AMERICAN HORTICULTURIST

APRIL/MAY 1980

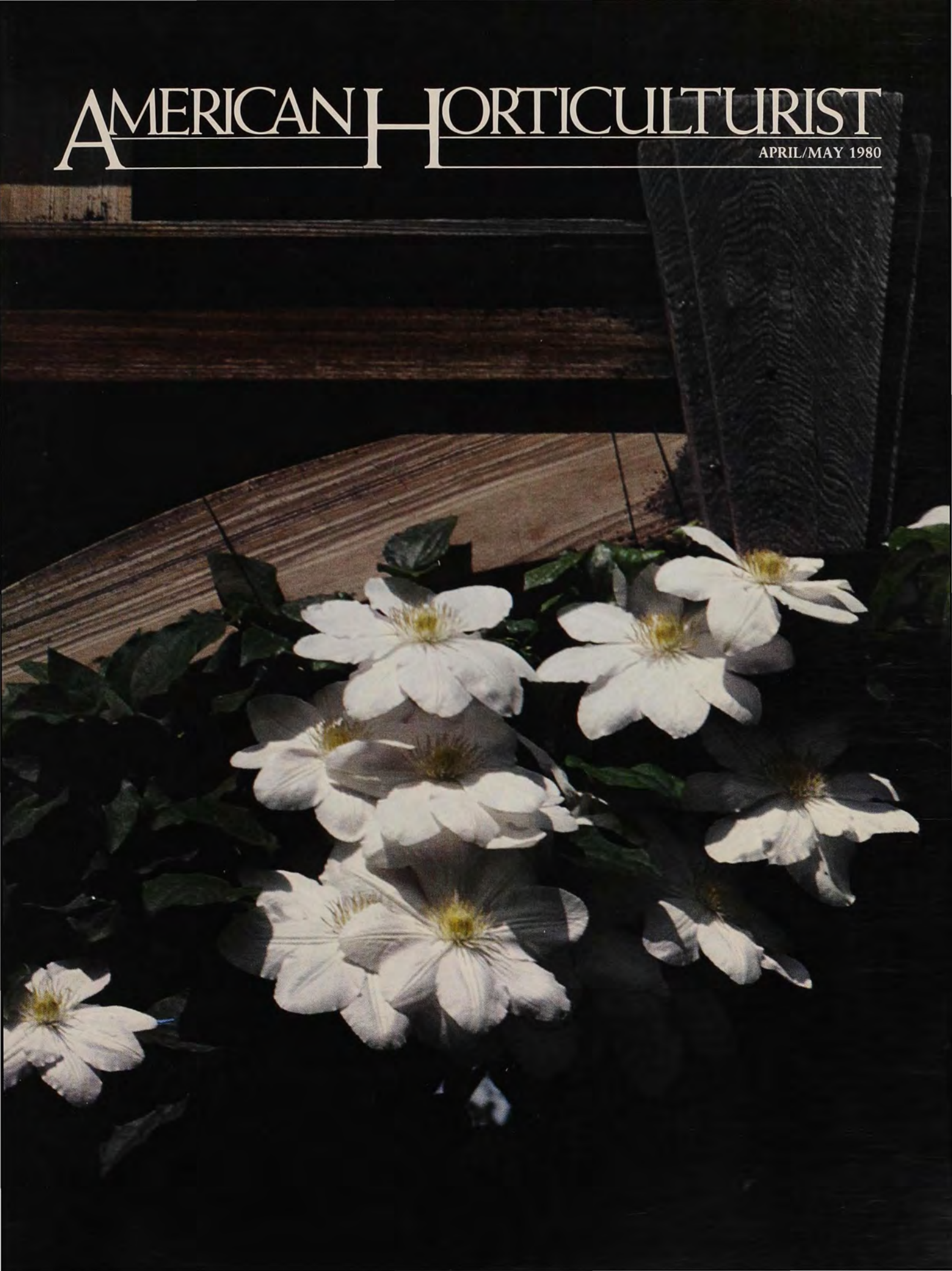

Illustration of 'Mary Brand' peony by Gwen Leighton

COMING IN THE NEXT ISSUE

In the June/July issue of *American Horticulturist,* look for Barbara Emerson's conclusion of her two-part series on weeds and how to control them. Also, read about the Missouri Botanic Gardens, one of several gardens members of the Society will be visiting during the 1980 Congress in St. Louis, September 16-20. In addition, Elizabeth Corning will tell you how to sow seeds for winter bloom and will suggest several flowering plants you may wish to try; Robert Carlson will give you tips on how to prune your fruit trees; Mrs. Ralph Cannon will write about the beauty of double flowers; and the staff will introduce you to a fascinating artist who uses dried flowers to make exquisite floral works of art he calls fleurages. All this and more in the June/July issue of *American Horticulturist.*

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FEATURES

COLUMNS

ON THE COVER: Photographer Pamela Harper has captured the beauty of clematis in this specimen, *Clematis lanuginosa candida* . The picture was taken at Dumbarton Oaks in Washington, D.C. For more information about these lovely flowers, turn to page 29.

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PRESIDENT'S PAGE

Back to Square One—and Perhaps Even Further

Congress passed the Endangered Species Act in December of 1973. It was hailed as a significant step in preventing the extinction of many vulnerable plants and animals. Biologists and conservationists throughout the United States prepared recommendations for plants and animals that should be given official protection under this new law. In January of 1975, the Smithsonian Institution published a major study which identified 3,187 species of native plants considered to be in danger of extinction. California and Hawaii, where many delicate habitats are under extreme pressure from human activities, figured prominently in this report. Almost half of the native flora of Hawaii (1,088 plants) and 680 plant species of California were on the list.

The Smithsonian report was submitted as a preliminary list by the Office of Endangered Species of the U.S. Department of the Interior for public review and comment as required by the Act. This was in July of 1975; a year later an official proposal was published in the Federal Register. This proposal listed 1,783 species of plants requiring immediate protection if they were to continue to survive in their natural habitats.

The legal process, which requires a formal presentation of the biological case for each plant or animal, is long and complex—but not impossible. By the end of 1979 studies had been completed for 56 native plant species, and they in turn were formally listed for protection under the Endangered Species Act. This may not seem like much of an accomplishment considering the extent of the original list, but it was definitely progress. The people of the United States had recognized the importance of all living things, no matter how seemingly insignificant. They were actually doing something to protect plants and animals that had survived millions of years of evolution but were now in imminent danger of extinction from the actions of man.

Or so it seemed! One of those newly protected creatures was a little fish whose habitat lay in the way of the construction of a new dam. The delays in construction and the possible abandonment of the Tellico Dam in Tennessee because of the three-inch-long snail darter raised a furor in Congress. As a direct response to this problem, Congress amended the Endangered Species Act in November of 1978. This amendment now requires not only critical biological data but also a sociological evaluation of the effects of protective action on the surrounding community. Early in this year an Executive Order issued by President Carter imposed essentially the same requirements as the amendment. Together, these actions required two levels of socioeconomic evaluation as part of the proposal for the protection of each endangered species. The cost and effort to prepare the necessary background studies before any plant or animal can be given protection under the Endangered Species Act has now reached an unmanageable level.

Furthermore, a seemingly minor element of the amendment requires that all this paperwork be completed within two years of the initial legal proposal that a species be placed on the endangered list. If all action is not completed within that time, then the plant or animal under consideration must be removed from the list of proposed species and cannot be listed again unless new information can be presented. As a result of this time limit, all of the plants on the original list of 1,783 species must now be reprocessed (except, of course, for the 56 native species for which all paperwork has been completed). There is even some doubt as to whether the balance of the plants on the list may be relisted because of the vague definition of "new" information. Technically, this could potentially negate the whole purpose of the Act. The effort and expense of presenting the case for each individual species has now become so excessive that it is beyond the current abilities of the limited staff and budget of the Office of Endangered Species.

Where do we go from here? If the intent of the original Endangered Species Act is even to be carried out, we had all better let our elected representatives know our feelings—and quickly. Time is rapidly running out, and species of plants and animals currently endangered could easily become extinct before we can act to protect them. What happens next is up to us!

As we announced in the March issue of the newsletter, the Society has been forced to raise annual membership dues for the first time in 12 years. Beginning this month, membership in the Society starts at $20 per year. Last month, all members receiving renewal notices were given the opportunity to renew at the old rate in order to save $5. We now wish to extend this invitation to those of you whose membership is due to expire later in the year. If you would like to renew now in order to take advantage of this offer, you must act soon—all future renewal notices you will receive will reflect our new rate of $20.

To renew early, send your magazine mailing label or your membership account number, accompanied by your $15 check, to the attention of Judy Canady in care of the Society, Mt. Vernon, VA 22121. We will then extend your membership in the Society by an additional 12 months.

Gilbert S. Daniels

—Gilbert S. Daniels
President

Editor's note: There are two congressional committees responsible for considering changes in the law regarding endangered species. Should you care to write to them, their addresses are: House Subcommittee on Fisheries and Wildlife Conservation and the Environment, John Breaux, Chairman, Washington, D.C. 20515. Senate Subcommittee on Resource Protection, John Culver, Chairman, Washington, D.C. 20510.

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LETTERS

More Comments on Daylily Article

This is a note to say that I agree with the reader of *The American Horticulturist,* Mrs. Lola Branham, who challenged the statement on hemerocallis, "To keep hybrids true to color do not let them go to seed." Of course, such a statement needs verification. Possibly just to sample existing cultivars is not enough. A long-range program should be carried out. I have some data on tetraploid hemerocallis that I thought I would pass along.

In 1969 Dr. Paul Voth, a member of the botany department of the University of Chicago, gave me 12 established clumps of his hybrid tetraploid hemerocallis. There were pink, melon, gold, orange, yellow, rose and red types. The tetraploidy had been induced by colchicine. I have been hybridizing these lilies every year by cross-pollination since that time. This represents 10 years of experimentation. In the 10 years, there has been no noticeable change in the color of the flowers from the original color resulting from seed formation in any of the 12 hybrid plants. Of course, all capsules were carefully gathered when they became dry. Ten years should indicate that seed formation on the tetraploid hemerocallis resulting from cross-pollination does not interfere with the original color of the flowers on the original clones.

The author of the daylily article may have reached her conclusion because the pigments in the flowers may increase in amount as temperatures rise, or the lack of light on cool days may affect the reflective capacity of the cells of the sepals and petals, causing misjudgment on the part of the observer.

—Mrs. Ralph Cannon
Chicago, Illinois

I would like to comment on Mrs. Burgess' article on daylilies in the August/September issue of your publication and on Lola Branham's letter about the article. Mrs. Branham and I are both members of the American Hemerocallis Society. I agree with her comments. If root clipping as a propagation method were widely workable, many hybridizers would be happy to use it to obtain quicker increase for their new introductions, but one does not hear of it as a method in the daylily literature.

Mrs. Burgess' article is only one of the recent articles in the popular gardening and horticulture magazines that fails to mention any of the varieties of daylilies that have won the American Hemerocallis Society varietal awards or scored high on the popularity poll taken of the membership. These varieties are not all new, nor are they all expensive, and it would be beneficial to your readership, I think, to know of them as well as the very old and species varieties mentioned all the time.

Some award winners are 'Moment of Truth', almost white in color; 'Red Rum' and 'Oriental Ruby', both reds; 'Bertie Ferris', persimmon, and 'Little Celena', rose-pink, both small-flowered and excellent for edging and bedding.

'Ed Murray' is at the top of the popularity poll and is a small-flowered, glowing, maroon-red. Second is 'Mary Todd', registered in 1967, so not exactly new. It is a showy, large, vigorous, bright-yellow tetraploid of heavy substance and great garden value and costs around $2 on many daylily lists. A top daylily need not be expensive. Others are: 'Green Flutter', a small green-yellow; 'Jock Randall', a large, brilliant rose-red; 'Prairie Blue Eyes', lavender with an almost blue central zone; 'Sari', a lovely pink; 'Hope Diamond', a pastel cream. Any of these can be purchased for $5 or less.

Mrs. Burgess recommends some excellent general nurseries as suppliers of daylilies, but specialists are also excellent as a source and often are less expensive. Those I have dealt with and recommend are: Iron Gate Gardens, Route 3, Box 101, Kings Mountain, NC 28086; Tranquil Lake Nursery, 45 River Street, Rehoboth, MA 02769; Pierce Daylily Gardens, 2361 East Road, Mobile, AL 36609; Tanner's Garden, Route 1, Box 22, Cheneyville, LA 71325; Schoonover Gardens, 404 South Fifth Street, Humboldt, KN; and Mrs. Branham's garden, 607 Woodhaven Drive, Richmond, VA 23224. Iris and daylily gardens that send excellent daylily plants are: Melrose Gardens, 309 Best Road South, Stockton, CA 95205; Corden Bleu, 418 Buena Creek Road, San Marcos, CA 92069; and Gene and Gerry's, 39 East Patrick Street, Frederick, MD 21701.

I have tried to include the kind of information I would have found helpful when I was starting out in daylilies. If this letter is published, I hope it helps readers.

—Sandra Solomon
Newport News, Virginia

Country Gardens Not Disappearing

I have just read the President's Page in the December-January issue of the *American Horticulturist.*

Where have Dr. Daniels and Mr. Starry been? As far as I can see, this is a lovely, nostalgic piece, but false.

Yes, I am mad. One part of the nation may be willing to ignore gardens and gardening in favor of "stretches of concrete and tarmac." On the other hand, why do we have such a rising movement in community gardening? Why are there so many successful sellers of flower seeds, plants, shrubs and trees? Why are gardening magazines so popular today?

Maybe "Come into the garden, Maude" is different. Tennyson's lady was certainly different from the present-day Maudes, who must sometimes be dragged from the gardens they have been planning, growing and tending. Who has the gas to go gallivanting away from home?

Look through the country. See the pride home owners take in the gardens in which they take their ease. Try Spokane, Washington: prim front lawns bordered with shrubs and trees don't tell of the delightful back gardens, but do show the love and care expended on home property. Now that the national road-building frenzy has died, people are reclaiming the land. I don't say all is beautiful, but every place I've lived in has had residents devoted to flower and vegetable gardening. And young ones are coming along all the time, to be shown by you and me, for one generation must always teach another.

It could be time you took a trip, sirs: not a tour of foreign garden spots, but of our own incredible country. Look around. Then, if you disagree with me, please let me know.

—Carol E. Howe
Springfield, Vermont

Take heart, gentlemen, country gardening is alive and well. It is your vision that has diminished, not grandmother's pleasure in growing things.

In between the rubber tires full of pansies and your sterile, professionally planned and maintained gardens there are thousands of small town gardeners doing exactly what you bemoan as extinct.

These gardeners have back yards (not gardens). They are far too busy to be obsessive about neatness; much too wise to clip every shrub to uniformity or worry with rules and regulations. They grow vegetables and flowers for pleasure.

Their choice blooms will not show up in any flower shop. More likely they will decorate the church or a wedding or a dinner party table. But they are no less perfect for not being touted.

For a cocktail party at the country club recently a friend of mine offered the hostess three dozen long-stemmed roses in a silver urn. Any single blossom could have competed with roses in any flower show. (Yes, I have seen the Philadelphia show.) These roses were grown and enjoyed for the pure pleasure of beautiful roses.

They grow what they want, what gives them pleasure and they grow it well. They are rooting cuttings for neighbors, dividing clumps and ordering new hybrids from the catalogs.

Vegetables from their kitchen gardens are canned and frozen. You, sir, may be eating vegetables from the supermarket all winter. We're still eating out of our gardens.

It is wrong to bemoan the death of country gardening when you are looking no further than the end of your nose.

—Nancy J. Siler
Knoxville, Tennessee

Dr. Daniels replies: I appreciate that there are many beautiful places in which to live, but the point of the article was to call attention to the fact that there are also lots of places that aren't, and we shouldn't be satisfied just because our own gardens are beautiful. Editor's note: Dr. Daniels' positions as President of the Society and as horticultural consultant to several institutions require considerable travel throughout the United States. He lives on a small farm in rural Pennsylvania where he raises horses, dogs, flowers and vegetables.

British Gardening Books Discussed

I was delighted by Dr. Daniels' comments about gardening books in the October/November *American Horticulturist.* Having spent the first part of my gardening years in England I may have less trouble than most American readers with the language problem, but I feel even more deeply the frustration that comes from not being able to find out which of my old friends it is worth my while trying to grow. Some knowledge of climate helps, of course, but we don't turn to books for knowledge we already have. We want them to know more than we do ourselves, else why are we reading them? This is not to say that gardening books from other countries are useless, but that they could be much more useful. At present many can be no more than supplemental to our libraries, for the sake of their beautiful illustrations.

I wonder whether the proper adaptation of gardening books for use in this country might not have a useful side effect on the nursery trade. There are plants from Europe that would do well in many parts of the United States, but most of these are completely unknown in the trade. See Pamela Harper's lament in the *American Horticulturist* for Early Spring, 1976. In fact, much that is known is not available. Except for specialist mail-order firms, the plant material seems to be becoming increasingly limited, while at the same time, of course, it is "new" and "rare"—an interesting paradox.

A demand that should be made of all book publishers is that no garden book, from whatever source, should ever be considered for publication without a detailed index. I feel strongly that the absence of an index makes a book close to useless. If a book is to be used for reference rather than bedside reading, as most garden books are, then the publishers should be asked how we can be expected to refer in the absence of an index, or better still two, one of plant names and one of other topics. This point should also be brought to the attention of reviewers of books.

I am grateful to the *American Horticulturist* for providing the incentive and opportunity to direct some comments to publishers of gardening books. Most of us will read anything we can get our hands on that has to do with plants and gardening. Let us hope that collectively we can get some improvements made.

—Sheila M. Ary
DeKalb, Illinois

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THE NETTLE FAMILY

Illustration by Alice R. Tangerini

How many times have you reached into a clump of plants in the garden to thin them or to cut some flowers only to snatch your hand back with a sensation of having been stung? More than likely the culprit was a stinging nettle plant growing unobtrusively among the foliage of the ornamentals. Contact with the numerous bristly, stinging hairs on stems and leaves of this plant produces an itching and burning sensation that usually lasts less than an hour.

This plant, which is widely disseminated and is usually considered a troublesome weed, has interesting family connections and, indeed, some merits of its own. Even Shakespeare took note of one of its virtues when he wrote, in Henry V:

The strawberry grows underneath
the nettle,
And wholesome berries thrive and
ripen best
Neighboured by fruit of baser quality.

The reference is to the fact that, while growing, the nettle is credited with stimulating the growth of other plants nearby and making them more resistant to disease.

The lowly stinging nettle also has nutritional attributes worthy of investigation. Although common throughout much of the United States, it is seldom eaten by Americans, yet it has a long history of use in European countries as a vegetable and potherb, as well as in recipes for various beverages. It is rich in health-giving minerals and also Vitamin C. For these uses nettles were at one time cultivated in European gardens.

The stinging nettle, *Urtica dioica*, is one of several nettles belonging to the Urticaceae, or the nettle family. It is comprised of some 1,500 species of herbs, shrubs, trees and vines. The family name, Urticaceae, comes from the Latin *urere*, which means to burn. Stinging hairs on stems and leaves are one prominent identifying characteristic of most family members. The inconspicuous flowers, borne in various sorts of clusters in the axils of the leaves, are generally unisexual. Female flowers are without petals. Stamens of the male flowers explode when ripe, releasing puffs of pollen. A small, single-seeded dry fruit results from pollination. These characteristics held in common have resulted in bringing together in one family a curious assortment of plants—ornamental, utilitarian and, should we say, tolerated.

The Latin name of the stinging nettle incorporates both *urere*, to burn (in *Urtica*) and *dioica*, which means "two dwellings," a reference to the separation of the sexes in the flowers, thus drawing attention to this family feature. The minute, clustered axillary flowers exhibit another family trait, that of exploding anthers. Pollen shoots into the surrounding air, a display reported to be readily observable in the early morning. Furthermore, these inconspicuous flowers have the distinction of being the only food eaten by caterpillars of the peacock and tortoiseshell butterfly.

Besides the stinging nettle and a number of house plants (*Pilea, Pelliona* and *Soleirolia*), the nettle family also includes one genus of economic value, the genus *Boehmeria*.

Still underexploited for its promising economic potential is *Boehmeria nivea*, the fiber plant ramie. Tall, slender, almost unbranched, with felty leaves that are white beneath, ramie is grown widely in China and to some extent in the southern United States. The fine fiber taken from the inner bark is not widely used commercially because of certain technical drawbacks in harvesting and processing.

The National Academy of Sciences reports that "almost any product that can be manufactured from cotton, flax, hemp or silk can also be made from ramie; in addition, ramie can be mixed and spun with either wool or synthetic fibers which increases its potential in the textile industry. Ramie improves the ability of synthetics to 'breathe'. Such blends are ideal for tropical clothing." In spite of its excellent properties, ramie fiber is not used on any large scale outside East Asia.

Ramie's obscurity as a fiber crop is matched by its lack of recognition as a potential forage crop. Its leaves make nutritious green feed that is low in fiber and rich in protein, minerals and carotene (a plant pigment), comparing well with alfalfa.

Again quoting the National Academy, ramie "has been grown as a fiber crop in China and Japan for many centuries. But its modern potential is as a dual-purpose crop, providing both fiber and forage. It has great promise to become an important new cash crop for many tropical and subtropical locations."

The members of the Urticaceae that are best known horticulturally and are commonly cultivated (primarily for their foliage) are *Pilea, Pellionia* and *Soleirolia*. These genera, popular as house plants, are without stinging hairs.

The late James Underwood Crockett wrote, "If there is one secret to handsome house plant collections, beyond healthy plants, it is combining a variety of shapes, sizes, textures and colors. The aluminum plant and other pileas meet the criteria in each of these qualities."

The aluminum plant, artillery fern, panamiga or friendship plant, creeping Charlie—all are familiar to the indoor gardener and all are pileas. Pileas are mostly tropical, and the species we know so well are grown as house plants or in the greenhouse for their interestingly quilted and colored leaves, their neat habit of growth and ease of culture.

The aluminum plant, *Pilea cadierei*, was introduced into the United States from Indochina in 1952; it is admired for its silver-patched green leaves. Other pileas are American in origin. The panamiga or friendship plant, *P. involucrata*, is from Panama; its delicate foliage is coppery, and flowers are clustered over the top of the mounded plant. Other panamigas are *P. pubescens*, silvery panamiga, with downy light-gray leaves, and *P. repens*, the black-leaf panamiga, characterized by its black-green leaves.

The most curious of the pileas is the artillery plant, *Pilea microphylla*, so called because the ripening anthers of the abundant but inconspicuous red flowers eject clouds of pollen forcefully into the air. Its intricate branching and small leaves are the reason for its also being called artillery fern.

Creeping Charlie, *P. nummulariifolia*, is a familiar hanging basket plant with light yellowish-green leaves.

It is easy to see that anyone who collects pileas can offer testimony in support of Mr. Crockett's view.

Pellionia species, named after a French ship's officer, are creeping herbs from tropical or East Asia and some islands of the Pacific. Two species, known by the common names rainbow vine and trailing watermelon begonia, offer attractive combinations of black or bronzy-green leaves with tinges of purple or red; both are good basket plants.

Terrarium enthusiasts know and use the delicate, moss-like baby tears as ground cover. Also known as Corsican nettle (and until recently as *Helxine*), it is *Soleirolia soleirolii*, a single Sardinian and Corsican native, adapted to greenhouse culture (where it has been known to run rampant) and to the outdoors, when grown in moist locations in warm regions.

In summation, the nettle family cannot lightly be dismissed. The stinging nettle itself, though not universally well regarded, has "earned its keep," so to speak. And other members of this diverse family have established reputations in their own right for worth in the plant kingdom and in our world.

—Jane Steffey

GROWING TULIPS: ADVICE FROM AN EXPERT

During the first two weeks in May over 50,000 tulips are in bloom at Kingwood Center, a botanic garden in Mansfield, Ohio. It is Kingwood's most popular event of the year; on a nice Sunday afternoon as many as 10,000 people tour the gardens. That's quite a feat considering that the town of Mansfield has a population of only 55,000.

With the success of this display has come considerable knowledge about the planting and care of tulips. Frederick Roberts, the Center's director, has kindly agreed to share some of that knowledge with us, including Kingwood's special method for preserving bulbs from one year to the next. Even now, as you enjoy your own tulip display, there are ways in which you can begin preparing for a more prolific and colorful garden full of tulips next spring.

ABOVE: Ten thousand people visit the gardens at Kingwood Center in Mansfield, Ohio during tulip season. LEFT: At Kingwood, tulip bulbs are saved from one year to the next. They are lifted soon after the flowers fade, with stems and leaves intact, and are hung in bunches to dry.

Tulips are generally placed in one of three categories: early-, mid- or late-season types. If you live north of the Mason-Dixon Line, you can grow most of the tulips in these three categories without serious difficulty. You must be careful in southern climates of the late-season varieties, though, because tulips do not like warm temperatures. Several days of temperatures in the 80's will quickly destroy the quality of bloom. Yet tulips are quite tolerant of cold weather. They will easily survive temperatures of 0°F prior to the time they show color; after color appears, damage can occur at any temperature below about 22°F. Once during early April at Kingwood we experienced a temperature change from 80°F to 2°F in less than 24 hours, but since none of the tulips were showing color, there was no damage to any variety in the display.

Tulips do best when grown in an open area with good air circulation and high light intensity. With the exception of some of the species tulips, most tulips do not naturalize well and will not thrive under deciduous trees as will daffodils and other, earlier bulbs. While tulips prefer full sunlight, partial afternoon shade in areas where high temperatures are experienced early in the spring can be beneficial. Tulips cannot take prolonged heat and prefer temperatures of around 45° to 60° during their bloom time. When temperatures regularly go above 60°, some afternoon filtered shade will prolong the duration of the display.

Many recommendations have been given on planting depths for tulips. Usually anywhere from four to eight inches is suggested; unfortunately, directions are not always clear as to whether that is from the soil surface to the top of the bulb or to the bottom of the bulb. A good general recommendation is to plant tulips with the top of the bulb about three to six inches below the soil surface.

At Kingwood, we apply ground corncob mulch three-quarters of an inch to an inch deep over tulips planted four inches deep. This system has been very satisfactory. It is important to stress that if you use a mulch it should be very loose and shallow, not over an inch and a half in depth. Also, if you plan to plant your tulips for only one season, plant them only four inches deep; it is then much easier to dig them out at the end of the season.

In planning a display, an interesting and useful variation in style is to interplant. This means to plant at least two different varieties in the same location. Choose an early variety to interplant with a late one. If you know the performance of the two varieties in your area, you can expect a prolonged display; if the timing is correct, the early variety followed by the later one could easily cover three to four weeks of

bloom time. One of the most successful interplantings that we have had at Kingwood Center is the use of 'Red Emperor' interplanted with 'Mrs. J. T. Scheepers'. 'Red Emperor' is an early, orange-red Fosteriana tulip. 'Mrs. J. T. Scheepers' is a late, very distinct yellow Cottage tulip.

Another major consideration in selecting tulips is height at bloom time. Most good catalogues will suggest an average height at bloom time, but this height may vary greatly. For example, a tulip listed in the catalogue at an average height of 22 inches may actually bloom uniformly at anywhere from 17 to 25 inches. This variation in height will be the result of individual growing conditions in the area relative to soil conditions, temperature and other factors, as well as to the quality of the bulb at the time of purchase.

The best buy relative to bulb size for good display or cutting production is a 12-centimeter bulb, especially for standards such as Darwin hybrids and Cottage types. Twelve centimeters refers to the circumference of the bulb at its widest point. Avoid buying anything smaller than a 10-centimeter bulb, since quality diminishes rapidly at that point. Also, it may not be wise to pay a premium price for bulbs larger than 12 centimeters. Often bulbs of 14 centimeters and up will produce a multi-flowered stalk, with individual flowers discolored and of inferior quality when compared with the desirable individual bloom on a single stem. Select bulbs that are firm, smooth and preferably covered with a fine outer membrane such as that on an onion.

Many other considerations must be taken into account as one prepares to select and grow tulips for outdoor display and for cutting for arrangements. Tulips will tolerate a wide range of soil types, but they must have good drainage in every case. They will not survive in situations where they are submerged in water for any length of time. Tulips grow best in a loose, sandy loam, but any soil can be amended to produce excellent tulips provided the drainage requirement is met. Improve the soil by adding leaf mold or other compost material. Lighten heavy soils by amending with sand or perlite. Add agricultural gypsum if you have heavy clay soil, but first consult with the county agricultural extension agent in your local area. The extension service has done an excellent job of reviewing soil types and conditions throughout the country. It has information available on soil amending for almost every area.

Have the soil tested before preparing it for planting tulips. Again, the county agricultural extension agent is the best source of help in getting soil tested as well as in making recommendations on the rate of lime and fertilizer material to be added. Tulips prefer a pH range of from 6.2 to 7.2; 6.5 is best. The amount of fertilizer recommended from the soil test should be applied in two applications. Half of the amount should be incorporated into the soil prior to planting. The other half should be broadcast over the tulip bed in very early spring, just as the plants start to push up through the surface of the soil.

There are two basic methods of planting tulips. One is to remove all of the soil from the planting bed to the desired depth, then put the tulips in the bottom of the bed at the desired spacing. This spacing may vary from an average of six to eight inches, depending on the size of the tulip and the style of the display. Do not space tulips closer than six inches on center, since close spacing will encourage disease problems. Then carefully spread the soil over the tulips, returning all of it to the bed. The other common method of planting is to prepare the bed with the soil in a very loose condition, then lay the tulips out on the soil surface according to spacing and design and plant them with a hand trowel or other planting instrument. Both methods have been used at Kingwood. There appears to be little difference in the quality of the display with either method; however, the latter method is much easier and less time consuming.

Tulips should not be planted in any area until fall soil temperatures regularly stay below 50°. This is optimum for their rooting process. If the fall season has been unusually dry, water the beds after the tulips have been planted to assure proper moisture for the rooting-in process. At Kingwood, we routinely drench the tulips with a mixture of Benlate and Truban following planting as a protective measure against diseases. You may not find this necessary, but it should be considered in situations where disease problems have commonly occurred. While tulips must have good drainage, they also must have adequate moisture and cannot be allowed to dry out from the time they are planted until they have finished blooming. In sea-

sons with unusual spring drought, especially when accompanied by unusually mild temperatures, irrigation is very important. Once the petals have started to fade, watering is no longer necessary.

Contrary to popular belief, tulips can be effectively dug and saved each year for the following fall planting. For best results, remove the flowerhead just as the petals start to shatter.

While tulips do not have many serious pest problems, there are a few that should be considered. Very few insects bother tulips; aphids are one common exception. Control them with common garden insecticides that are labeled for aphid control. Slugs may be a problem in certain areas. One greatly underestimated insect that occasionally will damage tulips is the sowbug. Sowbugs do a great deal more damage to garden crops than most people realize. Control them with Diazinon or Spectricide.

Disease problems with tulips are generally more serious than insect pests. The single greatest threat to a good tulip display is botrytis. Botrytis first shows up as small, light-brown blotches on the leaves and stems, and it later will affect the flower petals in the same manner. It can usually be prevented by early fungicide applications of either Ferbam or Zineb. Start applications when the tulips have reached a height of three to four inches and continue every 10 to 14 days until the flower buds just begin to show color. At that point, switch to Benlate or Botran, as Ferbam and Zineb will tend to discolor the flower petals.

Occasionally mildew also may be a problem, but it is easily controlled with Karathane. Time spray applications to follow periods of rain. Because tulips have a very waxy surface, it might be wise to add spreader sticker materials when they are not incorporated in the spray materials in adequate amounts. Botrytis, as well as many other diseases, may destroy the bulb as well as other parts of the plant. To prevent most bulb rot problems, dip the

bulb in a fungicide prior to planting it and also drench the soil. (Note that most bulbs that are purchased commercially have been treated with a fungicide which protects them from disease problems at the time of planting.)

There are viruses that may attack tulips, but there are no available controls for them. They generally show up as a yellow cast to the leaves. The best control for viruses is to rogue out plants that show infection or rotate the tulip crop to another location the following year if the virus persists.

As stated earlier, most tulips are not considered suitable for repeat bloom year after year, but some growers and hybridizers are currently working on new varieties that hopefully will be. Currently most tulips, particularly Darwin, Darwin hybrid, Cottage, and Lily-flowered varieties, are grown strictly for garden display; they are generally not of good quality after the first year of bloom. Most references suggest that gardeners should plan to plant tulips for one season and renew the planting each fall. This is good advice for the gardener who wants the best tulip display each year.

There is an alternative for the thrifty gardener, though. Contrary to popular belief, tulips can be effectively dug and saved each year for the following fall planting. There are many ways to do this. At Kingwood, we have experimented with this procedure extensively and have arrived at this approach: for best results, remove the flowerhead just as the petals start to shatter. Carefully lift the tulips with stems and foliage intact and wash the soil from the bulbs. It is not necessary to wait for them to die down. Then dry them by either laying them in flats or trays with rather loose spacing (40 to 50 bulbs per one-by-two-foot flat), or bunch them in shocks of about 25 plants and hang them to dry. Dry them at temperatures over 75° F in a dark location with good air circulation.

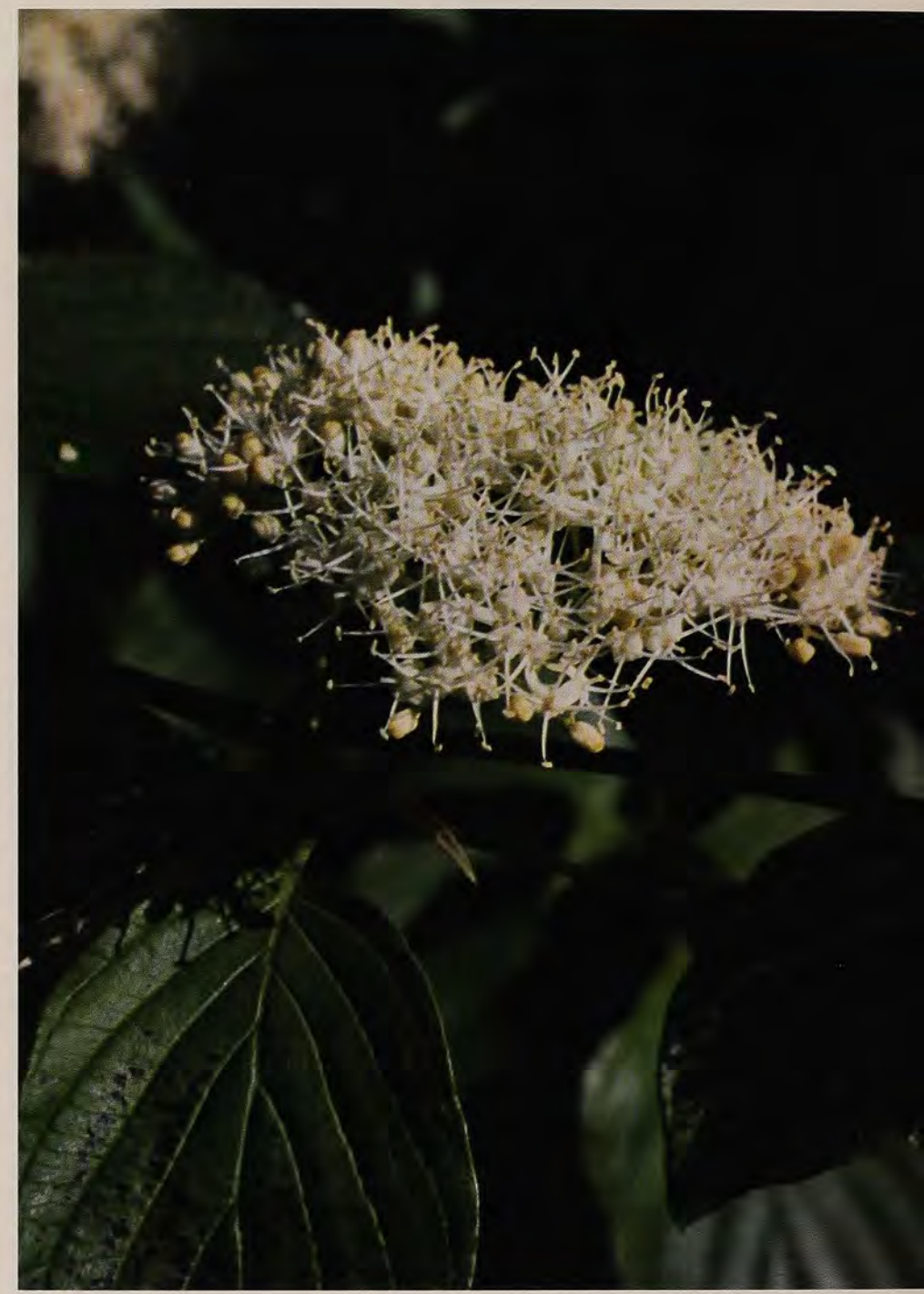
By August, after the plants are totally dry, remove the bulbs from the plant stem. Do so carefully so that you do not damage the basal plate of the bulb. Sort the bulbs at the time of shucking. Good display bulbs are generally those that are in excess of 1¼-inches in diameter, although many of the species tulips will be much smaller. Leave the papery skin on the individual bulbs. Some research has indicated that this skin may have a natural antibiotic quality. Once the bulbs are shucked, treat them with a fungicide in preparation for fall planting. Never store the bulbs in the presence of any ethylene-producing materials such as ripening fruits, vegetables or any decaying organic matter. This may inhibit the normal flowering process.

There are several advantages in lifting bulbs and saving them for reuse. If you lift bulbs in late May and keep them in storage until October, they are safe from the ravages of many pests which are most prevalent during that time of year. In addition, when bulbs are stored over the summer, it is easy to inventory the number of bulbs available of a given variety, thereby making it possible to replenish the supply if the number of usable bulbs has dwindled. This takes a lot of the guesswork out of fall planting. Removing bulbs from the garden for summer also will make it possible to use that area for other display crops without having to worry about damaging the bulbs.

—Frederick Roberts

Plants for Shady Gardens

TEXT AND PHOTOGRAPHY
BY MICHAEL A. DIRR



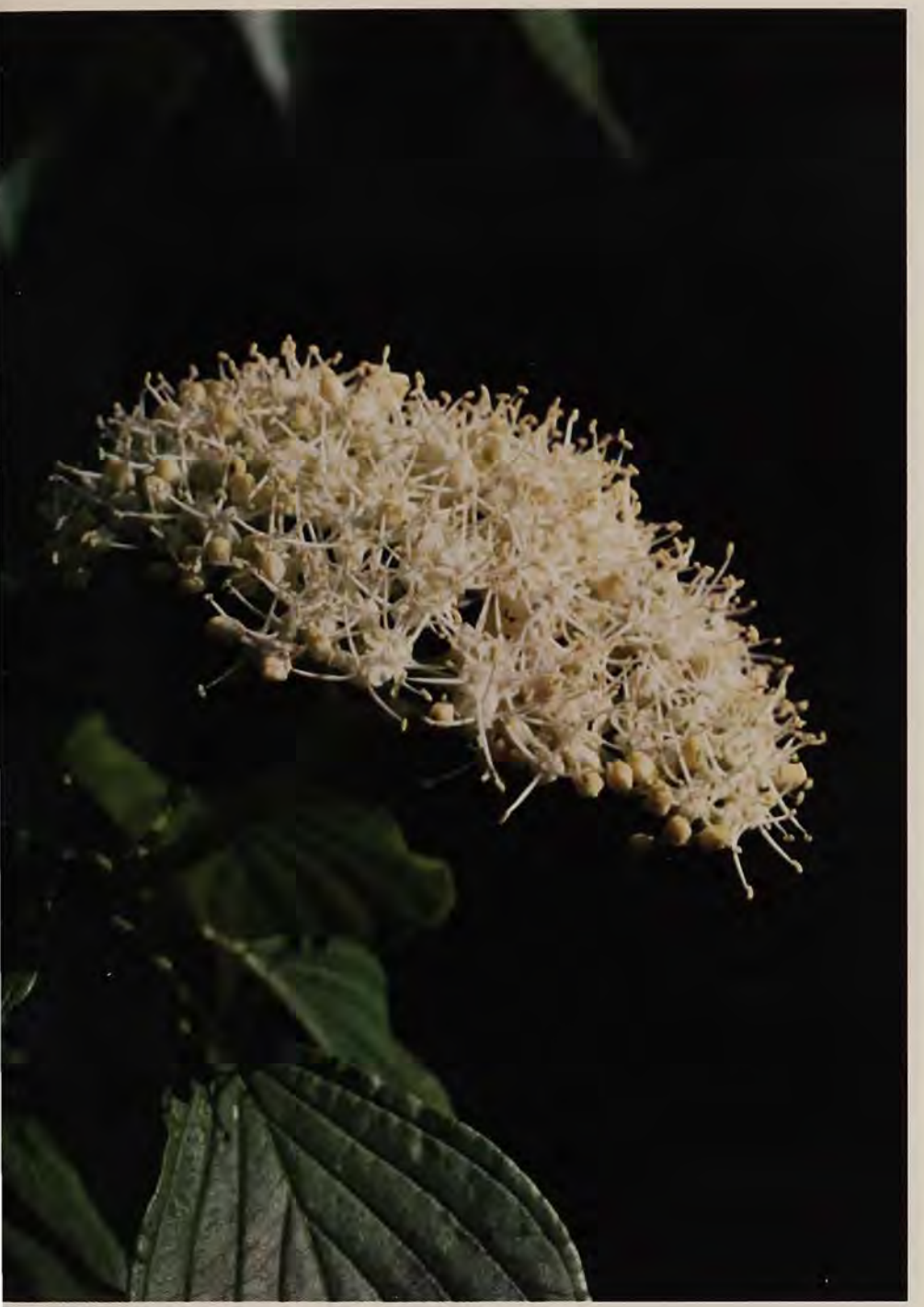
Many books have been written on the subject of shade gardens and the plants that grow best under these conditions. I would like to approach the subject from a different viewpoint than many authors because I do not consider shade to be a gardening problem but, instead, an interesting challenge. There are numerous woody and herbaceous plants that proliferate under low-light conditions. Discovering which ones grow best in the shade isn't difficult. One of the great teachers is nature. We need only give her an opportunity to provide us with ideas for plant material we can then order through our local nurseryman or mail-order plant company.

A casual walk through a shady woods will tell us much about the shade tolerance of plants. Unfortunately, many people look, but very few people see. Too often the most obvious is the least observed. Thankfully, there are enough observant nature lovers around to keep those of us who are not so observant from missing out on what the wild plant world can teach us.

Join me now for an armchair walk through some of the woods and forests I have visited in my professional wanderings. I believe you will find them teeming with interesting shade tolerant plants.

Some of the most notable plants I have met in my travels are understory trees. They reside under the canopy of large maples, beeches and oaks and exhibit a bulldog tenacity that permits them to maintain residence among the socially statured giants of the forest. Two such species are *Carpinus caroliniana,* American hornbeam, and *Ostrya virginiana,* American hop hornbeam. These are members of the family Betulaceae, and can be found growing side by side even though *Carpinus caroliniana* is often more abundant in flood plain areas and *Ostrya* on drier hillsides. The smooth, sinewy, fluted, slate-gray bark of *Carpinus* contrasts with the flaky, exfoliating bark of *Ostrya.* The leaves of American hornbeam vary in fall coloration from a clear butter-yellow to a palette of orange and red, while hop hornbeam maintains a subdued, muddied yellow fall color. It is easy to identify *Ostrya* in the summer by the forked veins and pubescence of its leaves, and in winter by the catkins which appear in three's. The fruits of *Carpinus* are subtended by a three-lobed bract, while in hop hornbeam they are enclosed in bladder-like sacs. The resemblance of the fruits of *Ostrya* to true hop, *Humulus* species, gives rise to the common name.

Another tree that begs for attention but is too often ignored is *Oxydendrum arboreum,* sourwood. Although many authorities refer to its need for full sun, I have seen plants that have spent their entire lives in the shadows. There are magnificent specimens in the University of Georgia Botanical Garden nestled under dense oaks and beeches. The lustrous leaves



of sourwood often turn a brilliant scarlet in the fall, but there are individual trees that show no significant fall coloration or at best a muted reddish purple. The fragrant white, urn-shaped flowers offer interest in June and July. The interesting seed capsules persist through winter and provide a means of identification. Young stems are often a glossy red, and the bark on old trunks develops a squarish, blocky, alligator-hide formation not unlike that of persimmon, *Diospyros virginiana.* Caution needs to be exercised in transplanting if you feel justified in removing this tree from its original habitat. I averaged 50 percent success in my Illinois garden. I dug up one plant that died and examined the root system only to find the largest block of underground wood I had ever seen. There was a paucity of feeder roots which probably explained the transplanting failure.

Another favorite of mine is *Halesia carolina,* silverbell, which I had never seen in the wild until arriving in Georgia. There are several plants in our botanical garden, and their location attests to their high degree of shade tolerance. The white, bell-shaped flowers (pink in var. *rosea*) give rise to distinctive four-winged fruits. The gray, longitudinally fissured bark on young stems matures to a blocky-scaly configuration on old trunks. Other, lesser-known species include *H. diptera,* two-winged silver-bell, and *H. parviflora,* small silver-bell.

One of the first trees to leaf out in spring is *Aesculus glabra,* Ohio buckeye, and it is frequently found in shady woods. In the South, *Aesculus octandra,* yellow buckeye, assumes a similar role. Both have yellow-green to yellowish flowers and the typical buckeye fruits. The husk of Ohio buckeye is rounded and prickly while that of yellow buckeye is more pear-shaped and smooth.

Other shade tolerant trees which deserve mention include *Acer pensylvanicum,* striped maple, because of its interesting snake-bark character and *Cornus alternifolia,* pagoda dogwood. I have seen *C. alternifolia* in deep, shady, cool, moist ravines at Turkey Run State Park, Marshall, Indiana, and all along route 441 through the Great Smoky Mountains. White flowers are borne above the foliage in stalked cymes during late May and June, and its fruit goes through a red to purplish color transition as it matures. Even after the fruits fall, the pink to rose-red infructescences are colorful. The horizontally tiered branches add winter interest.

The pawpaw, *Asimina triloba,* displays excellent shade tolerance. It is doubtful that anyone would go out of their way to add it to their landscape, but if native it certainly should be preserved. Its pale-purple flowers appear on leafless branches, and the curious, ellipsoidal yellow-green fruits are at their palatable best when they turn brownish black. This species often forms colonies which present a tropical appearance because of their large (12-inch long) obovate leaves.

Numerous shrubs also are amenable to shady gardens. Unfortunately, they are not as showy as the ubiquitous forsythia, deutzia, mock orange and spirea, all of which require full sun for maximum flowering. *Aesculus parviflora,* bottlebrush buckeye, epitomizes the best of the shade-tolerant shrubs. The foliage is essentially free of the mildew and blotch which are so trou-

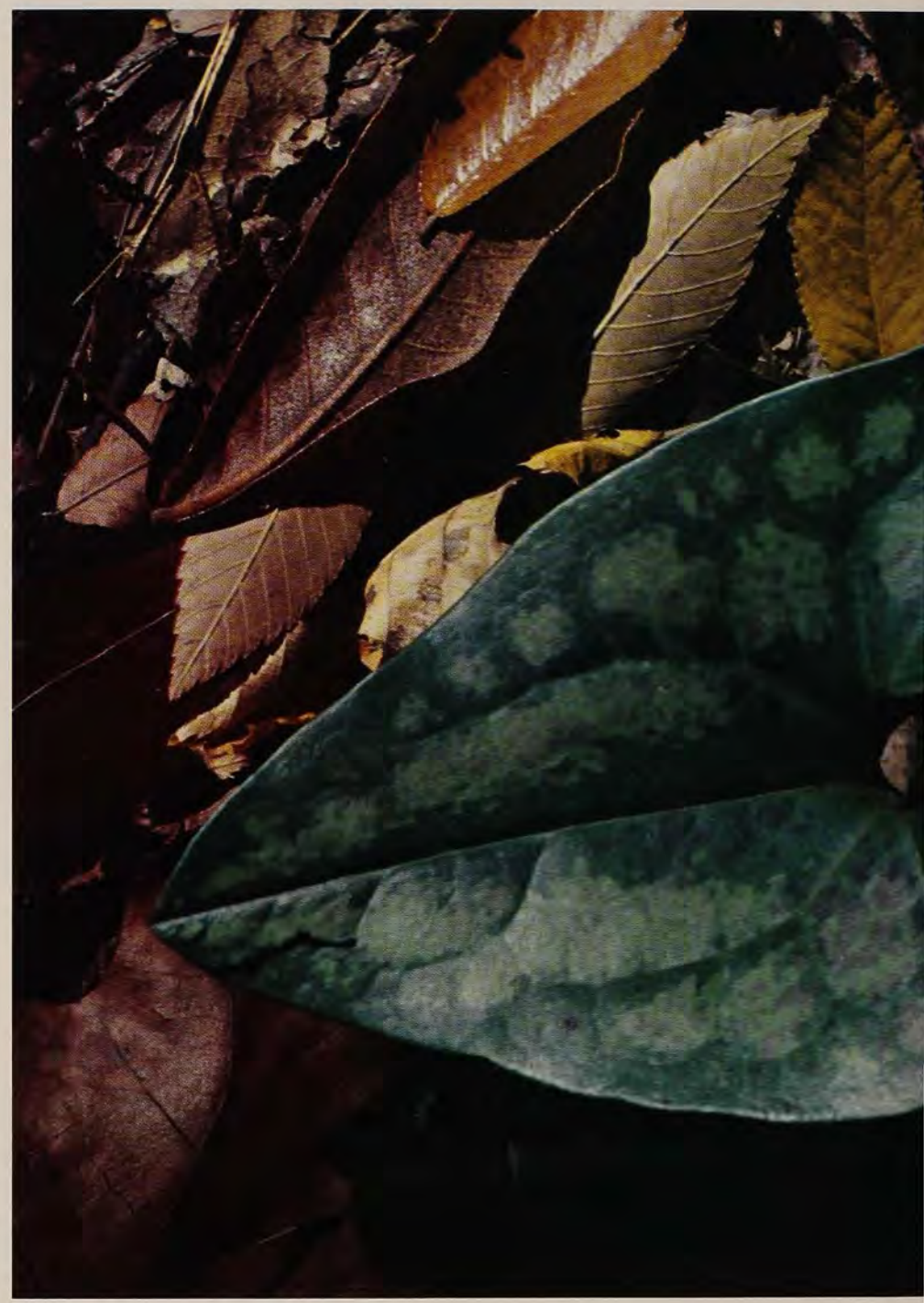
Cornus alternifolia is an ideal plant for a shady garden. This photograph is an enlargement of a flower detail of this lovely tree.

blesome to *Aesculus hippocastanum,* common horse chestnut, and Ohio buckeye. I have seen it display the most beautiful butter-yellow fall color, but the expression of color is strongly linked to proper environmental conditions. Its common name is derived from the eight- to 12-inch long cylindrically-shaped inflorescences that resemble bottlebrushes. This buckeye flowers out of season with the other *Aesculus* species and usually peaks in July. The fruit is a smooth, pear-shaped capsule that matures in late summer. The seeds require no cold treatment and can be planted immediately after collection.

Dirca palustris, Atlantic leatherwood, is found in the deepest shade and frequents moist, rich soils. The plant is somewhat open in heavy shade but becomes dense and compact in sun. The small, light-yellow flowers appear in March and April, ahead of the leaves. The soft green foliage turns a clear yellow in fall. This plant is called leatherwood because its bark is tough; in fact, the Indians used the bark for bow strings, fish lines and baskets.

Hamamelis virginiana, common witch hazel, is one of our loveliest native shrubs. The four yellow, ribbon-like petals are evident for several weeks, sometimes from October into December on many plants. The leaves often turn golden yellow in fall. This species shows remarkable adaptability and succeeds in moist or fairly dry, shady or sunny situations. All *Hamamelis* species display a penchant for shady conditions and should be afforded every consideration because of their beautiful flowers, foliage and bark.

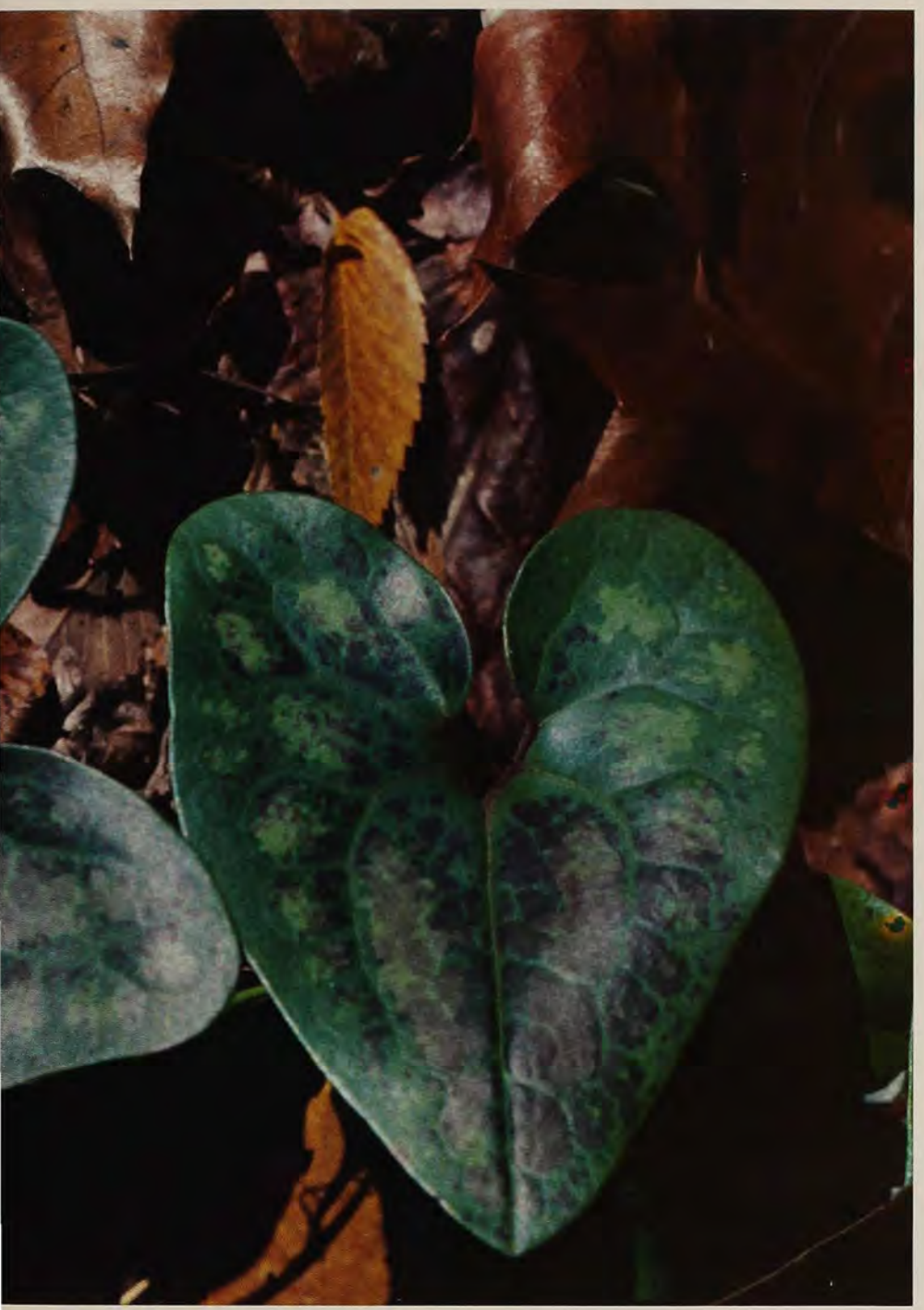
Two members of the genus *Hydrangea* are often found in the darkest shadows of the forest. I have discovered *Hydrangea arborescens,* smooth hydrangea, growing in full shade, out of cracks in sandstone cliffs in Turkey Run State Park. When used in a landscape setting it should be located in a moist, shady setting. This cultural regime should also be applied to the predominately sterile-flowered forms, 'Annabelle', 'Grandiflora', and 'Sterilis'. *Hydrangea quercifolia,* oakleaf hydrangea, is a wonderful landscape plant that unfortunately is not widely used. It seems to be abundant in the wild throughout Georgia. During a recent foray to LaGrange, Georgia, I came to the conclusion that every fourth plant was *H. quercifolia.*



Many groundcovers are good candidates for shady gardens. This close-up view of *Asarum arifolium* shows in good detail the plant's arrowhead-shaped leaves. It is easily propagated by division.

The large leaves resemble those of red oak, and the fall color on selected plants is an intense reddish purple. Sterile and fertile flowers are mixed in the six- to 12-inch-long pyramidal panicles. The flowers of 'Harmony', 'Roanoke' and 'Snowflake' are essentially sterile and form large cones of white which, because of their weight, cause the stems to bend in disarray. The inflorescences of the species and cultivars assume a pinkish tinge with age.

Any discussion of shade tolerant plants is incomplete without mentioning *Lindera benzoin,* spicebush. This native, which covers most of eastern North America, labors in relative obscurity. No matter how many times I encounter the plant I find it necessary to go through the identification process to affirm its nature. The collaterally-bunched globose buds, the lustrous green to olive-brown stems, and the distinct aromatic odor of the bruised bark quickly affirm my suspicions. The small, fragrant, yellow flowers appear on leafless stems in March or April, and female plants may set prodigious quantities of cherry-



red fruit. A red-flowered form (*f. rubra*) was described from Hopkinton, Rhode Island, and the yellow-fruited variety, (var. *xanthocarpa*), was found at the Arnold Arboretum.

Another shade-tolerant shrub is *Viburnum acerifolium,* which some might hold in weedlike esteem. It shows a distinct propensity to sucker and consequently forms large colonies. The red, maple-shaped leaf often turns the most spectacular pink to reddish-purple to grape-juice-purple in the fall. White flowers precede the black fruits. This particular *Viburnum* is abundant in the University of Georgia Botanic Garden and provides a wealth of color from late October to early December.

Our walk has taken us under and through a selected group of trees and shrubs, but we have neglected another element of the shade community—namely, the groundcovers. The evergreen wild gingers, *Asarum* species, head my list of favorite evergreen floor coverings. These include *Asarum virginicum, A. shuttleworthii* and *A. arifolium.* The arrowhead-shaped leaves of *Asarum arifolium* are mottled with gray. The plant is a clump former and can be easily propagated by division. All wild gingers prefer rich, humus-based, moist, well-drained soil.

Pachysandra procumbens, Allegheny pachysandra, native from Kentucky and Virginia to the Gulf, is a splendid shade-tolerant, semi-evergreen groundcover. The large, broad-ovate, gray-green leaves show a distinct mottle. Pinkish-white, fragrant flowers emerge from inflorescences at the base of the stems during March and April. It grows as far north as Chaska, Minnesota and has been overwhelmingly successful at the Morton Arboretum in Lisle, Illinois. With exposure, I envision its becoming as popular as *Pachysandra terminalis.*

Few people know *Xanthorhiza simplicissima,* yellowroot, and even fewer can spell or pronounce the scientific name. This glossy-leaved, purple-flowered member of the buttercup family will thrive under adversity. The pinnately-compound leaves often turn yellow-orange in fall. I have seen the color hold into December as far north as Boston. The common name is derived from the yellow-colored cambium. One particular plant of this species has followed me from Clermont, Kentucky, where I dug it out of a large planting at Bernheim Arboretum, to Urbana, Illinois where, in two years, two three-stemmed clumps covered about two-square-feet each. I then transferred a clump to Athens, Georgia, and planted it in a place where my children proceeded to flatten it with their bicycles. The final death knell was sounded when my youngest daughter pulled the plant up and deposited it on the sidewalk. I decided to give it a decent burial, but upon picking it up I noted an abundance of stoloniferous growth which prompted me to replant the bicycle-beaten plant. I am happy to report that it now covers two square feet of ground.

Who said shade-tolerant plants show no tenacity!

Sources for plants mentioned in this article: Fiore Enterprises, Rt. 22, Prairie View, IL 60069 (retail and wholesale); Lafayette Home Nursery, Box 1A, R.R. #1, Lafayette, IL 61449; Weston Nurseries, E. Main St., Hopkinson, MA 01748; Tingle Nursery Co., Pittsville, MD 21850; Panfield Nurseries, 322 Southdown Rd., Huntington, NY 11743; Gardens of the Blue Ridge, P.O. Box 10, Rt. 221, Pineola, NC 28662; Gossler Farms Nursery, 1200 Weaver Rd., Springfield, OR 07477.

New Trends in Vegetable Gardening

TEXT BY JEANNETTE LOWE
ILLUSTRATION BY MARJORIE STODGELL

Is your garden area for growing vegetables small, yet you want to raise cucumbers, melons, winter squash and other varieties that usually take too much room to consider? Are you an apartment or townhouse resident with access only to containers for vegetable gardening? Were you a little disappointed with your vegetable harvest last summer because of poor quality, mediocre yield or disease and insect problems? Do you long for some really different tasting vegetables to whet the appetites of your family and friends?

If your answer to any of these questions is yes, then modern trends in vegetable gardening and new varieties can help you achieve greater success and pleasure with every vegetable you grow this summer. Whatever the size of your garden, from a big plot to a few pots or containers on a sunny patio, there are vegetables right for you. Plant breeders use all their skill to develop and introduce new varieties that not only grow and taste better but also meet special needs. Now there are vegetables which save space in small gardens, thrive in containers, give bumper yields, resist diseases and insects, and, through their new flavor, add excitement to menus.

SPACE-SAVING VEGETABLES

The recent and continuing boom in vegetable gardening stimulated Burpee's Theodore Torrey, Cornell University's Dr. Henry Munger and other vegetable breeders to make a sharp appraisal of what new gardeners needed and experienced ones might like. The conclusion? Develop vegetable varieties that take less space in the garden. The result? Introduction of bush-like varieties of cucumbers, melons, winter squash and pumpkins that take little garden space, yet give good yields.

Cucumbers Crisp, home-grown cucumbers for summer salads are a special taste treat. There are several bush varieties on the market. 'Bush Champion' is new and especially attractive, tasty and productive. These mosaic-resistant plants start bearing about 60 days after seed sowing and continue bearing for a long time. 'Bush Champion' cucumbers are bright green, streamlined, nine to 11 inches long and excellent for making lots of slices or sticks.

'Spacemaster', introduced two years ago, is already a favorite. Some gardeners report 'Spacemaster' is the first cucumber they've had room to grow and the first they've enjoyed for its succulent, home-grown goodness.

Other good space-saving cucumber varieties include 'Patio Pik', 'Bush Whopper' and 'Hybrid Pot Luck'. 'Patio Pik' is a hybrid which has several uses. This early, disease-resistant cucumber can be used for pickling when small or for salads when full grown. 'Bush Whopper', which lives up to its name with whopping big cucumbers six to eight inches long, is excellent for slicing and for salads. 'Hybrid Pot Luck' features early maturity and an abundance of dark-green fruits that are six-and-a-half to seven inches long.

Sow seeds for all these bush-type cucumbers three to six inches apart in rows three feet apart. Later, thin the plants to stand 12 inches apart. This close spacing is a boon for small gardens but a plus for large gardens, too. There is no tangle of vines to trip over as you tend the plants and pick cucumbers.

If you garden in pots or containers on a sunny patio, porch or roof top, bush-type cucumbers are ideal for this purpose, too. Grow one or two plants in each 12-inch-wide and deep container, and you'll have fresh cucumbers from your mini-farm to enjoy in summer salads.

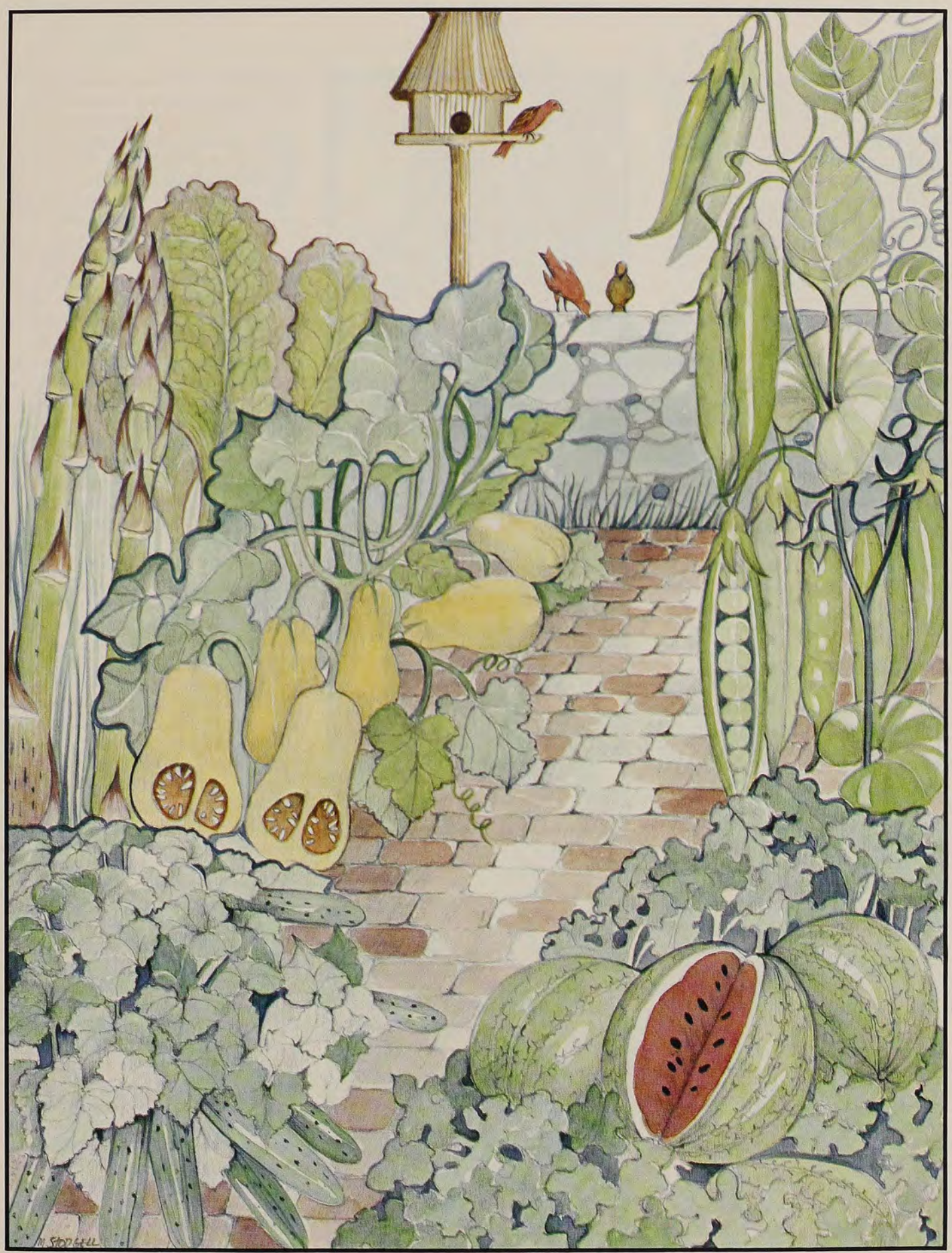
Melons Who doesn't relish sweet, juicy, chilled watermelon for a snack, appetizer or dessert on a hot summer day? This treat is extra good if you've picked the watermelon, vine-ripened to its peak of goodness, from your own patch. Now you can do so, even if your garden is small, when you grow bush types with short, three- to 3½-foot vines.

Burpee's 'Sugar Bush' watermelon has received Variety Protection from the United States Department of Agriculture for its outstanding features. Each plant needs only about six square feet of growing space and bears two to four slightly oval icebox-size melons weighing six to eight pounds each. 'Sugar Bush' fruits are ready to pick fairly early, about 80 days after seed sowing, and their bright scarlet meat is sweet, juicy and delicious.

'Kengarden', developed by Dr. Mohr of the University of Kentucky, is another space-saving watermelon that takes no more room in your garden than bush summer squash. Each plant produces two or three fruits in the 12-pound range. The flesh is deep pink with a high sugar content, the rind thin and the seeds small. 'Kengarden' does well where midseason and late-maturing varieties thrive.

Garden-ripe cantaloupes are another summer favorite, but until recently their sprawling growth excluded them from small gardens. Now there are bush types of cantaloupes on the market that you may want to try. These include 'Bushwhopper Hybrid' and 'Short 'N Sweet'. The fruit size and flavor don't match vining varieties of cantaloupes, but the plants require little space.

Winter Squash and Pumpkins It's fun



to grow your own winter squash and pumpkins for fall harvest. Bush type varieties make it possible even in a limited area. Burpee's 'Butterbush Squash' produces in one-quarter the space of the usual vining butternut varieties. Each plant bears four or five butternut-shaped fruits averaging 1½ to 1¾ pounds, just the right size to cut in half and bake for two servings. The meat is deep reddish-orange and delicious no matter how it is prepared.

'Gold Nugget' is another good, somewhat unusual winter bush squash. The orange fruits are about the size of a softball; the flesh is medium thick, golden, sweet flavored and dry. Burpee's 'Butterbush' and 'Gold Nugget' both grow well when one or two plants are spaced every three feet in rows three feet apart. Fruits not used soon after harvest keep well for winter meals.

When thoughts turn to Halloween and pumpkins for pies and carving, keep in mind these types: 'Cinderella' and 'Cheyenne' bear attractive pumpkins on bush-type plants like summer squash; each thrives in a six-square-foot area. 'Spirit Hybrid' takes a little more space, but it produces a bumper crop of large 10- to 15-pound pumpkins in less room than most varieties.

CONTAINER VEGETABLES

With the ever increasing trend toward apartment and townhouse living, the need for gardening in containers increases. Most suitable for these "mini-farms" is a universal favorite, the tomato.

Burpee's 'Pixie' hybrid tomato is ideal for individual pots at least six inches across and deep, for boxes or baskets, and for small beds. 'Pixie' is determinate, grows about 18 inches tall, and starts bearing loads of bright-red fruits the size of ping-pong balls in about 62 days from set plants. You'll relish the big tomato taste and texture. Team 'Pixie' with a couple of parsley plants in the same container and you'll have a handy snack bar.

Other appropriate varieties of tomatoes for growing in containers include 'Small Fry', 'Presto' and 'Tiny Tim'. 'Small Fry' is a hybrid that is verticillium and fusarium wilt-resistant. It is a heavy producer of small, tasty, bright-red, marble-shaped fruits one inch across. Plants need strong support. 'Presto' is a small-leaved plant which bears an abundance of delicious, flavorful, bright-red, half-dollar-size tomatoes. 'Tiny Tim' is a midget plant which provides bite-size, ¾-inch red tomatoes to use in salads or as part of a relish tray.

You also can raise large-fruited tomatoes if you have room for containers at least a foot across and deep. Burpee's 'Big Girl Hybrid VF', 'Better Boy Hybrid VFN' and other favorites make attention-getting, vertical accents for your patio garden if you grow the plants vertically supported. Place the containers in their permanent location, fill them with potting mixture, then set one young plant in each. Provide strong support with stout stakes, wire cages or tomato towers.

To complete your salad ingredients, why not grow lettuce in your mini-garden as well? Varieties of loosehead lettuce, including 'Green Ice', heat-resistant 'Royal Oak Leaf', 'Slobolt' and 'Salad Bowl' are easiest to grow and provide tender, tasty greens not often found at local markets. It is worthwhile growing lettuce if you have box gardens at least six inches wide and deep, and long enough to provide the equivalent of three feet of row. Lettuce needs semi-shade in hot summer weather, either natural or from a slat-like sunshield. If you want to venture into butterhead types, try 'Tom Thumb', 'Bibb' and 'Buttercrunch'.

What else can you grow on your mini-farm that gives big returns? Zucchini squash is both attractive and prolific. Burpee's 'Hybrid Zucchini', 'Elite Hybrid', 'Aristocrat Hybrid' and others grow well in 12-inch containers. A plant or two will provide squash to serve in many different ways.

Bush snap beans are always a garden and menu favorite. If you have container or bed space at least six feet long, or equivalent pot space six inches deep, then you may find it worthwhile to grow some beans. 'Greensleeves', 'Tenderpod', 'Tendercrop' and 'Greencrop' all provide a generous yield.

Eggplant and peppers can double as small shrubs in your patio garden. Both thrive in 12-inch containers, the plants are attractive, and their shiny colorful fruits not only add beauty to the outdoor scene, but gourmet touches to menus.

For success with container gardening, it is essential to use a growing medium which doesn't pack hard; drains well, yet doesn't dry out too fast; and supplies sufficient nutrients for good growth. A mixture of two parts planting formula (vermiculite, sand or peat moss) to one part screened garden loam is a good balance.

Water plants thoroughly whenever the planting material feels dry to the touch. This may be more than once a day in hot, dry weather and less often during a cloudy, cool or rainy spell. Feed the plants about once a week with a balanced, water-soluble fertilizer according to directions.

HYBRID VEGETABLES

The year 1945 was a milestone in vegetable history—the 'Burpee Hybrid' cucumber and the 'Fordhook Hybrid' tomato were introduced to the gardening public. They were the first hybrid garden vegetables from seed (except sweet corn) to be offered for commercial sale. These varieties opened the door to a new class of super vegetables that have been breaking records for excellence and yield ever since. Hybrids are often better than standard or "open-pollinated" varieties because of increased uniformity, vigor, quality and yield. Hybrids can be custom-bred to meet certain needs, such as disease and insect resistance.

If your harvest last summer didn't meet expectations, you'd be wise to let hybrids help you grow a bumper crop this season. Did you have problems with tomatoes because of diseases or nematode damage? Many excellent hybrid tomato varieties have built-in resistance to fusarium and verticillium wilts, some to nematodes. These include Burpee's 'Big Girl Hybrid VF', the new 'Supersteak Hybrid VFN', 'Better Boy Hybid VFN', 'Floramerica Hybrid VF 1 & 2', plus many more. One experienced gardener I know reported he couldn't grow tomatoes successfully any longer until he planted a hybrid resistant to nematodes as well as fusarium and verticillium wilts.

Cantaloupes are another crop which hybrids have revolutionized, not only by improved flavor and quality of fruit but also by greatly increased yields. Resistance to powdery mildew and other diseases often is closely associated with increased productivity. 'Sweet 'N Early Hybrid', 'Samson Hybrid', Burpee's 'Ambrosia Hybrid', 'Saticoy Hybrid' and others are resistant to certain diseases and bear bumper crops of excellent tasting melons. Let catalog descriptions help you choose what's best to grow in your garden.

Burpee's 'Hybrid Cucumber' pioneered the way with hybrid vegetables 35 years ago and is still going strong. Today there are many additional hybrid varieties of cucumbers on the market that are resistant to mosaic, mildew and other diseases that may cause serious problems. 'Victory Hybrid Cucumber', Burpee's 'M & M Hybrid', 'Gemini Hybrid', 'Spartan Valor Hybrid' and others are good varieties from which to make a selection that best fits your gardening needs.

In many other classes of vegetables there are also hybrid varieties you'll definitely want to consider growing. Hybrids can really outdo themselves in your garden.

TRY SOMETHING DIFFERENT

Why get in a rut with growing the same vegetables year after year? There are many unusual, different ones to expand your gardening horizon and add excitement to menus.

Have you tried golden beets or golden zucchini squash? They taste much like their red or green counterparts but put a sunny touch on the dinner plate. Golden beets are nice to prepare, too; they don't stain your hands.

How about kohlrabi? This somewhat unusual vegetable produces, on stems and above ground, apple-like bulbs with a mild turnip flavor that is hard to describe but delicious to taste. Kohlrabi is good raw or cooked. Peel and dice the crisp white flesh for a crunchy, tasty flavor in tossed salads, or cut into relish sticks to enjoy with dips, or just add a dash of seasoning salt and eat as is. For a different-tasting hot vegetable, boil or steam kohlrabi and serve it buttered or with cheese sauce. Kohlrabi is a good harvest extender since it's planted in summer, as well as spring, and matures in cool, fall weather before heavy frost. Extra bulbs can be stored in a cool place above freezing for later use. 'Grand Duke Hybrid', 'Early White Vienna' and other varieties of kohlrabi produce well.

Snap beans and limas are a menu staple, but if your bean growing and eating habits go no further, you're missing the unusual culinary, nutritional treat of soybeans. 'Frostbeater' soybean is ready to pick for green shell beans in 75 days from seed sowing, early enough for even short summer climates. 'Prize', 'Giant Green Soy' and 'Kanrich' are later maturing soybean varieties. All are rich-flavored and nutritious when freshly shelled and cooked like limas. They also can or freeze well. Here's a helpful tip on how to shell the fresh beans easily: put the pods in boiling water

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A Dangerous Passion

TEXT BY LINDA YANG
PHOTOGRAPHY BY JOHN LANG

In the autumn of 1869, amidst tortured pitch pine trees and jagged cliffs, a Quaker gentleman dreamed of carving an enduring and beautiful garden. Albert K. Smiley and his twin brother Alfred had just purchased several acres of land and a boisterous tavern. The land was located high in the Shawangunk Mountains, just south of the Catskills in New York State.

The remote lakeside spot was overgrown with wild mountain laurel, thoughtfully described by the previous owner as "worthless for wood and poison to cattle."

As Albert Smiley soon observed, the terrain was mostly rock around their newly renamed Lake Mohonk Mountain House (which they quickly converted to a more respectable hostelry). In addition, according to Smiley, "there was not a square of 100 feet where anything but ferns or lichen could hold on," the lichens having taken generations to cover a few inches.

In order to create a fertile garden medium, Smiley decided he had no choice but to have acres of topsoil carted in by horse from more than a mile away. This was carefully spread across the rocky surroundings.

The next problem was the lack of ready bedding plants and available seeds. Remember, this era predated the time of garden centers, which we now take for granted. Thus, it was quite a while before a few brave geraniums finally appeared at the edge of the lake. According to family history, Smiley would point with pride to those first blooms. Woe to the visitor who failed to admire each precious flower, inasmuch as every bud cost him in the area of $5 each!

With time, nurseries were located where ornamental shrubs and trees could be found for purchase. Old records show orders for rose bushes by the hundreds, rhododendron, hydrangea, deutzia, peonies and iris. Countless dollars went into the early gardens' development, but mostly there were the countless man-hours. And especially Smiley's. He found gardening not only stimulating but relaxing, so much so that he called it "dangerously near a passion." Among his self-appointed tasks were picking off the seed pods from the wild laurel. In this way he was able to encourage the flower buds to set for the following year. The beautiful pink blooms were appreciated at last.

Smiley's involvement was all-consuming for years, no matter where he was. A

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ABOVE LEFT: This photograph, taken about 1900, is of Albert Smiley, the creator of Mohonk Gardens. His love of plants became what he termed "a strange passion." RIGHT: The Mohonk Gardens today are a primary reason visitors enjoy coming to Mohonk Mountain House, pictured in the background. Maintained for over 100 years, these gardens are now designated as show gardens by All-America Selections.

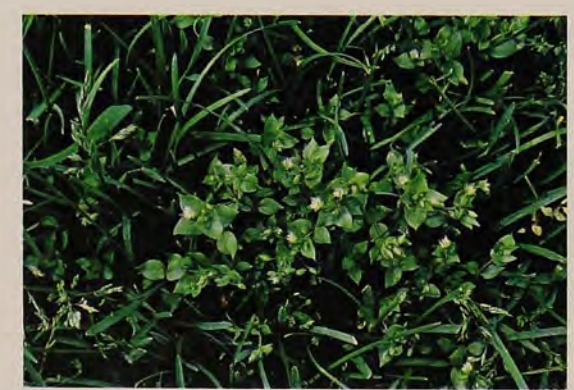
GETTING RID OF WEEDS

FIRST OF A TWO-PART SERIES
TEXT AND PHOTOGRAPHY BY BARBARA HESSE EMERSON

Nature abounds with contradictions. The plants commonly called weeds are no exception. Economically so important that a new scientific discipline is devoted to their study and manipulation, weeds are a psychological rather than botanical concept. Their agricultural depredations cause almost as great economic loss as insects and diseases combined—millions of dollars a year. Continued on page 40.

Green or broadleaf mistletoe (*Phoradendron flavescens*). Woody evergreen parasite (not the Christmas kind). Seeds spread by birds, stick to tree bark. Sucker roots connect with host plant's nutrient-carrying tissue. Eventually develops into big unsightly balls. Found from New Jersey to Missouri, Florida, and Texas to central California, where Modesto and Arizona ash are being heavily invaded. Commonly infests poplars and locusts. Prune clumps out, then wrap removal point with black plastic to minimize resprouting. Spraying Super D Weedone® Foam on cut stubs is easier, more effective, and recently registered for use in California only.

Wild garlic (*Allium vineale*). Bulbous perennial with hollow odoriferous leaves. Clumps reproduce primarily by constant division. Tops appear in late fall, flourish until late spring, disappear in summer. Bulb offsets remain dormant a year or more. Especially conspicuous growing through dormant warm-season turfgrass. In gardens, remove all bulbs and tiny daughter bulblets, because every one can start a new clump. Cultivate in spring and fall to destroy tops. In lawns, keep tops cut; spray with 2,4-D or dicamba in early spring for three consecutive years to prevent survival by means of slow-germinating hard bulblets.



Common chickweed (*Stellaria media*). Winter annual. Seed germinates from late fall through early spring. Simple pointed leaves; little star-like white flowers. Tender stems creep and root, forming mats. Sometimes retained in woody plant nurseries and under grape vines to prevent erosion. Overwhelms slower-growing herbaceous plants in coldframes and must be removed by hand. Competes with turfgrasses in spring, then dies out, leaving ideal openings for crabgrass to invade. Mouseear chickweed (*Cerastium vulgatum*) is a perennial but not as invasive. Control both in lawns with mecoprop, dichlorprop, dicamba, or combinations of these.

Henbit (*Lamium amplexicaule*). Winter annual or biennial. Seedlings start germinating in late fall and grow throughout mild winter periods. Upper leaves clasp the square stems characteristic of the mint family to which it belongs. Branches may root at lower nodes. Two-lipped tubular reddish-purple flowers conspicuous in early spring. Red deadnettle (*L. purpureum*) behaves similarly, but its leaves are triangular, hairy, often purplish, all have petioles, and its flowers are light purple. In gardens, control both by frequent cultivation. In lawns, mecoprop, dichlorprop or dicamba will control what properly maintained turf hasn't already suppressed. Treatment may have to be repeated.

Bur clover (*Medicago polymorpha*). Annual. Common throughout the U.S. Reached California during the Mission Period and especially abundant there. Its bright-yellow pea-like flowers are in small clusters of two to five on short slender stalks. Spirally coiled seed pods with two rows of hooked prickles along the edge are unique. Long prostrate stems don't root. Whitish or dark red spots on leaflets disappear with age. Black medic (*M. lupulina*) has more flowers in its clusters and spineless seed pods. A stalked middle leaflet distinguishes medics from clovers. Mecoprop, dichlorprop and dicamba control them all in lawns, which should also be fertilized to thicken turf. In gardens, cultivation is preferable.

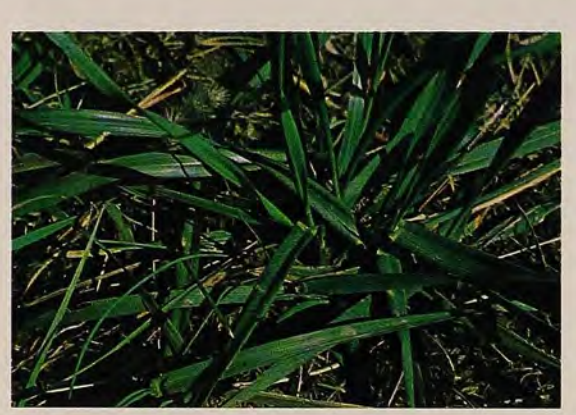
Spurweed (*Soliva sessilis*). Annual. A comparative newcomer among weeds, from Chile. Belongs to the same family as chrysanthemums. Branches are short, rigid, somewhat twisted. With finely divided leaves, it grows close to the ground and competes with grasses for moisture, nutrients, and space. The greenish flowers are inconspicuous, as are the seeds . . . until their sharp points pierce the skin of unwary people! Hence the common name. Still not widely disseminated, but can spread rapidly in warm climates, whether Georgia or California, if turf is thin. Control in lawns with mecoprop, dichlorprop, dicamba.

Southern brassbuttons (*Cotula australis*). Annual. A low-growing Australian native, it has moved into California and southeastern states. Related to tansy. The deeply cut leaves somewhat resemble those of spurweed, but are fleshy and aromatic. Can also be mistaken for pineapple weed (*Matricaria matricarioides*) or mayweed (*Anthemis cotula*). Flat yellow flowerheads with no showy ray petals give it its common name. Seeds have no spur. It tolerates fairly close mowing and becomes a serious pest in lawns; control there with 2,4-D.

Matchweed (*Lippia nodiflora*). Perennial. Small compact heads of dark purplish or nearly white flowers borne on long erect stalks look like kitchen matches. Wedge-shaped leaves are broadest at their tips, sharply toothed beyond the middle, and fuzzy. Grows from Florida to southern California and northward to Virginia and Arkansas. Useful as a groundcover and for erosion control because of its prostrate stems which root freely at the nodes. Increasingly objectionable in lawns, where it forms tough mats, but difficult to control.

Smooth and hairy crabgrass (*Digitaria ischaemum* and *D. sanguinalis*). Annuals. Their crowded yellow-green seedling may seem attractive in early spring. Maturing plants branch and spread crab-wise by midsummer, die in fall after smothering turfgrasses, reducing growth of ornamental plants and vegetables, and producing enough seed to ensure further survival. Watering lawns lightly encourages germination all summer. In very early spring, prevent emergence by applying Dacthal, Betasan or Balan to lawns and flowers or vegetables registered on the label. Control after emergence in lawns requires repeated treatments with methanearsonates (DSMA, MSMA, calar). Keep mower set 1½ or 2 inches high, and fertilize turf properly.

Green foxtail (*Setaria viridis*). Annual. Can be mistaken for crabgrass as a seedling, but doesn't creep. Grows upright and has bristly "foxtail" seedheads by late summer. Leaves are smooth, with longish hairs where leaf blade joins the sheath around the stem. Control with herbicides as for crabgrasses, and adequate fertilization. Infestations tend to disappear from lawns as turf thickens.



Tall or Kentucky 31 fescue (*Festuca arundinacea*). Perennial. Grows in clumps; doesn't spread. Formerly added to lawn seed mixtures as a nurse grass. Coarse texture looks weedy with finer turfgrasses. Tough; acceptable for athletic fields or low maintenance areas when grown by itself. Leaf blades form 90° angle with stems. Upper surface is dull and ridged. Stiff hairs along margins catch at fingers stroked along them. If objectionable, remove by cutting crown out (replace with sod if clump is large) or carefully spot-treat with amitrole or dalapon.

Dandelion (*Taraxacum officinale*). Ubiquitous perennial. Who doesn't recognize dandelions, with their rosettes of ground-hugging leaves, milky sap, thick taproots, gay yellow flowers, blow-balls, and untidy seedstalks? Young leaves are welcome greens as winter disappears, but older ones crowd turfgrasses. Attempts to dig it out usually stimulate formation of several new shoots. Chemical treatment with 2,4-D is most effective, preferably in late summer or early fall to eliminate established plants and new seedlings.

Ground ivy (*Glechoma hederacea*). Perennial. Common throughout most of the eastern United States. Square stems creep, root at nodes, and invade large areas. Roundish scalloped leaves are slightly hairy, strongly aromatic, grow opposite each other, and may vary in size depending on growing conditions. Blue-violet to purplish flowers are 2-lipped, making it a reasonably attractive groundcover in moist, somewhat shaded, areas where grass may not grow well. Can be selectively eliminated from lawns with mecoprop, dichlorprop, dicamba, or combinations. Sensitivity may vary during the growing season.

Caucasian speedwell (*Veronica filiformis*). Perennial. Another newcomer to weed lists. Introduced as a rock garden ornamental from Asia Minor; escaped to lawns. Now found in northern states across the whole country. Sets no seed, but dainty runners rapidly establish solid sheets of it. Clippings carried by mower wheels root readily, starting new patches. Myriad two-tone blue flowers; tiny scalloped, somewhat hairy leaves. (Lawn pennywort—*Hydrocotyle sibthorpioides*—resembles it, but those leaves are shiny-smooth and flowers inconspicuous.) Nearly impossible to control mechanically. Responds erratically to repeated applications of Endothal. Experimental treatment with Dacthal 75 WP promises control.

White clover (*Trifolium repens*). Perennial. Ambivalent turf component. Added to seed mixtures for quick cover and to add texture, which may be considered pleasant or undesirable. The flowers attract bees, which could sting and cause a serious reaction. An aggressive creeper, it smothers turfgrasses as crabgrass does and is difficult to keep out of gardens. In winter, its leafless stems leave bare patches in lawns. Applying nitrogenous fertilizer and lime helps control it there. So does applying mecoprop, dichlorprop, or dicamba in spring or fall.

Cinquefoil (*Potentilla canadensis*). Perennial. A native found in dry, often acid, subfertile soils in eastern United States except in the southeast coastal states. Leaves resemble those of strawberries, but have five leaflets instead of three. Spread similarly by slender runners that produce new plantlets where they root, and by seed. The small five-petalled flowers are yellow. Where practical, control it by increasing soil fertility and organic matter. Fertilize and lime lawns; treat with 2,4-D, dichlorprop or combinations with dicamba to establish control.

Wild carrot (*Daucus carota*). Biennial. Seedlings appear in autumn, form unpalatable fibrous taproot and a rosette of lacy leaves the first year. The second year, the familiar Queen Anne's lace umbels of tiny white (sometimes pink) flowers and a single velvety purple one are produced on bristly stalks whether grown to the usual one- to three-foot height or kept mowed only a few inches tall. Often infested by a leafspot fungus injurious to its close relative, celery. Seeds remain viable many years, germinate freely only in good light. In gardens the cycle should be interrupted by cultivation the first year. Seldom survives mowing in lawns.

Nimblewill (*Muhlenbergia schreberi*). Perennial. A North American native which grows in most eastern and central states. Loose, fine-textured habit almost looks like bentgrass but turns straw-colored from fall until late spring. The short gray-green leaf blades are distinctly grooved, and blade edges are smooth instead of rough like those of bentgrass. Wiry stems creep horizontally, enlarging patches which eventually break up and re-form into new patches. Can be readily grubbed out of gardens, but almost impossible to remove from lawns except by digging or spot treatment with a non-selective herbicide like amitrole or dalapon. Great care must be taken to avoid leaving even a tiny segment which could re-establish it.

Buying a Clematis

TEXT BY BREWSTER ROGERSON
PHOTOGRAPHY BY PAMELA HARPER

In the next few weeks North American gardeners will be bringing home several hundred thousand baby clematis to put into the ground—varieties from all over the temperate world—and chances are that a good many of those gardeners will not know quite what to expect when they get them there. Though famous for their beauty, clematis are suspected in some quarters of being quirky and hard to grow, and most people who have some experience with them will admit to having lost a few. The professional growers insist, and rightly so, that clematis are easy: once a plant has taken hold of its spot in the earth it is likely to go on getting stronger and more beautiful year after year with only the pleasantest of routine attention from its owner. The challenge, of course, is to get the right plant in the right spot in the first place, and then to put up with a certain amount of unpredictable behavior while it is settling in. A gardener needs a little forethought and a little patience in dealing with clematis, and in the interest of both of these he could use more specific information than is usually available. There are books on clematis (mostly British), and the trade offers various forms of instruction on cartons and flyers, but much of the lore of the large-flowered hybrids is stored in the heads of specialist nurserymen scattered across the country and never gets collected in print. What follows is an attempt to suggest some of the options open to gardeners who are thinking about growing some clematis, but hesitate because they have heard it is difficult, or because they may already have tried and failed.

The very first thing to understand about a young clematis is that, barring a stroke of luck, nothing much should be expected of it the first year. Though perfectly planted, propped, fed and watered, it may sit and do nothing for weeks; the double-flowered varieties, for instance, are notoriously slow starters. Or it may take off at once and put everything into a single shoot, producing ten feet of leaves and no flowers to speak of; this happens in the gardens of timid souls who cannot nerve themselves to pinch off a growing tip. Now and

LEFT: *Clematis lanuginosa candida*, as pictured on our cover as well. ABOVE: 'Duchess of Albany' has distinctive bell-shaped flowers, unusual among the larger, more open flower shapes of this plant.

As always, prices vary from one area to another, but if a young clematis in a four-inch pot is going for more than about five dollars, it is legitimate to ask why.

then a clematis will react to being planted as simply the last in a series of disagreeable shocks, and will go into the horticultural equivalent of a coma, looking and behaving exactly as if it were dead. If the ground can be spared, it might well be left there to see if it will recover—since some have done precisely that after lying inert for years—though perhaps most gardeners would rip it out and try again. Fortunately, most clematis are eager to grow, and even if broken all the way back to earth will start another shoot within a few days. Whatever the plant does in this first season, its essential job is to take hold in the ground, and for the time being its root system is what matters. Flowers will come, more in some varieties than others, but in the first year they are hardly comparable with what will come later.

The chances of success with a new plant are much greater if one knows something of the life it led before it got to market. Virtually all the hybrid clematis sold in this country begin as cuttings from greenhouse plants, most of them from the greenhouses of some five or six specialists who may grow anywhere from 20 to 100 varieties. From these suppliers they move out to nurseries, mail-order houses and garden centers either as bareroot plants or as two-year-old or three-year-old specimens in pots. Thousands may also be kept in cold storage until it is time to ship them out in long cardboard cartons ready for retailers to display. It may make a difference—in price, and sometimes in quality—which route a plant has traveled, but the preference is not automatic, since all the routes are variable.

Take the plants in the cardboard tubes: these are often fresh and healthy little vines, just ready to make something out of their second year, and if they have been handled with a decent regard to the fact that they are going to break dormancy the minute they are exposed to warmth and light, they should reach the counters in good condition. Naturally, the longer they stay there, the drier and spindlier they can get and the less likely to start without a handicap when planted. Occasionally there is another sort of problem. It is all too easy for a retailer who knows more about people than about gardening to have a case or two of these packaged plants on hand for instant display at the first sign of spring, even though the last frost date may be six weeks ahead and the ground as hard as iron. Anyone who fails to resist is going to be left with a tender plant already sending a shoot over the top of its carton and no place to put it. The only excuse for buying one of these prematurely delivered babies is that it may be a variety unusual in the area; somehow the odd 'Empress of India' does show up now and then in the midst of two dozen 'Crimson Stars', and the finder could do worse than take it home. It can be stored in a cool, well-lighted place (out of the sun) until planting time, requiring only that its roots stay moist, or eased into light soil in a peat pot and planted pot and all when the ground is workable. But clematis do not take kindly to having their roots disturbed; so the less hauling about, the better. Indoors the top will grow spindly, but it will need pinching back anyway when it goes into the ground, and the new growth will soon spring up on both sides of the pinched stem.

Nursery plants, whether they came as bareroot stock or in pots, are likely to be ahead of any but the best of the plants in cartons since they presumably have had some growing time in undisturbed conditions. But they also tend to cost more, sometimes a great deal more. As always, prices vary from one area to another and even across town, but if a young clematis in a four-inch pot is going for more than about five dollars, it is legitimate to ask why. There may be a good reason: it may be a new variety in the trade, or a select specimen of an old one, commanding a higher price at the source. Plants into which the nursery has put an extra year of care and handling also may cost more. But whatever the explanation, it is worth asking for, since it may be a means of finding out whether the nurseryman and his staff know anything much about clematis. Some of them do, and regrettably some of them do not.

Besides these sources there is still the hunting ground of the garden catalogues. Only huge nurseries can afford to stock as many varieties as are available from the major mail-order houses, and the chief advantage of buying by mail is simply that it extends the range of choice. At present only one of the specialist growers, D. S. George, sells clematis directly to individuals by mail, but each of the large mail-order nurseries offers its own selection of old and new varieties—some of the "new" ones occasionally being very old indeed. In all, there are over 60 large-flowered clematis being offered by mail in this country, and a few (though only a few) of the species and small-flowered hybrids that are of great interest to plantsmen but are as yet little known to casual gardeners. As might be expected, the range of quality is wide in mail-order clematis, if only because the postal system is not invariably kind to "plant material." But the reputable firms supply vigorous young plants, usually in plastic bags, with the rootball embedded in a claylike medium; again, these need to be eased into good soil with as little delay as possible, and fed gently or not at all until they have begun to show new life. In buying mail-order clematis it is only prudent to make certain that the firm has a policy of replacing stock that does not perform.

If it is true, as many nurserymen say, that most gardeners do not care about "varieties," but want only something that will flower brilliantly and give no trouble, there might seem to be no reason for the trade to offer such a range of choices. Some of the varieties are so close to one another that it takes an expert to distinguish them. But of course the truth is that

RIGHT: 'Nelly Moser' is a lovely two-toned clematis that will stand more shade than most varieties.

Representative Hybrid Clematis

Varieties	Description of Blossom	Height	Period of Bloom	Special Features
Purple				
Jackmanii	deep purple, with greenish-yellow stamens	10-18′	June, and again later (N)	easiest and most popular of all
Lord Nevill	plum-purple sepals with wavy margins	8-12′	spring and midsummer, or summer only (B)	much deeper and more intense color in hot weather
Lady Betty Balfour	velvety purple with a showy light eye	12-18′	late summer into autumn (N)	needs more sun than most
The President	violet sepals with a white bar on the underside	8-12′	as with Lord Nevill (B)	fresh-looking foliage, bronzed when young
Blue				
Ramona	purple fading to clear blue, reddish stamens	10-15′	as with Lord Nevill (B), though more abundant	one of the most adaptable (and oldest) of varieties
Belle Nantaise	large lavender blue with white center	8-12′	at intervals through the summer (B)	blossoms fade to a fine silver-blue
Mrs. Cholmondeley	long blue, narrow sepals, brownish stamens	8-15′	most of the summer (B)	opinions differ on the pruning, but it can be minimal
W.E. Gladstone	lilac blue with purplish stamens	8-12′	as with Lord Nevill (B)	flowers not numerous, but very large and long-lasting
Pink and lilac-rose				
Comtesse de Bouchaud	mauve-pink sepals, deeply ribbed, and yellow stamens	8-12′	June, and again later (N)	flowers most of the summer if suitably placed
Mme. Baron Veillard	lilac-rose with greenish stamens	10-15′	late summer to frost (N)	takes over where the Comtesse leaves off
Hagley Hybrid	light papery-textured pink with wavy margins	8-12′	June and through the summer (N)	flowers borne face up. Also sold as "Pink Chiffon"
Duchess of Albany	small, narrow pink bells with a red stripe	8-12′	July and after (N)	scarce in the trade, but very good by itself or climbing a tall shrub
Red				
Crimson Star	blood-red fading to magenta, with yellow-brown stamens	8-12′	June and through the summer (N)	more susceptible than most to wind damage
Ville de Lyon	deep red button-shaped blossom paling toward the center	8-12′	June, and again later (N)	needs some pinching back of new growth in spring to prevent legginess
Ernest Markham	broad magenta sepals, traditionally called "petunia red"	12-15′	late summer and fall if pruned hard (N)	can produce a small crop of large flowers in spring if pruned less heavily
Mme. Edouard André	pointed dark red sepals, creamy center: a quiet one	6-8′	two months or more at midsummer (N)	compact; eager to flower if given plenty of sun
White				
Henryi	white sepals forming a large six-pointed star; contrasting eye at center	10-18′	early summer, and later on new wood (B)	one of the showiest of vines, but must be shielded from high winds
Huldine	small translucent white sepals with a mauve bar down the back	10-18′	middle and late summer (N)	needs sun, and is most attractive where both front and back are visible
Lanuginosa candida	very full white, with yellow stamens	8-16′	as with Lord Nevill (B)	probably the easiest of the whites, and widely grown
Miss Bateman	rounded creamy-white sepals and a striking darker eye	6-8′	early summer, and sometimes again later (O, sometimes B)	not easy, but worth trying; best left unpruned

Varieties	Description of Blossom	Height	Period of Bloom	Special Features
Two-toned				
Nelly Moser	sepals pale mauve with a red bar	8-12′	as with Miss Bateman	fades fast in sun, but will stand more shade than most varieties
Carnaby	white six-pointed star with a red stripe down each sepal	8-12′	usually early summer	best left unpruned
Barbara Dibley	variable, plum to violet sepals with a crimson bar	8-12′	as with Lord Nevill (B)	responds well to light shade, but flowers more abundantly in sun
Star of India	full plum-purple sepals with a reddish bar that fades out gradually	12-18′	midsummer and fall (N)	handsome and relatively easy
Double-flowered				
Duchess of Edinburgh	white rosettes with creamy yellow stamens	8-12′	May-June and sometimes again in autumn (O)	slight scent; occasionally produces its flowers in green
Belle of Woking	silver-blue rosettes, yellow stamens	8-12′	as with the Duchess (O)	as with Miss Bateman
Vyvyan Pennell	showy violet-blue with carmine tones in the center	8-12′	early summer; single flowers toward fall (O, sometimes B)	as with Miss Bateman
Lady Caroline Nevill	clear lavender blue sepals, slightly barred, beige stamens	12-20′	semi-double in early summer, single thereafter (B)	may die back to the ground in winter without damage

the range was already there to be used. It came about not by any systematic campaign, but through the private enthusiasm of professional and amateur breeders working independently of one another, over more than a hundred years, and it goes on being expanded today. There are enough real differences among tribes of clematis to make further hybridizing worthwhile, and some of those differences have a direct bearing on the prospects of a given variety in a given region.

For example, the genus divides for horticultural purposes into three groups, each asking ideally for a different sort of treatment; some flower on wood of the previous year, some only on the new wood and some on both if pruned encouragingly. The first sort have their principal flowering in the spring, and are sparse after that; the second flower off and on, or continuously, during the summer; and the third have both spring and summer bloom, with all kinds of variations between the early and late crops. It matters which of these groups a variety belongs to. In vast areas of this country and Canada, gardeners have learned to their cost that icy winds can snap off slender stems a few inches above ground. If they want their clematis to have a fair chance to flower, and do not expect to go out and wrap the lower reaches against the cold, they clearly should make their choice from the second group, or the third if they are willing to risk the first installment of flowers. That is one consideration that can affect the choice; more obvious ones are the probable height of the mature vine, the color and habit of other plants with which it is to grow, and whatever special character an individual variety may have. But since it is easy to make such matters look unduly complicated, perhaps it will be best to show in a set of examples the *kinds* of differences among varieties that a gardener may want to consider. The table opposite represents something like a cross-section of the available hybrids, each category limited to four varieties—enough, possibly, to equip buyers with the right questions about whatever other clematis they find for sale.

Two preliminary notes: (1) describing colors is hard enough at best, but clematis make it worse by *changing* color in response to various influences, especially the temperature. So much, however, for apology. (2) Under "period of bloom" the initials N, O, and B identify "new wood," "old wood" and "both." There being no space for pruning instructions, the initials may serve to suggest at least the principle behind good pruning. Since "new wood" varieties need to get rid of some of their old wood if their blossoms are not to rise gradually out of sight, they require heavy pruning, either during the winter or in early spring, when they are beginning to bud; each stem should start afresh from a pair of strong buds near the ground. Old-wood varieties can do without anything more than occasional shaping up, but it is better to cut them back moderately when their main flowering is over, so as to prompt fresh growth during the summer. Varieties that bloom on both the year-old and the new wood respond to either method, though, of course, cutting them back sharply in early spring deprives them of their spring crop. 'Lord Nevill' being the first such variety named in the list, others of the same persuasion are referred back to it.

Some Retail Sources: D. S. George Nurseries, 2491 Penfield Road, Fairport, NY 14450; Burpee Seed Company, Warminster, PA 18991, or Clinton, IA 52732, or Riverside, CA 92502; Park Seed Company, Greenwood, SC 29647; Van Bourgondien Brothers, 245 Farmingdale Road, Babylon, NY 11702; Wayside Gardens, Hodges, SC 29695.

Among plants sold at retail in cardboard tubes, those bearing the name and guarantee of Arthur H. Steffen, Inc. are of consistently high quality. A comparable source in Canada is Barron's.

ROSES UPDATE

TEXT AND PHOTOGRAPHY BY R. J. HUTTON

A rose fancier's pleasure at being told of the development of a new and lovely rose hybrid is probably second only to his delight in seeing the first roses bloom in his own garden. Yet one might well ask, given the tremendous strides in the development of the rose over the last few years, "Could there possibly be anything new to offer the rose lover?" Fortunately, the answer is yes. As always, the All-America Rose Selections (AARS) award winners prove that refinements in rose hybridization have only just begun. There are also some nonaward-winning roses which show great promise for the future. In this article, you will be introduced to 20 hybrids ideal for adding to your 1980 garden.

AARS award winners top the list. This distinction is the highest honor a new rose can earn, one it must achieve even *before* it reaches the commercial market. To be eligible, a rose must be tested for two years in 25 trial gardens spread throughout the country—from Springfield, Massachusetts to Tustin, California and from Cypress Gardens, Florida to Seattle, Washington. After careful screening, members of the AARS make their selections. This year's winners, 'Love', 'Honor' and 'Cherish', were all developed by the same man, Bill Warriner.

'Carefree Beauty', created by Griffith Buck, is a shrub rose that also has decorative, bright-orange fruit in the fall and winter.

I think I can say I like all roses, since I grew up among them and have always lived and worked with them. However, I do have preferences and favorites. Among Warriner's three 1980 award winners, my favorite is 'Love'. A bold Grandiflora, 'Love' is the most colorful of the three. Its petal face is bright red and, on the reverse, a rich, creamy white. The bicolor bud is brilliance unmatched, with a long, pointed form opening to fully double blooms which are predominantly red. What I particularly like about 'Love' is its broad, upright growth and unusual vigor. It seems always to be in bloom. It grows to medium height and has lots of rich green leaves. You will like this plant even though you may have many old blooms to pick off.

The Hybrid Tea winner is 'Honor'. A much needed exhibition white with a truly classic bud, 'Honor' just had to win blue ribbons. Large, firm petals with a light scent are plentiful enough to fill the open bloom and to allow it to open gracefully in almost any weather. The white of the petals is occasionally touched with soft cream. I like the somewhat rangy, upright growth and good foliage of 'Honor'. These traits help fight off mildew. 'Honor' is vigorous and of above medium height, with lots of nice cutting stems.

In recent years we have begun to see a new race of large-flowered Floribundas. They have the compact, freely branched growth and floriferousness we expect of the class, but they bear large-size, fully double flowers often more than four inches across. This could be said of 'Cherish', Bill Warriner's third AARS award winner for 1980. The bud and flower form of this rose approach hybrid tea quality, and the color is touted as a dusty salmon-pink. The color doesn't do a lot for me, but it is an excellent addition to the many pink roses that have been developed over the years.

One of the fine introductions of the year, but not an AARS winner, is the 'Ambassador' Hybrid Tea rose from the House of Meilland. It has been some time since we have had such a beauty from them. This rose is a rich blend of copper and apricot and has unusually longlasting, fragrant flowers always on fine stems for cutting. The only other roses which produce such consistently good cutting stems are 'Gypsy' and 'Medallion'. 'Ambassador' is a showy standout, whether in the humid heat of the Midwest, the desert Southwest or cool coastal Maine. It is a tall, upright, bushy and hardy plant with plenty of good, clean foliage. 'Ambassador' is the favorite of Louisette Meilland, its originator.

Other distinctive and interesting new roses for 1980 include two from Sam McGredy. His roses always seem to have the vigor and freshness of their originator, as exemplified by 'Young Quinn', which is a tall, robust Grandiflora in radiant yellow, occasionally blushed with pink. Then there is 'Trumpeter', a vivid scarlet-orange Floribunda, fully petalled and of good flower size. The plant is low and nicely mounded, a perfect front row sparkler. From Reimer Kordes of Germany comes the Floribunda 'Deep Purple', whose color begins to approach its name. It is an exceptionally floriferous, vigorous and hardy rose. If you like the new and different mauve shades, you will enjoy 'Deep Purple'.

Let's return our attention to the All-America award winners and review some of the recent ones. I feel some will become "Roses of the Decade." 'Double Delight', for example, is a striking creamy white, with glowing scarlet and red washing over the flower as it opens. This rose couldn't be better named; if you are an exhibitor in search of blue ribbons it will serve you well, and if you just want lots of color in the yard with blooms for your home or for friends, you will find it here. Unfortunately, 'Double Delight' may be the last from H. C. Swim, the retired dean of American hybridizers.

With 'Paradise' comes a real color breakthrough. It has satiny, lavender petals, the edges of which are liberally brushed with a glowing ruby red to win the hearts of anyone who may have resisted mauve roses. A beauty on any stage, 'Paradise' has much to offer in color, bud and flower form, fragrance, and all the plant characteristics that we want and need so badly—vigor, floriferousness, abundance of leathery foliage, long stems, resistance to disease problems and hardiness. Again, we have a rose patterned after its originator, in this case O. L. Weeks, who is just as colorful, vigorous and rugged as his creation. Ollie, as he is known by all, is the "professional" among professionals, a rose nurseryman whose life has been devoted to exceptional quality in both the production and breeding of roses. For him, life is not a bed of roses but fields of them.

The third of these "Roses of the Decade" is 'Charisma', a flashy Floribunda with a yellow bud that takes on orange and red tones as it opens. 'Charisma' is unusual in many respects: it is modest in size but has an exceptionally full-petalled bloom, blooms open under any weather conditions, and flowers are long-lived whether on the plant or cut for a bouquet. The relatively low-growing plant is dense and covered with dark leaves, which provide a perfect backing for the bright blooms. 'Charisma' is the first AARS award entry from Robert Jelly of the E. G. Hill Company, a specialist in roses for the florist trade.

Developments and exciting breakthroughs in roses, as in other fields of research, often occur in clusters, with similar results coming from two or more persons, working in different ways, who are completely unknown to one another. We see this phenomenon illustrated in four successive AARS award winners, each from a different source: 'Double Delight', 1977; 'Charisma', 1978; 'Paradise', 1979; and 'Love', 1980. Each is a base color overlaid with a shade of red which produces a distinctive and unusually pleasing color effect, yet each is from a different breeder who was surely working with different bloodlines. In addition, these four All-America roses are all of American origin. That, too, is somewhat unique.

'Sundowner', an AARS award-winning Grandiflora, is from Sam McGredy and is his first Grandiflora to receive this honor. Its healthy foliage and strong growth require only routine care and attention. 'Sundowner' is every bit as colorful, tall and imposing as its originator. But while this rose is best at the back of the garden where its gleaming orange blooms won't overshadow other roses, Sam McGredy most definitely belongs in the forefront of those involved in rose hybridization. He loves roses with a relaxed and jolly enthusiasm which can only come from being Irish. Now that his home and research is in New Zealand, Sam is surely the most travelled of rose breeders; he checks his rose "children" growing in test gardens and rose nurseries throughout the world. Such travel keeps him abreast of the work and developments of all rose fanciers, and it is knowledge he willingly shares with others as he walks among the roses or downs a pint of beer.

Over the years it may seem that pink roses have received undue recognition. Many have been AARS winners, but then pink is the color which has the widest range of hues—from the softness of 'Royal Highness' to the deep pink, almost red, of 'Charlotte Armstrong', one of the first AARS winners. The most recent pink AARS winner is the Hybrid Tea, 'Friendship', from Robert V. Lindquist, Sr. Its coral-pink buds open to a clear, glowing pink. 'Friendship' is a large exhibition rose with good stems and a strong, sweet fragrance. One of Bob's major contributions to our gardens has been roses with fragrance. He has won the Gamble

Rose Fragrance Medal twice for his AARS winners, 'Tiffany' and 'Granada'. I don't know if 'Friendship' will make it three, but when it blooms you know it is there by sight and smell.

Griffith Buck, professor of horticulture at Iowa State University, has long been a rose enthusiast and has brought us something novel for landscape and garden enjoyment. It is a pink, everblooming, flowering shrub that also has decorative, bright-orange fruit in the fall and winter. Why do I mention it in an article about roses? Because it just happens to *be* a rose. Griff has been hybridizing roses for fun and to fill the needs of midwestern rose growers whose plants must withstand hot, humid prairie summers and cold, windy winters. He came up with a lovely pink shrub which he calls 'Carefree Beauty'. A more appropriate name would be hard to come by. The flower is a clear pink with a uniquely long, pointed bud which pops open to a semi-double bloom. Blooms come in clusters throughout the summer. Seed hips begin their show in September while there are still lots of flowers on the plant. This rose is literally carefree. I've had several plants around my home for years. They now range in size from three to six feet high and three to four feet across. Without any attention, they have become beautiful additions to my garden.

Another rose which comes close to the landscape uses of 'Carefree Beauty' is 'Simplicity'. This rose is a medium pink and is unusually profuse in its flowering. The plant is vigorous and upright and is covered with a blanket of bright-green leaves. It has been sold primarily as a fence rose, but its use goes far beyond that. It is particularly suitable for use as and among any other relatively tall-growing floribundas and especially for a mass of continuous color in a grouping from three to a hundred or more plants. A grouping of three or five in a shrub border would be appropriate. Bill Warriner brings us this one.

How often the roses I have described seem to bear a resemblance to the personality of their creator! Their characteristics, of course, come from the breeding lines of the parent roses, but the colorful, bold stature and glowing personality of Sam McGredy, for instance, is surely reflected in 'Sundowner' and 'Young Quinn'. The friendly gentleman that is Bob Lindquist is present in his 'Friendship', a rose you can count on. Ollie Weeks' strong individualism stands out in the distinctiveness of 'Paradise', and 'Love' is the quiet, smiling presence of Bill Warriner. This evidence seems to be refuted when one compares the diminutive Louisette Meilland to the bold and flashy rose 'Ambassador', but she is reflected in the soft tones and lasting quality of every bloom.

I am blessed to know all these roses and the people who bring them to us. I am certain I'll see many of their creations in American gardens everywhere this coming year.

Roses mentioned in this article should be available at your favorite garden centers and through mail-order specialists, including Armstrong Nurseries, P.O. Box 4060, Ontario, CA; Jackson & Perkins Co., P.O. Box 1028, Portland, OR; and Thomasville Nurseries, P.O. Box 7, Thomasville, GA. 'Ambassador', 'Paradise', 'Friendship' and 'Carefree Beauty' are trademarks of the Conard-Pyle Company, West Grove, PA. ❶

Editor's note: Many of the roses mentioned in this article, including 'Love', 'Gypsy', 'Medallion', 'Double Delight', 'Paradise', 'Charisma' and 'Royal Highness' can be viewed at the American Horticultural Society's headquarters at River Farm. With the addition of a new test garden this year, there should be well over 1,000 rose bushes on display.

CONTRIBUTORS

Gilbert S. Daniels is the current President of the American Horticultural Society. He holds a doctorate in botany from UCLA and is the Principal Research Scientist at the Hunt Institute for Botanical Documentation, Carnegie-Mellon University. He also trained at Harvard as a physical anthropologist. He is a nationally respected botanist and plant explorer.

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Barbara Hesse Emerson is lawn and garden product development specialist for Union Carbide Agricultural Products Company. She holds a degree in horticulture from Cornell University and is a charter member of the Weed Science Society of America. She served the American Horticultural Society as director, and the Garden Writer's Association of America and the Council on Botanical and Horticultural Libraries as president. She was guest editor for the Brooklyn Botanic Garden's *Handbook on Weed Control* and was a contributor to Lois Wilson's *Complete Book of Gardening*. Her articles and photographs have appeared in *American Horticulturist,* the *New York Times, Green Scene, Horticulture* and other publications.

R. J. Hutton grew up among the Star Roses in the rolling hills of southeastern Pennsylvania. He is now president of The Conard-Pyle Company, Star Roses, West Grove, Pennsylvania. Mr. Hutton enjoys plants and gardening as a hobby as well as a career and business. Other interests include photography and travel, particularly as they may be associated with plants and people.

Jeannette Lowe is a graduate of Wellesley College with a degree in botany and horticulture. She has been employed by the Burpee Seed Company for 30 years, and for many summers worked at their Santa Paula, California seed ranch. While there she helped develop many new flower hybrids, especially zinnias and snapdragons. She is presently working at Burpee's Doylestown, Pennsylvania branch in their public relations department.

Frederick E. Roberts is a graduate of the University of Connecticut with a degree in horticulture. After graduation, he participated in the Mercer Research Fellowship program at the Arnold Arboretum of Harvard University. He specialized in botanic garden management through the study of park management at Sacramento State College and as a graduate student in the Longwood Graduate Program at the University of Delaware. Mr. Roberts is currently the director of Kingwood Center in Mansfield, Ohio.

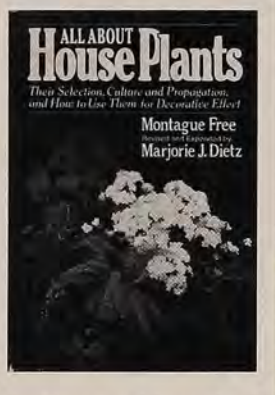
Brewster Rogerson is Professor of English at Kansas State University in Manhattan. In addition to his fondness for listening to music, Mr. Rogerson enjoys growing clematis as a hobby. He has developed considerable expertise in growing this lovely flower over the years.

Jane Steffey is a graduate of Hood College with a major in botany. She is the current horticultural advisor to the American Horticultural Society, handling member inquiries. A long-time gardener herself, she has recently specialized in indoor plants and for a number of years wrote "The Indoor Gardener" for the *Washington Post.*

Linda Yang is author of *The Terrace Gardener's Handbook*. She is a freelance garden writer, contributing articles regularly to *The New York Times* Home Section. **John Yang** is a photographer whose black and white pictures have appeared in public exhibitions as well as photographic journals. Linda and John and their two children count themselves among the numerous devoted guests of the Lake Mohonk Mountain House.

BOOK REVIEWS

ALL ABOUT HOUSE PLANTS. Montague Free (Revised by Marjorie J. Dietz). Doubleday & Company. Garden City, New York. 1979. 368 pages; hardcover, $12.95. AHS discount price, $10.96 including postage and handling.



This new edition of a 34-year-old standard work has been completely updated and considerably expanded because of the current popularity of growing house plants. It is a book to be read, although it is reasonably illustrated. The subject is how to propagate and care for individual plants which may be grown in the house. It is not a book which will help you identify the wealth of plant material currently available for growing in the home, but the specific cultural instructions given for each plant can give good service in guiding you in the selection of plants which you can grow well.

SMALL FRUIT CULTURE (5th edition). James S. Shoemaker. AVI Publishing Company. Westport, Connecticut. 1978. 368 pages; hardcover, $20.50. AHS discount price, $18.67 including postage and handling.
TREE FRUIT PRODUCTION (3rd edition). Benjamin J. E. Teskey and James S. Shoemaker. AVI Publishing Company. Westport, Connecticut. 1978. 415 pages; hardcover, $21.50. AHS discount price, $19.52 including postage and handling.
NUT TREE CULTURE IN NORTH AMERICA. Richard A. Jaynes, editor. Northern Nut Growers Association. Hamden, Connecticut. 1979. 466 pages; hardcover, $15.00. AHS discount price, $10.00 including postage and handling.

These three books are intended as reference works for the commercial grower. As such they contain the kind of information on culture, disease control and harvesting that the serious gardener needs but often has difficulty finding. *Small Fruit Culture* covers grapes, strawberries, bramble fruits, currants and gooseberries, blueberries, and cranberries. *Tree Fruit Production* covers apples, pears and all the hardy stone fruits. *Nut Tree Culture* includes not only all the hardy nuts but also macadamia, cashew and jojoba. Three reference works essential for the really serious gardener.

Save time and money—buy books by mail! Order books available at a discount through the Society.

PLANTS OF COLONIAL WILLIAMSBURG. Joan Parry Dutton. Colonial Williamsburg Foundation. Williamsburg, Virginia. 1979. 193 pages; softcover, $6.95. AHS discount price, $6.66 including postage and handling.

This little pocketbook is more than just a guide to the gardens of Colonial Williamsburg. It is a description of the trees, shrubs, vines, herbaceous plants and herbs grown in Colonial America. Each species is illustrated with a watercolor sketch by Marion Ruff Sheehan, and the text gives many details of the active trade in seeds and plants which was carried out both within the colonies and between the colonies and Europe. A biographical appendix gives further information about the gardening societies and individuals who figured prominently in early American gardening. This essential guide for any gardener visiting Colonial Williamsburg would be equally useful at many other early American historical sites.

A ROSE IS A ROSE IS A ROSE . . .

WITHOUT A THORN. Stuart Mechlin and Ellen Bonanno. Timber Press. Forest Grove, Oregon. 1978. 108 pages; softcover, $6.95. AHS discount price, $6.80 including postage and handling.

PETER MALINS' ROSE BOOK. Peter Malins and M. M. Graff. Dodd Mead. New York, New York. 1979. 258 pages; hardcover, $12.50.
THE OLD SHRUB ROSES (revised edition). Graham Stuart Thomas. J. M. Dent & Sons, Ltd. London, England. 1979. 232 pages; hardcover, $15.95.
THE ROSE. Julia Clements, et. al. Mayflower Books. New York, New York. 1979. 144 pages; hardcover, $17.95. AHS discount price, $15.85 including postage and handling.

As one of the most popular of garden flowers, the rose is naturally a prime subject for gardening books. The four reviewed here are a mixed bag considered by your reviewer to be the most worthwhile of a much greater number of rose books published recently.

Without a Thorn is a well-written introduction to growing roses. Although intended specifically for the Pacific Northwest, it can be used equally well by the beginning rose grower in other parts of the country. General classes of roses are discussed, but no cultivars are described or recommended. The subject is limited to rose care.

Peter Malins' Rose Book is also written for the beginner. The author, who is in charge of the rose garden at the Brooklyn Botanic Garden, offers his years of experience as a guide to rose care and cultivar selection. For each of the recommended cultivars, a brief history of its development is followed by a description and a discussion of its good and bad features. Unfortunately, the illustrations are not in color.

The Old Shrub Roses is an in-depth study of one class of roses intended for the specialist or the more advanced gardener. A history and description of each cultivar often includes references to other works where the rose has been discussed or illustrated. The author is obviously a spe-

cialist who offers his personal comments and enthusiasm in his subject to other gardeners who are also interested in this one type of rose.

The Rose is a beautifully produced book which deals with all aspects of this favorite flower. About half the book is devoted to the history and biology of the rose and its use in decoration, perfumery and the garden. More than a third of the book is about growing roses. Excellent illustrations clearly explain everything. Only 20 pages are devoted to cultivars, and many of these are not available in the United States. This is a British import in spite of being issued as an American edition.

PODS—WILDFLOWERS AND WEEDS IN THEIR FINAL BEAUTY. Jane Embertson. Charles Scribner's Sons. New York, New York. 1979. 186 pages; hardcover, $14.95. AHS discount price, $13.20 including postage and handling.

This is a book for the flower arranger. "Pods" in the title is really a misnomer as the subject mostly covers dried portions of wildflowers including stems, leaves and flowerheads as well as seed pods. More than 150 species of wildflowers whose desiccated parts can provide startling variety to a dried arrangement are illustrated in color. For each species, photographs of the blooming plant, of a single piece of the dried material and of a typical arrangement using the material are presented along with a description of the plant and its dried parts. The fine photography illustrates some very different ideas on materials for dried arrangements.

GROWING TREES INDOORS. D. J. Herda. Nelson-Hall. Chicago, Illinois. 1979. 254 pages; hardcover, $13.95; softcover, $7.95.

For the individual who wants to use larger plants as an element of home decoration, this is a useful book, but it won't be of help to most gardeners because it deals less with care and propagation than it does with the decorative attributes of trees and large plants. There *is* useful information on the care of indoor trees and on species recommended for use in an indoor environment, but the chapter on propagation will probably be wasted on the home decorator who will find this book of most use. A good book to give to your non-gardening friend who is trying to use plants as part of the indoor furniture, and who needs help on how to keep the indoor tree growing and healthy.

HERB GROWING (1978). THE ALLOTMENT BOOK (1977). PLANNING YOUR GARDEN (1978). Sampson Law Publishers. Maidenhead, England. 144 pages each; hardcover, $12.50 each. AHS discount price, $11.25 each including postage and handling.

These three how-to books are all English imports. Notwithstanding their origins, they can be recommended to the American gardener as useful guides. The only translation required is in the title of *The Allotment Book*, which for Americans should be read as "Vegetable Gardening." All three are illustrated with clear line drawings and, while they are all mainly for the beginning gardener, even the more advanced practitioner will find some fresh ideas. If you don't want them for yourself, they can be recommended as suitable gifts for a friend who is just starting to garden.

THE GARDENS OF POMPEII. Wilhelmina F. Jashemski. Caratzas Brothers Publishers. New Rochelle, New York. 1979. 384 pages; hardcover, $55.

This sumptuously produced book is an archaeological study of the gardens of the Roman city of Pompeii. When Mount Vesuvius erupted in 79 A.D., it quickly buried the city in volcanic ash and preserved it in its death throes for all of us to view today. From the architectural studies of Pompeii, it is obvious that gardens were an important part of the lifestyle of these ancient Romans. It is fascinating to read how much can be learned about the gardens, their design, the plants grown in them, and their place in daily life from their ash-covered remains. Garden plans have been reconstructed from the preserved remains, and abundant frescoes found on the garden walls illustrate the gardens' utility and beauty. Profusely illustrated with 175 color photographs, 290 black and white photographs plus many maps and line drawings, this is a most outstanding book for anyone curious about these ancient gardens.

PLANTS AND BEEKEEPING (new and revised edition). F. N. Howes. Faber and Faber. London, England and Boston, Massachusetts. 1979. 236 pages; softcover, $9.95. AHS discount price, $9.46 including postage and handling.

If the bees in your garden are also producing honey for you in their hives, then you will find this book helpful and informative. Hundreds of species of flowering plants are described for their usefulness as a source of nectar. Both quantity and quality of nectar production (and subsequent quantity and quality of honey) are discussed for each plant. While it makes fascinating reading for the gardener without bee hives, it is an essential guide for anyone who combines beekeeping and gardening in his activities.

APPLES AND MAN. Fred Lape. Van Nostrand Reinhold Company. New York, New York. 1979. 160 pages; hardcover, $9.95. AHS discount price, $9.20 including postage and handling.

Not so much a gardening book as an interesting presentation of everything you would want to know about apples, this is good background reading for the gardener with a home orchard, as well as for anyone who wants to know more about the apples he eats. The chapter, "Chemical Nightmare," is a frightening discourse on all the chemicals involved in a commercial orchard operation. Unfortunately, the author doesn't offer any alternatives to those practices which he finds so abhorrent.

—Gilbert S. Daniels

Orders for books available at a discount to members of the Society should be sent to the attention of Dotty Sowerby, American Horticultural Society, Mount Vernon, VA 22121. Make checks payable to the Society. Virginia residents, add 4% sales tax.

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Voracious competitors for nutrients and water, several are themselves edible. Infestations of many reduce land values, but a few enhance soil tilth or prevent soil loss through erosion. And the presence of weeds can be a galling affront to one's horticultural pride and thus pleasure.

Used properly, herbicides can accomplish minor miracles in the fight against weeds.

The origins of weeds are as varied as those of our country's citizens. Some are natives but, like us, many more have immigrated from Asia and Europe. A few have been brought here as ornamentals or potherbs. Most were unintentional stowaways in fodder, ballasts, on the roots of desirable species, or with inadequately cleaned seed.

Great aggressiveness, ability to compete successfully with other plants, and remarkably prolific and versatile reproductiveness that insures survival even under adverse conditions characterize these plants we regard unfavorably and call weeds.

Paradoxically, the majority of weeds appear most often where soil is disturbed, but are commonly controlled by cultivation.

Cultivation or mulching are sufficient to keep most under control, but some require the sterner measures of chemical treatment. It is *essential* to understand the nature of the latter, and to follow explicitly the recommendations of local authorities such as state or county agricultural agents, and the manufacturer's federally registered directions on the product labels. Many of these materials are selective, killing certain specified plants but not others. The majority "regulate" the way susceptible species grow, rather than being poisons. All should be used with respect. Used properly, herbicides (weed killers) can accomplish minor miracles impossible with cultural or mechanical treatment, such as controlling or eradicating deep-rooted perennial species.

Unattractive as their behavior may be, the habits of weeds follow regular patterns. Observing them thoughtfully can provide good clues to controlling horticultural undesirables satisfactorily. ◊

Continued from page 21

for a few minutes, then drain and the beans will pop out of the pods with just a little finger pressure.

Any soybean pods not picked at the green shell stage can stay on the plants until they're dry in late summer to early fall. At that time, shell or thresh the seeds and store them in a cool place until needed. Dried soybeans are delicious prepared and baked in the same way as dried limas or navy beans.

'Sugar Snap' pea is without a doubt the most sensational new and venturesome vegetable to be introduced in a long time. Developed by Dr. Calvin Lamborn of the Gallatin Valley Seed Co., 'Sugar Snap' was first offered to the gardening public in 1979, and in just one year it has become a smash hit. If you didn't try 'Sugar Snap' last year, get on the bandwagon and plant a generous patch now while the weather is cool. Don't miss out again on this most talked about vegetable. It is an all-new vegetable unlike any you've ever tasted. The pods are edible—round, slightly curved, medium green, two-and-a-half to three inches long, and quite thick and fleshy. But unlike flat-podded snow peas, which must be picked young, these are picked when the peas are fully mature and large, and the pods full size.

How do 'Sugar Snap' peas taste? Absolutely delicious. The flavor, raw or cooked, is somewhat like good, garden-fresh peas, but sweeter than you can imagine! The texture is crisp, crunchy and juicy.

Serve them raw, either whole or snapped into pieces, in tossed salads or as an appetizer on the relish tray. With a mayonnaise or sour-cream dip, they're a great conversation starter at parties. They are also delicious steamed or quickly stir-fried, Oriental fashion. Keep them crisp-tender and never overcook.

You get a lot for your money , time and effort when you grow 'Sugar Snap' peas. The four- to six-foot vines are productive, both the pods and the peas inside are completely usable at the mature stage, and they can be served so many delicious ways. Any extra peas freeze well for gourmet winter treats.

Whatever the size of your vegetable garden, whatever your preferences, modern trends in vegetable gardening and appropriate varieties can help you have fun, success and a bounteous harvest from your garden this spring, summer and fall.

Source Sheet for Vegetables

Illustration of kohlrabi by Virginia Daley

	B	F	H	P	S*
Snap Beans					
Greensleeves	●				
Tenderpod	●				
Tendercrop	●		●	●	●
Greencrop	●	●			
Soybeans					
Frostbeater	●				
Giant Green Soy		●	●		
Kanrich					●
Beets, Golden	●			●	
Cantaloupes					
Ambrosia Hybrid	●				●
Bushwhopper Hybrid				●	
Saticoy Hybrid			●	●	●
Samson Hybrid	●			●	
Short n' Sweet				●	
Cucumbers					
Bush Champion	●				
Bush Whopper				●	
Burpee Hybrid	●				●
Burpee's M & M Hybrid	●				
Gemini Hybrid			●	●	●
Patio Pik Hybrid		●		●	●
Spartan Valor Hybrid		●			
Victory Hybrid	●	●		●	●
Eggplant & Peppers					
Many varieties, all companies					
Kohlrabi					
Early White Vienna	●	●	●		●
Grand Duke Hybrid	●	●	●		●

	B	F	H	P	S*
Lettuce					
Bibb	●		●	●	
Buttercrunch	●	●	●	●	●
Green Ice	●				
Royal Oak Leaf	●				
Salad Bowl	●	●	●	●	
Slobolt	●	●	●	●	
Tom Thumb	●	●		●	
Pea					
Sugar Snap	●	●	●	●	●
Pumpkins					
Cinderella	●				
Cheyenne		●			
Spirit Hybrid	●			●	●
Winter Squash					
Burpee's Butterbush	●				
Gold Nugget		●	●	●	●
Zucchini Squash					
Aristocrat Hybrid	●			●	
Burpee Golden Zucchini	●				
Burpee Hybrid Zucchini	●				
Eldorado Hybrid			●		
Elite Hybrid			●		
Gold Rush Hybrid	●				
Tomatoes					
Burpee's Big Girl Hybrid VF	●				
Burpee's Pixie Hybrid	●				
Better Boy Hybrid VFN	●			●	
Floramerica Hybrid VF 1 & 2	●	●	●	●	
Presto Hybrid			●		
Small Fry Hybrid	●		●	●	
Supersteak Hybrid VFN	●				
Tiny Tim		●		●	
Watermelons					
Burpee's Sugar Bush	●				
Kengarden				●	

*B—**Burpee Seed Co.**, Order from nearest branch: 300 Park Ave., Warminster, PA 18974; Clinton, IA 52732; Riverside, CA 92502
F—Farmer Seed & Nursery Co., Faribault, MN 55021
H—Joseph Harris Seed Co., Inc., Moreton Farm, Rochester, NY 14624
P—Geo. W. Park Seed Co., Inc., Greenwood, SC 29647
S—Stokes Seeds Inc., 737 Main St., Box 548, Buffalo, NY 14240

Continued from page 22

letter written from California in 1904 included this message to be given the head gardener: "Take special care of the Drummond Phlox seed and get them along as early as possible. I spent hours getting them myself and if he knows how I labored, he won't lose a seed."

As the number of plants multiplied, the garden design began to emerge. Landscapes of the day tended towards the "naturalistic," encouraging the beauty already present. Albert Smiley was also influenced by a popular author, Andrew Downing. Downing was a nearby neighbor on the Hudson and a leading authority on the picturesque garden design of the late 1800's. This "romantic" approach, featuring irregularity of form, ideally suited the wild surroundings.

At Mohonk, man was to be both in harmony with, and a part of, nature. This was as much in keeping with the Smiley family's Quaker beliefs as it was in the influence of the gardens in contemporary Victorian England. There, gardens of the periods were also influenced by the recently discovered gardens in China. Rock outcroppings were emphasized, areas were opened up to invite long views, and selective pruning focused upon what nature had already provided.

At the turn of the century, "flower girls," like the one pictured above, gathered flowers from the cutting gardens at Mohonk for arrangements in guests' rooms.

More than a century has now passed since Smiley's dream was begun, yet his remarkable gardens remain and yearly attract visitors from all over the world. Although hundreds of new varieties of trees and shrubs have been introduced, much of the original design still exists. The modifications are surprisingly few, considering that the present garden crew numbers eight, while the original numbered 40.

Of special attraction are the annual bedding plants whose names read like an index from a nursery catalogue. These flowers change with the seasons and the years as Grounds Superintendent Alain Grumberg and his crew experiment with new and more colorful varieties. Mr. Grumberg, who has overseen the garden for a dozen years, has received justifiable recognition for his talents. In fact, the Lake Mohonk gardens are the only resort gardens in New York which have been chosen by the All-America Selections for show purposes.

The 19th-century influence may still be

felt in the use of the formal flower gardens as a transition from the Mountain House to the encircling forests. Vine-covered arbors and curved paths invite one to wander past the flowers, on to the herb garden, the rose garden, beyond to the old-fashioned cutting garden, and finally out into the woodlands.

Fine tree specimens, which dot the sweeping lawns, include a weeping beech, Camperdown elm, sweet bay magnolia, Japanese larch, dawn redwood and cutleaf maple. In the herb garden, which features an old six-foot millstone, there are peppermint geranium, lemon verbena, lavender, sage and thyme. Tucked along a brook is a wildflower-fern trail where native plants, already in abundance, have been augmented with an assortment of new or unusual cultivars. Perennials include lupine, delphinium, centaurea and platycodon. Favorite shrubs such as old-fashioned lilacs, hydrangeas, spireas and mock orange also abound.

Throughout, only simple ornaments are used, continuing the Victorian tradition. There are a sun dial, rustic stone pergola and wooden benches. Also scattered about the landscape are Oriental-looking gazebos called "summerhouses," where it's easy to imagine a Victorian lady gathering her petticoats to climb the steps and gaze upon serene surroundings. Many of these ornaments have been given over the years as gifts from devoted friends and visitors.

Generations of guests, along with Albert Smiley's descendants, continue to be involved, both with the gardens and the stewardship of the surrounding forests, now protected in their wild state. In the formal beds, chores continue as always, with weeding, watering, pruning, fertilizing and pest and disease control. Yet even to the casual observer it is apparent that the Lake Mohonk Garden which Smiley began will surely remain very much a "dangerous passion." ●

The Mohonk Mountain House and gardens are approximately 90 miles north of New York City. Should you care to visit them, you can write Carolyn Fiske, Public Relations Director, for more information and directions. Her address is Mohonk Mountain House, New Paltz, New York 12561.

The author is indebted to members of the Smiley family of Lake Mohonk for access to historical archives and information contained herein.

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PRONUNCIATION GUIDE

Guide to Botanical Names in This Issue

The accent, or emphasis, falls on the syllable which appears in capital letters. The vowels which you see standing alone are pronounced as follows:
i—short sound; sounds like i in "hit"
o—long sound; sounds like o in "snow"
a—long sound; sounds like a in "hay".

Acer pensylvanicum
A-ser pen-sil-VAN-i-kum
Aesculus glabra
ESS-kew-lus GLAY-bra
Aesculus hippocastanum
ESS-kew-lus hip-o-kas-TAY-num
Aesculus octandra
ESS-kew-lus ock-TAN-dra
Allium vineale
AL-ee-um vin-ee-AL-ee
Anthemis cotula
AN-them-is COT-u-la
Arachis hypogaea
ah-RACK-iss hy-po-GEE-ah
Asarum arifolium
as-AR-um air-i-FO-lee-um
Asarum shuttleworthii
as-AR-um shut-el-WER-thee-eye
Asarum virginicum
as-AR-um ver-JIN-i-kum
Asimina triloba
ah-SIM-i-na try-LO-ba
Boehmeria nivea
bo-MAR-ee-ah NY-vee-ah
Carpinus caroliniana
car-PY-nuss ca-ro-lin-ee-A-na
Cerastium vulgatum
ser-ASS-tee-um vul-GAY-tum
Clematis lanuginosa
CLEM-ah-tis la-NEW-gi-no-sa
Cornus alternifolia
KOR-nus all-ter-ni-FO-lee-ah
Cotula australis
KO-tew-la os-TRAL-is/os-TRAIL-is
Daucus carota
DAW-kus ka-RO-ta
Digitaria ischaemum
di-ji-TAR-ee-ah ish-EE-mum
Digitaria sanguinalis
di-ji-TAR-ee-ah san-gwi-NAL-is
Diospyros virginiana
dy-OSS-per-os/dy-o-SPY-ros
ver-jin-ee-A-na
Dirca palustris
DER-ka pah-LUSS-tris
Festuca arundinacea
fes-TEW-ka ah-run-di-NAY-see-ah
Glechoma hederacea
glee-CO-ma hed-er-A-see-ah
Halesia carolina
ha-LEEZ-ee-ah ca-ro-LY-na
Halesia diptera
ha-LEEZ-ee-ah DIP-ter-ah
Halesia parviflora
ha-LEEZ-ee-ah par-vi-FLOR-ah
Hamamelis virginiana
ham-ah-MEE-lis vir-jin-ee-A-na
Humulus
HEW-mew-lus
Hydrangea arborescens
hy-DRAN-gee-ah ar-bo-RESS-enz
Hydrangea quercifolia
hy-DRAN-gee-ah kwer-si-FO-lee-ah
Hydrocotyle sibthorpioides
hy-dro-COT-il-ee sib-thorp-ee-OY-deez
Lamium amplexicaule
purpureum
LAY-mee-um am-plex-i-CALL-ee
pur-pur-EE-um
Lindera benzoin
LIN-der-ah BEN-zo-in
f. *rubra*
REW-bra
var. *xanthocarpa*
zan-tho-CAR-pa
Lippia nodiflora
LIP-ee-ah no-di-FLOR-ah
Matricaria matricarioides
mat-ri-KAY-ri-ah mat-ri-kay-ree-OY-deez
Medicago polymorpha
lupulina
med-i-KA-go pol-ee-MOR-fa
lew-pew-LY-na
Muhlenbergia schreberi
mew-len-BER-gi-ah SHREB-er-eye
Ostrya virginiana
OSS-try-ah ver-jin-ee-A-na
Oxydendrum arboreum
ox-ee-DEN-drum ar-BOR-ee-um
Pachysandra procumbens
pak-i-SAN-dra pro-KUM-benz
Pachysandra terminalis
pak-i-SAN-dra ter-min-A-liss
Pellionia
pel-ee-O-nee-ah
Phoradendron flavescens
for-ah-DEN-dron flay-VES-enz
Pilea cadierei
PY-lee-ah ka-DEER-ee-eye
Pilea involucrata
PY-lee-ah in-vol-yew-KRAY-ta
Pilea microphylla
PY-lee-ah my-kro-FIL-ah
Pilea nummulariifolla
PY-lee-ah numm-u-lair-ee-eye-FO-lee-ah
Pilea pubescens
PY-lee-ah pew-BES-enz
Pilea repens
PY-lee-ah REE-penz
Potentilla canadensis
po-ten-TILL-ah can-ah-DEN-sis
Setaria viridis
se-TAR-ee-ah VEER-i-dis
Soleirolia soleirolii
sol-eye-ROLL-ee-ah sol-eye-ROLL-ee-eye
Soliva sessilis
SOL-i-vah SESS-i-lis
Stellaria media
ste-LAR-ee-ah MEE-dee-ah
Taraxacum officinale
ta-RAK-sa-kum o-fish-i-NAL-ee
Trifolium repens
try-FO-lee-um REE-penz
Urtica dioica
UR-ti-ka dy-O-i-ka
Veronica filiformis
ver-ON-i-ka fil-i-FOR-miss
Viburnum acerifolium
vy-BUR-num a-ser-i-FO-lee-um
Xanthorhiza simplicissima
zan-tho-RY-za sim-pli-SIS-i-ma