

American

# Horticulturist



Volume 54 Number 6 Winter 1975

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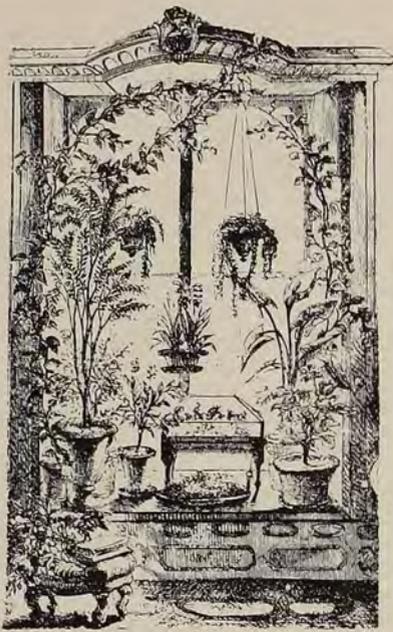
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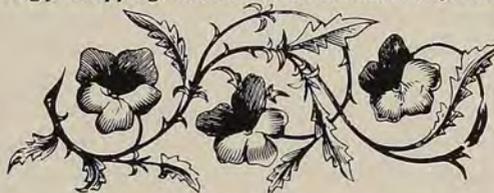
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## *Horticulturists: Certified, Sealed, and Delivered*

How reliable is the information available to gardeners in the United States? Many of us have "Dear Abby's" to help guide us with gardening problems. Yet, with thousands of varieties of plants to be grown, few general horticulturists are available to answer the countless questions which arise. The problem is further compounded by incompetent "sayers and sages" who present misleading, inaccurate, and obscure methods of solving horticultural problems.

Each of us has limits to our knowledge and gardening initiative. This is why "liars panels" or "plant clinics" rate high in the needs of every gardener. But they do not provide the ultimate solution. Each of us tends to select or hear only the flow of words that we want to hear and often disregard the rest. Seldom does one hear later that "your suggestion did a (pick one) *good, poor, lousy, fantastic* job for me." Most of us forget where a gardening idea came from anyway. This information is blended with other ideas and distortions to produce new impressions. When I was a beginning gardener, I sought the advice and continuing guidance of seasoned gardeners. Sometimes they suggested procedures that later on did not bear up under the scrutiny of a "so called" technical education, but at least they got me headed in the right direction. It is not usually possible to learn something the "correct" way the first time.

How do you acquire basic gardening knowledge? Very few of us decide that acquiring gardening information will be the major pursuit of our lives. Even in my days as an undergraduate in the horticultural department in my state university—our numbers were small. Few of my classmates in the undergraduate and even graduate programs are still working with plants today as a vocation. Real estate, banking or association work ultimately became their professions. The American Society for Horticultural Science lists about 3000 professional horticulturists in the U.S.—hardly enough to go around. The

advanced gardeners, therefore, must play major roles and handle many of the jobs communicating the hows, whys, do's and don'ts of the plant world.

All horticultural courses in our universities, arboreta, botanic gardens and local clubs are now brimming with students. Many do not expect to weave this gardening knowledge into a profession. They just want to acquire a few basic skills. However, some of these people *will* want to become professionals. This is why AHS started the Horticultural Certification Program. At the Washington Congress—October, 1974, AHS awarded the first certificates to five people. They had shown through a written test and a demonstration of practical skills that they had the basic knowledge to be recognized as a "horticulturist." We are currently restructuring and expanding this program with the cooperation of the American Association of Botanical Gardens and Arboreta and its more than 100 member institutions. We are developing a way for qualified individuals to gain professional recognition.

Horticulturists must have more than skills, they must be communicators of sensible and clear gardening information. I have had the opportunity to gain a national audience through the written and spoken word. Recently, I appeared on the NBC TODAY Show for the eighth time in two years. Each show emphasized the discovery of new plants and gardening techniques that were feasible for everyone. All scripts were reviewed by other horticulturists and stressed the best and the most up-to-date information. Perhaps this is the only course of checks and balance open to us: read the materials published, make comments about material that is insufficient or misleading and fire it back to the author. This magazine, *American Horticulturist*, serves only when it provides the best information for all gardeners. None of us can claim to be master gardeners, but all of us can claim to be *growing* gardeners.

Henry M. Cathey  
President, AHS

American

# Horticulturist

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**OUR COVER PHOTO**—Red and white Poinsettias courtesy of USDA, Beltsville, Md.

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# A New Era For Poinsettias

## Performance and Resistance

*Henry M. Cathey, President  
American Horticultural Society  
Chief and Research Horticulturist  
U.S.D.A. Beltsville, MD.*

My phone calls and mail during April to June bring almost daily stories of the discovery of a new "wonder" poinsettia plant. Callers say their poinsettia is in almost the same condition it was when purchased the previous December. They feel that their plant just has to be some exclusive "sport." "I never had one last so long before," they say. The voice on the other end becomes even more confused when I say, "You have one of the NEW ERA varieties of poinsettia. All of the accomplishments can be traced back to the past 13 years with the discovery of completely new poinsettia types, new methods to regulate size, flowering, pollution tolerance, and new control measures to ward off pests and diseases."

The poinsettia, more than any other plant in our lifetime, has become the highest unit-value flowering plant sold by the florist industry. Compare it on a time x cost performance rating with any other flowering gift plant. A one time investment means the purchase of a decorative plant which gives 2, 4, or 5 months of display without a significant change. Since I have been involved in NEW ERA poinsettia research I'll pass along some ideas to help you enjoy them more fully.

### Varieties

In 1825 Joel Robert Poinsett collected 16 original plants near Taxco, Mexico. From his greenhouse in Greenville, South Carolina, he distributed plants to botanical gardens and friends. Nurseyman, Robert Buist, made the first poinsettias available to the public. Until 1923, cuttings from the original introduction were grown primarily in botanic gardens or as a flowering shrub for

landscape use in the tropics. The use of poinsettias as a pot plant began with the introduction of OAK LEAF in 1923. From 1923 to the mid 1960's all of the principal varieties were mutations (sports with only minor variations from the original seedling) from the OAK LEAF seedling selected and developed primarily by Paul Ecke of California.

Dr. Robert N. Stewart, research horticulturist (USDA Beltsville, MD), has helped commercial breeders of poinsettias understand the potential for breeding many new desirable characteristics: stiff stems, pollution tolerance, large bracts, new colors, and lasting qualities. Much of the information regarding characteristics of the mutations has been based on his work.

Any red poinsettia can occur in 4 basic color forms: Red, pink, dawn, and white. The appearance of the bracts is based on the absence or presence of anthocyanins in the 3-layers of every leaf and bract. One cannot breed for a pink or dawn poinsettia since the germ cells are formed in layers. They must be selected as mutations from large populations of plants.

### New Era

. . . PAUL MIKKELSEN (1963) was the first variety with stiff stems and retained its bracts and leaves for long periods of time.

. . . ANNETTE HEGG, the first multi-flowering variety, was a Norwegian introduction in 1964. It was unique in that 5 to 10 side shoots, each with a set of bracts and cyathia (true flowers), were produced from the removal of a single growing point. The cuttings rooted easier and





Red, white and pink foliage Poinsettia plants of the Hegg variety.

flowered earlier than the previously known seedlings. This variety is most commonly sold by mass market outlets and will thrive under cool (55°) growing conditions.

. . . ECKESPOINT C-1, the first extra large variety with smooth-surfaced, upright bracts which required a minimum of staking was introduced in 1968; this variety is most commonly sold by florists and requires a minimum temperature of (65°) to develop properly.

. . . USDA SEEDLINGS such as Stoplight (Spectrum red), Rudolph (Intense red), Truly Pink (genetic pink) and Ruff and Reddy (intense red and rough surfaced bracts with a high level of tolerance to air pollution) were introduced by Dr. Stewart to supply fertile breeding lines with known genetic potential for use by commercial breeders.

Other varieties available may not have national distribution.

The New Era Poinsettia varieties are giving rise to mutations with all kinds of BRACTS (intense red, orange, shocking pink, mauve, bicolors, transparent white to almost yellow), STEMS (stiff, highly branched, procumbent), LEAVES (magnolia, oak or holly shaped, variegated and anthocyanin filled). This variability is most remarkable since all poinsettias are considered to be derived from a single species.

#### Light Requirement

**OLD:** The OAK LEAF type varieties required direct daily bright light throughout their life to retain their cyathia (flowers), bracts, and leaves. The plants seldom survived as pot plants past January 10 of any Christmas Season.

**NEW:** The long lasting varieties such as Paul Mikkelsen and Annette Hegg will survive well even under dim light

conditions. As long as one does not water log the growing media. Given a moderate level of mineral nutrients, plants will survive 8 to 12 feet away from an undraped window. For the development of large and brightly colored bracts, however, direct sunlight for 4 to 6 hours daily is required throughout the plant's development. Once its bracts are brightly colored, however, the plant may be moved to a dim spot for weeks of continuous display.

#### Artificial Light

**OLD:** Poinsettia plants grown under incandescent—filament lamps produce stems with long internodes, a few aborted cyathia surrounded by crippled bracts.

**NEW:** Fluorescent lamps can provide an adequate light environment to grow and flower poinsettia plants throughout the year. The most rapid flowering occurs when the recently rooted cuttings are exposed 6 inches away from fluorescent lamps, 10 hours daily, excluded from light of any kind for the remaining 14 hours. The day temperature should be 65°F, the night can be as low as 55°F.

#### Temperature Requirement

**OLD:** Poinsettias had to be grown at a minimum night temperature of 65°F, otherwise leaf drop occurred soon after flowering began.

**NEW:** The New Era varieties, particularly the Mikkelsen and Hegg types, possess characteristics which permit their culture at temperatures as low as 55°F. The stockplant must be grown and cuttings rooted at temperatures above 65°F. Once the plants have rooted, they may be grown at progressively cooler temperatures and will develop brightly colored bracts for Christmas.

#### Media and nutrients

**OLD:** Dig up the clay from the subsoil level—break up the clogs, let it dry. Pot 4 in. hardwood cuttings in the dry mix. Water and watch some of the cuttings strike root.

**NEW:** Prepare an artificial growing media consisting of 2 parts sphagnum peat moss, 2 parts vermiculite, 1 part perlite, and 1 part builder's sand. To each cubic yard of mix add 1 lb. of calcium nitrate, 2½ lbs. of superphosphate, 5 lbs. of dolomitic lime, 5 lbs. calcium carbonate, and 1 lb. iron sulfate. Add a completely water soluble fertilizer to the water—you should be able to count at least 12 elements in the mix. Apply 60 g of 20-16-66-8.3 NPK dissolved in 1 liter of water twice a week through an injector in the ratio of 1=100.

#### Promote rooting

**OLD:** Select leafless stems, cut into 3 to 4 in. sections. Insert into a bench in a greenhouse filled with builder's sand. Water and maintain temperature above 60°F. Even-



“POLLINATING”: The hands of Franz Freuhwirth, hybridizer, delicately pollinating unnamed Eckespoint® Seedlings.



JINGLE BELLS, Red and Pink Novelty—Discovered by John Fantom, Baltimore, Maryland.

tually some of the hardwood cuttings will root.

**NEW:** Select 3-4 in. cuttings from rapidly developing vegetative stock plants. The softwood cuttings must be free from disease, experience no moisture stress and be maintained at a minimum temperature of 70°F and a maximum of 85°F. Wash all working area surfaces with 5% household bleach (diluted 1 to 9 parts water). Leave all leaves on the cutting. Dip base of cutting into a dust containing 2500 PPM of indolebutyric acid. Insert cuttings into rooting media, water thoroughly and start mist. To keep a film of water on the leaves at all times, mist 5 seconds every 5 minutes during the daylight hours. The propagation area may have to be covered with shade (saran or whitewash) to reduce light during periods of bright weather. When the cuttings form a callus (in 7 to 10 days) one can start to fertilize the plants. The cuttings are removed from the rooting bed when the roots are at least 1 in. long (in 14 to 18 days).

### Inhibit Flowering

**OLD:** Flowering eventually occurred, regardless of growing situation.

**NEW:** Poinsettias are one of the most sensitive photoperiodic plants to artificial light at night. Even 0.01 foot candle (equivalent to the light from one candle 100 feet away) is sufficient light to stall the development of flowers. One foot candle, regardless of source, shining all night will indefinitely inhibit the flowering of all varieties of poinsettias. For the minimum energy use to inhibit flowering, mount 7½ watt incandescent lamps 4 feet above the plants, 4 feet apart. Light the lamps 3 seconds every minute from 11 p.m. to 1 a.m. daily to insure continued vegetative growth of all varieties of poinsettias.

### Promote Flowering

**OLD:** Flowering usually occurred sometime during the winter months. It could be as early as Thanksgiving or as late as Valentine’s Day—but one could expect some display by Christmas time.

**NEW:** Flowering is controlled by regulating the growth, daylength and temperature of the plants during October and November. Poinsettias are plants and need daily periods of 13 hours light—11 hours dark to begin to initiate flower buds. To control the daylength—a black plastic or a sateen cloth (a minimum of 68 × 104 threads to the inch), is applied to cover the plants for 14 hours daily, usually from 5 p.m. to 7 a.m. For off-season flowering, the long night treatments must continue until the bracts are well developed, otherwise chlorophyll may develop in the bracts and discolor them. Year round flowering may be achieved by inhibiting and promoting flowering through the use of artificial light and opaque coverings.

**Weeks to Flower**

Annette Hegg types	8 wks.
Paul Mikkelsen types	9 wks.
Eckespoint C-1 types	10 wks.
USDA: Ruff'n Reddy	10 wks.
Stoplight	10 wks.
Truly pink	10 wks.

**Height control**

**OLD:** In late summer, stop watering the plants—let the leaves wilt. While the plant is in flaccid, fold the stems into a S-shape. Use wires to hold the bent stems to stakes. The twisted leaves eventually right themselves and the cracks on the stem heal over.

**NEW:** Use a chemical growth retardant to control internode elongation without altering the number of leaves formed or the time of flowering. Cycocel®, B-Nine® and A-Rest®, are registered for poinsettia use.

By adjusting the concentration and time of application of the chemicals, one can grow plants of any size. The first benefit observed from growth regulator application is the darkening of the green foliage. Overtreatment can cause a reduction in the size and the crinkling of bracts. The label suggests the proper procedure for using the chemical retardant safely and efficiently.

**Air pollution**

**OLD:** Plants in late summer or early fall often lose most of the bottom leaves. The loss is due in part to oxidants (ozone, Sulfur dioxide) in the air from industrial and auto exhausts. Plant a quick growing fern in the growing media to help disguise the bare stems.

**NEW:** Select one of the new varieties in the Ruff'n Reddy from USDA breeding program, Annette Hegg or C-1 families which possess increased tolerance to ozone and sulfur dioxide. Plants treated with Cycocel®, B-Nine® and A-Rest® keep their stomates closed, have reduced intercellular air spaces and thus have less visible injury to air pollution than plants grown without the treatments.

**Sensitivity to Sulfur dioxide**

Greatest	Intermediate	Least
Annette Hegg	Dark Red	Ruff'n Reddy
Trulypink	Annette Hegg	
	Eckespoint C-1 Red	
	Paul Mikkelsen	

**Control rot diseases**

**OLD:** At the first sign of the development of black,

rotted areas, the grower would stop fertilizing and cease to water the plants for long periods. Many of the plants died, others survived sufficiently long to produce flowering plants. Most plants sold were contaminated.

**NEW:** Poinsettia plants are subject to *Rhizoctonia* (stem and root rot), *Pythium* (water mold root rot), *Thielaviopsis* (black root rot), *Botrytis* (gray mold), *Erwinia* (bacterial soft rot) and *Corynebacterium* (bacterial canker).

These organisms may be transported in water, soil, on contaminated tools, and on the hands of workers. Sanitation is the prime control. Eliminate all weeds and debris. Wash down all surfaces with a household bleach. Keep all hoses, tools, growing media, and benches free of contamination. Rogue out obviously infected plants—drench growing media with fungicides to suppress the continued development of the organisms. Benlate®, Dexon 35®, and Terraclor 75WP® have demonstrated that control of the diseases without plant injury is possible. Use according to label.

**Insect Control**

**OLD:** Flare-ups of whiteflies occurred throughout the growing season. The infestation of white flies could become so heavy in certain areas that the plants start to get dirty, black, sooty-mold look. Scraping the eggs off the leaves and washing with warm soapy water were the only control methods.

**NEW:** The approach now is the use of an integrated control program, combining cultural, insect predators, pyrenones (synthetic pyrethum) with extremely low mammalian toxicity. The plants are grown at night temperatures 68° to 75°F (warmer than the optimum one for the plants) to promote the growth of predator. The pyrenone is used to kill the adults prior to introduction of the predatory wasps to control the hatching of the whitefly eggs. Near complete control of the whitefly population is possible. The label of the pyrenone tells how to use the chemical safely and effectively.

**Toxicity**

**OLD:** The poinsettia belongs to the Spurge Family (*Euphorbiaceae*) that comprises approximately 7000 herbs, shrubs and trees. The latex of spurges causes skin irritation, diarrhea, photosensitization, and cyanogenetic poisoning to cattle, horses, and humans. In Mexico the leaves have been applied as poultices for skin infections and brewed and taken internally by nursing mothers to increase the flow of milk.

**NEW:** There are many claims but little original documented evidence can be found on the toxic agents in poinsettia plants. Stone and Collins reported in 1971 that 160 rats showed no apparent ill effects when given large doses of hornogenates made from the leaves, bracts, or

flowers of the poinsettia, variety Eckespoint C-1 Red. In 1967, Dominiquez, Khastgir and Pradhan found extracts of poinsettia to contain common plant sterols or triterpenes, none commonly considered toxic. We still await additional evidence from other workers on the toxic constituents of the many varieties of poinsettias which are available to consumers. As with all items of special value in our living space, poinsettias should be kept out of the way of people who do not know how to handle them carefully. Keep your hand wet when you handle the plants and wash your hands thoroughly afterwards.

### Uses

**OLD:** Poinsettias were used as flowering shrubs. In the tropics or as cut flowers (with the stems burned to seal the latex flow) for a Christmas display.

**NEW:** Poinsettias are successful and dependable plants for year round use.

1. Form—train as an 8 ft. tree or a 6 in. minipan-single stem or multiflowered. Group as single plant or in masses.
2. Texture—mix red; pink, dawn, and white forms of a variety with green and variegated foliage.
3. Space—Make multi-flowering poinsettias into a hanging basket. When bracts are beginning to develop color, take out of pot and wrap entire plant in a sheet of paper. Cut 4 to 15 8in. holes in the side of a 10 in., self-adhering saucer, plastic hanging basket. Fill with artificial growing media up to holes. Pull a plant from the inside out in the 4 holes. Fill in more media and add 3 plants on top. Water and fertilize as before, plants will turn and fit into a solid ball of bracts and foliage.
4. Cut Plant—Wash growing media off the roots of a flowering plant. Scrub with a brush to remove all adhering debris. Use in arrangements as a cut flower, plants with roots will last longer and retain better bract and leaf-color than branches cut off and sealed with boiling water or fire.
5. Bedding plant—Plant into garden beds along with annuals to create at the time of planting, they should be watered and fertilized at frequent intervals until their roots knit into the bed. The bracts will develop a rusty cast as chlorophyll forms in the cells. Expect the display to last until frost.

### What to do to buy and care for a Poinsettia plant

1. Select plants with green foliage all the way down to the soil line. This is a good indication that plants have active, healthy roots.
2. Look for plants that have small green buttons (Cyathia) in the middle of the bracts. These buttons will eventually develop into flowers.
3. When transporting plants home, make sure they are protected from temperatures lower than 50 degrees. Chilling causes the leaves to drop.

4. Water plants thoroughly when you get them home. The entire soil area should be thoroughly saturated.
5. Later, take it easy on watering, because the plants won't need very much. Water every three or four days.
6. Fertilize plants within several days. They are without plant food during the entire marketing process and will need a feeding by then.
7. If you keep curtains drawn during the day to conserve heat, remember that Poinsettias must have at least six hours of bright indirect light daily to thrive.
8. Keep plants away from drafts, radiators and hot air registers.

### What to do to flower a plant a second time

**OLD:** Soon after Christmas, the plant dropped all of its leaves. You left the plant in a dry cool spot until April-May. You then repotted the plant placed it in a bright spot in the window, started to water and fertilize. Shoots eventually developed. You continued to grow it in the window until the Fall. From October 1 to December you put the plant in a light-tight closet every night to give the plant 14 hours of dark from 5 p.m. to 7 a.m. A few brightly colored bracts developed in time for Christmas.

**NEW:** The New Era varieties never stop growing—they retain their leaves and bracts for many months. You continue to give the plant water and fertilizer at 3 to 4 day intervals. Side shoots begin to develop in January. By June, if these shoots are not removed, your plant may have developed into a 4 foot foliage tree—with many branches and large leaves. Repot the plant into a larger (8×10×12 in.) container. Move the plant out-of-doors for the summer. By October 1 you can have an 8 ft. foliage tree with more than 100 growing points. Give the plant 4 to 6 hours of direct light a day and 14 hours (5 p.m. to 7 a.m.) of darkness. Put on wheels—move into a light tight closet in your living space to give the plant a 14 hour night. Maintain the temperature at 65°F at night, continue to water and fertilize at 3 to 4 day intervals. You should have a massive display of brightly colored bracts beginning the first week of December.

### OR

You may cut back the plant anytime during the growing season, making the last pruning in mid August, to control the size of the plant. The cuttings may be rooted in a pot filled with your artificial growing media. Dust the base of the cutting with a rooting powder. Insert cutting into media, water thoroughly and place pot and cuttings into a large polyethylene bag. Seal and place it in a brightly lighted area at 65°-75°F. Roots will begin to form in 14 to 18 days. Punch holes in the bag when the cuttings begin to grow. Remove bag and grow plants just like all of your other plants.

**P.S.:** Enjoy your new-era of poinsettias!

# From Pavement to Garden

by Linda Yang

Ms. Yang is author of "The Terrace Gardener's Handbook". Doubleday, N.Y.

adapted from "Gardens on Parade"  
The Queens Botanical Garden  
Society Inc., N.Y.



Lucky the terrace gardener who has room for al fresco dining among his plants.

Several square feet of pavement is all you need if you want to have a garden. That's right . . . pavement! City folk, limited to apartments with balconies, terraces, rooftops or small houses with patios or decks, often assume they can't grow trees, flowers, or vegetables. But this is one assumption which "ain't necessarily so." For any plant which can be grown outside IN the ground, can also be grown outside ON TOP OF the ground . . . in tubs. But it just takes a bit more work.

One secret of successful terrace gardening, especially where woody plants are concerned, is to start with either B & B (balled and burlapped) or container-grown nursery stock. These are plants which have a good amount of fine roots, intact, and are surrounded by the soil in which they were originally grown. Although more expensive, they are well worth the extra money. And it is best to buy them from a reputable dealer in your vicinity, or within a radius of less than 40 miles or so. This is important,

largely because an experienced nurseryman will only carry those plants which he has found to be tolerant of local climate and air conditions. By beginning with reasonably mature (that doesn't have to mean big) plants, you will know that they have been given a good start in life. Thus, they will be better able to adjust to the "cultural shock" of the move to your terrace.

Another advantage to buying directly from a nearby nurseryman is that you will be able to select the very specimen you like, choosing the plant with the most suitable height, width, leaf tone and form, and of course, flower color. But best of all, by using mature plants, your terrace is transformed instantly into a garden. It may be fine on a country estate to wait 10 years for a shrub to look like a shrub . . . but on a tiny terrace, that's 10 years too long!

Another ingredient for successful terrace gardening is to use as generous size containers as you have room for. This is vital since the tub is the

only home the roots and soil can have. A good quantity of soil is necessary not only to store the vital nutrients and moisture, but for hardy plants which remain outside all year, the soil is also an insulator that protects the roots from the cold.

Because the tub size affects the plant's survival, I have found that for woody plants on terraces in this area, a safe, yet practical minimum container size is 14 inches in diameter. Wherever possible, I try to use tubs which are larger, but for hardy trees, shrubs or vines, never use anything smaller.

If you survey your "property" carefully, you can easily see how many big plant containers you can fit in and still have room for humans. One method which will help you determine the size and location of the tubs is to use chalk and draw outlines right on the floor. Chalk is easily removed and permits you to change your mind as much as you like.

If yours is a tiny space, plan to make the most of your corners and



Different garden spaces are created by this small trellis covered with a sliverlace vine.

ends for plant locations. But it's fascinating to be able to see your trees and shrubs from indoors all year as they change with the seasons. Thus, where possible, place them within view of your windows or glass doors. And rather than lining them up in rows, like soldiers against the wall, be sure to arrange them in groups. This will make your garden more interesting as well as give the illusion of greater depth and spaciousness.

As for the choice of containers, it's relatively easy to build wooden ones if you're of the do-it-yourself school. But I gave up on that when I found that an amazing assortment of ready-mades were to be found not only at garden centers but at junkyards, brewer's and other such places. In fact, nearly anything can serve as a container for plants, provided it is weather-resistant and non-toxic and can have holes drilled in the bottom for drainage.

Since vegetables and flowers are grown outside in the area only during the summer, the minimum tub size required for woody plants does not apply. I've seen these warm-weather plants growing quite happily in discarded tires (no kidding!), driftwood, old milk cans and even broken teapots.

One final factor for successful terrace planting is that the gardener must be acquainted with the actual light available. There are nursery plants to be found for every light condition ranging from full sun to dense shade. But before you can decide what to buy, you have to know what the home you are giving it is like. Remember that the compass will tell you little about your true gardening conditions, especially in densely built areas. The amount of sunlight changes not only throughout the day, but throughout the year.

The only way to know the space you really have is to get out there and look, not once, but many times. Most likely what you find will be quite different from what you thought you would find.

# Liberty Hyde Bailey as I Knew Him

L. H. MacDaniels  
*Professor Emeritus, Cornell University*



The first time I saw Liberty Hyde Bailey was in 1907 when he gave a lecture at Oberlin College in Ohio. All I recall is that I remember *him* when many other lecturers are forgotten. I don't remember what the lecture was about, except that somewhere along the line he recited poetry, some of which I do recall. My next contact with him was 1912, when I came to Cornell as a graduate student. He was then Dean of the College of Agriculture where he was busy with the growth of the College. New departments of Plant Pathology and of Floriculture, among others, were formed and the Department of Botany was organized in Agriculture rather than in the Arts College.

At that time Dean Bailey drove to his office in an open carriage, wearing gray gauntlet gloves and a light gray, broad-brimmed, Texas-style hat. The hat and gloves were a sort of hallmark that appeared in photographs of the time.

As is well known, Dr. Bailey had a plan for his career. The first twenty-five years would be spent in learning a profession, the next quarter century in gainful employment, and the rest of his life in doing as he pleased. So it happened that in 1913 he offered his

resignation as Dean of the College of Agriculture. This was not officially accepted at first. To show that he meant it, Bailey closed the door of his office as Dean and never returned. The rest of his life was spent with headquarters at his home on Sage Place where his daughter, Ethel Zoe Bailey, still lives.

During the early days of Dr. Bailey's retirement from the University, I did not know him well. I was an instructor in Botany and went to him occasionally to identify a plant or for advice on some matter relating to botany. Going to see him was usually an experience to be remembered. He would look at the plant, give it the correct name, and say something like, "I collected this species on the south slope of Mt. Katahdin in July, 1922." He would then go to the herbarium case and show you the plant which he had collected. I learned that he was intolerant of ignorance, inefficiency and sham, and that it was well not to bother him with trivia. On the other hand, if you had a legitimate question, he would listen and would give you a considered answer.

In 1925, Dr. Bailey asked me to write the articles on fruits for Hortus II. The assignment was precise: one hundred dollars for the lot, each with specified number of words and deadline. The work was completed except for an article on growing grapes under glass, when I went to him explaining that I was unable to finish it before going on sabbatic leave. He simply said, "I want the article before you go." It was written in a hotel in

San Francisco just before the ship sailed. The above is relevant only as it shows his own rigorous, disciplined work habits.

In my opinion, Dr. Bailey's greatest concern in his later years was the Hortorium. He used the term meaning "of the garden" to designate an institution dedicated to the botany of cultivated plants in the broadest sense. Botany departments, then and now, give little attention to cultivars. Bailey's contention was that to understand cultivated plants, it is necessary to study their origin and ecological adaptation, and that it is first necessary to give the plant a name so that we will know what we are talking about. Insofar as I am aware, the Hortorium is the only organization which is concerned with cultivated plants in this fundamental way. To secure continuity in the institution, the Hortorium was given to Cornell University and was moved from Sage Place to its present quarters in Mann Library.

A the time of this gift, the Advisory Committee for the L. H. Bailey Hortorium was organized. For many years I was secretary and was later chairman. The term "Advisory Committee" was a misnomer, in that the committee certainly did not advise Dr. Bailey as to what he would do. It did, however, serve as communication between the Hortorium and the University Administration, and perhaps more important, gave Bailey an opportunity to tell the committee of about a dozen concerned biologists about his philosophy and work, and particularly about his expeditions in search of palms.

It was at these meetings that I learned what the Hortorium stood for and what its founder was trying to do. In retrospect, and as I write, I try to determine what it was that made possible this man's outstanding accomplishments. Certainly one thing was his great energy and his work habits. His working day began at 7:00 A.M. and lasted until 11:00 P.M. The passageway leading from the living quarters at Sage Place to the Herbarium was lined with tables. On

these, reference materials for active projects were assembled, each in a separate center. Thus it was possible to move from one to the other without clearing the desk.

Another attribute of his was an outstanding memory. Apparently he was sure enough of it so that it was not necessary to check back in a manuscript to know what was written before. I recall a talk to the Rotary Club in which he stated that the night before at eleven o'clock he stopped working on a manuscript in the middle of a sentence. The next morning he finished the sentence without re-reading the beginning. How many of us could do that?

At one time in the dead of winter, Dr. Bailey was working on a problem with nut grass (*Cyperus*) and wanted to check some detail of its growth. He called the late Walter C. Muenscher on the phone and asked if he knew where the plant was growing. Dr. Muenscher did and said that, come spring, he would be glad to show him where it was. Bailey replied that he wanted to find it now, and although six inches of snow were on the ground, they went into the field, found the plant, and answered the question. This sense of urgency in getting things done contributed to Bailey's accomplishments. He would go through "hell and high water" to complete his objectives. There was no waiting until tomorrow.

Undoubtedly a major contribution to Dr. Bailey's success was the devoted cooperation of his daughter, Ethel Zoe Bailey. A botanist in her own right, she was curator of the herbarium at Sage Place. She typed manuscripts, answered correspondence and, in general, attended to details, thus freeing her father for productive work.

In addition to Dr. Bailey's accomplishments as administrator, botanist, and horticulturist, he contributed significantly to conservation and political philosophy in his so-called "Background Books": *The Holy Earth*, *What Is Democracy*, *Universal Service*, and a book of verse intitled *Wind and Weather*. As I

recall, he said that he wrote *The Holy Earth* in one week while on ship-board. The book has been reprinted several times and shows a broad concept of conservation far ahead of its time.

More than any other person, Dr. Bailey was responsible for the concept of the Cornell Plantations. As a member of its Policy Committee, he suggested the name and outlined its developmental guidelines as a land use plan for the University comprising "a giant horseshoe" anchored on the campus, including the Fall Creek valley, extending over Turkey Hill and down Cascadilla Creek valley to the campus again. These are still the guidelines being followed in the development of Cornell Plantations.

A celebration of Dr. Bailey's ninetieth birthday was planned for 1948. The festivities had to be postponed because Bailey was far away on a palm-collecting trip. When the party was held after his return, it was quite an occasion with many distinguished persons coming from far and near. His talk was full of plans for the future, although his tribute to the past was his closing sentence "my life has been a continuing fulfillment of dreams."

His dream of the future did not materialize. In January, 1949, while in New York City arranging for a collecting trip to Africa, he was jostled while going through a revolving door, fell down some steps, and broke a hip. He never fully recovered. For many months he would sit by the window of his home looking out over State Street. I visited him there several times. Once he was reading a book and remarked that he was doing it to keep his mind alert and able to read technical writing.

In my opinion Dr. Bailey was one of the really great men of his time. Most of us work at lesser tasks, do our work in a credible manner, and make our contribution, whatever it may be. Then someone comes along who sees things in a larger pattern and puts them in perspective. Such a man was Liberty Hyde Bailey. I consider it a great privilege to have known him.

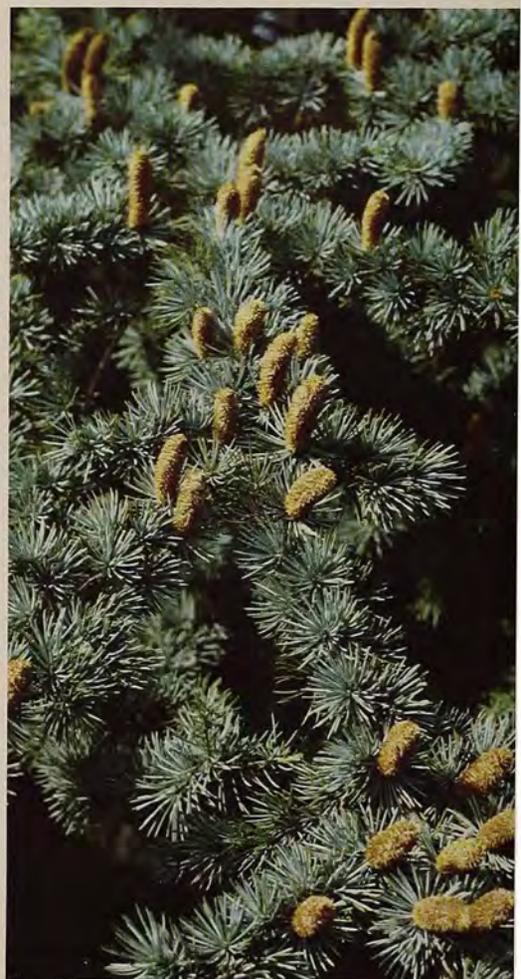
# Plants of Christmas

Evergreen plants play a special part in our Christmas customs. Mistletoe, fir, juniper, and holly are used at Christmas because they hold their foliage color during the winter months. Historically, Christmas plants have held symbolic and religious significance to man since before the first century A. D. when they were integral parts of pagan religious ceremonies in ancient civilizations.

The ceremonial use of evergreens was probably first associated with the Druids, a pagan religious cult in ancient Gaul, Ireland, and Britain. When Christianity was introduced to Britain, mistletoe and wreaths of holly were banned by the Christian Church for their pagan association with Druid winter fertility rites. Gregory the Great, a Roman monk and pope, wrote in 598 that Christian missionaries should not try to change these popular pagan customs "upon the sudden", but adapt them "to the praise of God". Following his advice, the Christian Church incorporated ancient Celtic customs into their own religious rites and theology. Most of our winter holi-

day customs are a result of the fusing of these two cultures.

Since the beginning of recorded history man has believed in the special powers of mistletoe. The mistletoe of legend is the native European mistletoe, *Viscum album*, not to be confused with the American mistletoe, *Phoradendron flavescens*, although both are members of the Loranthaceae family. The Druids worshipped the European mistletoe when it grew upon their most sacred and powerful symbol, the oak (probably *Quercus robur* or *Q. petraea*). Only rarely did an oak host the parasitic mistletoe. The Druids believed the two growing together made very powerful medicine. Each year they held a special ceremony to gather mistletoe from the oak. White cloth spread under the tree caught the precious twigs as they were cut with a gold scythe, and where they fell two white bulls were slaughtered, the blood fertilizing the tree. Mistletoe became a symbol of fertility and hope for growth in the coming year. Twigs were distributed to the



# and Before

by Sally Meeting  
Assistant Librarian  
Kingwood Center  
Mansfield, Ohio

townspeople who put them over doorways and made rings and bracelets from them. The twigs supposedly protected against evil fits, witches apoplexy, tremors, consumption, and other dreaded diseases.

Although mistletoe was first banned by the early Christian Church, after it was accepted monks often wore chips of its wood around their necks to cure disease. The word for mistletoe still used in modern Gaelic means literally "All Heal". It has been used to treat man and beast in folk medicine so often that modern scientists have investigated its medicinal powers. Findings indicate it may be valuable in treating high blood pressure, diseases of the circulatory system, and even cancer.

The "kissing ball" or kissing bunch, a ball of evergreens and mistletoe suspended from a ceiling, was the focal point of Christmas festivity during the Elizabethan period in England. Elizabethan custom demanded that "when a Man catch his Woman he may kiss her until her ears crack or she will be disappointed, if she is a Woman of any

Spirit." Often kissing balls held figurines of the Holy Family. Later the Victorians made kissing balls from holly berries, sticking the sprigs into scrubbed potatoes. Sometimes they were decorated with apples and other fruits, candles, and small gifts.

The present English custom of burning a special Yule log of Scotch pine (*Pinus sylvestris*) or cedar (*Cedrus libani*) at Christmas is probably a remnant of the Celtic Druids' fire festivals, the most important part of the Druid winter ceremonies. The Druids held these celebrations of fertility on December 21, the winter solstice and shortest day of the year. Their ceremonial fire symbolized the sun, whom the Druids worshipped as the god and source of all light and warmth. The ceremony itself was a plea and reminder to the sun to return to earth bringing another fruitful summer season. Evergreens and herbs with strong aromatic scents were popular additions to these fires as protection against evil spirits.

The name "Yule" came from the Scandinavian word



for "wheel", which described the shape of the sun. The custom of arranging evergreens in circular wreaths may have been a part of the Druids' sun worshipping ceremony. To the ancients who began the custom, the wreath represented the perpetuity of the endless cycle of the seasons and hope that the cycle would continue. Evergreens and nuts used in the circle of infinity added power to its significance. Through history, the wreath has remained a symbol of welcome and protection.

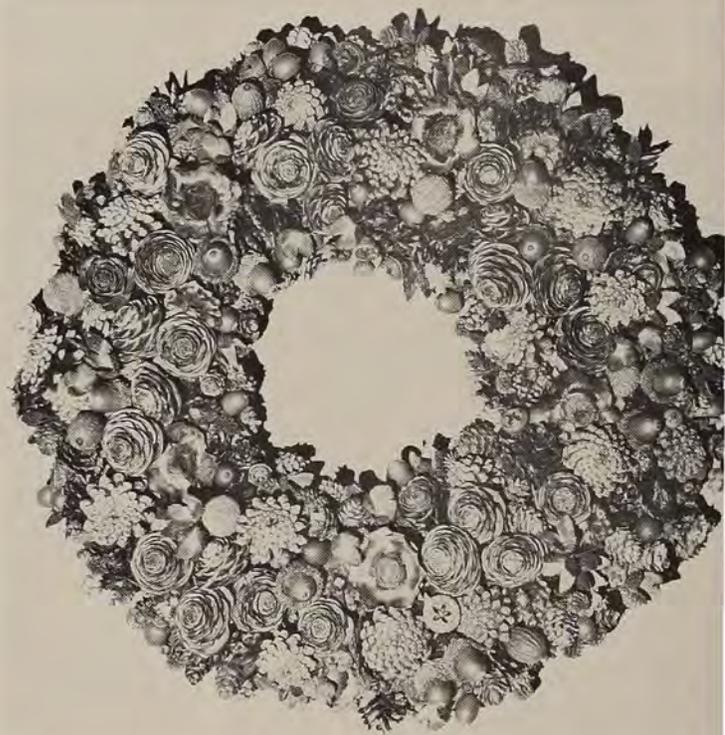
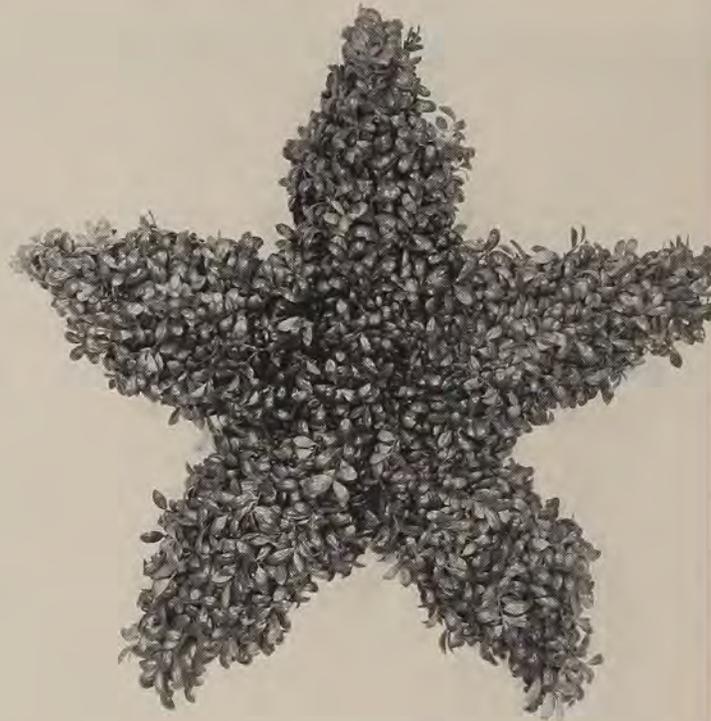
Almost every Northern European culture gave significance to special evergreen trees because they were unchanging year round. Firs and junipers were always brought inside at the winter solstice. Each of these had special powers and symbolized renewal, hope, power, and immortality because of their evergreen quality.

As much legend and superstition surrounds the fir tree as any other Christmas plant. In some cultures, it has been worshipped as the "Tree of Life". Since there was no ancient standardization of plant names, the fir of folklore could have been the Silver Fir (*Abies alba*), the Siberian Spruce (*Picea obovata*), or the Norway Spruce (*Picea abies*). One legend tells the story of St. Wilfred, who chopped down a sacred Druid oak to convince Christian converts it had no power to harm them. Inside the oak (probably growing from a crotch) he found a young fir which he declared a symbol of holiness and peace.

Scholars of folklore believe that a non-Christian religious festival held in the Harz Mountains of Germany was the beginning of our Christmas tree custom. During this ancient German celebration young girls danced and sang songs in a circle around a special fir (most likely *Abies alba*) they had decorated with lighted candles, flowers, and eggs. The girls' dance imprisoned an imp who lived in the fir. If the imp was unable to escape, he was forced to give presents or secrets to the girls. This imp may have been the ancestor of our Santa Claus.

Juniper, called the "tree of sanctuary" from a legend that it once sheltered the Holy Family as they fled from Herod, was burned during medieval time to fend off demons. It is said the Greeks burned the berries of juniper (probably *Juniperus macrocarpa* or *J. excelsa*) to protect against evil. Old European references to juniper or cedar could mean any *Juniperus communis* such as Irish Juniper (*Juniperus communis stricta*) or Swedish Juniper (*J. communis 'Suecica'*). Juniper greens were hung above doors to keep out witches, who were bound by the devil's law to count all juniper needles before entering a home. Supposedly witches found this boring and searched for unprotected dwellings.

English holly (*Ilex aquifolium*) was used by Druids who loved its evergreen color and included it in the winter solstice celebration. Pliny the Elder, a Greek of the first

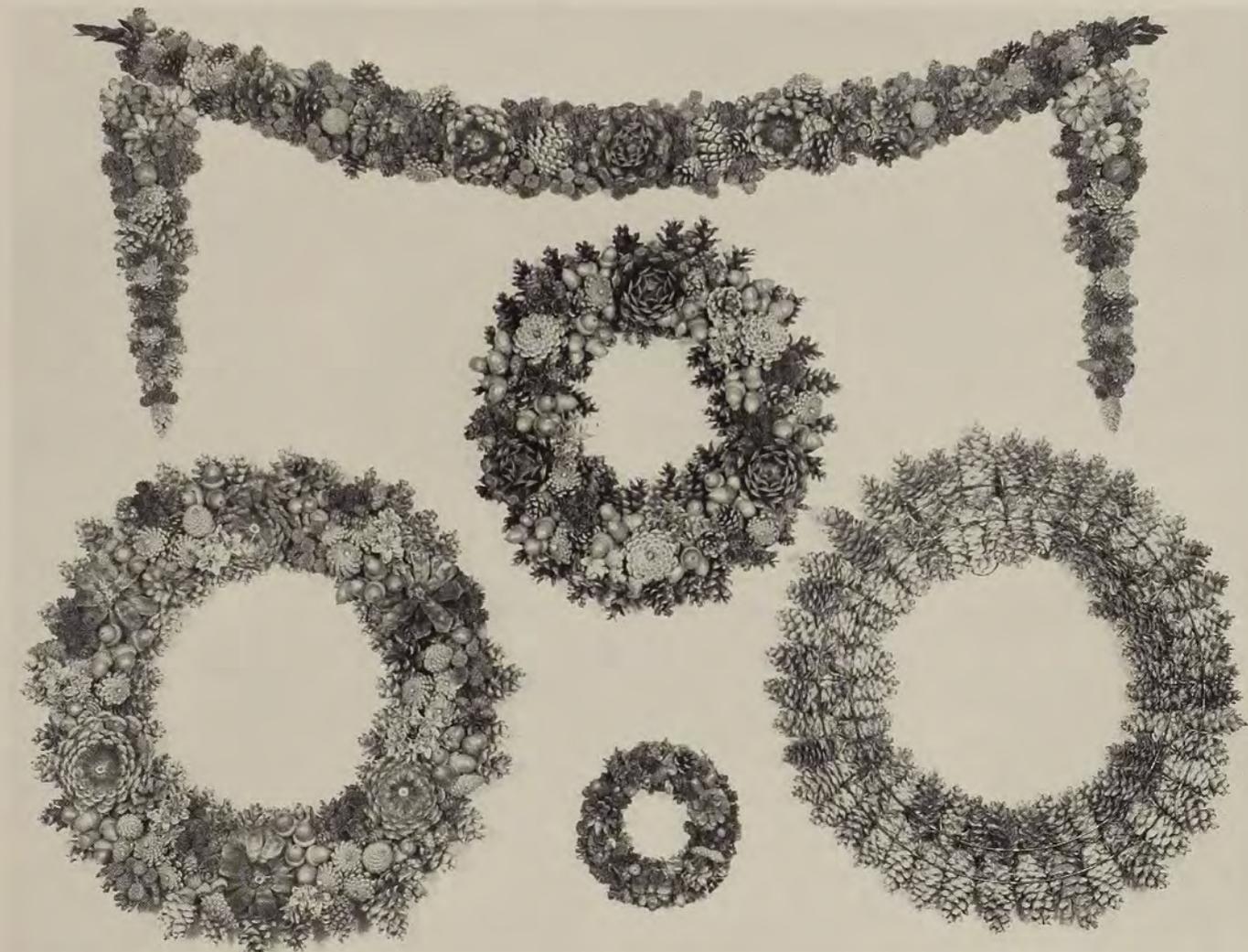


Decorations by Florence D. Wyman.

Top Left—Star of *Ilex crenata convexa*.

Lower Left—Cone and acorn wreath.

Top Right—Garland and cone wreaths; foundation made of *pinus strobus* cones.

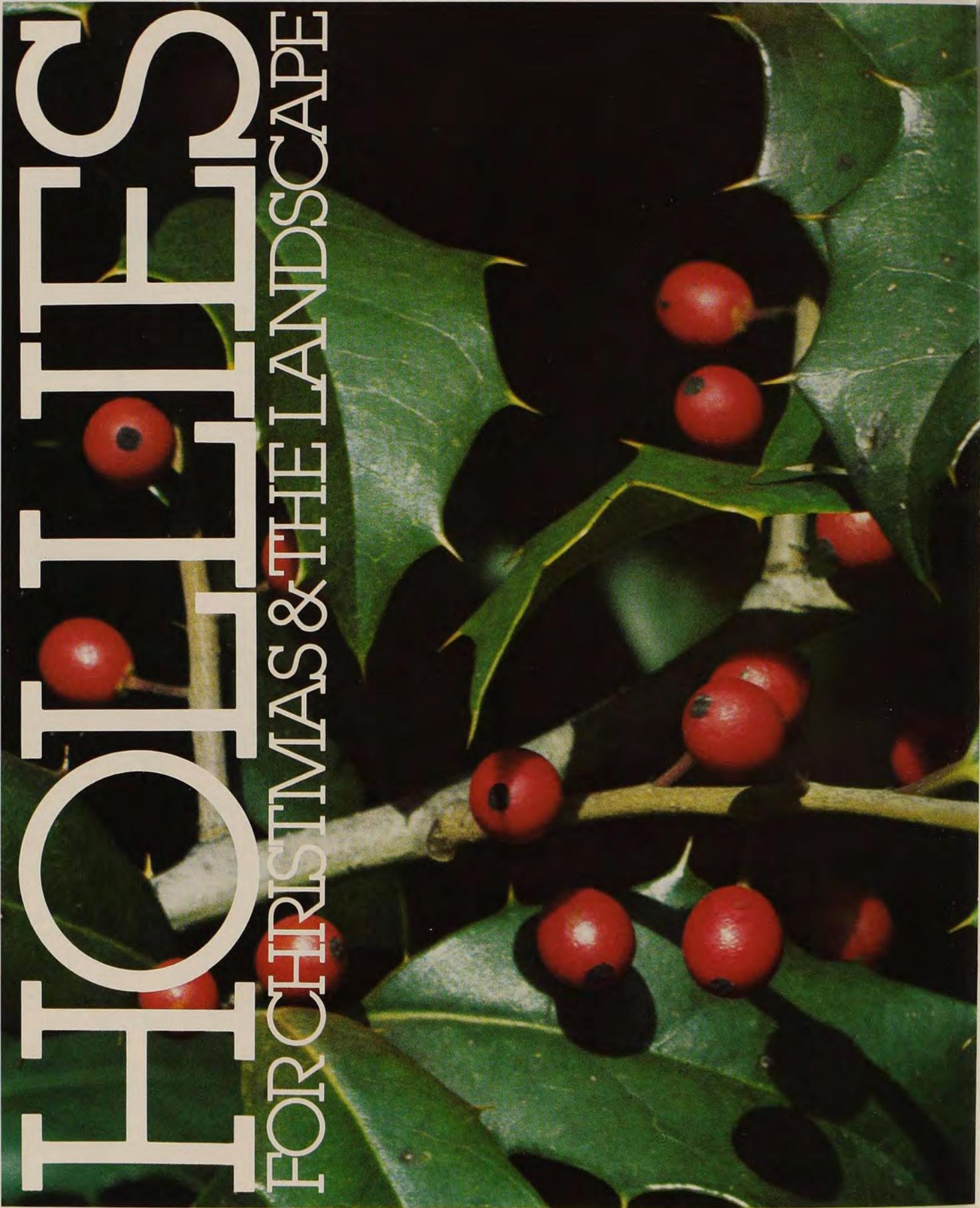


century, wrote that holly gave protection from lightning, witchcraft, and poisoning. It is possible that ancient references to holly actually describe the evergreen Holly Oak or Holm Oak (*Quercus ilex*) or the Cork Oak (*Q. suber*). Both have foliage very much like *Ilex aquifolium*. Like mistletoe, holly was once considered pagan by the Christian Church but was later accepted. One Christian legend describes Christ's crown of thorns as holly. Old English folklore instructed maidens to place holly sprigs at their bedsides on Christmas Eve to protect against witches, goblins, and the devil.

Myths, legends, and folklore obscure the true origin of many of our Christmas customs. But from them we do know that man through the centuries has included plants in the most special occasions of his life. Ancient man chose evergreens as winter decoration because they brought him hope for Spring, growth, and regeneration of life which should also be an important part of the modern Christmas Spirit.

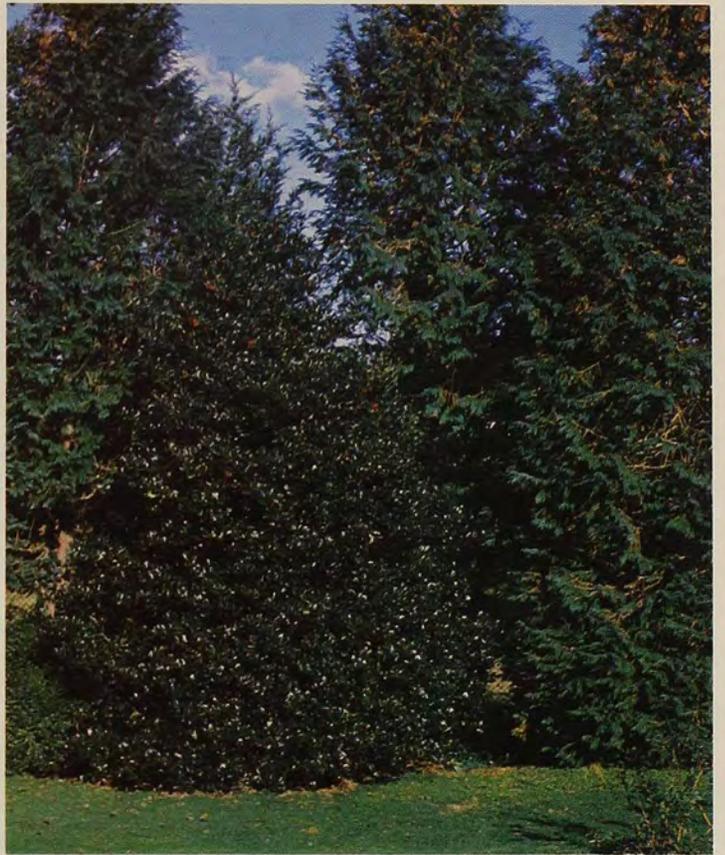
# HOLLIES

FOR CHRISTMAS & THE LANDSCAPE





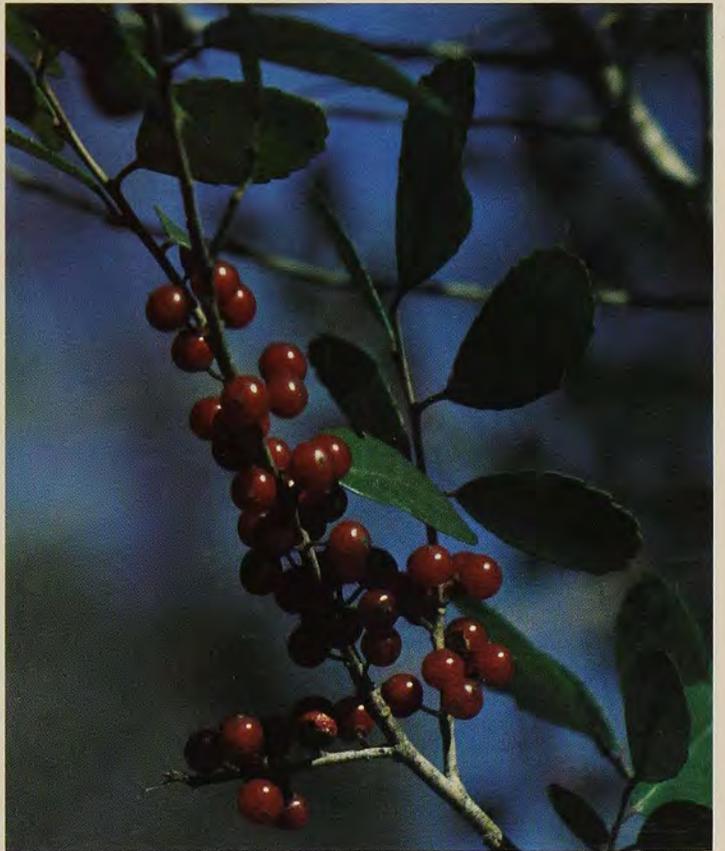
*Ilex pedunculosa*. This is a native of China and Japan.



'Beautyspra', *Ilex aquifolium* cultivar



*Ilex vomitoria*, var. 'Yawkeyi'. A rather rare yellow-fruited form of the Yaupon holly.



*Ilex vomitoria*, known as the Yaupon holly.

The red-berried, spiny-leaved, evergreen English holly, *Ilex aquifolium*, has for many centuries enjoyed a sentimental connection with mankind in western Europe. Even before the earliest writings of the Greeks and Romans, this is evident in the superstitions, legends, myths and folklore that were transmitted from generation to generation. Historians consider that decorating with holly boughs and giving of gifts arose from the Roman festival of the Saturnalia. This annual event took place in mid-December about the time of the winter solstice in honor of the Italic god Saturn. The early Christians of Rome probably adopted the custom and made use of holly decorations during their Christmas season. At any rate the custom still prevails and holly still finds a place in our landscape and in our sentiments.

The early colonists of eastern United States were greeted at the shores by the native American holly, *Ilex opaca*. The appreciation for the English holly of their fatherland was transferred to this native holly, which occurred naturally from Massachusetts south to Florida and west to Texas. Although the leaves lack the luster or glossiness of English holly, it also is a red-berried, spiny-leaved evergreen tree and an excellent substitute for its European cousin.

The western states do not have a natural occurrence of this beautiful plant. Thus the pioneers, who followed the Lewis and Clark Trail to the Pacific Northwest, were not greeted by a member of the holly family. Somewhere between 1850 and 1875, seeds and plants of English holly were imported by ships sailing around the Horn. This holly, transplanted from western Europe, found the western soil and climate to its liking and flourished. Today many people think that English holly is native to this region. One of the largest English holly trees in America is located at the Pioneer Post Office in Portland, Oregon. It was planted in 1874.

Commercial production and marketing of English holly for use in Christmas sprays and wreaths has been a major horticultural specialty item for the last 45 years. Over a period of time, selections have been made for specific characters such as early berry-ripening, placement of berries, texture of foliage, and hardiness. Recently cultivar selections for landscape usage and as berried potted plants are being considered.

Before considering a cultivar for the home garden or landscape, it is wise to consult your local nurseryman. His familiarity with the requirements of the various species or named cultivars will be helpful to you. It is also recom-

mended that arboreta, botanic gardens or parks within the gardener's own climatic zone be consulted regarding hardiness or heat tolerance of a holly species.

As a rule, American holly does well in the east, but does not perform satisfactorily in the west. Named cultivars selected in Pennsylvania or New Jersey may do well in northern areas, but perform poorly in the south. Those selected in Florida do best in the southeast. Examples within *Ilex opaca* are 'Cumberland' and 'Old Heavy Berry' for the northeast; 'Miss Helen' for the mid-Atlantic states; 'East Palatka' and 'Howard' for the southeast. There are hundreds of equally fine cultivars to choose from. So investigate the origin, because most American hollies have been selected from the wild.

English holly collections date back about 300 years, when nurserymen collected different leaf types and colorations within the species. As long ago as 1737, we find that 33 varieties were listed in Miller's "Gardener's Dictionary". Adding to the nomenclature confusion, Canary Island species *I. perado* and *I. platyphylla* were brought to the mainland and evidently hybridized with *I. aquifolium*. This infusion produced large-leaved, pigmented hybrid English holly types now designated as *Ilex X altaclarensis*. It is difficult to determine if cultivars originated as hybrids, or descended directly as *I. aquifolium*. As a result most of the West Coast named selections were simply carried as cultivars of *I. aquifolium*.

Examples of old English selections available in the nursery trade are *I. X altaclarensis* 'Camelliaefolia' and *I. X altaclarensis* 'Wilsonii'. 'Camelliaefolia' is a hardy, purple-stemmed, entire-leaved specimen growing into a broad cone. Its leaves are 3½-5' long, 1½-2' wide, elliptic and very glossy. Its primary use is in the landscape. 'Wilsonii' is a tenderer, green-stemmed, spiny-leaved specimen. Its green oval leaves are up to 5" long, 2½" wide, with ¼" spines pointing upward towards the tip, and well-defined veins. It is used mainly in the landscape.

Examples of Pacific Northwest selected English holly used mainly in orcharding, but also useful in the landscape, are *I. aquifolium* 'Beautyspra', 'Deluxe', 'Shortspra' and 'Rederly'. 'Beautyspra' is a hardy, early-ripening, disease-resistant selection. 'Deluxe' is a hardy, early-ripening, selection. The spray branches are slender and pigmented. There are a few isolated cases where small populations of English holly seedlings have been planted, subjected to eastern conditions and then the survivors selected for further testing. Time will tell whether selections from Virginia, Maryland, Pennsyl-

vania or Massachusetts will produce a clone that can adapt itself to the western environment.

English holly dislikes the hot summers of the south and southeast United States. A recent candidate for heat-tolerance is a species from Asia, the Chinese holly, *Ilex cornuta*. This species is a large evergreen shrub; with spiny glossy leaves and large orange-red berries. This species has two faults—vicious spines and late-ripening berries. Two cultivars are available for landscape usage that have only a terminal spine and an excellent gloss. *I. cornuta* 'Burfordii' grows as a large mounded shrub, while *I. cornuta* 'Dwarf Burford' is a smaller version. Both are heat-tolerant and do well throughout the southern states. The orchard type is *I. cornuta* 'Shangri-La'. It has weaker spines, smaller leaves and ripens earlier than the species.

There are some newcomers to the field of red-berried, glossy-leaved evergreen hollies used either as cut holly or in the landscape. They are interspecific hybrids (hybrids between two species). *Ilex* X 'Nellie R. Stevens' (hybrid between *I. cornuta* and *I. aquifolium*) is a spiny, glossy-leaved, evergreen, tree-type holly with orange-red berries. It is heat tolerant, will tolerate wet soil conditions and does equally well in the East, South and West Coast. *Ilex* X *attenuata* 'Foster #2' (hybrid between *I. opaca* and *I. cassine*) is a spiny, lustrous-leaved, evergreen, small tree-type holly with red berries. It is finer textured than *I. opaca*, easily propagated and quickly develops into saleable size. Interspecific hybrids offer the possibility of tailor-made hollies for a particular environment or landscape usage.

Hollies are of a dioecious nature. Each clon is exclusively male or female. All the hollies described are females which produce the red berries. In order to get a high quality berry set it is necessary that a male flowering at the same time be present. In the wild, species are kept true by flowering at different times. For example *I. cornuta* will flower first. After this species is through, then *I. aquifolium* will flower. Later yet *I. cassine*. In order to effect hybridization, the holly breeder must manipulate the time of flowering so that the two species flower at the same time.

Therefore, the home gardener should make sure he has a male of the same species as the female cultivar to get good pollination. If interspecific hybrids are being grown, a male of the same cross will flower at the same time as the female cultivar.



Most hollies are partial to acid soil, with a pH range of 5.5 to 6. A well-drained sandy loam to which organic matter has been added will make for good growth. The roots prefer an undisturbed, cool, moist environment which can be provided by bark dust, wood chips, oak leaves, pine needles, peat moss or similar material. Hollies, like other broadleaved evergreens, should not be planted in exposed, windy locations.

If you desire red-berried hollies in your landscape, reserve your pruning operations for the Christmas season; shape your plants and decorate your home with the sentimental holly.

# A SPRAY OF

*Ilex aquifolium*, the English holly.



Now of all the trees by the king's highway  
Which do you love the best?  
Oh! the one that is green upon Christmas day,  
The bush with the burning breast.

from "Modrab Marya",  
an old Cornish carol

Dim-berried is the mistletoe  
With globes of sheenless grey,  
The holly mid ten thousand thorns  
Smoulders its fires away;  
And in the manger Jesus sleeps  
This Christmas day.

from "Before Dawn"  
Walter de la Mare (1873-1956)

(copyright, Henry Holt and Co.)

*Ilex aquifolium fructo-luteo*, a yellow-fruited English holly.



Heigh-ho! sing, heigh-ho! unto the green holly.  
Most friendship is feigning, most loving mere folly.

Then, heigh-ho, the holly!  
This life is most jolly.

Song from "As You Like It",  
William Shakespeare (1564-1616)

The mistletoe hung in the castle hall  
The holly branch shone on the old oak wall  
And the Baron's retainers were blithe and gay,  
And keeping their Christmas holiday.

Thomas Haynes Bayly (1797-1839)

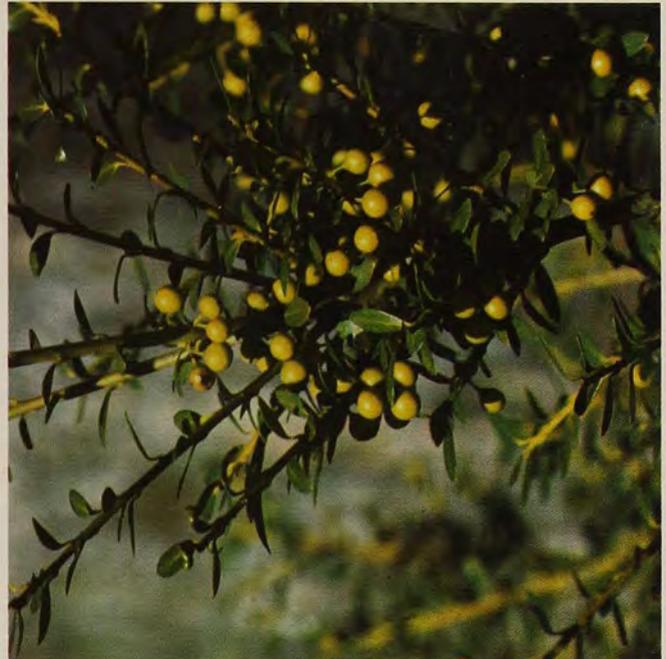
# HOLLY

A Folio of Photographs  
by  
Martha and Jordan Prince  
Poetry Quotations  
collected by  
Martha Prince

*Ilex verticillata*. The common name is  
Winterberry.



*Ilex crenata*, a Japanese native.



*So, now is come our joyfull'st feast  
Let every man be jolly;  
Each room with ivy leaves is drest,  
And every post with holly.*

*George Wither (1588-1667)*

*But when the bare and wintry woods we see,  
What then so cheerful as the Holly Tree?*

*Robert Southey (1774-1843)*

*With footstep slow, in furry pall yclad  
His brows enwreathed with holly never sere,  
Old Christmas comes, to close the waned year.*

*John Bampfylde (1754-1796)*

*On Christmas Eve the bells were rung  
On Christmas Eve the mass was sung;  
The damsel donned her kirtle sheen  
The hall was dressed in holly green:  
Forth to the wood do the merry-men go  
To gather in the mistletoe.*

*Then drink to the holly berry  
With hey down, hey down derry.*

*English song, nineteenth century,  
added to adaption of verse  
from "Marmion",  
Sir Walter Scott (1771-1832)*

# Brookgreen Gardens

Text and Photos: *202 Old Broadmoor Road*  
Lorraine Mashall Burgess *Colorado Springs, Colo 80906*

Brookgreen is a name to remember in public gardens. Located on a magnificent stretch of land along South Carolina's coastal Highway 17, about 18 miles south of Myrtle Beach, these gardens combine the best of plant materials in natural garden settings with exceptional 19th and 20th Century garden ornament by many of America's finest sculptors.

Its founder, Archer Milton Huntington, described Brookgreen as 'a quiet joining of hands between science and art'. On land developed in the 1930's on the remains of a mid-18th Century plantation, the Huntingtons chose to remake this naturally-beautiful site a sanctuary

for flora and fauna and their own collection of fine sculpture. Few of the original plantation structures remained, but their locations were marked with the installation of pools and fountains, giving focus to forested segments, to the Avenue of Live Oaks, and to the views of the rice fields and the Waccamaw River as it curves around the 10,000 acres of grounds and empties into the sea.

Rather than echo the portrayal of historical events typical of other eastern plantation restorations, the Brookgreen gardens constitute a rebirth of the land, a simple melding of natural plant forms with creative design. The gardens are the southernmost link in a chain of three wild

refuges; the first, 13,000 acres of forests and lakes in the Adirondacks of New York, and the second a smaller plot of coastal land, a shore bird sanctuary also devoted to the study of the sea—this is at Newport News, Virginia.

At each turning of Brookgreen's garden paths there is a fine sculptural ornament, sometimes a jaguar, brown bear, wild boar, an owl or penguin, a crested crane, or even a vulture, each by an outstanding artist of our times.

Altogether there are over 350 garden pieces by more than 175 different sculptors. Of plant material the gardens include an arboretum of Carolina trees, an avenue of southern



The Avenue of Live Oaks stands at the main axis of the gardens. The trees were planted in the mid-1700's.

# in South Carolina

magnolias, a horseshoe-shaped planting of dogwoods, a fine group of cucumber trees, a misty fringe tree, a palmetto garden, azaleas in every hue, and in the several pools and ponds, fine waterplants.

Motorists traveling north or south on the east coast should find Brookgreen a good excuse for an overnight stop. Motel accommodations nearby are numerous and admission to the gardens is nominal. The gates open at 10 a.m. every day, offering, in addition to the show gardens, picnic areas, a wildlife park, and a visitor's pavilion. Across the highway is the Huntington Beach State Park, one added incentive for the family traveling with young children.



Swans by Gaston Lachaise appear to float in one of the garden ponds



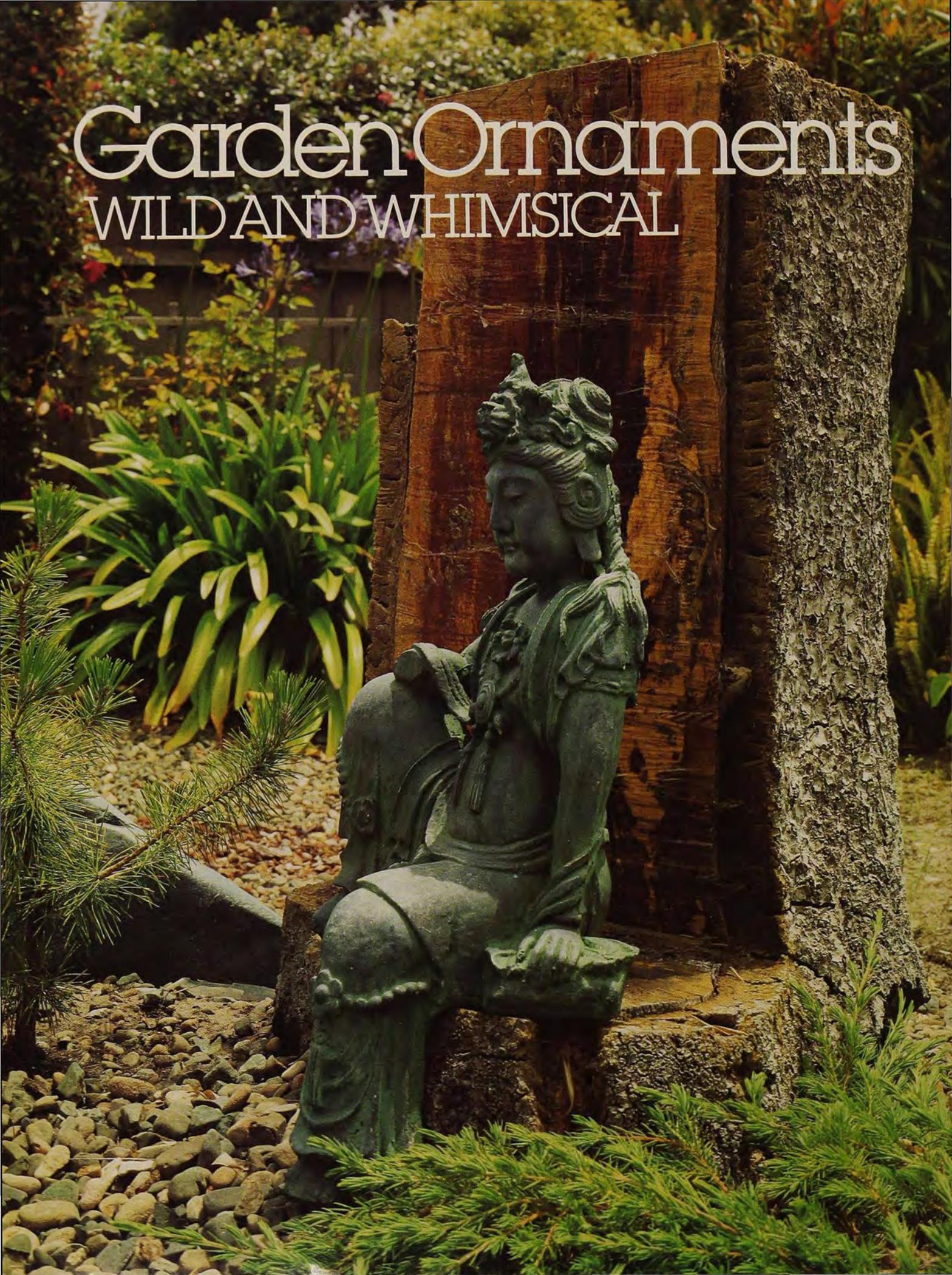
Bronze sundial of child and lamb by Brenda Putnam, 1890.



Resting stag by Elie Nadelman occupies a pedestal in one of the outdoor alcoves.

# Garden Ornaments

## WILD AND WHIMSICAL



Color photos: Guy Burgess  
Lorraine Marshall Burgess  
202 Old Broadmoor Road  
Colorado Springs, Colorado 80906

Among many gardeners there is a natural compulsion for whimsical ornaments, small conceits, and enduring follies. As we become confident of our horticultural skills, we reach for other ways of strengthening our intimate relationship with our plants and our gardens. Gradually we grasp the advantages of this personal association with the outdoors, gardener to garden, person to plant, and artist to art.

Some count us odd in our enthusiasms, but we care little. We pursue our small delights, mingling lobelia with parsley to make a blue-green jewel, or growing sturdy clusters of golden achillea and spikey blue veronica in a vast bed of nodding field daisies. Rightfully we carry our preferences and our eccentricities into our gardens, whether it is a love for old wrought iron fencing or for twisted krumholtz timberline wood. We salvage and save bits of history and scraps of architecture to ornament our lives. We learn to balance rough textures against smooth, and coarse leaves against fine.

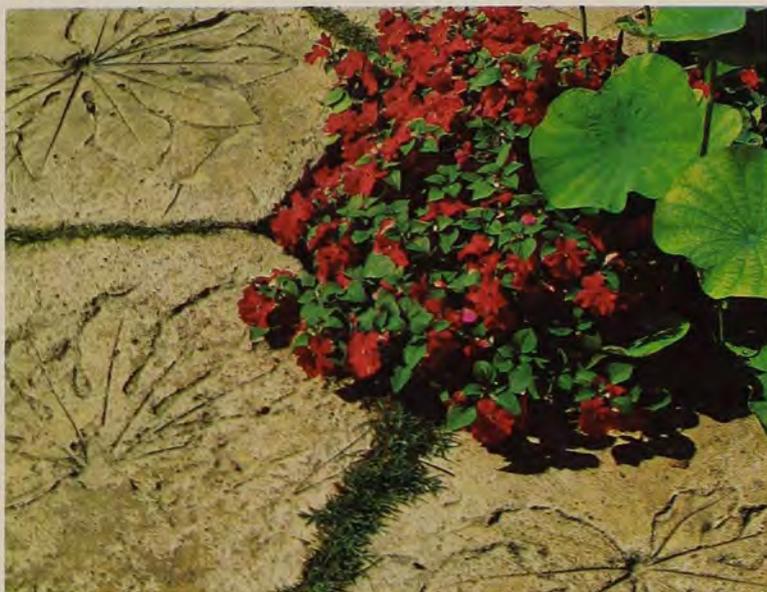
Our gardens become studios where we play the boldness of one red zinnia against another, or the volume of a billowing box hedge against the fragile beauty of a vitex tree. We become acutely aware of pavings we put down, the mulches we lay, and the ground-covers we cultivate, not only for their practical, low-maintenance features, but also for their tactile qualities and for their response to light. We install a small sculpture in a bed of rose heliotrope or plant and train a dwarf fruit tree to a wall fan. We shape a fig vine to our liking or mount the spiral blade of an old lawn mower on point as a mobile on a six by six foot post. In a single season we become sculptors, painters, antique collectors, and art connoisseurs, attuned to our garden world.

These follies and conceits generate new delights. The silhouettes of our trees, the shimmer or the dazzle of our flowers have fresh importance. As our awareness of creative design grows the need for interrelated shapes becomes more important.

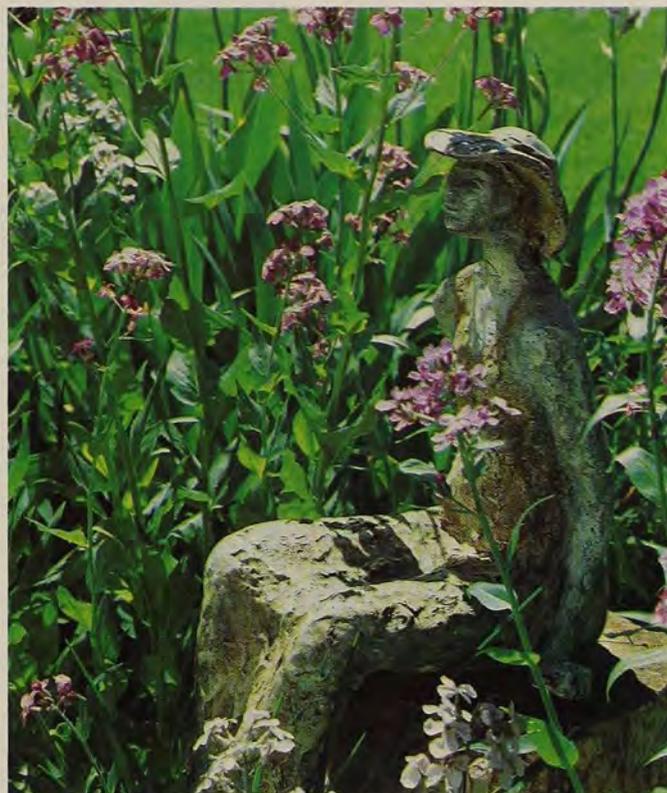
Some of our designs may prove wrong, and on occasion even foolish or absurd, but this is not a grave problem. Gardens, by nature, are built on change, and most corrections and alterations are easy to make.

Whatever your inclination, pursue your creative instincts in a personal and quiet way, fashioning the ornaments and frivolities that give you pleasure. Go wherever you fancy leads you. Such pursuit may offer just the lift you and your garden can use.

Specifically-cut tree stump serves as platform for garden sculpture. Lindsey garden, Pebble Beach, Ca.



Tub submerged in terrace paving holds lilly water plant. Impatiens disguises rim of container. Custom tiles carries auralia leaf imprints. Bellingrath garden, Theodore, Miss.



Garden sculpture by Meg Anderson with iris and sweet rocket.

# Miyabe Maple

## A TREE WORTH KNOWING MORE ABOUT

By Walter Eickhorst



*Acer miyabei*

Clarence E. Lewis

Miyabe maple, *Acer miyabei*, was introduced into cultivation in the United States in 1892 and is still regarded as a relatively rare plant. Its name honors Kingo Miyabe (1860-1950), who was Professor of Botany at the Hokkaido University at Sapporo, Japan. Early reports indicated that the plant was known only in the Hokkaido provinces of Hidaka, Tokachi, Iburi, and Ishikari. In the journal, *Garden and Forest*, Professor Charles S. Sargent noted that this maple was named by Dr. Carl Johann Maximowicz in 1888. Professor Sargent was on one of his many Asiatic plant hunting trips when he discovered a hitherto unrecorded stand near the small community of Iwamizawa, located some twenty-five miles from Sapporo. He described this stand as growing on a site similar to that of the original find, with *Acer pictum* (now considered to be *Acer mono*) being its principal associate. The fruit of *Acer miyabei* was apparently unknown to western botanists until Sargent discovered the stand near Iwamizawa. Seed was collected from this source, and subsequently plants were established in Europe and North America.

*Acer miyabei*, according to Rehder's *Manual of Cultivated Trees and Shrubs*, may attain a height of thirty-five to forty feet. According to Krüssman's *Handbuch der Laubgehölze*, the height range is slightly greater: forty to fifty feet. The flowers are greenish-yellow, but not especially showy. The leaves resemble those of *Acer campestre* but are somewhat larger and have lobes that are longer and more sharply pointed. Foliage ranges in color from soft gray-green to moderately dark green and usually appears somewhat glossy. The leaves retain their greenness well into autumn, in a way similar to those of the related Norway maple (*Acer platanoides*), then turn rapidly to pale yellow and fall in early November. The trunk and maturing branches exhibit a slight degree of corkiness in the bark.

At the Morton Arboretum, in Lisle, Illinois, a seed lot planted in 1932 produced an assortment of globe-crowned, short-trunked specimens, ranging to approximately twenty-five feet in height. Among these are a number of very handsome specimens, four or five having somewhat open crowns, others exhibiting rather pro-



*Acer miyabei* foliage and fruit.

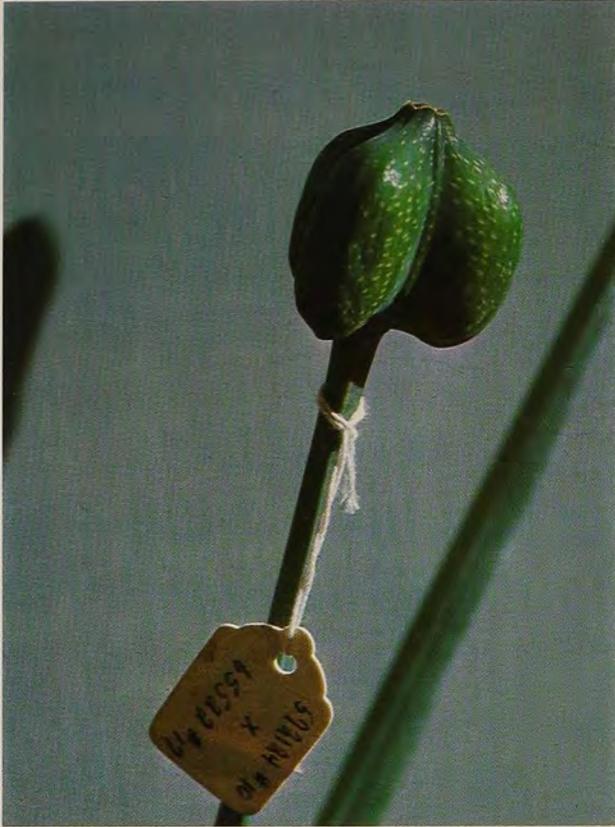
nounced crown denseness. These specimens have repeatedly withstood temperatures lower than minus 20° F. without discernible damage.

Two specimens received as small plants in 1929 from Ludwig Spaeth Nursery, Berlin, Germany, exhibited distinctly different growth characteristics. One persisted without vigor and was removed in the mid-1940's. The other has developed into an outstandingly attractive, shapely tree. Its basic silhouette resembles that of our native sugar maple, *Acer saccharum*, although it will not reach a size comparable to the much taller sugar maple. Its branch structure is moderately dense and somewhat ascending, but not enough so to be considered columnar. The trunk is short, dividing into several stems about four feet above the ground.

This particular specimen of *Acer miyabei* at the Morton Arboretum has been the subject of repeated attempts at vegetative propagation, with a number of related species having been tried as rootstocks without success. Attempts to obtain plants from seed have also been frustrating.

Seeds have matured only sporadically, and, when collected, have germinated poorly. Volunteer seedlings have occurred occasionally, however, and in the spring of 1972, a greater than usual number appeared under one of our trees. These plants have provided understock material for numerous successful grafts, utilizing scions from our outstanding specimen. Recently we also have obtained fairly good results using *Acer campestre* as understock, even though past attempts had been unsuccessful. Thus we are gradually acquiring information as to the propagation of this attractive maple.

Miyabe maple has performed well at the Morton Arboretum and has the attributes of an excellent shade tree. Difficulties in propagation have undoubtedly been among the reasons it is rarely listed in commercial nursery catalogs and remains little known outside of arboreta and botanical gardens. With improved techniques, perhaps commercial propagation will become feasible. We hope so, for we feel that it is certainly a tree worth knowing more about, and one that should be added to the list of choice shade trees.



*Paramongaia*, seed pod.



*Paramongaia*, preparing to bloom



Nestled along cliff edge in Andean Mountain



Betty Collins displays giant Daffodil like blossom.

*Paramongaia weberbaueri* Velardi

# A Peruvian Plant New to Cultivation

by

Dr. Russell J. Seibert  
Director, Longwood Gardens  
Kennett Square, PA 19348

*Dr. Seibert received the 1975 AHS Liberty Hyde Bailey Medal—the highest annual award given in horticulture.*

While traveling in north central Peru along the Huaraz-Casma Road in the Department of Ancash on January 22, 1965, with my wife and artist friend, Betty Collins, we were attracted by a lone Andean Indian man riding horseback and carrying a bouquet of large yellow flowers.

Our inquiry soon revealed to us that the flower was called, "Cojomaria". The plants were to be found growing along the road a short distance downhill.

The road was in the precipitous Andean Mountains with numerous "switchback" turns with some mountain slopes reaching 45°. It frequently nestled along cliff edges with a sheer drop of several hundred feet below.

After a short drive downhill, we encountered three small Amerindian children attending several bouquets of these same fragrant, large, yellow, *Amaryllidaceous* flowers.

Obviously the bouquets were for sale, but our knowledge of Quetchua proved inadequate for good communications and the children did not respond to Spanish. We surmised that the plants grew further down the road and after producing a 5-sole note, we were able to buy one of the bouquets.

The magnificent flowers reminded one of giant daffodils approximately 15 c.m. in diameter. They were

butter yellow with a very fragrant aroma.

After a short drive down the Andean Road, we located large quantities of the flowering bulbous plants bearing the same kind of single flowers observed in the bouquets. They were growing on extremely steep slopes at about 10,000 feet elevation just above the village of Pariocoto. The plants were confined to a restricted area less than 500 hectares in extent. The soil appeared to be of a decomposing granitic nature and supported a very sparse desert-like natural vegetation.

Collection of a few individual plants was a difficult task. Combined with the extremely steep topography of nearly 100% grade, a slipping hard granular soil surface and very little protective support, digging the plants with bulb depths of 25-30 cms. with a crowbar-like tool was a real challenge.

The plants were blooming before the presence of mature foliage. None of the 7 bulbs collected showed evidence of off-sets. The two larger bulbs were to 6.5 cm. in diameter and were flowering plants. Five younger pre-flowering bulbs ranged from 2-3 cms. in diameter.

The young foliage exhibited a marvelous fresh-light green, very clean appearance in an area where other growing things were dry and dull looking, or grayish colored cacti.

The flowers kept for several days while traveling along the north central coastal area of Peru. Some of them lasted the four days it took us to return to Lima. The remaining flowers and a flowering sized bulb were presented to the Director of the Museo de Historia Natural "Javier Prado".

The plant was not known there and identification was later made by Dr. Jorge Leon, one of the AID botanists in Peru. The plant is apparently not well known outside of its natural habitat. Although Dr. Leon indicated the plant had been tried at least on one occasion in Lima, it had not survived as a garden plant.

The six remaining bulbs were shipped to the USDA Plant Inspection House in Miami, Fla., and were then forwarded to the USDA Introduction Station at Coconut Grove to continue their growth cycle. Five of the plants were shipped to Longwood Gardens in mid-April, 1965. They were dried off from May-August. In December, they renewed their growth, but did not flower.

The plant, *Paramongaia weberbaueri* Vel. was first described by M. Octavio Velarde in 1949 from the coastal Lomas or Paramonga and Huarmey. Although the plant had been first collected by Raimondi in 1874 and again by Weberbauer in 1931, it had remained undescribed, having been included with the "Amancaes" in the genus *Hymenocallis*, even though the flowers of *Paramongaia* were much larger and much more beautiful.

To date, only two introductions of this species are known to exist in the U.S.A. They consist of the above introduction and an earlier one in 1949 when several bulbs from Peru were received for identification by Dr. Hamilton P. Traub of the Plant Life Society in Southern California. He flowered the bulb and set seed which he then distributed. Longwood Gardens received some of these seeds in 1957 and grew several bulbs from this first introduction from Huarmey. The plant first flowered at Longwood in 1966.

The very attractive canary yellow flowers which last for 8-10 days attracted our attention to its possibilities as a public conservatory cool-house display plant. The long petals, sepals and especially the large spectacular staminal coronas make the plant thoroughly worthy for an elite floral display. The spicy fragrance of the flower is pleasant and very pronounced. Occasional plants with two flowers have been noted.

Longwood Gardens has expended considerable effort in building up a sizable supply of plants from both introductions. If grown in pots, the plants develop off-sets and, of course, will set hand pollinated seed.

The two accessions are grown separately and bloom

about a month apart. The coastal form starts mid-October while its mountain cousin begins in late November. By using the two groups of plants, flowering is sequential and extends over a period of 2½ to three months. Relatively few plants are in full bloom at any one time, but this feature helps to extend the exhibit period.

At the present time, efforts to produce a complete crop of simultaneously flowering plants has not been unsuccessful. In many respects, they behave like *Hippeastrums* with irregular flowering over an extended period.

After the plants have flowered the leaves mature and give indications of going dormant. The bulbs are then gradually dried off and stored in a 21-24°C. very dry condition. They may be kept in their same pots and baked in the sun much like *Nerines*, or stored in an inert material such as vermiculite. Complete dormancy occurs about 6 months after commencement of growth.

Mature bulbs usually produce two or more offsets per season and these mature in about 3 years.

Although the flowers are easy to pollinate, they have not successfully crossed with anything other than with plants of *Paramongaia*.

Seed pods mature 6-8 weeks after pollination, producing 50-75 seeds. Seeds germinate in about 18 days. No serious pests or diseases have affected the plants although red spider sometimes is present to a minimal extent.

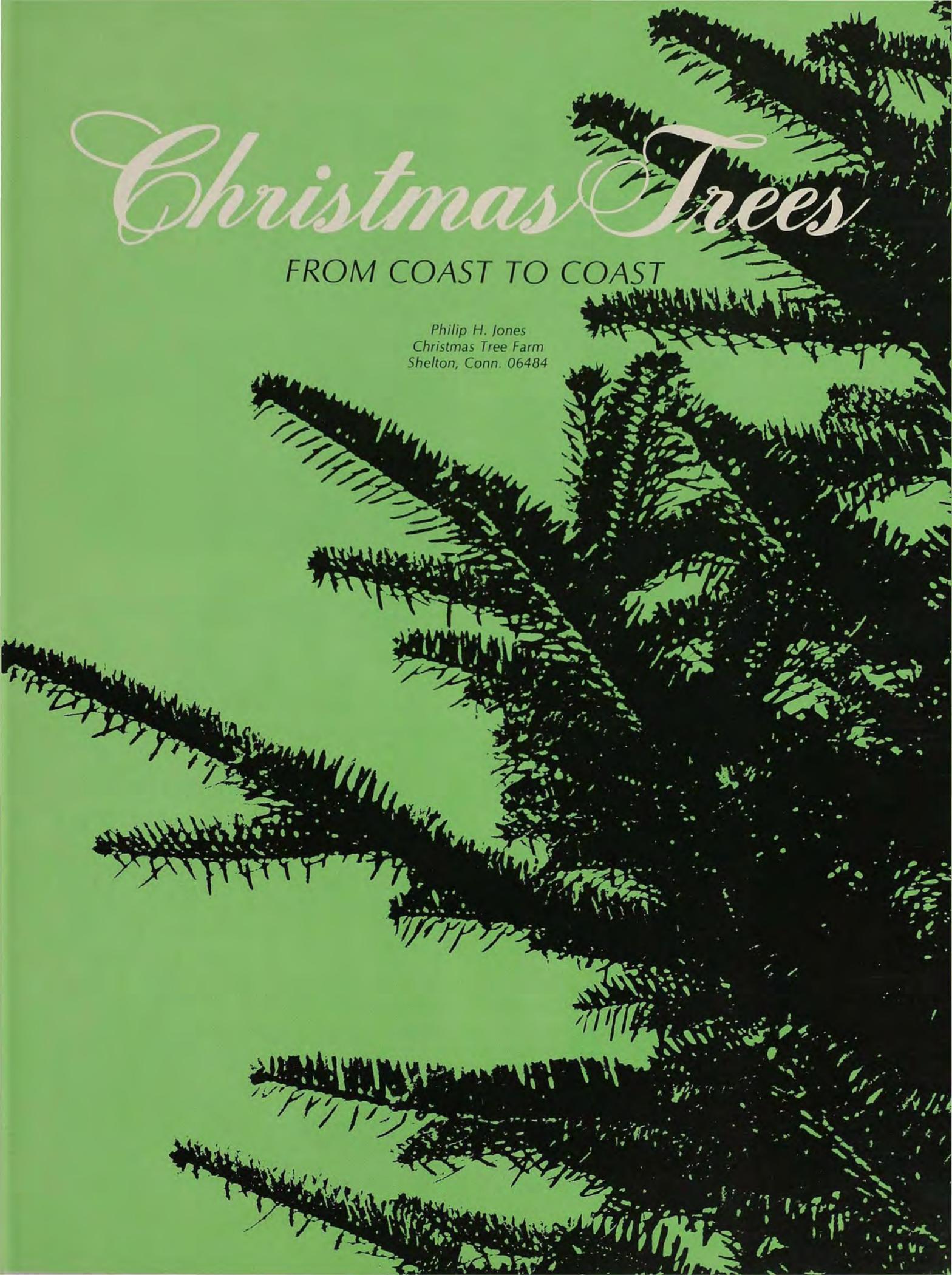
The bulbs at Longwood Gardens are grown in equal parts of soil, sand and peat, with some charcoal, leafmold and fertilizer added along with a pinch of lime. The mixture is well drained and has a pH of 6.0-6.5.

Active growth in the greenhouse in our climate starts in October. Each bulb produces 6-7 strap-shaped leaves. Optimum growing temperature appears to be 21-24°C. during the day and 18°C. during the night. Plants are watered freely and grown in full sun.

Efforts are being made to get them to phase into summer flowering to correspond with their flowering time in Peru. This may be easier to accomplish in a milder climate where the bulbs will not freeze when they are planted outside to naturalize.

It seems strange in this day and age, that something which flowers so spectacularly has not long been in frequent cultivation. This is only one more indication that hidden away in remote areas such as in the Andes, one may still find worthwhile new and exciting plants for the garden and horticultural use.

We at Longwood Gardens hope to build a sufficient supply of the plants to allow for a general distribution to botanical gardens within the next few years.



# *Christmas Trees*

FROM COAST TO COAST

Philip H. Jones  
Christmas Tree Farm  
Shelton, Conn. 06484

ONCE UPON A TIME families bundled up in mid-December, took along a sharp hatchet and set out on a happy search for their Christmas tree. These annual outings took place on their own farms or in neighboring forests. Some city folks would do the same thing. Generally, however, they picked up a tree at the corner grocery, gas station, or from the enterprising merchant who used a vacant building for just a few days and stocked it brim full of Balsam trees from far away Canada. The aroma of the northwoods alone would sell them.

Christmas trees of yore were really just wild Red Cedars, White or Red Pine, or various spruces in the east—and a variety of fir, predominantly Douglas—in the far west.

Wild trees were just fine. They were green, grown entirely by Mother Nature, smelled great when brought into a warm cozy home and decorated. They served admirably as true symbols of Christmas and the life everlasting.

These wild trees were the product of natural abandonment of the lands and the forces of nature in careless harmony with pasture land farming. Burned, cut over, and usually overgrazed, these hillside pastures created rather poor conditions for livestock. They were better sites for natural regeneration of forest trees. If a Christmas tree search party found a particularly fine, well-shaped, full tree, the chances are it resulted from some mechanical injury—frost, bird, or insect damage. Exceptional trees were rare.

Changes began to occur about thirty-five years ago. Wild grazing lands were converted by man-made, heavy machinery into improved pastures or they were abandoned and reverted back to forest land. This caused problems for the profusion of brushy, spindly natural trees that had been a way of life in American homes for decades. As this type of tree supply began to dwindle, a few enterprising farmers and nurserymen seized the opportunity to prepare and plant special areas just for Christmas trees. The Federal Foresters were also quick to spot the opportunities here for landowners. Soon a new type of plantation grown Christmas tree industry was springing up literally from coast to coast.

In some areas of the country, planting took hold with a vengeance and millions of trees were grown with scarcely any knowledge of what the true future would hold for them. Most of these plantings are still there, growing ever taller and stagnating into a strange man-made forest.

In the past two decades much species experimentation has taken place in the upper two-thirds of the United States. At first growers used Scotch Pine from such unlikely places as Finland, Greece, Spain, France and even Turkey. This trial and error method still continues. Scotch Pine in its native countries is generally a fine straight timber type tree. When transplanted in America the tree often develops peculiar growth habits. Most grow too fast



Balsam Fir

and require yearly shearing to produce adventitious budding and thickened growth.

Crooked cork screw stems are a favorite trick of some pine strains. Trees grown from seeds collected in northern Europe often develop an entirely unappropriate yellow foliage in late fall because of reduced light levels. Scotch Pines from the warm countries of Europe do not play these tricks. When the proper strains are grown on the correct sites, a lovely product emerges. Scotch Pine can grow on extremely poor ground, even strip mine spoil banks and abandoned gravel mines.

Everyone is familiar with the grandeur of Colorado Blue Spruce. This handsome tree, native to a limited area of the Colorado Rocky Mountains has been transplanted from Maine to the Pacific coast and Minnesota down almost to northern Florida. It is used extensively as a Christmas tree both cut and live. As a cut tree it fares very well at needle holding ability, equal to the pines and firs. The same can be said for its sister tree, the Engelman Blue Spruce.

Other spruces largely used in New England and the upper midwest are the Norway and White varieties. The Norway, of course, originated in Scandinavia and has now naturalized in many areas. One of the favorite exhibits at the Chicago World's Fair or Columbian Exposition in 1893 gave three Norway Spruce seedlings packaged in sphagnum moss to any visitor wishing to carry them home. Aging Norway Spruce trees in front of some of the older homes across the country tells us that a resident of that house attended the Fair in 1893.

The White Spruce is native to northern New England,



Blue Spruce

Canada and Alaska. They acclimate well and now grow successfully and extensively several hundred miles south of their natural range.

Many studies have been made with the Douglas Fir. The coast range types fail badly if transplanted very far from its native conditions. Severe winters and spring frosts will do it in.

Mountain strains of Douglas Fir ranging all the way from the Coconinos in Arizona up into the Schuswap lakes area of British Columbia fare quite well across the country. Other true firs are performing nicely in far flung areas. You may be surprised to find your tree is a Grand or Nobel Fir from Washington or Oregon even if you live in Florida, Texas or Arizona. Even if you live in New York City, Cleveland or St. Louis, you may buy a Fraser Fir native to the high Smokey Mountains of North Carolina. California growers are very proficient with Silver Tip Fir, Sugar and Bishop Pine. Some are growing Redwood (*Sequoia gigantea*) and can produce a fine six to eight foot tree in five or six years. Our native species are on the move and are contributing to ever more exciting varieties in the market place.

We cannot overlook the globe hopping newcomers like Vietchi Fir from Japan and King Boris Fir from the high altitudes in the Balkans. Some growers are trying a lovely blue green White Pine type found only in the high mountains of northern Mexico. Carefully selected strains of Arizona Cypress are catching on in South Carolina, Georgia and other southern states. Carefully sheared native White Pine can be grown into strikingly handsome trees

all the way from Maine to the Mississippi River. Even Western White Pine, largely found in Idaho and Montana, flourish in Connecticut and Pennsylvania, Kansas, Nebraska, and Iowa.

Some enterprising farmers have almost turned full circle and now practice controlled grazing on their tree plantations to control unwanted vegetation from grass and bindweed. Generally sheep and dry cattle are used. Control of unwanted vegetation is a must and mowing may be required up to three times a year. On a hot August day watch out for hornets, they love to build their condominiums in or around Christmas trees and birds of all kinds love to nest in Christmas tree plantations.

There are about 5000 Christmas tree farms in the United States and Canada. Size ranges from the retired businessman's acre hobby to the full time professional tree growers' hundreds of acres devoted exclusively to Christmas trees. Trees are spaced five to six feet apart producing 1200 to 1700 trees per acre. Rotations vary from six to fifteen years. The industry employs a full time crew of approximately ten to twelve thousand persons. The work force swells to ninety and one hundred thousand during shearing, planting and harvesting seasons.

Every business or profession is organized in our society today and tree growers are no exception. The National Christmas Tree Association formed twenty years ago is made up of over two thousand members, each one in turn is a member of thirty-one different state grower associations from California to Maine.

One of the very fine things about the Christmas tree business—like all wood-using industries—is that trees are a constantly renewable resource. The vast majority of fresh natural evergreen trees is produced on land completely unsuited for food crop production . . . Worn out pasture land, mine spoil banks, terribly rock ground, and steep hillside areas are used. Large sections of Michigan and Minnesota have stabilized sand dune land with permanent crops of "Santa's Forest" helpers. Thousands of perpetually growing evergreens are a great boon to the land, to the birds and wild creatures that need shade and cover for existence, and, of course, to the families in far off cities who otherwise would be without the once a year happy time symbol of Christmas.

A fake tree does nothing for the land but rob it of non-renewable metals and petroleum byproducts—it also consumes much vital energy in its manufacture. This is hardly symbolic of the true meaning of Christmas and its spirit of peace on earth and life everlasting.

Tree growers assure American families that once a year the joy of decorating a real fragrant Christmas tree can continue.

Hatchets and saws are once again doing their duty in mid-December just as in those good old ONCE—UPON—A—TIME days.

J.A. Witt  
Curator of Plant Collections  
University of Washington Arboretum  
Seattle, Washington 98195

# Stewartia pseudocamellia



The genus *Stewartia* belongs to that interesting group of plants including *Magnolia* and *Illicium* native only to the southeastern United States and eastern Asia. Members of the Camellia family (*Theaceae*), they may be either evergreen or deciduous; the persistent leaved species have been removed from *Stewartia* by some botanists and called *Hartia*. These broadleaved evergreens are rarely cultivated, and then only in warm temperate regions. The deciduous species include eight plus one hybrid and are much more common in cultivation. The American members of the genus *S. ovata* and *S. malacodendron* are among the most beautiful of American shrubs, but to my mind, they do not compare in garden value to several of the oriental species, particularly *S. pseudocamellia*.

The latter is small to medium sized and interesting during all seasons. Slow growing, it ultimately may develop into a tree of fifty feet or more with a smooth trunk on which the bark peels and flakes away revealing patches of red-brown, silvery gray and beige—not unlike a small sycamore. Its winter habit reminds one of witch-hazel with brownish zig-zag twigs. The leaves unfold in early April in the Pacific Northwest and are fresh green, two to three inches long and ovate to obovate in outline. In the Autumn they turn a brilliant orange-red, or in some forms a rich reddish brown.

The single white flowers appear in the axils of the leaves in mid to late June, a time when good flowering trees and shrubs are at a premium. Each flower is up to three inches across and consists of five silky white

petals surrounding a boss of yellow stamens. They are similar to single white camellia flowers as their specific epithet would indicate. The fruit is a pyramidal capsule which often persists after leaf fall, adding to winter interest.

Here now is a tree of a size to be useful in all but the smallest gardens, with a winter habit both interesting and, because of the flaking bark, colorful; summer blooming, and elegant when in flower and with a brilliant display of autumn color to end the year.

*Stewartia pseudocamellia* is native to Korea and to Japan where it grows in the mountains of Kyushu, Shikoku and Honshu. The Korean plants were originally named *S. koreana* by Alfred Rehder who based his new species on plants collected by E. H. Wilson in Korea and on cultivated



Trunks of *Stewartia pseudocamellia*



Fruits of *Stewartia pseudocamellia*

specimens growing in the Arnold Arboretum. In 1948, however, J. R. Sealy reduced Rehder's species to a variety of *S. pseudocamellia*. Dr. Steven A. Sponeberg has gone even further and in his paper "A Review of Deciduous-Leaved Species of *Stewartia* (Theaceae)," *Journal of the Arnold Arboretum* 55 (2) 182-214 (April, 1974) felt that the two races should be combined since there really were no taxonomic characters sufficient to separate them. He does admit that there may be enough differences to make a horticultural distinction between the two, for instance the Korean plants have a flatter corolla, a longer flowering period, and a somewhat different autumn leaf color.

The *stewartias* are not the easiest plants to establish in the garden, but given most of their basic needs they seem remarkably free of diseases and insect pests. In the Seattle area we grow them under conditions identical to those which suit their relatives, the *camellia*. They thrive in well drained soil in which quantities of

organic matter have been incorporated. Moisture during the dry season is essential; leaf margin burning results if they become too dry during early summer. This is especially true of newly transplanted specimens. Transplanting should be done as early as possible since *stewartias* generally have the reputation of being difficult to move. While a sunny location suits them well it is best to try to site them where they receive some protection from drying winds. Once established, *Stewartia pseudocamellia* requires very little attention. Any pruning should be limited to removing lower branches which might hide the beauty of the bark. A mulch to retain soil moisture and an occasional fertilization with an acid fertilizer will take care of the tree's nutritional needs.

Given the necessary cultural requirements, *S. pseudocamellia* is hardy in zone 5 and in most warmer zones provided it has adequate water and acid soils. How is this *Stewartia* best used in the garden? Its eventual size of about fifty feet suggests that it

should be considered first as a specimen tree, located where its striking winter outline and exfoliating bark can be enjoyed during winter months and its flowers and autumn color will show well at other seasons. We in the University of Washington Arboretum have found it a most suitable companion plant for *camellias* and *rhododendrons*. There does not seem to be any serious root competition among these genera and the summer flowering *stewartia* provides enough, but not too much, shade for these spring flowering broad-leaved evergreens. If a background of evergreen trees can also be provided to serve as a windscreen and a backdrop for the white flowers and the brilliant fall color, so much the better.

To sum up, *Stewartia pseudocamellia* is a tree for three seasons: winter, late spring, and fall. Its display of pristine silky white flowers is a joy at a time when flowering trees are rare; add to this, ease of culture and a pest free nature, and here is a gem of a plant for nearly any garden.

# GARDENER'S MARKETPLACE

## African Violets

AFRICAN VIOLET? Free copy 'Helpful Hints for Success with African Violets' Write Saint-paulia International, P.O. Box 549, Knoxville, Tenn. 37901

## Bonsai

For membership information write: American Bonsai Society AH, 228 Rosemont Avenue, Erie, Pennsylvania 16505.

## Bicen—Special

Send 35¢ for special list of 76 plants—you choose 40 and remit \$17.76. Less than 45¢ ea. Edelweiss Gardens, Box 66 GA, Robbinsville, N.J. 08691

## Cactus & Succulents

Lithops—Fascinating African succulents resembling colorful pebbles. Other rare succulents. Write for catalog, ED STORMS, 4223 Pershing Ft. Worth Texas 76107

## Chrysanthemums

National Chrysanthemum Society, Inc. USA. Annual dues \$7.50, includes 5 issues of The Chrysanthemum, Beginner's Handbook. MRS. WALTER CHRISTOFFERS, Sec., 394 Central Avenue, Mountainside, New Jersey 07092.

## Daphne Odora

The delightful 'February Daphne' offered by Little Lake Nursery growers of rare plants. \$5.75 prepaid, California residents add 6% sales tax. Box 782, Willits, California 95490.

## Ferns

LEARN ABOUT FERNS—join the Los Angeles International Fern Society for only \$4.50 yearly. Receive 16-page educational Bulletin and two-page Lesson monthly. Address LAIFS, Box 448-H, Hawthorne, CA 90250.

## Fuchsias

FUCHSIAS—75 varieties tested in the S.E. for heat resistance. Propagated from acclimatized stock. Send 10¢ for list. HIDDEN SPRINGS NURSERY, Route 3, Rockmart, Georgia 30153.

## Gardening Equipment

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## House Plants

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## Orchid Kits

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## Plant Supports Tiltproof

NEW Plant Supports from ORDEV keep your large growing potted indoor or patio plants straight, tiltproof and securely portable. STAKE KIT expands through add-on sections up to 6 feet tall. TRELLIS KIT adaptable to various shapes and heights. Detailed information: ORDEV MFG. CO., INC., 6781 Ward Road, Niagara Falls, New York 14304.

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## Publications

WAKE UP YOUR GARDENING. Gardening is going places—are you with it! The AVANT GARDENER brings you all the "firsts"—new plants, products, techniques, with sources—plus full features, special issues. A unique horticultural magazine-news service. 24 issues a year, over 500 articles. Curious? 3 sample copies \$1. Serious? \$8.50 for a full year. P.O. Box 489, New York, NY 10028

1976 GROWERS CATALOG—(50th year) Thousands of items. Many unusual. Trees, Shrubs, Plants, Seedlings, Seeds, Books, Pots, Tools, Supplies. Stamps appreciated. Mellinger's, North Lima 41, Ohio 44452

BOTANICAL & HORTICULTURAL BOOKS. Rare, Out-of-print, New—Latest Catalog \$1.00 S.J. Singer Co. 1133 Broadway, New York, N.Y. 10010

VEGETABLE GARDEN DISPLAYED by The British Royal Horticultural Society is invaluable for gardeners everywhere: \$6.75, postpaid. Bryant & Cook, Seedsmen, Box 488 A, South Windsor, Connecticut 06074.

## Rare Bulbs and Plants

THE WIDE, WIDE WORLD OF BULBS AND PLANTS. America's unique catalog. Thousands of rare items. Many unavailable elsewhere. Bulbs from Achimenes through Zephyranthes. Hundreds of genera and thousands of species from the world's best growers. Hardy bulbs and perennials, house plants, orchids, bromeliads, insectivorous plants, countless others. Now completely revised. Price \$2.00 (Deductible). INTERNATIONAL GROWERS EXCHANGE, Box 397-E, Farmington, Michigan 48024

## Rhododendrons

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## Seeds

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## Volunteer Peace Corps

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# BOOKS

## JOHN BANISTER AND HIS NATURAL HISTORY OF VIRGINIA, 1678-1692

by  
Joseph and Nesta Ewan.  
485 pp.  
70 plates of Banister drawings  
University of Illinois Press,  
Urbana, IL  
\$15.00

Gardeners interested in botany, in colonial history, in nomenclature, will find this book absorbing. The wide-ranging correspondence of John Banister and the dispersal of his papers and specimens created a tangle which the authors have undertaken to unravel by dedicated research. Not much is known about the life of John Banister; to quote from one chapter: "Of the early life of John Banister little record remains, or of his fourteen-year struggle in Virginia to build himself 'an estate' which would make possible the devotion of the major part of his time and energies toward a 'Natural History' of that colony. Before his accidental death at the age of forty-two he had collected, described, and sent specimens of approximately 340 species of plants, 100 'Insecta', twenty 'Mollusca,' and some fossils and rocks to colleagues in England. He had sketched more than eighty species of plants, a few insects, a number of shells, and he had composed part of his Natural History and part of his account 'Of The Natives.'"

Part I of the book covers these activities. Part II is comprised of Banister's catalogs and the authors' explanations of their approach to the study. The Ewans have documented Banister's place in the growth of knowledge of the natural history of the Atlantic seaboard.

J.S.

## LOW MAINTENANCE GARDENING

The Editors of *Sunset Books*  
and *Sunset Magazine*  
*Lane Books*  
Menlow Park, California  
1974-96 pages-\$2.45

This large paperback has something to offer every lazy gardener. An extensive series of garden designs plus discussions of gardening techniques and plant material are all intended to maximize the time in the hammock and minimize the time behind the lawn mower. While *Sunset Gardening Books* are mainly thought of for California, this book is intended for all parts of the United States. Garden plans are given for such diverse locations as Pasadena, Portland, Houston, Chicago, Atlanta, and Orlando. Lots of ideas and well worth the price.

Gilbert S. Daniels

## NOTHING GROWS FOR YOU? A BROWN THUMB GUIDE TO HOUSE PLANTS

by  
Frances Tenenbaum  
Charles Scribners Sons  
New York, New York  
1974-118 pages-\$6.95

This little book can be considered a good source of basic indoctrination for the new house plant grower. Sound advice is offered on growing conditions and plant materials. Of particular value are those chapters which discuss what to look for in a potential house plant and some of the pitfalls which may be encountered in purchasing plants both from a nursery or plant boutique and, in particular, from mail order sources. This book is a worthwhile primer for the beginning or casual house plant grower.

Gilbert S. Daniels

## WILDFLOWERS OF THE SOUTHEASTERN UNITED STATES

By  
Wilbur H. Duncan and Leonard E. Foote  
University of Georgia Press  
Athens, Georgia  
1975-296 pages-\$12.00

This guide is actually useful for an area covering almost the entire eastern half of the United States. In combination with the brief descriptive text, the 485 excellent color photographs provide means of identification for more than 1,000 species of herbaceous annual and perennial plants. A very brief and simple key guides the reader to the appropriate section of the book, where further identification can be made directly from the photographs. A brief descriptive glossary, part of which is illustrated, further simplifies the use of the book by the non-botanist. Although it's 6 x 9" format makes the work just a little large for use as a pocket guide, it would certainly be worth carrying in the knapsack for any wildflower enthusiast.

Gilbert S. Daniels

## THE COMPLETE BOOK OF HERBS

by  
Sanecki, Kay N.  
Macmillan  
November 14, 1974  
247 pp. — drawings by Edward Russell  
\$9.95

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The following is a condensed balance sheet of the Society for the FY ending March 31, 1975.

The complete financial statement for this year together with reports on examination by our auditors, Stanton, Minter, and Bruner of Alexandria, Virginia, are available upon request.

Harold Epstein, Treasurer                      O, Keister Evans, Executive Director

**THE AMERICAN HORTICULTURAL SOCIETY, INC.**

**BALANCE SHEET**

March 31, 1975

**ASSETS**

**CURRENT ASSETS:**

Cash	\$ 68,313	
Accounts Receivable	7,005	
Grant	200,000 *1	
Grant receivable	187,170 *2	
Other Current Assets	23,145	
<b>TOTAL CURRENT ASSETS</b>		\$485,633

**TOTAL PROPERTY, NET:** \$949,176

**OTHER ASSETS:**

Grant receivable, non-current	\$400,000 *1	
Miscellaneous Other Assets	59,393	
<b>TOTAL OTHER ASSETS</b>		\$459,393
<b>TOTAL ASSETS</b>		\$1,894,202

**LIABILITIES & FUND BALANCES**

**CURRENT LIABILITIES:**

Accounts Payable	\$ 27,728	
Mortgage Payable, Current	200,000 *1	
Deferred Income:		
Membership Dues	231,451	
Longwood Grant	187,170 *2	
<b>TOTAL CURRENT LIABILITIES</b>		\$646,349

**MORTGAGE PAYABLE** \$400,000 \*1

**TOTAL LIABILITIES** \$1,046,349

**FUND BALANCES:**

Restricted	\$676,681 *1 *2	
Unrestricted	171,172	

**TOTAL FUND BALANCES** \$ 847,853

**TOTAL LIABILITIES & FUND BALANCES** \$1,894,202

\*1) Entries pertaining to special arrangement of grant from Enid A. Haupt charitable trust for purchase of River Farm.

\*2) Longwood Foundation Grant for P.S.D.C.

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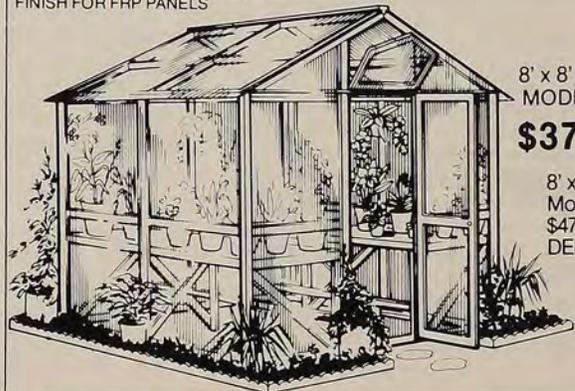
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Royall Wilson Bemis, Proprietor

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# RA·PID·GRO

# The American Horticultural Society Travel Plans

The resounding success of the various horticultural explorations sponsored by The American Horticultural Society has encouraged the planning of additional trips into other areas of the world with an accent upon features of horticultural interest, without overlooking other areas of cultural and historical interest.

Each of the programs are individually planned and researched in an effort to produce a distinctive itinerary for members of the Society who have great diversification in their horticultural interests. It will be noted that these itineraries are quite different in many ways from the non-objective usual tourist programs. They are not 'hop, skip, and jump' trips covering huge areas and continents in minimum periods. They are planned for the sophisticated traveler with a common interest in horticulture—a magnificent bond. All airlines are scheduled I.A.T.A. flights.

These travel adventures are planned on a basis of providing the best of comforts in the areas visited. Since each of the groups are strictly limited in numbers, early reservations are recommended. Many previous projects have been fully subscribed several months prior to departure. Early enquiries are extended preference.

## AN EXPLORATION OF THE ISLANDS OF SOUTHEAST ASIA

**Departure February 2nd, 1976 for 22 days or 31 days**

An exotic itinerary departing from San Francisco to Hong Kong, Singapore and an extended visit to Indonesia, Sumatra, Java and the magic Isle of Bali, returning on February 24th. An optional extension is offered to Thailand visiting colorful areas around and in Bangkok plus the cooler Chiang-mai mountain area in Northwest Thailand. Return to San Francisco on March 4th. Prior brochure available upon request.

## SPRING HORTICULTURAL EXPLORATIONS IN GREAT BRITAIN

Great Britain renowned as the Garden Isles has been long considered the mecca for all horticulturists. Few areas in the world are blessed with the climatic conditions so favorable for the gardener in these Isles. Based upon the interest indicated and the success of previous horticultural explorations there, three alternative itineraries are offered for Spring 1976.

## NINE DAY HORTICULTURAL EXPLORATION DEPARTURE APRIL 26th, Returning MAY 4th, 1976

The first four nights are in a London hotel. Visit the Spring Show at the Royal Horticultural Society in London and Kew Gardens, etc. Part of time for inde-

pendent activities. The following four days via coach to private gardens, botanic gardens, nurseries, etc. south of London. Since low winter air fares will apply this will be an economical trip.

## FIFTEEN DAY HORTICULTURAL EXPLORATION

**Departure May 13th, returning May 27th (15 days or June 3rd (22 days)**

The first ten days after arrival, coach tour into Southern and western England visiting many renowned gardens, large and small, nurseries, botanic gardens plus other historical and cultural points of interest. Return to London on May 23rd to attend the famous annual Chelsea Flower Show staged by the Royal Horticultural Society. Balance of stay in London is for independent visits to Kew Garden or other personal interests. Return to New York on May 27th (15th day).

An extension is offered for an additional week at the same Group Air Fare. This time will be devoted to a coach tour north and west of London to many areas of horticultural interest. Return to New York on June 3rd (22nd day).

## EXPLORATION OF CALIFORNIA AND ITS HORTICULTURE 16 days—April 1976

Outlining an itinerary for the prescribed time is frustrating, not because of a dearth of subjects, but because of the huge variety of attractions and the great mileage between them. The result is a compromise, so that many facets of California are sampled, with accent on horticulture in its many phases—large and small gardens, arboretums and botanic gardens, nurseries, wildflowers and the countryside at peak of bloom in glorious cool spring.

The itinerary will commence in San Diego and continue north to the San Francisco area. Departure date and details will be available soon.

## EXPLORATION OF THE PACIFIC NORTHWEST (Oregon-Washington) (Vancouver)

**16 days—May 1976**

Commence the itinerary with a circle tour from Portland, Oregon south along the coastal road and the magnificent shore with many attractions plus native flora. Continue to the Crater Lake area and north inland and the major mountains. Then to the Columbia River and into Washington and Mount Ranier. A few days in Seattle and then to the Olympic Peninsula, the mountains and the Rain Forest. Ferry across

# for 1976

to Victoria on Vancouver Island, and to the City of Vancouver. Throughout this itinerary there will be visits to private gardens, botanic gardens, parks and the native flora,—a continuous program of magnificent country and a wealth of flora from all areas of the world.

The departure date and complete itinerary will be available soon.

## A SUMMER EXPLORATION OF THE ORIENT

July 16th to August 6th, 1976

This itinerary will be off-beat in Japan. After a few days in Tokyo travel into the Central Japan Alps to the Japan Sea area. Via another route continue to Kyoto for a few days. After necessary few days there fly to the northern island of Hokkaido and its cooler climate. Optional extensions will then be available to Taiwan and Hong Kong. Here is an opportunity to travel in the more remote areas of Japan which are seldom visited by tourists.

## AN EXPLORATION OF NEW ZEALAND

(The Garden Isles of the South Pacific)

October—November 1976

23 days

This group will be routed from Los Angeles with stop in Fiji Islands before continuing to Auckland, New Zealand, which will be reached at the peak of their spring season. The itinerary in the North Island will include the area around the major city. Auckland and then to Rotorua, Waitomo, Mt. Ruapehu, New Plymouth and Wellington.

Then by air to the South Island —first to Nelson, Kakoura, Christchurch, Mount Cook, Milford, Queenstown, Timaru, Ashburton to Christchurch for departure.

This entire trip will be saturated with various horticultural visits —private gardens, botanic gardens, national parks and forests, plus the distinctive native flora. New Zealand is an extremely scenic country, the itinerary including some of the most spectacular areas. This unprecedented itinerary will furnish a thorough insight into the two islands of New Zealand.

Note: There will be available a one week extension to the Polynesian Islands of Tahiti, Bora Bora, Moorea and Huahine. This will be en route to Los Angeles.

There is evidence that there is extreme interest in this unusual journey. If you are seriously interested your enquiry will be welcome and given precedence.

## AN EXPLORATION OF SOUTH AFRICA

September 1976

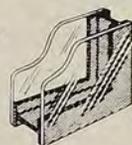
22 days

Based upon the expressed enthusiasm by those who experienced the past three explorations in South Africa, another opportunity is offered to those members interested in this fascinating area with its distinctive rich flora and beautiful countryside. The itinerary will again include Johannesburg, Pretoria, Private game reserves, The Blue Train, Cape Town and Peninsula, Stellenbosch, Darling, Oudtshoorn, the Garden Route to Durban, Drakenberg Mountains, and Zululand Game Reserve.

Illustrated brochures of the past itinerary are available immediately.

If you wish further details concerning any AHS Travel explorations briefly outlined above, please write AHS Tours c/o American Horticultural Society, Mount Vernon, VA, 22121. We will send you complete brochures as soon as they are available.

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# Introducing the Official 1976 American Horticultural Society Calendar



\$4.95<sup>each</sup>

The American Horticultural Society is proud and delighted to present the 1976 Calendar of American Wildflowers designed by artist-naturalist Martha H. Cawley.

Each month features one of twelve American wildflowers from all across the nation. The California poppy, responsible for the phrase "Golden West." The Atamasco lily, "flower of the West Wind." The Texas bluebonnet or lupine, whose name is derived from the ancient belief that it desecrated croplands as wolves prey on sheep. The New England aster, whose roots Indians once smoked to attract game for hunting.

Accompanying each wildflower is a brief selection of poetry or prose from some of the world's greatest writers—Wordsworth, Whittier, Thoreau and their literary peers. In addition, you receive a fascinating biography of each flower—its scientific name, its many common names, its preferred living conditions, its distribution in North America, its season and little-known facts and fables about it.

Printed in full color on high-quality paper, this 11" x 17" wall calendar makes an elegant yet practical year-round addition to home or office. And you can order your calendar *now*, in plenty of time for thoughtful gift-giving or fund-raising projects.

- Full-color reproductions
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Mail with check to:

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The 1976 Burpee Garden Catalog is a comprehensive planting and growing guide with over 1400 vegetables, flowers, shrubs, trees, and garden aids. Plus dozens of helpful hints for a better, more productive garden from Burpee's horticulturalists—based on our 100 years of gardening experience. There is also a 10-page "Keepsake" section, featuring the cover from Burpee's 1888 Catalog.

Since 1876 Burpee has been continually developing new vegetable varieties that are easier to grow and produce more in less space, as well as new and better flowers. As a result, Burpee is America's leading breeder of vegetables

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**4. Burpee's Best White Marigold Mixture**—Burpee's 56-year search for the White Marigold is ended. The \$10,000 payment has been paid. As soon as seeds are available it will be offered to our customers. In the meantime these are an exciting mixture of White and nearly White Marigolds. Plant form, size, and time of bloom will show some variation.

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Order the 5 all-time  
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