes tolerate many types of soils. Meyer reported seeing trees in China that were productive even when growing “in an inner courtyard where the ground has been tramped until it is hard as stone.” Jujubes also tolerate a wide range of soil moisture conditions, as evidenced by their native habitats where rainfall might be as little as five, or as much as eighty, inches each year. Cultivated trees grow well between rice paddies in China and in the dry soils of the American Southwest. Sometimes, however, rain during the period when the fruit is ripening will split the fruit.

Given adequate heat and sun, jujube trees will thrive without any special care. The plants bloom reliably late enough to escape spring frosts and virtually no pests attack the plant or the fruit. The plants are precocious. Grafted trees have even been known to bear some fruit in the same season in which they were grafted!

Meyer reported that the Chinese would cut out a ring of bark from the trees right after blossoming in order to increase yield, with some sacrifice of sweetness in the ripe fruit. The ring was made with a saw cut each year at a different level on the trunk, beginning when trees were six or seven years old.

The ground around jujube trees should never be cultivated. Any root damage induces the plants to send up suckers.

Plants grown from seed usually do not bear high-quality fruit, but could be used as rootstocks or ornamentals. Germination is enhanced by opening the stone and extracting the two kernels it contains. (Depending on pollination, some stones will be hollow—and some large-fruited cultivars always have hollow stones.) An easy way to open a stone is to carefully cut it lengthwise along one edge with pruning shears.

The kernels should be stratified under cool, moist conditions for two months. It is important that the peat moss, perlite, or whatever medium in which the seeds are being stratified is just moist, not wet. Never expose the kernels to temperatures below freezing. Expect an average of about 50 percent of the seeds to germinate, less for large-fruited clones, and more for small-fruited clones. The kernels are slow to germinate and seedlings often require two years of growth before they are large enough to be grafted.



ROGER MEYER



PAUL LYRENE

Above: Fruit of the ‘Li’ jujube drying on the tree. Dry fruit will keep for a year if kept cool. Left: As fruit ripens it turns from white to mottled, then solid reddish brown.

may bear a few fruits in their first season. Chip budding, T-budding, and whip-and-tongue grafting have all been successful. Stem cuttings root with difficulty.

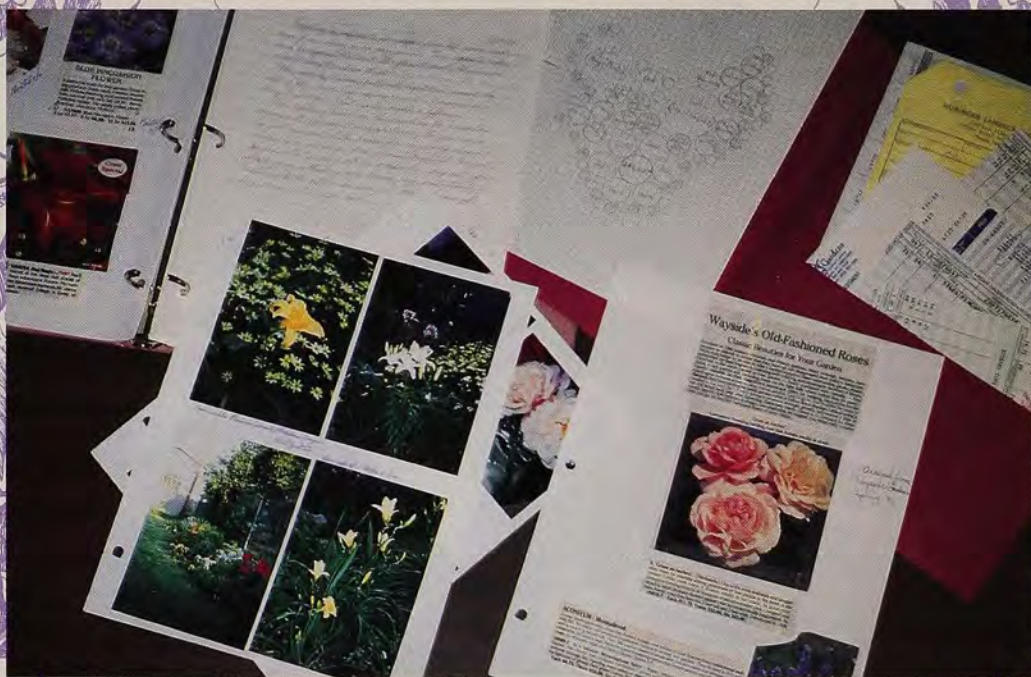
The 100 pounds of fruit that a single jujube tree can produce do not ripen at the same time, so the fruits must be picked every few days for a month or more. As a green fruit ripens, it first turns almost white and then becomes mottled reddish brown. This mottling quickly coalesces until the ripe fruit is completely reddish brown.

The fruits can be picked underripe—when they turn from green to almost white—and ripened in a bag at room temperature with a ripe apple (volatile ethylene given off by the apple speeds ripening). Such fruits will not be as sweet as those ripened on the tree, though.

Ripe fruits will keep for one to two months at 50 degrees; at room temperature, the fruits *continued on page 40*

CONSTRUCTING & KEEPING A *Garden*

BY JEAN STARR



*"But the
Glory of the
Garden lies
in more
than
meets the
eye."*

— Rudyard Kipling,
The Glory of the Garden



Journal

My garden journal started out as a notation on the kitchen wall calendar. In the tiny square for May third, I wrote: "Planted marigold seeds." They were the biggest, brightest marigolds I'd ever seen, and they brought compliments from all who passed. The next year, I wondered what type of marigolds they were so that I could repeat the performance. I couldn't remember. I'd even forgotten where I'd purchased them.

But it was the gladioli that made a journal seem a necessity. One gloomy fall day a thick catalog arrived containing gorgeous photo-

graphs of dahlias, gladioli, and other "exotic" flowers. One glad intrigued me so much that I mailed out a check for forty of the bulbs, which were promised to "arrive at the proper planting time." When I received the order acknowledgement in mid-December, I tossed it in a drawer and forgot about it.

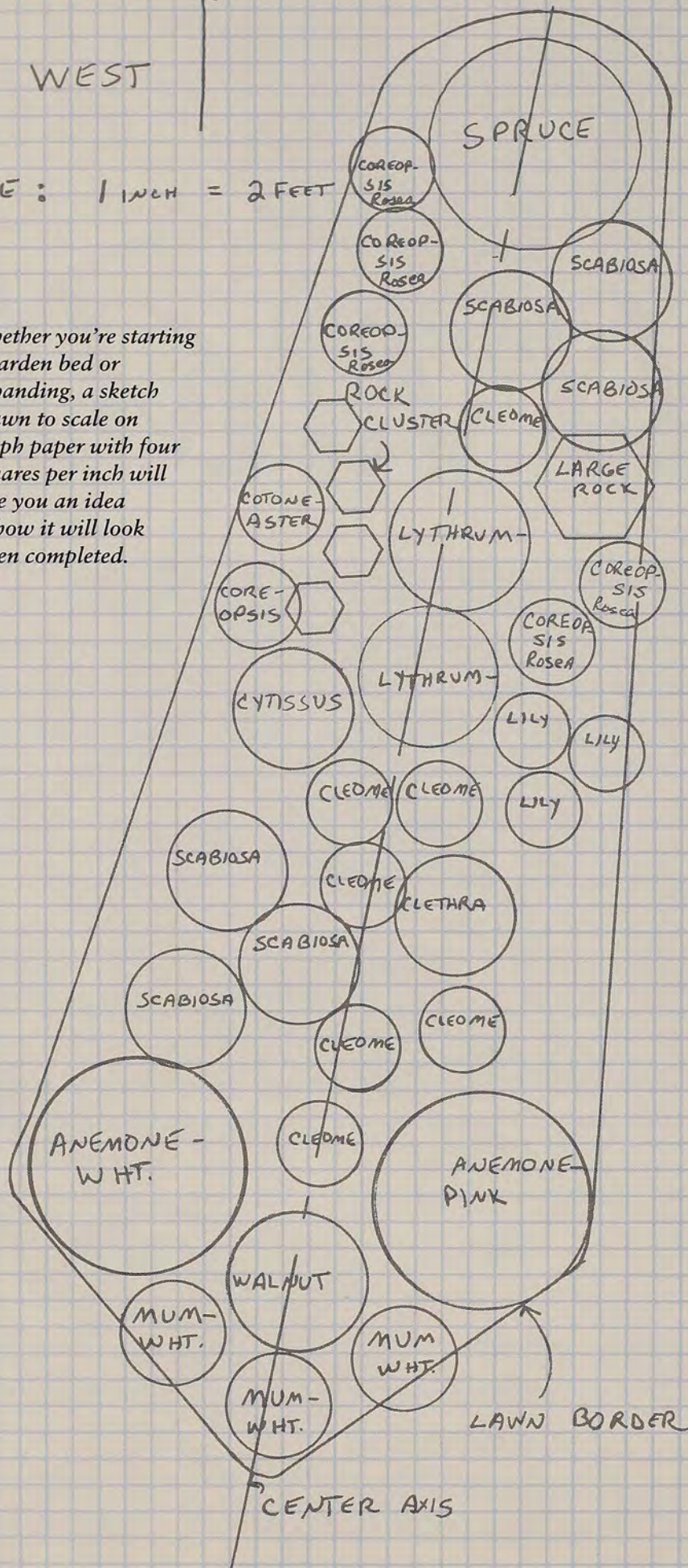
The following April, while browsing through a local nursery here in Indiana, I was attracted to a large display of gladioli of a particularly striking shade of coral. I was in the mood for a little digging, so I bought forty of them. Two days later, mail-order bulbs arrived and—you guessed it—I ended up searching for homes in my already crowded garden for

Apr 11, 1991
The small-cupped narcissus have been blooming for a few days; the daffodil, "Easter Bonnet" in the front garden has come up & opened as well. Those thin, succulent leaves that have been coming up every Spring for the past two years have finally given me some charmingly-tiny narcissus. It's been down in the 30's for the past two nights, but there were some days in the upper

WEST

SCALE: 1 INCH = 2 FEET

Whether you're starting a garden bed or expanding, a sketch drawn to scale on graph paper with four squares per inch will give you an idea of how it will look when completed.



eighty identical gladioli!

I decided I needed a place to record all of this information so that I wouldn't have to live with any more oversights and disappointments. I was learning that this hobby that requires the wearing of old clothing and the dirtying of fingernails also has its cerebral side. I also discovered that gardening can be a costly pastime, especially if you don't go into it with a little preparation.

The most admirable gardens are not results of spur-of-the-moment ideas. They are the products of plans, sketches, research, and very often, trial and error. Even if your gardening involves only the planting of a few petunias, there are always new varieties on the market. Gardening is not static, and documenting changes can be as rewarding as creating them.

Look out a frosty window through the blanket of snow or sodden leaves and imagine the way your garden will look in a few months. Your impatience for the new season can be alleviated by flipping through your own garden journal. What to include? Here are just a few ideas:

- Photographs of plants and beds during their growing season.
- Notes on what's going on in your garden and when.
- The date each item is planted, along with its bloom time and soil and light requirements.
- How you've controlled pests or diseases and the time of year these problems are prevalent.
- The number and type of annuals you've planted.
- Weather trends and how you deal with them.
- Descriptions and photos (if available) of plants you've ordered from catalogs and receipts of purchases with guarantees.
- Mistakes in plant placement.
- Articles listing new varieties available next season.

When you've finished going through your garden to clip, prune, and inspect for insects and diseases, take another few minutes to record your thoughts and discoveries. When you're impressed with the way a plant or bed looks, take its picture. If for no other reason, it will give you something to look at on those dreary days of winter.

When planning a new garden bed or adding to an existing one, you'll need to have an idea of how it will look when completed. You don't have to be an artist

Stella d'Ore
 more from the drought we've been having. The *Sounding*
 for about two weeks + then we get only 1/4". The *Sounding*
 phlox has been in bloom for about 1 1/2 wks + is really
 magnificent! I purchased another one labeled the same
 from *Seaside Garden Center*, but it's not the same
 plant. The annual dianthus has been holding up very
 well in the heat + dryness. Everything is about two w
 earlier because of the weather.

or an engineer to sketch your garden to scale on graph paper with four squares per inch. A tape measure, ruler, and template are all you'll need to make sure everything fits into the space available.

April 26

"I divided the Hosta and put them under the juniper on the east side where they'll have more room. I purchased two of them three years ago and now have six plants."

It's important to keep track of each variety you obtain and when and where you plant it. Looking back at this information will be helpful if a certain plant fails to bloom as it had in previous years. It may simply be in need of division.

March 3

"I squashed my first slug today. I put out shallow bowls of beer covered with chicken wire—they love it! (So does the dog.)"

The types of diseases or pests that are prevalent in your area and how you've dealt with them should be recorded so that you'll remember what to watch for and when.

September 1

"NEXT YEAR: Plant more tall snapdragons and annual Dianthus in the daylily bed to provide late summer color. Order Cleome seeds for early spring sowing in same bed."

When using annuals in perennial beds or borders or in pots and flower boxes, in-

dicating the number of plants needed for the best effect will help ensure that you purchase the correct amount each year. Throughout the summer you might find you need to make adjustments for the following year.

June 17

"The Liliium 'Enchantment' went through its bloom cycle very quickly, beginning about a week ago. Make sure they have

Photos of plants ordered from catalogs are fun to compare to photos of them that you take later.



Nemophila menziesii S. Gort.
NEMOPHILA
Menziesii S. Gort. Trailing 3-6 x 12 in.
 A delightful floral escarpment and a refreshingly useful basket or container plant. The palest of rain washed blue veined petals with a deep blue spot at each petal tip. Particularly useful for part shaded position. (Illus.)
 2560 1970 seeds \$1.50



CLEOME—Capparidaceae Spider Flower P.H.S.
 Spherical 'Queen Fountain' flower 3' tall.
 Bushy, acorn, or border plant with spiralling scarlet spires in pink, red, blue, purple and white. (Illus.) \$1.00 (90 seeds) \$1.50
 Cherry Queen' Carmine \$1.50 'Mink' composite' yellow \$1.50
 Violet Queen' \$1.50 Each of separate colours 150 seeds \$1.50



Anemone x '*Honorine Jobert*'
 2 1/2" x '*Honorine Jobert*'
 white LSU-EF 36"H x 36"W (ANE-05)
 A hybrid from mid 1800's; the best single white.
 Also:
 x '*Margarette*'
 bright pink semi-double LSU-EF 36"H x 36"W (ANE-09)



Cleome '*Fama*'
 lavender ESU, towards 3' tall.
 Attractive, late, excellent.

Ordered from Thompson & Morgan
 Jan '91

IMPORTANT!
↓

BURPEE
PACKING LIST
ACKNOWLEDGEMENT

| | |
|------------------------------------|---------------------------------------|
| ACCOUNT NO. 861330002093 | ORDER NUMBER 1568286-049007 |
| REC'D 05/04/90 | DATE 05/04/90 |
| B 90600064 | DOCUMENT 24106643 |
| SALES TAX | TOTAL ORDER VALUE 14.65 |
| | PAYMENT CHARGE ORDER |

| DESCRIPTION | PRICE |
|-----------------------------------|-------|
| MARIGOLD CLIMAX GOLDEN IMPRVD HY | 1.35 |
| ZINNIA, BORDER BEAUTY SCARLET HYB | 1.35 |
| ZINNIA RUFFLED JUMBO SCARLET | 1.50 |
| (S) WILL BE SHIPPED SEPARATELY | |
| LILIUM, MONT BLANC | 8.95 |

IMPORTANT! PLEASE SAVE THIS FORM in case an adjustment is necessary.
See reverse side.

SEE YOUR BURPEE CATALOG for more information about shipping dates for specific products

NOTHING IS MISSING
 Check code column above for explanation
 CANNOT SUPPLY—refund or credit to follow
 DELAYED—will ship when available
 RESTRICTED—refund or credit to follow
 FALL SHIPMENT in season
 SPRING SHIPMENT in season
 SHIPPED SEPARATELY

enough water during very dry spells.”

When we experienced a drought in 1991, I looked back at my garden notes from 1988, a year that, in the Midwest, had set many temperature records and gave us very little rain. I found a few helpful ideas: “Purchase a coupler so that two hoses can be run from one spigot and watering time cut in half. A timer can be purchased through Ringer and Gardener’s Supply Company catalogs.”

The notes I’d taken in the summer of ’88 also gave me an idea of what to expect as far as the length of bloom time for some of the plants in these conditions.

July 20

“The Gypsophila paniculata ‘Perfecta’ is beginning to bloom again after cutting it back about three weeks ago. It seems to thrive in these hot, dry conditions.”

Buy a rain gauge and check it after each rainstorm. Jot down the amount and keep a monthly record. The amount of precipitation your gardens happen to receive is not a factor you can adjust, but it’s interesting to compare rainfall from year to year. You’ll be more aware of how different plants perform in drier or wetter conditions, indicating which ones to buy again or the need for alternative choices and strategies.

July 4

“The Clethra was dead when we returned from vacation. Sent letter with receipt to White Flower Farm for credit.”

A really avid gardener will use many sources for plant purchases. There are hundreds of plant catalogs available and it can be more fun to browse through these than to trudge out on a rainy fall day in search of a certain Narcissus. If you order through the mail

WHAT YOU’LL NEED

You don’t need to be a naturally well-organized person to keep a garden journal. With materials found in an office supply store or local supermarket, it’s easy to keep documents, photographs, and notes in an attractive format that can be referred to during the gardening season and all year long. The following supplies are all

- you need to make journal-keeping an enjoyable habit:
- Three-ring binder.
 - Filler paper.
 - Graph paper (four squares per inch).
 - “Add-A-Pocket” dividers.
 - Heavy paper for mounting photos or photo album refills that will fit a three-ring binder.

from a reputable dealer, there is often a guarantee that extends one year from the date you receive your plants. Your journal can be used to file the receipts just in case, through no fault of your own, one of them refuses to grow. Keeping these records can also help to prevent duplication if you have been ordering a lot of plants through the mail as well as making local purchases, as I did with my gladiolus.

October 10

“The two fall-blooming Anemones, A. × hybrida ‘Honorine Jobert’ (white) and A. × hybrida ‘Margarette’ (pink), are quite healthy-looking. But while the pink one is blooming nicely, the white one has only buds.”

November 4

“It snowed yesterday and the buds on the white anemone never did open. NEXT YEAR: Try feeding the white anemone earlier in the season.”

When ordering from several catalogs, it’s helpful to cut out pictures of the plants along with their descriptions and attach them to a plain sheet of paper in your

journal. It’s fun to compare these pictures with the photos you take of these plants after they’ve taken up residence in your garden. You’ll also know what to expect as far as bloom times and the ultimate size of the plant.

April 18

“The Muscari armeniacum is at its peak, but the Narcissus I planned for them to accent are finished blooming. IN THE FALL: Move the Muscari to the front bed with the late-blooming Narcissus ‘Thalia’ and ‘Hawera’.”

June 16

“The Lilium ‘Mont Blanc’ are blooming nicely but they’re too close to the pink minirose, causing few blooms and blackspot problems. IN THE FALL: Relocate rose or lilies.”

You can’t expect to create the perfect combination of perennials every time. Before putting your mistakes behind you, put them in your journal.

You will often find articles in newspapers and magazines about promising new cultivars of garden plants that will



soon be available. A good place to keep these articles on file is a pocket in your journal, possibly labeled, “New on the Market.” That way, when you are ready to purchase additional plants (And what gardener can resist at least one?), you’ll know where to find their sources, names, and descriptions.

When those flashes of color begin to appear in your once all-brown landscape, you’ll have a game plan for the gardening season that is never long enough. And when you pick up your journal to add information about the current growing season, you’ll be drawn to its previous pages and reminisce about triumphs and failures. You’ll see your gardening skills improve before your very eyes.

Jean Starr is a free-lance writer who is working toward her Master Gardeners certificate from Purdue University.



Photographs will help you remember what your garden looked like at various times during the growing season.



POLLY HILL: *An Unerring Eye*

*Her plant introductions range from azaleas
to crabapples to clematis.*



ABOVE PHOTO BY POLLY HILL. PHOTO INSET BY MARTY CARLOCK



B Y M A R T Y C A R L O C K

Polly Hill wants to make it clear right off the bat. She is *not* a hybridizer. “I don’t push pollen around! I’m a grower. And a selector.” 🌱 In a thirty-five-year (so far) career of testing plants whose potential was unknown, Hill, now 85, has grown, selected, named, and seen marketed close to fifty varieties of woody perennials, most of them azaleas. She has developed and named another thirty cultivars, including dogwoods, hollies, and magnolias, which, because of the slowness of propagation, aren’t on the market yet. 🌱 Hill is credited with popularizing in this country compact dwarf azaleas like those prized in Japanese temple gardens. Working with a Japanese colleague, she developed what are known in the trade as “Polly Hill” or “North Tisbury” azaleas, based on a wild plant from Taiwan. 🌱 Throughout three decades

Above: ‘Chalif’, one of three Polly Hill selections of Rhododendron bakeri, adorns a native stone fence. Inset: Hill inspects shrubs in her “Playpen,” where her most prized specimens are kept.



MARTY CARLOCK

Above: A 1690 farmhouse now serving as a guest house is surrounded by beds made fertile by their former use as a chicken yard.

Right: *Cornus kousa* 'Blue Shadow'. Another Polly Hill selection, *C. kousa* 'Square Dance', has bract segments that nearly form a square.



POLLY HILL

of horticultural experimentation, Hill has never sold a plant. She gives them away, and then badgers nurserymen to propagate and promote them. "That way I don't have the IRS on my back," she says. That's part of it. The other part is, she likes to see her plants flourish—and be appreciated—in the world beyond Barnard's Inn Farm, the Martha's Vineyard locus of her experiments.

In this island setting of meadow and woodland and gray shingled structures seven miles off the Massachusetts coast, sea air moderates the state's dominant USDA Zone 5 to a more temperate Zone 6. Hill insouciantly and persistently tries plants not expected to be hardy in New England. "You never know until you try," she says.

John Elsley, director of horticulture for Wayside Gardens, which sells a number of Hill's plants and is building up stock of others, calls Hill "an amateur in the best, original English sense of the word. She has a good eye for selecting very good forms. There are few amateurs so knowledgeable about such a wide range of woody plants. The fact that so few of her plants are available is not her fault, but that of the industry. The only way these plants will become known is through publicity, and

she's a very modest, low-key person."

Richard Lighty, director of the Mount Cuba Center for the Study of Piedmont Flora in Delaware, has traded plants and seeds with Hill for thirty years, and describes her as being as meticulous as a scientist. "She's highly organized and thorough. When she doesn't know something, she gets in the car or on the phone until she finds the answer."

High morning Vineyard fog blocks the sun as I rendezvous with Hill, who waits perched on the edge of a yellow electric cart. It's the kind of vehicle used by country club grounds crews, comprising a shallow truck bed that carries tools and whatever else Hill may need in her peregrinations about the farm. She invites me aboard for a tour.

As we ride, she tells how her parents, Mr. and Mrs. Howard Butcher Jr., bought the property in 1927. "All the buildings needed work then and there was no electric power up-island." (The Vineyard's harbors, Edgartown and Vineyard Haven, are down-island, and the Tisbury are up-island.)

Henry Luce, progenitor of the publishing family, bought the land from Algonquians in 1640. The Luce family owned it until about 1860, when an islander, Bart Smith, and Albert Littlefield, a friend he

met in the California goldfields, came back to farm it. When Hill's parents bought the property as a summer place, the Littlefield family guaranteed them twenty-five acres. "When it was surveyed, it turned out to be forty-seven!" Since then, Hill has been able to buy twenty adjoining acres of woodland. But she has cultivated only twenty acres. "I wanted to keep it simple, and not clutter up the fields, and keep it manageable, because there was no gardening staff," she explains. Hill refers to planted areas descriptively as the Allee, the Barnyard, the Arbor, the Playpen.

Hill points out a lavishly blossoming *Photinia villosa* higher than the roof of a nearby shed. "I think the reason that's done so well is, this was the chicken yard," she theorizes. "In the old days everybody kept chickens, and everything around the farmhouse has done well."

When Hill's parents bought the property it had not been a working farm in thirty years, but in the nineteenth century it was a sheep farm; the soil is especially fertile around the gateways in the stone walls. She once rooted a *Franklinia alatamaha* cutting by merely sticking it into the ground.

In our yellow cart we glide past the 1690 farmhouse, modernized by Hill's mother.



It's now a guest house often occupied by Hill children and grandchildren. Hill and her husband Julian, one of the inventors of nylon, have summered in what was the cow barn. "In '35 my mother threw the animals out of the house we live in now." But it would be another twenty years before Hill was given gardening space at Barnard's Inn Farm.

Her mother was "no gardener," Hill says, and was more interested in remodeling the old buildings than in improving the landscape. Hill was "always interested in plants," though. Vacationing on the Vineyard, she and Julian and their young family cleared poison ivy and catbrier from the granite walls bordering the fields. At home in Wilmington, Delaware, she maintained a small but choice city garden and was active in the garden club. After World War II when Longwood Gardens began offering horticultural education, Hill took courses there. "I wanted to learn how to do it right," she says. One of her instructors was Longwood's director, Russell Seibert, who would continue to act as a mentor.

Just before Hill's mother died in the 1950s, she let Polly put in some seedbeds at the Vineyard place, out of sight in the woods. "I was going to do hollies. But I

planted some pines for a windbreak, and that led to conifers. Dr. Seibert said, why don't you do camellias? I thought it was pretty far out of range. But I had nothing to lose and all the time in the world." She was 50 at the time.

This great patience is one factor that has made Hill's plants so outstanding, according to Wayside's Elsley. "She has observed their performance over an extended time."

Oddly, Hill has never introduced a new camellia, but her seed-grown selections include, besides azaleas, forms of rhododendrons, dogwoods, magnolias, *Stewartia*, hollies, *Clematis*, junipers, crabapples, and sorrels.

In 1958 she took over the Vineyard property and began her experiments in earnest. By this time she had taken courses in botany, taxonomy, and plant pathology at the University of Delaware. Her dream was to create her own miniature botanical garden using plants grown from seed, a method that gives her greater variation in genetic material. Lighty says that while he was trained as a geneticist, "She seems to come by it naturally. She's fascinated with the natural variation, and she's very discriminating in choosing plants that will be usable in the garden."

It was her observation that seeds collected from the Far East were often more adaptable than American natives moved out of their normal range. She obtained Asian seeds both from her Japanese collaborator and from botanical gardens, such as Arnold Arboretum in Boston, Morris in Philadelphia, and Longwood in Kennett Square, Pennsylvania. Other seeds and plants came to her by swapping with friends "or enemies," she says with dry humor. A long-time member of many horticultural societies, she also has obtained seeds from their exchange programs.

Landscaping the farm, Hill found that its gray native stone fences make a handsome and subtle backdrop. One of her favorite walls is Beetlebung Alley, where she has planted a row of twenty black gum (*Nyssa sylvatica*, known locally as "beetlebung") along 100 feet of stone wall. Pruned to create a hedge on stilts, their trunks and high hedgelike foliage frame the field beyond.

We motor through a shady corner near the road. Hill points out a *Magnolia grandiflora*—"It blooms through October"—and a double row of *Cornus kousa*. Although these oriental dogwoods were once thought to be almost immune to the dogwood anthracnose that has decimated the native *C. florida*, the damp ocean air made her trees susceptible to the fungus about two years ago. In her allee of thirty trees, two were killed and others had to be severely pruned. "We took out two and a half truckloads of dead wood from here," she says. She looks up to assess the other twenty-eight as we glide by. "But they've practically recovered."

Hill has named and introduced seven *C. kousa*. Her favorite is 'Square Dance', whose four white bract segments come close to forming a square. Those who've seen this tree rave about it. Lighty says it is notable not only for its unique bracts, but also for its large and abundant fruits. Others among Hill's *C. kousa* are 'Big Apple', 'Blue Shadow', 'Julian', 'Snowbird', 'Steeple', and 'Gay Head'.

Like *C. kousa* 'Gay Head', some of Hill's hollies are given Vineyard geographical names: *Ilex verticillata* include 'Quansoo', 'Quitsa', 'Aquinnah', 'Tiasquam'. Family members are similarly honored. A magnolia and a dogwood are named for Julian; the Hills' three children and five grandchildren all have namesake plants.

The *Clematis* 'Starfish', on the other hand, was named for its shape. Its elongated petals make it look as though it could



Above: A blossom on *Stewartia malacodendron* 'Delmarva'.

Right: The 'Louisa' crabapple, one of Hill's widely sold selections.

Far right: Hill and a visitor chat in the "Bower," where an old *Clematis* cultivar, 'Lasurstern', is in bloom.



swim up its vine. It's an eye-catching white. 'Gabrielle', which is similar in shape, is lavender.

Hill's interest in plants wasn't reflected in her undergraduate studies. A music major at Vassar, she took zoology and chemistry, but not botany. After graduation in 1928, she traveled to Japan to teach English and gym for a year at Vassar's sister college, Tokyo Joshi Daigaku. She spoke no Japanese. "It was hard," she remembers.

But Japan was to play a major role in her horticultural work. In 1956, planning a tour of Asia with her son, she was sent with an introduction to Dr. Tsuneshige Rokujo, a professor of surgery whose avocation is hybridization of *Rhododendron* species. Hill became intrigued by the miniature azaleas that so effectively carpet Japanese gardens, and asked Rokujo to make some crosses to meet a specific objective: a prostrate, hardy evergreen form to be used as ground cover. "I'm more impressed with form than color. It's something I learned from the Japanese," Hill says.

Bill Frederick, a Delaware landscape architect, praises Hill for this sensitivity to design considerations. "She has high standards. None of her selections was a waste of time."

The Tokyo surgeon was the first to base his hybrids on the Taiwanese miniature *R. nakaharae*. This gives Hill's azaleas their desirable prostrate form. "The bloom is beautiful, too," said Gary Koller, assistant director of horticulture at the Arnold Arboretum. "There are enormous flowers on these little plants."

The basic facts about Hill's progeny—scientific name, seed origin, hybridizer, year planted, germination, location on the farm, and continuing health or demise—she methodically records by hand on three-by-five cards. Once a year she sends them to a "computer lady" in New Bedford, who enters it all and returns a bulky printout.

That's for the official record. But as we pass her favorites she has an anecdote to tell about each—finding this one on a bird walk, getting that one as a seedling in the mail. Outside the Playpen, Hill stops to admire 'Little Hill', a dwarf pine named but not yet introduced. It's the result of seeds collected from a witches' broom in an Eastern white pine tree (*Pinus strobus*). It has grown into a tiny, appealing mound shape.

The story of the rediscovery of the wild *Rhododendron nakaharae* is one of Hill's best tales. In 1969 a military wife from the Vineyard, Ann Fielder, was taking her five

children to live in Taiwan to be near her Vietnam-based husband. Hill gave her some twigs from a cultivated *R. nakaharae* and asked her to make a project of finding the wild species. Many fruitless expeditions ensued. Finally, picnicking on Mount Seven Star, Fielder's teen-aged son somersaulted down the hill, landed in a clump of brush, and shouted, "I've found it!"

Fielder collected the seed with the help of a faculty member at Tai Da University. Of those sent to Hill, two germinated and one plant lived. Twenty years later it still survives, a low and compact mound, in the Playpen. Hill says it has the richest flower color of any *R. nakaharae* she has seen.

Rokujo has sent other plants, cuttings, and seedlings. The U.S. Department of Agriculture requires that they be heat sterilized. "It's not supposed to kill them," Hill says. "Some of them don't survive the cooking, though."

In the electric cart we drive through the Arbor, a pleached arch of European hornbeam, *Carpinus betulus*. We park outside the Playpen, where Hill's most-prized specimens are protected. It's a no-nonsense enclosure thirty-five by 300 feet, surrounded by lumber-and-wire fencing ten feet high. Hill emphasizes that she respects



all of nature. She is realistic, however, allowing hunters into her woods; they took seven deer last year. “Deer will jump eight feet. They love rhododendron buds,” she says. “And this place is a smorgasbord for rabbits.”

Inside the Playpen is an array of shrubs, from the modest mound of the original wild Mount Seven Star azalea (a cultivar is sold as *Rhododendron nakaharae* ‘Mt. Seven Star’) to stately *Magnolia hypoleuca* ‘Lydia’. Hill points out ‘Wild Wealth’, a *Rhododendron yakusimanum* selection of which she is particularly proud. She pauses to admire its unfolding blossoms, cerise in bud, paling as they open to pure white. “It blooms top to bottom,” she says with satisfaction.

A former vice president of the American Horticultural Society, Hill has received countless honors for her work, including gold medals from the Pennsylvania Horticultural Society and the American Rhododendron Society and a silver medal from the Massachusetts Horticultural Society. In 1990 she was awarded the prestigious Arthur Hoyt Scott Garden and Horticulture Award at Swarthmore College for “creating and developing a wider interest in . . . gardening through her work as a grower, introducer, and promoter of superior garden plants.”

As we meander through the Playpen, Hill is approached by a neighbor. “Oh, do you have some time?” she asks. Hill excuses herself and sets him to work on a nearby bed. Returning, she explains, “That fellow is an artist. He understands plants, so when he has some time he comes and works for me.”

For some years Hill gardened without a staff. Now she has an assortment of part-timers, anchored by “head pruner,” Elizabeth McFadden, who periodically ferries over from New Bedford. “I couldn’t get along without her,” Hill says. “I don’t have to tell *her* what to do. I ask her what she’s going to do today.”

Two local women work for about ten hours apiece each week, one bringing her baby with her. There’s no time clock to punch at Barnard’s Inn Farm; the workers just tell Hill how long they’ve been there. “People come [to work here] because they like to come.”

She gets help from family members, as well. “I have a daughter who loves to prune. She does the crabapples. My grandchildren, if I can get my hands on them, are good workers.” There are five, ranging in

MARTY CARLOCK

age from 12 to 26. "Lydia, the 12-year-old—she could run this place herself."

When it was Lydia's turn for a namesake plant, Hill asked whether she wanted a small plant or a big tree. She chose the big tree. *Magnolia hypoleuca* 'Lydia' stands thirty or so feet tall in the Playpen.

Next our cart circles the north field. Hill plants things only at the perimeters. "I keep the centers of the fields open. It's how the Vineyard looks." She points out *Malus* 'Louisa', a weeping pink crabapple named for her daughter. "It stays pink; it's very fragrant. It has this umbrella shape you see. And it's disease-free."

Barnard's Inn Farm now holds some 1,700 taxa. "I'm trying to make everything I do better than what exists. Or new. Something nobody bothered to think about." She glances sideways with a suppressed smile. "You've got to beat the competition."

She has. She has grown *Stewartia malacodendron*, recommended for Zone 8, on the island. From seed sent from Georgia, she has raised and introduced three spectacular orange *Rhododendron bakeri* cultivars—'Sunlight', 'Sizzler', and 'Chalif'—here in Zone 6. "A lot of it is serendipity," she says. "Some plants don't like some people. Tree peonies don't like me. They want clay, and less acid."

Probably the most popular of Hill's introductions have been the 'Joseph Hill' azalea and the 'Louisa' crabapple; "thousands" of the flowering *Malus* are sold each year, Hill says.

There have been some frustrations, too. One of her favorite azaleas, *Rhododendron bakeri* 'Sunlight', "nobody can root. Briggs [an Olympia, Washington, nurseryman] has it, and we're hoping he can root it in tissue culture." The dogwoods 'Square Dance' and 'Blue Shadow' have potential, but no one has offered them yet. "A lot of people have them, but say they have to build up their stock" before the trees go into their catalogs. Because of the time it takes to propagate enough plants, Hill notes, "Many more of my things are in botanical gardens than in nursery catalogs."

Hill's horticultural prowess is legendary on the island. Garden clubbers tell of her appearance at a meeting carrying a *Stewartia* blossom as big as a turkey platter. She is generous to those interested in plants. One amateur gardener recalls a visit when Hill offered her an unusual milkweed seedling. On the way to dig it, Hill spotted some surplus Japanese Jack-in-the-pulpit; would

she like one? And how about some gentian? And with scientific precision, the instant she removed a plant, Hill went to the compost pile and filled the hole.

Where Hill differs from many experimental growers is her persistence in introducing new forms to the trade. If a nurseryman evinces interest, she'll invite him or her to North Tisbury. "We'll put them up, let them have whatever they want. I don't sell anything. I give it away."

Polly Hill will go some lengths to publicize her plants—even submit to an interview. She didn't like the idea. "I was brought up to believe, 'Fools' names and fools' faces. . .'" She thought it over for a moment. "But I'll do it for the plants."

"I don't want to die and have all these things die here without anybody knowing about them."

Boston free-lancer Marty Carlock writes about nature, art, and education for the Boston Globe and other publications.

SOURCES

Arthur Steffen Sons, 1253 Fairport Road, Fairport, NY 14450, (716) 377-1665. Catalog \$2. *Clematis* 'Gabrielle', *C. 'Starfish'*.

Carlson's Gardens, Box 305, South Salem, NY 10590, (914) 765-5958. \$2 for two-year catalog subscription. Azaleas.

The Cummins Garden, 22 Robertsville Road, Marlboro, NJ 07746, (201) 536-2591. Catalog \$2. Azaleas.

Roslyn Nursery, 211 Burrs Lane, Dix Hills, NY 11746, (516) 643-9347. Catalog \$2. North Tisbury azaleas.

Wayside Gardens, Garden Lane, Hodges, SC 29605, (800) 845-1124. Catalog free. *Rhododendron* 'Joseph Hill', *R. nakaharae* 'Mt. Seven Star', *Stewartia* 'Ballet'.

Weston Nurseries Inc., Box 186, Hopkinton, MA 01748, (508) 435-3414. Catalog free. *Ilex* 'Bright Horizon', North Tisbury azaleas.

The following two nurseries are wholesale only. **Do not contact them directly.** Rather, give their addresses to local nurseries if you want them to order Polly Hill plants for you.

Environmentals, Cutchogue, NY 11935. Azaleas.

J. Frank Schmidt & Son Company, 9500 S.E. 327th Avenue, Box 189, Boring, OR 97009. *Malus* 'Louisa'.

Jujubes continued from page 27

may be stored for a week to a month. The length of the storage period probably depends on the humidity, with longer storage possible in drier air. If stored at temperatures below 36 degrees the fruit may be injured and sunken areas in the fruit may develop.

Under dry conditions, on or off the tree, ripe fruits lose moisture, shrivel, and become spongy inside. These dried fruits will keep for up to a year at cool temperatures and just over 50 percent relative humidity.

In China, jujubes are eaten fresh, dried, smoked, pickled, candied, and as a butter. The fruit can also be boiled with rice or baked with breads, much like raisins. Meyer reported in 1911 that the very spiny branches of wild jujube plants were used as fencing in China, and their small, sour, though pleasant-tasting, fruits were collected by "old women and children" for pastes and preserves.

Here is the recipe for *real* jujube candy (Chinese "honey jujubes"), quoted from Meyer's 1911 report:

The Chinese take large, sound, dried fruits and boil them thoroughly in sugared water, after which they are taken out and dried in the sun or wind for a couple of days. When sufficiently dry they are given a slight boiling again and are partially dried. When dry enough to be handled, the skin is slashed lengthwise with a few small knives tied together. Then the fruits are given a third boiling, now, however, in a stronger sugar water, and for the best grades of honey jujube, honey is added. When this process is finished they are spread out to dry, and when no longer sticky are ready to be sold.

Dr. Lee Reich is a horticultural writer and consultant who lives in New Paltz, New York.

SOURCES

Edible Landscaping, P.O. Box 77, Afton, VA 22920. Catalog free. 'Lang', 'Li', and local large-fruited varieties.

Pacific Tree Farms, 4301 Lynwood Drive, Chula Vista, CA 91910. Catalog \$2. 'Lang' and 'Li'.

Roger and Shirley Meyer, 16531 Mount Shelley Circle, Fountain Valley, CA 92708. Send self-addressed stamped envelope. 'Lang', 'Li', 'Silverhill', 'So', and about twenty other cultivars.



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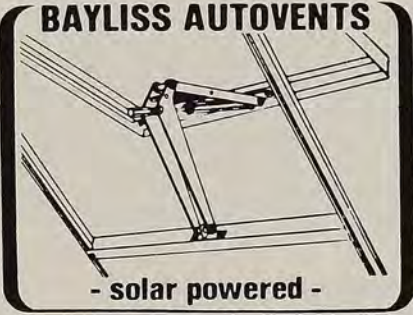
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"GREAT GARDENERS OF AMERICA" LECTURE SERIES SCHEDULE: APRIL TO MAY 1992

- April 25:** "American Gardens in Jeopardy, Opportunities for Optimism." *H. Marc Cathey, National Chairman for Florist and Nursery Crops Review with the Agricultural Research Service, Former Director of the U.S. National Arboretum*
- May 2:** "The Luxuriance of Peony, Hosta, and Daylily Gardening" *Roy Klehm, Owner of Klehm Nursery in South Barrington, Illinois*
- May 9:** "Gardening: The Great American Dream" *Carolyn Marsh Lindsay, Immediate Past President of AHS from Rochester, New Jersey*
- May 16:** "Gardening in All Five Senses" *Alan Lacy, Author and Garden Columnist from Linwood, New Jersey*

May 23: "Gardening for the Design of It" *Sally Boasberg, Landscape Designer from Washington, D.C., and AHS Board Member*

May 30: "Flower Arranging for Floral Artists" *Pauline Runkle, Floral Artist from Manchester-by-the-Sea, Massachusetts*

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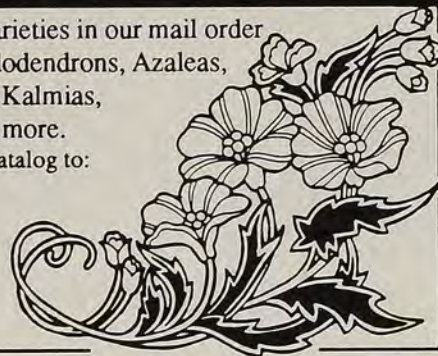
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 × *Aporophyllum* × uh-por-oh-FIL-um
Astrophytum as-tro-FYE-tum
Brugmansia × *candida* brewg-MAN-see-uh × KAN-dih-duh
Carpinus betulus kar-PINE-us BET-yew-lus
Cephalocereus senilis sef-uh-lo-SEE-ree-us seh-NIL-iss
Cestrum nocturnum SES-trum nok-TURN-um
Cleistocactus klay-sto-KAK-tus
Clematis KLEM-uh-tis
Cleome klee-OH-mee
Clethra KLETH-ruh
Cornus florida KOR-nus FLOR-ih-duh
C. kousa C. KOO-suh
Datura metel duh-TOUR-uh MEH-tel
Dianthus dye-AN-thus
Discocactus alteolens dis-ko-KAK-tus al-tee-OH-lens
Echinocereus pectinatus var. *rubrispinus* ek-in-oh-SEE-ree-us pek-tin-AY-tus var. roo-brih-SPY-nus
E. reichenbachii var. *baileyi* E. rye-ken-BAK-ee-eye var. BAY-lee-eye
E. viridiflorus E. vir-ih-dih-FLOR-us
Echinopsis leucantha ek-ih-NOP-sis lew-KAN-thuh
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Fagus grandifolia FAY-gus grand-ih-FOE-lee-uh
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Gymnocalycium friedrichii jim-no-kuh-LIH-see-um freed-RIK-ee-eye
Gypsophila paniculata jip-SOF-ih-luh pan-ik-yew-LAY-tuh
Hosta HOS-tuh
Ilex × *altaclarensis* EYE-leks × al-tuh-kluh-REN-sis
I. aquifolium I. ah-kwih-FOE-lee-um
I. cornuta I. kor-NOO-tuh
I. crenata I. kree-NAY-tuh
I. decidua I. deh-SID-yew-uh
I. dimorphophylla I. dye-more-foe-FIL-luh
I. glabra I. GLAY-bruh
I. liukiuensis I. lew-kew-EN-sis
I. × meserveae I. × meh-SERV-ee-ee
I. opaca I. oh-PAY-kuh
I. serrata I. ser-AY-tuh
I. verticillata I. ver-tih-sih-LAY-tuh
Lilium LIL-ee-um



Mammillaria zeilmanniana 'G. Thompson'.

Magnolia grandiflora mag-NO-lee-uh grand-ih-FLOR-uh
M. hypoleuca M. hye-poe-LOO-kuh
Malus MAL-us
Mammillaria longiflora mam-mil-LAIR-ee-uh lon-gih-FLOR-uh
M. surculosa M. sur-kew-LO-suh
M. theresae M. teh-REE-see
M. zeilmanniana M. zyle-man-nee-AY-nuh
M. zeilmanniana var. *albiflora* M. zyle-man-nee-AY-nuh var. al-bih-FLOR-uh
Mesembryanthemum mes-em-brih-AN-thee-mum
Muscari armeniacum mus-KAY-ree are-men-ee-AY-kum
Narcissus nar-SIS-us
Neopteris gerocephala nee-oh-por-TER-ee-uh jer-oh-SEF-uh-luh
N. napina N. NAP-ee-nuh
N. rapifera N. rap-IF-er-uh
Notocactus magnificus no-toe-KAK-tus mag-NIF-ih-kus
N. uebelmannianus N. oo-bel-man-nee-AY-nus
Nyssa sylvatica NISS-uh sil-VAT-ih-kuh
Oreocereus hendriksenianus oh-ree-oh-SEE-ree-us hen-drik-sen-ee-AY-nus
O. hendriksenianus var. *densilanatus* O. hen-drik-sen-ee-AY-nus var. den-sil-an-AY-tus
Oxydendrum oks-ih-DEN-drum
Pachypodium pak-ee-POE-dee-um
Parodia catamarcensis puh-ROE-dee-uh kah-tah-mar-SEN-sis
P. laui P. LAUW-ee
P. mairanana P. mare-uh-NAY-nuh
P. schwebsiana P. shwebz-ee-AY-nuh
P. tafiensis P. tah-fee-EN-sis
Pediocactus peh-dee-oh-KAK-tus

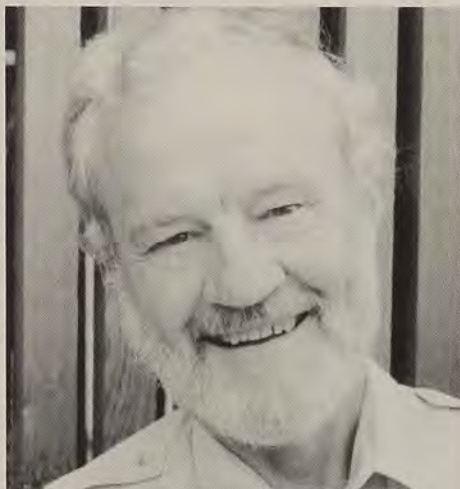
Photinia villosa foe-TIN-ee-uh vil-LO-suh
Pinus strobus PINE-us STRO-bus
Primula auricula PRIM-yew-luh ah-RIK-yew-luh
P. chionantha P. kye-oh-NAN-thuh
P. clarkei P. CLARK-ee-eye
P. cockburniana P. ko-burn-ee-AY-nuh
P. denticulata P. den-tik-yew-LAY-tuh
P. floribunda P. flor-ih-BUN-duh
P. florindae P. flor-IN-day
P. helodoxa P. heh-lo-DOKS-uh
P. japonica P. jah-PON-ih-kuh
P. juliae P. JEW-lee-ee
P. × juliana P. × jew-lee-AY-nuh
P. × kewensis P. × kew-EN-sis
P. malacoides P. mal-uh-KOY-deez
P. obconica P. ob-KON-ih-kuh
P. × polyantha P. × pol-ee-AN-thuh
P. rosea P. ROSE-ee-uh
P. rubra P. ROO-bruh
P. saxatilis P. saks-uh-TIL-iss
P. sieboldii P. see-BOL-dee-eye
P. sinensis P. sye-NEN-sis
P. veris P. VER-iss
P. veris var. *hortensis* P. VER-iss var. hor-TEN-sis
P. verticillata P. ver-tih-sih-LAY-tuh
P. vialii P. vee-ALL-ee-eye
P. vulgaris P. vul-GAY-ris
Rebutia narvaecense reh-BEW-tee-uh nar-vee-SEN-see
Rhododendron bakeri roe-doe-DEN-dron BAKE-er-eye
R. nakaharae R. nak-uh-HAH-ree
R. yakusimanum R. yah-koo-see-MAY-num
Sclerocactus sklee-roe-KAK-tus
Selenicereus seh-lee-nih-SEE-ree-us
Stenocereus beneckeii sten-oh-SEE-ree-us ben-EK-ee-eye
Stewartia malacodendron stew-AR-tee-uh mal-uh-ko-DEN-dron
S. pseudocamellia var. *koreana* S. soo-doe-kuh-MEEL-yuh var. kor-ee-AY-nuh
Sulcorebutia arenacea sul-ko-reh-BEW-tee-uh are-en-AY-see-uh
Turbnicarpus lophophoroides ter-bin-ih-KAR-pus loe-foe-for-OY-deez
T. pseudomacrolele T. soo-doe-mak-roe-KEE-lee
T. pseudopectinatus T. soo-doe-pek-tih-NAY-tus
T. schmidickeanus T. shmed-dik-ee-AY-nus
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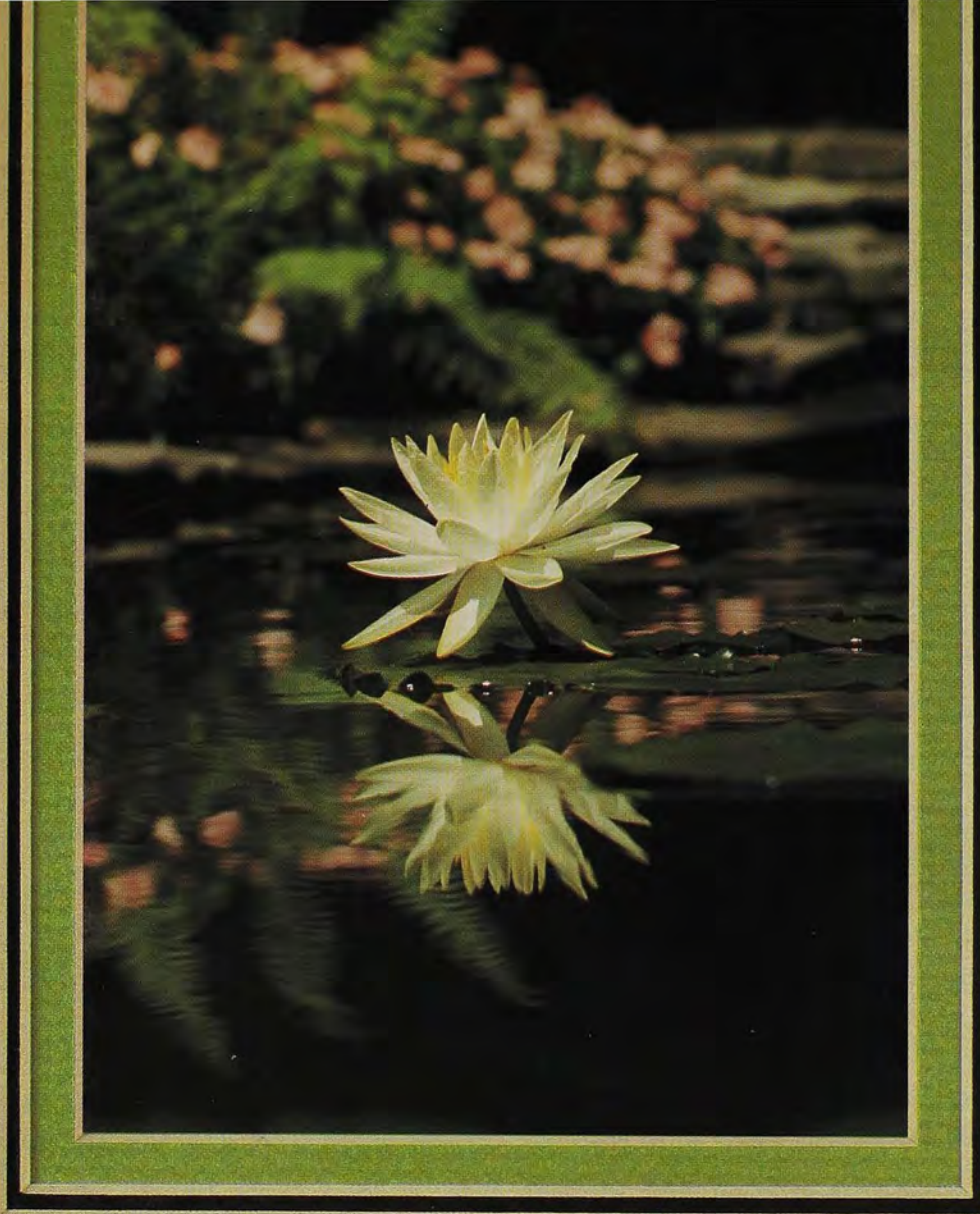
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