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The National
HORTICULTURAL
Magazine

★★★ to accumulate, increase, and disseminate horticultural information ★★★

The National Horticultural Magazine is the official publication of the American Horticultural Society and is issued four times a year during the quarters commencing with January, April, July and October. It is devoted to the dissemination of knowledge in the science and art of growing ornamental plants, fruits, vegetables, and related subjects.

Original papers increasing the historical, varietal, and cultural knowledges of plant materials of economic and aesthetic importance are welcomed and will be published as early as possible. The Chairman of the Editorial Committee should be consulted for manuscript specifications.

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The National Horticultural Magazine

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The National Horticultural Magazine

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FRONT COVER ILLUSTRATION
A fall sketch of Ginkgo biloba by Erik Hans Krause

CORRECTION

The National Horticultural Magazine, October 1957

Page 327. Illustration legend should read:
Plate 6. *Hosta fortunei* var. *gigantea* (Giant Plantainlily)

Page 328. Illustration legend should read:
Plate 7. *Hosta ventricosa* (Blue Plantainlily)

Page 338. *P. viridis,* P.I. 75160 should read:
P. viridi-glaucescens, P.I. 75160
P. sulphurea var. *viridis,* P.I. 77257 should read:
P. viridis, P.I. 77257

Helleborus niger

An excellent specimen flowering plant of the Christmas Rose in a Massachusetts garden

(Note several bees working on the flowers)

The Christmas Rose for winter flowers

KARL F. FISCHER

The genus *Helleborus* is a member of RANUNCULACEAE, the Crowfoot or Buttercup Family. Several species and cultivars of this genus are known. The Christmas Rose, *Helleborus niger*, although by no means a common plant, is, perhaps, the best known and most commonly cultivated species.

The Christmas Rose is interesting not only botanically, but also from the legendary and the medicinal points of view. The species *H. niger* and its numerous cultivars are particularly valuable because of the flowering season, which extends from October until March—a time when few flowers are found in gardens in many geographical areas. An individual plant, of course, will not flower during all these months; the time depends upon the particular cultivar, the section of the country, and even variations of temperature from year to year.

THE PLANTS

The Christmas Rose has been well known in Europe for many years. The plants are grown there in favorable garden locations and considerable use is made of their cut flowers. They are excellent for corsages and may be worn out-of-doors during cold winter days. They combine well with hollies and other Christmas greens for table decorations.

European florists sell potted plants of *Helleborus* during the Christmas season. They also move clumps into the cool greenhouse, or pit, at regular intervals for cut flower production. It is interesting to note that these cut flowers bring prices comparable to the first forced tulips available at the same time.

In this country, plants of *Helleborus* were hardly known some twenty years ago. They still are considered a novelty in spite of the fact that leading horticultural magazines have recently published excellent articles on their culture pointing out their unusual qualities.

The flower is borne one on a stem; frequently, one or two smaller flowers will appear on the same stem below the main flower. The flower is single having five white petals, often flushed on the outside with purplish rose, and measuring from 2-4 inches. A well-grown plant might produce 150 twelve-inch flower stems. When the flower fades, the petals turn rose, later greenish, and will last for months even though the fruit has formed.

The leaves are basal, divided into seven or more evergreen, or nearly evergreen, leaflets, and on mature and well-grown plants, have stems not more than 18 inches long.

It is necessary to start with plants of sufficient size and vigor to insure success. The writer believes that this is of utmost importance and that failure in the culture can almost always be attributed to failure in selecting good plants. *Helleborus* plants are like many other alpines which are difficult to establish, but are comparatively easy to grow once they have reached a certain size and age. As they are still considered a novelty, it may be difficult for the average gardener to know what constitutes a plant of sufficient size. A description of the methods of propagation may help to clarify this point.

PROPAGATION

Helleborus niger may be propagated by division and by seed. Of course, if it is desired to perpetuate a particular quality of a strain, division is necessary. This should be done in the early fall because new roots form rapidly then. The division should be promptly planted into a carefully prepared nursery bed and grown there for at least one year. Those plants developing two strong leaves, or more, and a good root system are considered sufficient in size for transplanting to permanent locations.

Propagation by division is comparatively simple. *Helleborus* slowly grows

to a sizeable plant large enough to be divided, however, and it becomes necessary to propagate by seed when a large quantity is desired.

The flowering time falls in the winter months and seed ripens during early spring. To preserve their viability, these must be sown immediately or temporarily stored in moist sand. Stored seed planted indoors germinate in November or December, while stored seed planted outdoors in October, germinate in March or about ten months after harvest. During the first season, the seedlings develop few roots (but these often 12 inches long). The top growth is confined to two or three small leaves with less than the usual number of leaflets. During the second growing season, the new set of leaves increases in size but usually a third season is required to produce a plant which is comparable in every respect to one which has been grown from a division.

It may follow, that regardless of which propagation method is employed, it takes several years to produce mature plants. This, coupled with the fact that losses among seedlings are high, is the reason that the Christmas Rose is still rather scarce and high priced. Concerning the propagation from seed, there exists another fact which is unique due to the unusual flowering time. Seeds of early flowering plants (October-January) frequently do not mature. This is usually caused by inclement weather. The propagator should provide some form of protection for these flowers to mature their seeds, or else he will have to depend on the later blooms for seed production and this, in turn, might tend to develop late flowering strains divesting *Helleborus niger* of its most desirable quality.

SHADE AND MULCHES

Attention must be turned to the cultural needs after good plants have been secured. It should be realized that the requirements of the Christmas Rose are different from those of border perennials. They are indigenous to the Mediterranian mountains where summer temperatures are lower than those found in most parts of the United States. Accordingly, the gardener should provide shade and mulching material from April until August. During April and May, the foliage is still tender and wilts easily in wind and sun, even though there may be considerable moisture in the ground. Wooden lath, bamboo, reed mats, aluminum lath, or evergreen boughs which have lost their needles, will be satisfactory. It should not exclude more than forty per cent sunlight. The shade should be supported on a framework at least 18 inches from the ground. The framework may be used later to support sash or other winter protection, whenever such seems to be desirable. Artificial shade is usually preferred because it may be removed during the months of lower light intensity.

Natural shade is generally preferred when Christmas Roses are grown for display in the garden. Deciduous trees located south of the plants are admirable for this purpose. These trees cause little shade during fall and winter, and they provide ideal conditions as far as intensity of light is concerned. It should be remembered, however, that the closer a plant is to the trunk of the tree, the more it will have to compete with the tree roots.

Mulch will aid further to keep the plants cool and comfortable. Again, a wide choice of materials is available but preferred are such materials as are alkaline.

Since shade is important, the choice of a planting site should be governed by this fact. If, at the same time, protection exists from the coldest weather in the form of a shrub or evergreen planting, a wall or building, it will be so much the better. The plant itself is very hardy and can stand temperatures well below zero; open flowers, however, will be damaged by temperatures below 20 degrees. This need not discourage the gardener as succeeding flower buds will await the next warm spell to unfold their beauty.

PLANTING, WATERING, AND FERTILIZING

Helleborus lives for many years. It is known to dislike being disturbed and to be a gross feeder. Obviously, then, the soil in which they are to grow must be carefully prepared. Basically, it should be somewhat heavy with a neutral or slightly alkaline reaction. Set the topsoil aside and discard the subsoil to a depth of 18 inches. Replace this subsoil

with compost or well-decayed leaves and stable manure. Some gravel should be added and a generous amount of coarse bonemeal and some ground limestone. These materials are thoroughly mixed with the existing topsoil and the hole or bed is backfilled to a level slightly higher than the existing grade. It is best to prepare the soil several weeks before actual planting time to allow for settling of the soil. Of course, where existing soil conditions are approaching this ideal, it may be necessary only to add bonemeal and ground limestone.

The best planting time extends through late summer into early fall and in southern regions the months of November and December are still favorable. There is also a short time in the spring when it is possible to plant, the time roughly corresponding to the time when seedling trees in your particular region may be set out.

It will take considerable time, possibly a year or more before the plants become well established in their new location. If after this time a need for additional plant food seems to be indicated, use a top dressing of fertilizer. During the active growing season they will also appreciate an occasional watering with compost or manure water.

WINTER PROTECTION

In cold regions, and especially when the Christmas Rose is mainly grown for cut flower production, winter protection may be desirable. In case there is only one plant to be protected, a box, from which bottom and top have been removed and over which a large pane of glass is placed, will serve the purpose. A portable frame with standard sash may be placed over the plants when many plants are to be protected. Additional cover mats, canvas, or whatever is available, may be applied when these are in full flower and extremely cold weather threatens. This protection may be left on the plants night and day during extended cold periods as long as the temperature does not rise above freezing. Even after weeks under such cover, plants and flowers may be found in perfect condition. This practice, in addition to producing cleaner blooms, will also tend to lengthen the flower stems. It is quite important to give ample ventilation when the temperature rises above 32 degrees if any form of cover has been placed over the plants.

INSECTS AND DISEASES

The Christmas Rose is occasionally attacked by insects and diseases but almost always these attacks occur when the plants are being forced or otherwise growing under conditions not entirely favorable.

It is best to cut and destroy all old leaves just when new leaves appear at the base of the plant if scale insects are present. Aphis will attack and seriously damage the young and tender leaves. These should be sprayed promptly with any of a number of insecticides recommended for the control of this insect. Until recently, the writer would have maintained that spider mites never attack *Helleborus*. It seems that the extreme dry conditions during the past summer, however, were so favorable for this pest that a group of plants was heavily infested by them. One or two Lindane-Aramite applications should control this mite.

Slugs will sometimes damage the flower buds as they appear at the base of the plants. Moderate amounts of prepared slug bait, scattered around the plants will dispose of these pests.

A type of blister beetle, which attacks other members of the RANUNCULACAE also may rarely be found to cause damage to the flower buds. These beetles feed at night and hide during daytime in the mulch and litter. As they occur in relatively small numbers and are quite large, hand picking is the best control.

Black Spot is caused by the parasitic fungus *Coniothyrium hellebori*. This may be controlled by cutting off and burning all affected leaves and stems and spraying the plants with a copper-containing fungicide.

THE REWARD

It may be seen, that it takes considerable patience and some effort to produce the Christmas Rose, but the gardener will be amply repaid, when he can go into the garden in the middle of winter and admire a well grown specimen in full bloom or pick some of these lovely flowers for home decoration.

CAROLYN CARTER

'Rachael Jackson'

Cactus type, yellow flowers, 8 x 4 inches

The Dahlias

Conrad E. Faust

The first gardener was Adam. His descendants throughout the lands today have a bond of fellowship wherever a helping hand is willing. All sorts of hobbies draw men together, but none more naturally, and few so wholesome, as gardening. It puts men in partnership with nature, and gives them a hand in creating beauty.

For more than thirty years, it has been my privilege and my pleasure to give nature, in a small way, a helping hand in creating beauty—growing dahlias.

GLIMPSE INTO THE WRITTEN RECORD

A book was published in 1615 by Francisco Hernandez in which he described three dahlias by their Aztec names, Acocotli, Acocoxochitl, and Cocoxochitl. Cocotli meant tube or hollow stem; thusly translated, these names equal, "water pipe," "water-pipe flower," and "hollow-stem flower," respectively. Hernandez, physician to the Spanish Philip II, had been commissioned in 1570 to investigate the natural history of New Spain. He published three other works on plants and animals as a result of his explorations in what is now Mexico.

Nicholas Joseph Thiery de Menonville, a French Botanist, reported in 1787 that he had seen the Acocotli growing in a garden near Guaxaca as a cultivated flower. Two years later the director of the botanic garden at Mexico sent seed to Madrid, some of which were subsequently obtained by the Marchioness of Bute. These were grown in her greenhouse, and while not particularly successful, it is recorded that she did gather enough seed to share them with many botanical gardens in Europe. Then, along came a successful flowering under the culture of John Fraser, an English nurseryman. This single petalled form is believed to have been the first illustrated in England, with its appearance in the *Botanical Magazine* in 1804.

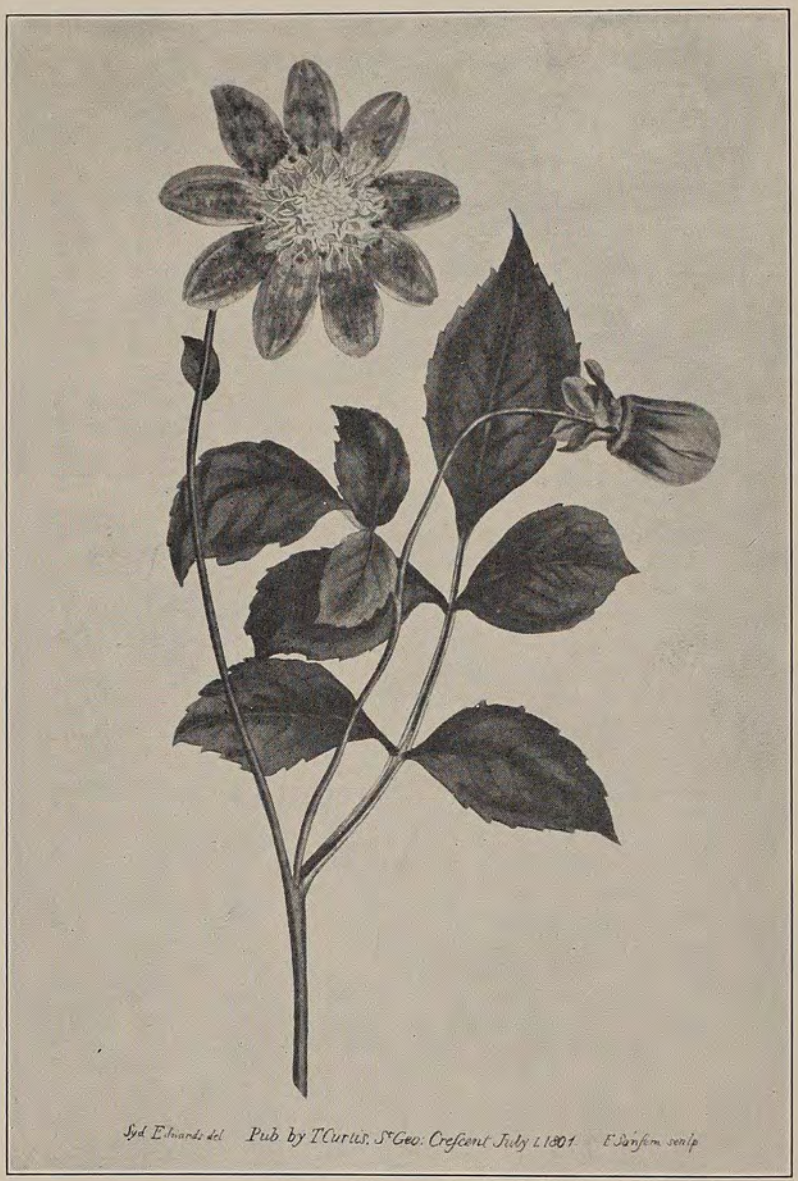
Dahlias became very popular and growers sought to improve them from about 1810 to 1840, but prior to 1860 the interest began to wane. It was thought that every color and combination had been accomplished. The National Society of Great Britain was formed in 1870 and at that time there appeared a small ball type blossom which was called a pompon. Interest was revived but, again, soon lagged.

In 1872, a box of dahlia roots was sent from Mexico to Holland. Due to the long journey all roots were lost except one. This root produced a brilliant red blossom, a variety never seen before. Petals were rolled back and pointed. It was a tall plant with flowers well above foliage. It differed so greatly it was given a place as a botanical species which was *Dahlia juarezii,* in honor of the president of Mexico. This new variety was called a cactus. Crosses were made from this new variety with parents of early varieties and these progenies are now the parents of our hybrids today.

OFFICIAL DAHLIA CLASSIFICATIONS

Sizes

The various types as recognized by the American Dahlia Society are in three general size groups, i.e., "A" or large, over eight inches in diameter; "B" or medium, four to eight inches in diameter; and "M" or miniature, under four inches in diameter. The exception to the above size groups are the pompons, which must be under two inches, and miniature ball dahlias, two to four inches in diameter.



ENGRAVING LOANED BY THE MISSOURI BOTANICAL GARDEN

Dahlia coccinea

First figure of the Dahlia printed in England,
Botanical Magazine, Plate 762, 1804

ENGRAVING LOANED BY THE MISSOURI BOTANICAL GARDEN

Dahlia juarezii

Illustrated in The Gardeners' Chronicle, October 4, 1879

ENGRAVING LOANED BY THE MISSOURI BOTANICAL GARDEN

First figure of the dahlia ever printed, from the Nova Plantarum Animalium Mineralium Mexicanorum Historia of Francisco Hernandez, 1615

Types

Single: Open-centered flowers, only one row of ray florets, margins flat or nearly so, regardless of the number of florets.

Mignon: Single flowers, plants of which approximate eighteen inches.

Orchid-flowering: Flowers as in Single, excepting that rays are more or less tubular by the involution of the margins.

Anemone: Open-centered flowers, only one row of ray florets, regardless of form or number of florets, tubular disc florets elongated, forming a pincushion effect.

Collarette: Open-centered flowers, only one row of ray florets, addition of one or more rows of petaloids, usually of a different color, forming a collar around disc.

Peony: Open-centered flowers, two to five rows of ray florets with or without addition of smaller curled or twisted floral rays around disc.

Incurved Cactus: Fully double flowers, margins of the majority of floral rays fully revolute for one-half or more of their length, tips of rays curving toward the center of the flower.

Straight Cactus: Fully double flowers,

margins of the majority of floral rays fully revolute for one-half their length or more, rays straight, slightly incurved or recurved.

Semi-Cactus: Fully double flowers, margins of the majority of floral rays fully revolute for less than half their length, rays broad below.

Formal Decorative: Fully double flowers, margins of floral rays slightly or not at all revolute, rays generally broad, either pointed or rounded at tips, outer rays tending to recurve and central rays tending to be cupped; majority of all floral rays in regular arrangement.

Informal Decorative: Fully double flowers, margins of the majority of the floral rays slightly or not at all revolute, rays generally long, twisted, or pointed and usually irregular in arrangement.

Ball: Dahlias with fully double flowers, ball shaped or slightly flattened, floral rays blunt or round at tips, quilled or with margins involute for more than half the length of ray in spiral arrangement, flowers four inches or more.

Miniature: All dahlias which normally produce flowers not exceeding four inches, pompons excluded, classified according to the foregoing descriptions. Miniature Single, Miniature Peony, Miniature Straight Cactus, Miniature Semi-Cactus, Miniature Formal Decorative, Miniature Informal Decorative, Miniature Ball.

Pompon: Having same characteristics as Ball, but for show purposes, not more than two inches in diameter.

Dwarf: Applies to plant size without regard to the characteristics of blooms.

Colors

Colors, shades, tints and combinations thereof, known to be found in cultivated forms are grouped into fifteen classes. Color classification is determined by the predominant color or colors which appear on the face of the floral rays and in such classifications the color of the reverse of the floral rays is not considered. Exception: the color of the reverse of the markedly involute rays in orchid-flowering and in certain pompon or ball dahlias may determine the color effect of the bloom and accordingly its color classification.

White: Includes pure white, ivory, cream, and faint blushes of other colors.

Yellow: Includes straw, sulphur, lemon, primrose, yellow, apricot yellow, golden yellow, and chrome yellow.

Orange: Includes cadmium orange, apricot, tangerine orange, orange chrome, and orange.

Flame: Includes spectral blends, xanthic in origin, of scarlet red or orange with yellow.

Autumn: Includes buff, yellow ochre, tanned and grayed suffusions, and blends of such tones with pink and lavender.

Red: Includes mandarin red, vermilion, scarlet, crimson, cherry, and currant red.

Dark Red: Includes cardinal, oxblood, and maroon.

Pink: Includes shell pink, salmon pink, coral pink, rose, and tyrian rose.

Lavender: Includes lavender, mauve, and phlox pink.

Purple: Includes rosy magenta, dahlia purple, purple, amaranth purple, and violet.

Blend: Varieties having no clear or distinct color, instead having two or more intermingled colors of different color classes which gradually merge but each of which can be distinguished at a distance of six feet.

Light Blend: Includes blends of the lighter tints and tones of pink, yellow, lavender, and other pastels, and, also, includes two-toned varieties of pastel tints and tones in which the central rays are of a different color than the marginal rays.

Dark Blend: Blends of low brilliance, of dark reds, maroons, purples, or other dark cyanic blends with contrasting color or colors.

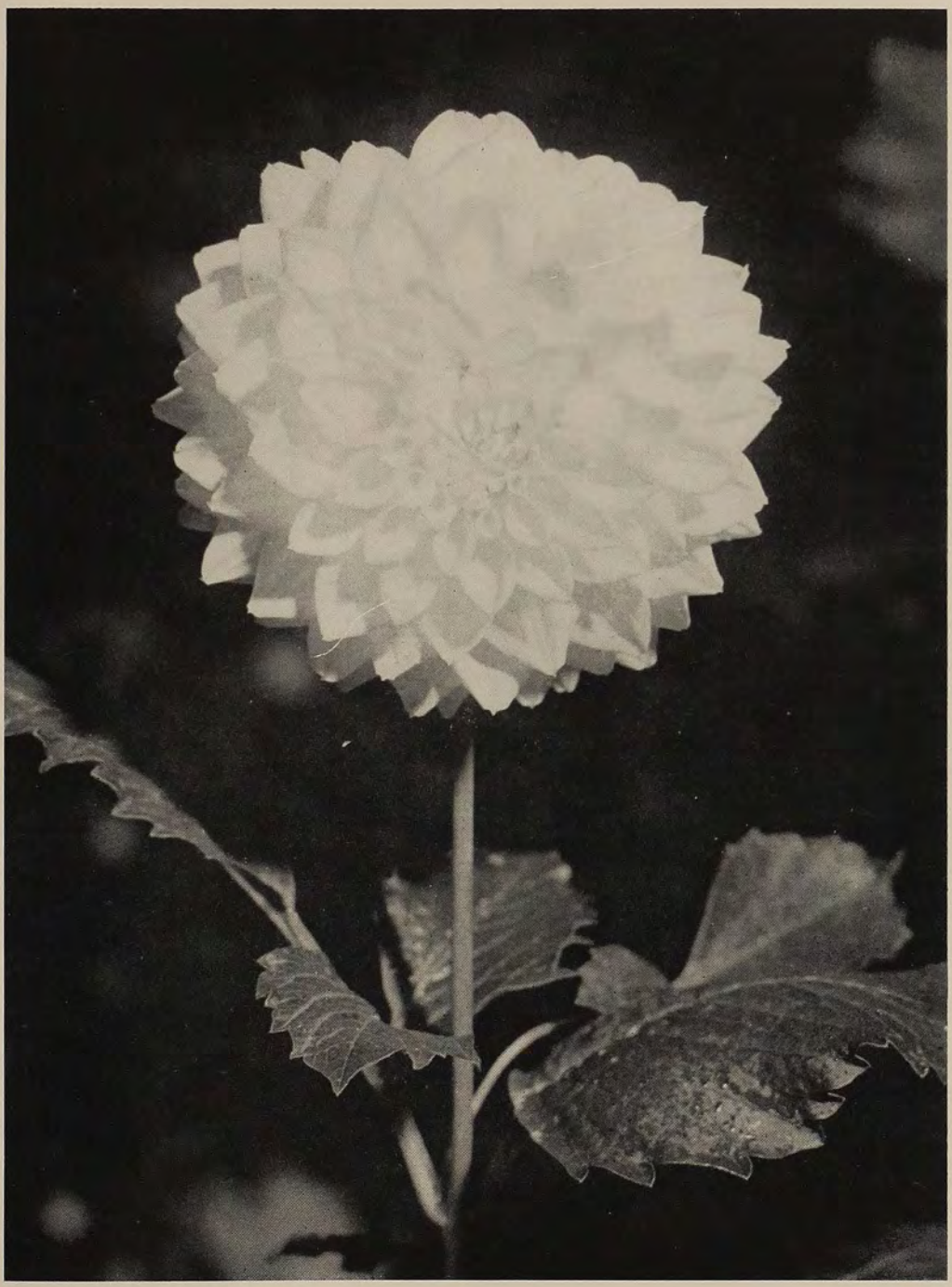
Bi-color: Varieties having two or more distinct, clear and separate colors on the face of the floral rays.

Variegated: Varieties having two or more distinct colors on the face of the floral rays, arranged in dots, flecks, splashes or narrow lines which contrast sharply with the basic color.

CAROLYN CARTER

'Pirate Treasure'

Informal Decorative type, autumn color flowers, 10 x 5 inches



CAROLYN CARTER

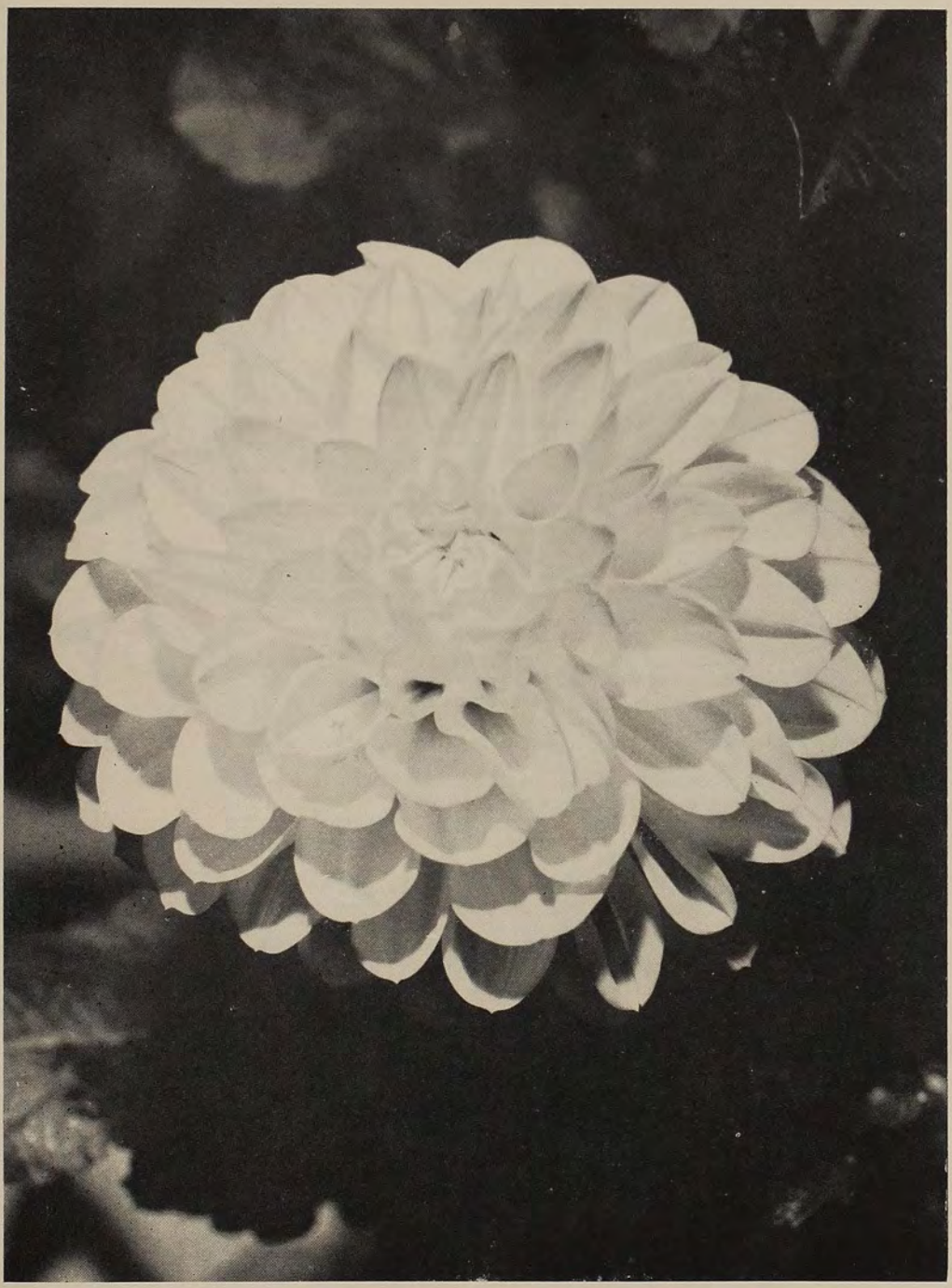
'Iva Ree'

Formal Decorative type, white flowers, 7 x 4 inches

CAROLYN CARTER

'Johnnie Casey'

Miniature, Formal Decorative type, red with tipped white flowers, 3 inches



CAROLYN CARTER

'Jonell'

Ball type, white flowers, 5 x 3 inches

HOW TO SCORE DAHLIAS
with
American Dahlia Society Score Card

Three sizes of Dahlias, as listed in A. D. S. Standard Nomenclature, may be scored with this card: SMALL (under 4 inches in diameter), MEDIUM (4 to 8 inches in diameter), and LARGE (over 8 inches in diameter).

Each column represents maximum perfection. Each square contains maximum points for perfection based on favorable characteristics present in flower to be scored.

To start scoring, credit the variety with as many points of the score for each favorable characteristic as is evident in the flower.

Next, check unfavorable factors in color, form, size, stem, foliage and bush, substance. For each one deduct the minus figures shown in front of each unfavorable factor or a less figure if same is only partially unfavorable, from the maximum in each square.

Example, COLOR characteristics: If flower is clear, bright, attractive, and in your opinion, useful, then it rates high Color score, but if you discover that it fades, deduct up to 3 points. If colors are rather dull, deduct up to 2 points. If it burns in the sun, deduct up to 3 points, and so on. Again, if flower is clear and bright, but because it closely resembles and is not better than some other flower in color and therefore is not as useful as it could be. Then your maximum score for the variety being judged is lowered before you even start to deduct unfavorable factors.

DISTINCTIVENESS score may be used to increase rating from standpoint of Color, Form or any other quality providing the flower is outstanding for some particular reason. If it cannot be truly said, however, that the flower is distinctive from any standpoint, then these maximum 5 points should not be awarded.

Familiarity with Dahlias in commerce is most helpful in determining proper scoring. Mental comparison with other Dahlias which have won A. D. S. Certificates, which have proven themselves commercially acceptable, listed on Honor Rolls and which have won at shows, will aid in arriving at the proper values of the good and bad factors present in variety to be scored.

Use the 10 or 5 maximum points for "Floriferousness" *or* for "Uniformity" depending on where Dahlias are judged—in field or at shows.

The reverse side of the
Official Score Card of the American Dahlia Society
(Reproduced actual size)

AMERICAN DAHLIA SOCIETY
OFFICIAL SCORE CARD

Originator.....Stake No.....

Address.....

Variety Name or No.....Type.....

Number in each column, below at left, represents MAXIMUM Perfection. Deduct, in each square, for less than perfection (negative qualities).

M Small	**B** Medium	**A** Large	**CHARACTERISTICS** First Line Favorable, Second Line Unfavorable
Max. 20	Max. 20	Max. 20	**COLOR** +Clear +Bright +Attractive +Useful −4 Unpleasing blend −2 Dull −3 Fades −3 Burns
Max. 15	Max. 15	Max. 15	**FORM** +Uniform +Artistic +True to Type −4 Deformed −2 Ordinary −2 Varying
Max. 5	Max. 5	Max. 5	**DISTINCTIVENESS** Add 1 to 5 pts. for form, color or other quality because superior to, or different from existing varieties
Max. 3*	Max. 0	Max. 10	**SIZE** Disbudded, Diameter.....Depth..... Natural, Diameter.....Depth.....
Max. 20	Max. 20	Max. 20	**STEM** +Strong +Erect +Long +Graceful +Proportion −5 Weak −3 Crotchy −3 Crooked −3 Poor Proportion
Max. 15	Max. 15	Max. 15	**FOLIAGE AND BUSH** +Health +Vigor +Rugged +Proportion −5 Poor −3 Weak −3 Succulent −3 Poor Proportion
Max. 12	Max. 15	Max. 10	**SUBSTANCE** Condition of Petals, +Firm +Thick +Back Good Condition of Petals, −3 Soft −2 Thin −2 Wilt −2 Falls
Max. 10	Max. 10	Max. 5	**FLORIFEROUSNESS** For Field Judging only +Profuse +Early For Field Judging only −3 Shy −3 Late
Deduct See Right	Deduct See Right	X	**UNIFORMITY** For Bench Judging only, deduct 1 to 5 pts. M or B only for Varying Size. Incomplete, too old or too young
TOTAL **M**	TOTAL **B**	TOTAL **A**	Bush Height, Pinched Back, Ft..... Bush Height, Natural, Ft..... Bloom Position Facing (top T) (45°\) (side |) (down /)

Color Description.....

Remarks.....

Evidence of Insect Damage.....of Disease.....

Where Scored.....Scored by.....Date.....

*Maximum up to 3 points awarded for daintiness—small size under 4 inches.
(See reverse side for Scoring Directions)

The obverse side of the
Official Score Card of the American Dahlia Society
(Reproduced actual size)

ENGRAVING LOANED BY THE MISSOURI BOTANICAL GARDEN

CULTURE

Soil, Drainage, Tillage, Other Factors

Dahlias require a good garden soil with a generous supply of humus, good drainage, and at least four hours of sunlight a day. Drainage is important as dahlias do not like too much water to stand after a rain. If soil is heavy, use cinders or furnace ashes, some sand and plenty of humus. Light sandy soil needs enough humus to hold a sufficient amount of moisture. Humus may be supplied by a cover crop in fall, turning this under in spring, and, also, by applying rotted manure, peat moss, or leaf mold.

To get the best results, the soil should be kept loose while plants are growing, working soil four or five inches especially after each rain. Work the soil lightly and when plants are approximately three feet tall use a good mulch, such as straw, leaves.

Several other factors are important: get vigorous disease-free stock; select dahlias that meet your requirements. You have a wide selection to choose from. Remember, it takes just as much space to grow a poor dahlia as a good dahlia.

Propagating

Dahlias are generally reproduced by dividing the root clump—each division must contain an eye or seed bud. Clumps may be divided in March or April — which is the time the buds usually appear. Make the separation with a sharp knife and discard all damaged sections and those without eyes.

Additional plants may also be obtained from cuttings. The root clump is planted in a shallow tray of equal parts of garden soil and peat moss—in January or February — leaving the upper part of the stem out of the soil so that the point where the shoot will appear can be seen. The planted tray is placed in full sunshine and kept at room temperature. Cuttings are made after three or four sets of leaves appear or when the sprouts are three or four inches high (*upper illustration*) and are placed in coarse sand and put in a shaded location to root (*center illustration*). The rooted cuttings (10 days to 2 weeks) are then transplanted to individual containers to grow on until outdoor transplanting time (*bottom illustration*).

Staking, Planting, Watering

Set your stakes approximately 3 by 3 feet. The ideal stake is a 6-foot reinforcement steel rod which will last a lifetime. After stakes have been properly placed you are now in position to plant. Apply a handful of superphosphate at each stake working it into the soil about 6-8 inches. If available, add a shovelful of well-rotted manure. This should be mixed with soil. No other fertilizer is needed at this time.

Place the root approximately six inches deep, with the sprout about two inches from stakes. In planting green plants, the ball of dirt should be covered approximately two inches. Soak the ball of soil around plants thoroughly. Planting time in the South is the month of May as all danger of frost is over then. Keep the plants growing normally and get a good root system before hot, dry weather sets in. Do not push plants too fast. A fast growth is a soft growth and plants will suffer in hot dry weather resulting in injury to plant tissue and hardening of plant

Other factors interfering in hardening of plants are planting too early when the soil is cold, setting plants that have not been properly hardened off, lack of water, excess of water, lack of cultivation, and insect control.

Water when necessary and soak thoroughly. Light sprinkling causes the roots to come to the surface and they are then injured by heat and drought.

Disbudding

To get uniform plants, pinch out center tip as soon as three sets of leaves develop. This will cause at least four to six branches to develop; the result will be more blooms per plant.

Dahlias produce clusters of flower buds; the center flower bud will produce the largest bloom. Remove the two side lateral buds, disbud all side shoots except the lower pair on each branch, which should be allowed to grow to form later flowers. These new branches should be handled as previous ones, as soon as they have developed sufficiently.

Cut Flowers

Flowers should be cut from the plants early in the morning or late in the evening after sunset. The life of a dahlia flower can be insured by a few simple precautions; cut only matured flowers, store them in a cool place, and avoid placing them in a draft. A method that has been successful in increasing the life of the bloom is to place the stem in cool water immediately after harvestng, cut off a small portion of the stem under water and leave it in the container for about thirty minutes. This allows the water to flow through the microscopic tubes in the stem to flower head. This will often revive flowers after they have wilted.

Harvesting Clumps

Dahlia roots should be dug after a killing frost. Cut off stalks even with ground and wait about a week before digging roots. Loosen the soil around the clump, with care exercised so that necks are not broken. Two diggings, one on each side, can lift a clump with less damage. Writing name of variety with indelible pencil on each clump will guarantee accurate identification. Each root may be marked by this most satisfactory method when divided from clump.

There are several methods of storing roots. A method I have been using successfully for years is to wash clump clean, cut stalk off two inches from crown, which largely helps to prevent stem rot later, If a large clump, cut in half and dust cuts with powdered sulphur; pack in boxes or crates using peat moss or vermiculite as a covering. Store in cool part of basement or greenhouse. Clumps should be stored bottom up to allow drainage of any liquid remaining in stalk. Ideal temperature is 40 to 60 degrees. Proper humidity and air circulation helps to keep tubers from shriveling. Check clumps each month for stem rot or mold, and if found, cut out defective parts and dust with sulphur.

Another method of storing used by other growers is digging the clumps with as much soil adhering as possible and storing in cool part of basement. If the roots start to shrivel, a little water may be added to soil. Clumps are stored right side up in a single layer on floor. Fill in enough soil around clumps leaving crown and stalk exposed.

Clumps can be divided in early spring, but it is best to wait for eye sprouts.

Each root or division should have a sprout before planting.

Fertilizing

Dahlias are gross feeders and like a balanced diet. Three elements are necessary: nitrogen, phosphate, and potash. Other elements, that are required, are usually found in the soil in small quantities. A good grade of fertilizer usually has the minor elements included. Nitrogen is needed for plant growth, dark green foliage, and large flowers. Lack of nitrogen in soil shows a yellow cast to the leaves, failure to develop buds properly, and small flowers of poor color; too much produces a soft plant, vigorous growth of foliage at expense of blooms, and reduced keeping quality of roots in storage. Sources are sheep manure, dried blood, and commercial fertilizer. Phosphorous, important in all plant functions, increases root development, develops strong stems, increases vitality of the plant, and if used in excess quantities, it is not harmful. Common sources are superphosphate and bone meal. Potash also increases the vigor of the plant, gives color to the flower and foliage. It is important in starch formation and aids in the maturing of roots. Sources are muriate or sulphate of potash.

When plants are about three feet tall and buds are formed, a light application of fertilizer is made around each plant, twelve inches from stalk—5-10-10 for average light soil, and 5-10-5 for heavy soil at intervals of ten days. A light application of sheep fertilizer or dried blood will add size to blooms. Do not use excessive quantities of nitrogen as it will reduce keeping qualities of roots for next year. After applying fertilizer, water the soil thoroughly as a plant can only take in food when dissolved in water.

Insects, Damages, and Controls

Dahlias are subject to damage by insects and indirect damage caused by insects carrying disease from plant to plant. The first principal of control is to use proper insecticides, spraying at frequent intervals. Red spider or spider mite are very small black and white to brown or red minute insects found on under side of leaves. This gives the under side of the leaf a grey and silky appearance. The top of the leaf starts turning brown and develops into a leaf resembling cured tobacco. Red spider damage has been increased since the use of DDT which destroys parasites that normally help control red spider. There are several sprays which are effective in controlling the red spider—Malathion, dust or liquid, is one.

Aphids, or plant lice, are small soft-bodied sucking insects, light green, red, or greyish black. Usually, they are found in clusters on the stem, around the buds, and on the underside of the leaf, causing the leaf to curl. Blackleaf 40, Pyrethrum extract, or Rotenone, are commercial insecticides which offer effective control.

Leaf hoppers are small greenish-yellow flying insects and are very active in warm weather. They fly when the bush is touched especially during the heat of the day. They work on the underside of the leaf causing the edges to turn yellow, then brown, finally, the entire leaf dies. Malathion will help control leaf hoppers.

Thrips are tiny insects and are very hard to see without the aid of a magnifying glass. They enter the growing leaf bud and chafe the newly formed leaves, injuring them so that they are malformed and curled. They also injure the small flower bud and stem. DDT, combined with a mite spray, offers control.

Mildew is controlled by dusting the under side of leaves with dusting sulphur about September first. One application will suffice for a season.

To keep plants growing, they must be kept clean. Spraying or dusting at regular intervals will help eliminate completely or help control insects.

DAHLIAS BY NAMES

There are many good varieties of Dahlias to select from. Listed below are a few that grow well in all sections of the U. S. The size refers to the diameter of the flower and the depth as seen from the side.

Large size—above 8 inches

'Rose Ann' — Cactus, orange, early bloomer, good stems, 9-10 inches by 4-5 inches.

'Prairie Fire' — Semi-Cactus, orange, strong stem holds bloom side to forty-five degree angle, 10 by 5 inches.

'Jane Lausche'—Semi-Cactus, rosy mauve

with about one-third of each petal tipped white, good stem, 10 by 5 inches.
'Mary Elizabeth'—Informal Decorative, dark turkey red, vigorous grower, 10 by 5 inches.
'Kelvin' — Informal Decorative, peach pink, flowers large with good stems, vigorous grower.
'Arthur Godfrey' — Formal Decorative, orient red with orange shading, excellent stem, rugged grower, 10 by 5 inches.
'Cherokee Beauty'—Formal Decorative, begonia pink, vigorous grower, 10 by 5 inches.
'Cherokee Brave'—Informal Decorative, oxblood red, one which does not fade much in hot weather, good grower, excellent stems, 9 by 5 inches.
'Surprise' — Semi-Cactus, peach, flowers have great depth and excellent substance, good stems holding blooms well above foliage, 10 by 5 inches.
'Kidd Climax'—Formal Decorative, cream overlaid pink and heliotrope, stems strong, good grower, 9 by 5 inches. This variety is from New Zealand.
'Croydon Masterpiece'—Informal Decorative, deep shade of tan, high full centered flowers held facing up on strong stems, 10 by 5 inches.
'Art Linkletter'—Semi-Cactus, primrose yellow, vigorous, strong stem holding bloom facing, 10-12 by 6 inches.

Medium size—4 to 8 inches

'Bunny'—Incurved Cactus, primrose yellow, uniform blooms on good stems, 7 by 3 inches.
'Juanita'—Straight Cactus, dark red, prolific bloomer, good stems, 7 by 4 inches.
'Joey K'—Semi-Cactus, marigold orange, prolific bloomer, good cut flowers, 6 by 3 inches.
'Wind Lassie' — Informal Decorative, pure white, an excellent variety that has an outstanding record, vigorous grower, blooms held on strong stems, 8 by 4 inches.
'Daily Gold'—Formal Decorative, empire yellow, suffused saffron yellow, vigorous grower, excellent stems, 8 by 4 inches.
'Southern Beauty'—Formal Decorative, white at center with outer one-half to one-third deeply suffused rose red, good stems holding flowers well above foliage, good grower, 6 by 3 inches.
'Peach Blend' — Formal Decorative, attractive peach with reddish rose suffusion on outer portion of petals, stems vigorous, profuse bloomer, 6 by 3½.
'Maureen Connally' — Formal Decorative, sulphur yellow, petals roll back to stem forming ball shape blooms, 5 by 4 inches.
'Betty Blossom' — Formal Decorative, color straw yellow, flushed phlox pink, plants vigorous, 7 by 4 inches.
'Fairy Queen'—Semi-Cactus, pure white, early and profused bloomer, good substance, plants freely branching, slightly below medium height, 5 by 3 inches.
'Eldorado'—Semi-Cactus, bicolor—marigold orange deepened with lines of red, white tips, 8 inches.
'Grandezza'—Cactus, currant red, shading to cardinal, good stem, 7 by 4 inches. This variety comes from Holland.
'First Lady'—Formal Decorative, Dresden yellow, petals roll completely back to stem giving the bloom unusual depth, medium height, 7 by 4 inches.

Miniature

'Gypsy's Kiss' — Formal Decorative, white, overlaid lavender, with streaks and specks of purple throughout the petals, attractive, 3 inches.
'Mabel L'—Formal Decorative, autumn and orange, 3 inches.
'Timmie' — Formal Decorative, cream, blending to rose violet at the tips of petals, vigorous tall grower, 3-4 inches.
'Ruby Charm'—Semi-Cactus, ruby red, good grower, 4 inches.
'Johnnie Casey' — Formal Decorative, red, tipped white, color uniform throughout season, prolific, 3 inches.
'Little Rachael'—Semi-Cactus, rose pink, tall, strong grower, 3 inches.
'Butterscotch'—Formal Decorative, most interesting bicolor with edge and base of petals bright yellow, tipped white, dark foliage, 4 inches.
'Little Bill' — Cactus, bright yellow, bloom average 4 inches.
'Butter Ball' — Ball, yellow, vigorous grower, tall plants, profused bloomer, 5 by 3 inches.
'Needles' — Collarette, white suffused, striped and speckled peony purple with collar petals of the same color, vigorous grower, attractive.
'Dark Lustre' — Orchid-flowering, deep velvet purple, bloom about 3 inches, good stems, attractive.
'Little Patty'—Semi-Cactus, pure white, good cut flowers with excellent stems, 5 by 3 inches.

H. H. EVERETT

Caltha palustris

Wildflowers

to start the garden season

ELIZABETH CLARKE

To some garden enthusiasts, success with the flower border is nearly accomplished with a profusion of bloom during the late spring, summer, and fall. To have interest earlier in the season becomes a challenge.

Most gardens are likely to include some native American plants that have been cultivated and generally accepted as suitable to combine with those of other lands. This is one way to be certain the heritage of American flora will be preserved. In these times when natural woodlands are being destroyed for suburban development, it is all the more important that every garden include many of the native plants.

The exact time these native plants put forth every effort to show their beauty varies depending on the soil, location in the garden, and the geographic areas. There are some showy ones, however, that can be counted upon to flower about the same time as the cheery Forsythia.

VIRGINIA BLUEBELLS

Mertensia virginica enhances the beauty of early flowering tulips when planted with them in the flower border. Found in woods, bottom lands, and clearings of the Eastern States, it is easily adapted to loamy soil (pH 6-8) and will grow to 12 inches if partly shaded in the summer. The gray-green leaves are smooth, the basal ones having long petioles while those along the unbranched stem are blunt. The flowers are outstanding and distinctive in that the flowerbud is pink, opening to a purplish-blue. The foliage entirely disappears during the summer; new growth appears the following Spring.

SPREADING PASQUEFLOWER

Anemone patens many times finds its way into gardens without anyone realizing it is native in grasslands and on exposed slopes from Illinois to British Columbia, Alaska, Washington, south to Utah, Nebraska, and Texas. It is a low-growing perennial with deeply cut hairy leaves. It has blue, purple, or white flowers, which are actually colorful sepals, on a 4-8-inch stalk that elongates after the flower fades. Then a head of long-tailed silky fruitlets appears. This gives a filmy cast adding interest to the flower border as well as becoming useful for arrangements. The Spreading Pasqueflower is at home in the dry soil of the border; also, in the rock garden its flowers add to the array of early color. The seed pods are outstanding during the summer.

CREEPING POLEMONIUM

The low-growing *Polemonium reptans* is equally happy in the rock garden and in its native haunts—the open woods from New York to Alabama and Kansas. The weak, light-green stem, ascending about 12 inches, has leaves composed of 11-17 slender leaflets. From the axils of the upper leaves arise the flower stalks with clusters of deep blue flowers made distinctive by white stamens. The Creeping Polemonium, because of its rambling growth habit, is best supported by rocks. It grows in either shady or sunny locations where the soil is moderately acid.

MOSS PHLOX

Phlox subulata is one of the best known plants used in the rock garden, on the terrace, or in the rock wall. A carpet of plants covered with pink, purple, or white flowers can be found in dry sandy, gravelly, or rocky soils, neutral or moderately acid, from Long Island to Michigan and southwards to North Carolina and Tennessee. The low evergreen mat has erect flower shoots. The Moss Phlox is not fussy; it transplants well, may be divided or grown from cuttings and seed.

COMMON FAWNLILY

Erythronium americanum, a small bulbous plant, has found its way into many rock gardens. One of the pleasures of a woodland walk is to come upon a colony of these single pale yellow flowers nodding on slender stems a few inches high. It is well established in the East. The elongated leaves are mottled with brown (this species is often called the Troutlily) or perhaps they are plain green. Plants formed from seed have one leaf the first year; sometimes, these seedlings form shoots — threads that grow down into the ground and form bulbils. When sufficient food is stored in the mature bulb, two leaves and a flower appear. Unless there are two leaves, no flowerbud is formed. By this time the bulb is deep enough to prevent root injury should the flower be picked. In a neutral or moderately acid soil, whether by a stream, under a hemlock or in a beech-maple woods, where the ground is slightly moist, the Common Fawnlily flowers in early spring.

Erythronium albidum, the White Fawnlily, and *E. albidum* var. *mesochoreum,* two other species, add blue, pink, and white flowers to the choice of plants that can be grown in a rock garden. The Fawnlilies are also adapted to the small wildflower garden where plants are exhibited for the pleasure of everyone.

COMMON MARSHMARIGOLD

Caltha palustris is a willing candidate for those gardeners fortunate enough to have a brook, wet meadow or wet open woods, where the soil varies widely in acidity. A colony of plants with deep yellow sepals, and glossy, roundish leaves, gives a meadow or brookside the appearance of a bright carpet. This low growing, sometimes decumbent, plant grows well in heavy mucky soil where there is plenty of moisure all year. While it enjoys the full sun in springtime, the Common Marshmarigold, like other woodland plants, thrives best in the shade during summer. Plants may be easily separated, after the flowers have faded, by lifting and washing the muck away. The seed germinates well if the soil is kept damp. Plants will mature and flower in three years.

ANEMONELLA

The *Anemonella thalictroides* presents quite a contrast to the bold brilliance of the Common Marshmarigold. It grows in the open woods of the Eastern States. For the garden that includes an oak-hickory woods with moderately acid soil, this native is a delicate plant worthy of being grown. The thin, wiry stem is 4-9 inches tall, and the foliage is somewhat like Meadowrue. There is a whorl of leaves below the white or pinkish flowers. The fragile-looking plants are easy to move; the thin tubers may be divided and, with a top dressing of leaf mold in the fall, they will bloom the following spring after planting.

ROUNDLOBE HEPATICA

Hepatica americana is another relative to the Common Marshmarigold and Anemonella. It is a dependable plant and is known to flower early, sometimes pushing up through the snow. It is equally pleasing at the base of a tree, in a soft woods soil, with stones, and the well-drained slightly acid soil of oak-hickory woods.

The long-petioled leaves with rounded lobes are leathery, last through the winter, forming a rusty background for the flowers. The new green leaves, 4-6 inches high, appear after the bluish-lavender, deep-purple or rosy-pink flowers

have faded. The new leaves and flower stalks are fuzzy giving the plant a wooly appearance.

VIRGINIA SPRINGBEAUTY

Claytonia virginica is often associated with the commencement of spring. The dainty but showy white or rosy flowers with deeper veining may be found growing in open woods, thickets, and clearings in the eastern part of the United States. The opposite leaves are almost grasslike and characteristic of many woodland plants, they disappear completely after flowering. The flowers of *C. caroliniana,* Carolina Springbeauty, are not as profuse and the leaves are broader. Growing 5-12 inches high, both species are found in an oak-hickory woods where the tiny tubers are several inches deep in moist places or along stream banks. The plants spread rapidly. Colonies may be found at the edges of woods and in nearby lawns. Transplanted or grown from seed, it will flower well in the wildflower garden in leaf mold soil with a pH 5 or a pH 6.

TRAILING-ARBUTUS

Epigaea repens, most cherished native plant, is becoming difficult to locate in the wild. The pearly-pink blossoms, nestled among the oval, lightly hairy, evergreen leaves, are a joy to behold. The delicate flowers have a spicy fragrance and upon close examination, the minute hairs on the inside of the tube may be distinguished. This prostrate undershrub is sought among withered oak leaves or sometimes it is hidden under pine needles. It prefers sandy to peaty woods soil (pH 4-5) or clearings, most often appearing on sandy slopes where there is shade. It is frequently found in the pine barrens in clumps or patches trailing along the ground.

Successfully growing Trailing-arbutus is an accomplishment. It does not readily transplant. It needs a soil that is strongly acid and free of earthworms.

It requires a mulch of pine needles, oak leaves or sawdust that must not dry out. If moving a plant of Trailing-arbutus is undertaken, loosen a large clump 2-3 inches beneath the surface with a spade before lifting. It is best to move only young plants, or better still, take cuttings. Young plants are available in many nurseries as are most of these early native plants that may be cultivated. Because of all the exacting requirements, growing Trailing-arbutus in the wildflower garden is difficult, but well worth the effort.

Beyond the pleasure and satisfaction derived from this recreational pursuit, there is the knowledge that these wildflowers have been rescued. In their new locations and with proper cultivation, they will survive and give others the enjoyment of knowing the first flowers of spring. This is a conservation measure; and, one way to preserve the beauty of native flowers belonging to all of us, everywhere, the rightful legacy of future generations.

Deciduous Azaleas for the Lower South

HENRY T. SKINNER

Deciduous azaleas have long been used in European gardens. As Mollis and Ghent hybrids which originated in Europe, or as species of American or Asiatic origin, they have been grown in botanic collections and in many private gardens of our northern states. More recent converts to their culture admire their tawny or flaming oranges or find in their pastel shades of cool yellows, soft pinks and tinted whites both relief from the harsher blue-reds and a foil for the pleasing softer tones of the tremendously popular semi-evergreens. Many of the deciduous azaleas have excellent fall color and in a mixed planting with their semi-evergreen cousins can add pleasant year-round variety to an otherwise somewhat monotonous banking of rather constant darker green.

Such comments apply to northern gardens, why not to those of the Lower South? Why have Mollis and Ghent azaleas remained almost unknown much south of Washington, D. C., and why have the native species, the true azaleas of Linnaeus, remained in the south as just "honeysuckles"? They have been admired perhaps, sentimentally, but seldom cultivated outside of the Biltmore Gardens and a few collections comparable with that of Mr. S. D. Coleman at Fort Gaines, Georgia. The answer to the last question may be the easier. The plants of our woods, though attractive, are rather "common." Azaleas from the southern woods have not yet been "improved" or advertised. The improved and advertised hybrids, the Mollis and Ghents, were bred in Europe for northern conditions. They contain *Rhododendron japonicum* and *molle* (from Japan and China) mixed with *R. flavum* (from Europe) and one or all of these again mixed with American natives such as *R. calendulaceum, nudiflorum* (which may have included *canescens*), *speciosum, viscosum* or *occidentale*. Present evidence indicates that these European and Oriental species are poorly adapted to warm climate cultivation; while our own western azalea, *R. occidentale,* is even more sensitive on the East Coast. It is winter-hardy but yellows badly in midsummer, a fact which leads us to question the heat tolerance of the excellent new Knap Hill hybrids which are currently creating their own stir among northern gardeners.

The "present evidence," just referred to, is very spotty. We actually are not sure that selections out of *R. flavum* or *molle*[1] may not be susceptible of successful cultivation in the Gulf States. The time is ripe for a good trial under fair conditions as well as for a test of a range of the Ghent, Mollis and Knap Hill hybrids. Certainly those Ghent hybrids with a preponderance of characters from our native species (including *R. speciosum* and possibly *canescens*) might do reasonably well in southern gardens. Should but a few succeed they would be eminently useful in future breeding efforts directed to the improvement of southern deciduous azaleas for southern cultivation. Such a program is surely needed. Its end results might be significant far outside this southern area where potential indigenous breeding stocks are already more numerous and more varied than for any other climatic region of the world. No less than ten species of de-

[1]Although *R. molle* grows well, produces good foliage, and sets flower buds at Pass Christian, Mississippi, it has not flowered. This failure bears no apparent relation to winter freezing, but may be caused by insufficient winter to overcome bud dormancy. There is recent experimental evidence to show that Azaleas, native to the South, require significantly shorter rest periods than northern and exotic species.

ciduous azaleas are native to Georgia alone; while from Florida to Louisiana and Texas we have a color-range array from pink, purple and white to yellow, orange and red with an amazing flowering season which extends from mid-March through every month to November. There are species with minimum winter-dormancy problems and those which, by modern methods, can be propagated relatively easily from cuttings. What more could be asked for?

The breeding program suggested might well start with a thorough appraisal of present deciduous garden hybrids conducted, preferably, on the southern coastal plain at some suitable location between Florida and east Texas. The most promising survivors, if any, could be mated with native species selected for their potential contribution of improved flower color, flower form, season of bloom, desirable habit, ease of propagation and increased climatic tolerance.

If it is found that the northern hybrids had better be forgotten, their best features could be reproduced, without any doubt, by working with the indigenous azaleas alone. The starting point would be up to each breeder to decide for himself, with all the following to choose from: *R. canescens* is the wide-spread early-flowering "pink honeysuckle" which is so adaptable to diverse climatic and relatively diverse soil conditions that it is at home from South Carolina to Tennessee as well as all around the gulf from north-central Florida to east Texas. Its range is far wider than that of any other southern azalea. It has large-flowered forms which vary from pure white to very deep pink; it is vigorous and can often be readily propagated by summer cuttings. It is the only far southern species of primarily pink color and might well be a first choice on any breeding list.

In *R. austrinum* we have the only truly southern yellow, which is also early flowering, which hybridizes readily with *R. canescens,* and which is a denizen of the coastal plain from northwestern Florida to the southeast corner of Mississippi. Although its best forms are not blessed with especially large flowers, its hybrid progeny show good promise. It also propagates by summer cuttings, a little less readily than *R. canescens* but fairly well. There is a second yellow in Georgia, *R. calendulaceum,* but its home is in the mountains. It is not especially heat-tolerant and being a tetraploid does not hybridize readily with these other species.

There are three reds, all potentially useful, *R. speciosum* from the coastal plain to Piedmont Georgia is slightly later but overlaps *R. canescens* in flowering time. It has larger flowers than other southern species except *R. calendulaceum* and as a low-elevation plant should hold its color well in cultivation. Crossed with *R. canescens* it produces strong pinks and interesting tan shades the first generation. *R. bakeri,* yellow to orange-red, is June flowering and from the mountains of Georgia and Alabama but seems nonetheless to be very heat-tolerant; while the latest red, July to August-flowering *R. prunifolium* from the Georgia coastal plain, should be most valuable for adding color to a late-flowering race of hybrids. It is being currently used by northern breeders for just this purpose. As with any late azalea its flower display is more subdued than that of an earlier species blooming before any shoot growth is made. But the show can be good for *prunifolium* holds its flowers high, and in later years its shoot growth is not too vigorous.

And then there are six whites, any one of which may have something useful to contribute. Coastal plain *R. atlanticum* is the earliest and should prove particularly valuable for its low, stoloniferous habit and pleasant, strong scent. From the southern end of its range in coastal South Carolina it should be adaptable to the gulf area. The next white to flower; two weeks later than *R. canescens,* is *R. alabamense* from the hills of northern Alabama. Its chief recommendation is its delightful lemon scent. It too tends to be stoloniferous, but its first-generation hybrids are often rather small-flowered. *R. viscosum* is represented in south-central Georgia and Alabama by the interesting May-flowering var. *aemulans,* low to medium in height and apparently drought-tolerant, which is very closely related to May-June flowering *R. oblongifolium* of eastern Texas. June-flowering *R. arbore-*

scens from Upson County, Georgia, and northward has the largest blossoms of any of the whites and produces showy pink hybrids when crossed with reds such as *R. bakeri*. But this, basically, is a moisture-loving northerner which would need testing for adaptability before being used too much. *R. serrulatum* is the last and the latest. It is small-flowered but can be showy with its many pleasantly-scented blossoms. It is also a moisture-lover from the swamps of southern Louisiana to Florida, but seems tolerant of much drier conditions under garden cultivation. It starts flowering in July and the same or different plants may continue to flower into September, October or even later. Through hybridization with *R. prunifolium* and other selections its lateness awaits exploitation towards production of some future and highly distinctive race of fall-flowering azaleas.

These, briefly, are the building materials. Each species should be analyzed for the needed characters it can contribute and a search should be then instituted for the outstanding flower forms which carry these desirable characteristics. A few such good selections are already to be found in the better collections. Because these characters will often be masked or diluted in first-generation hybrids back-crossing to one parent or the other may often be necessary. By wise selection of parental materials, with continued crossing and with careful later selection there are no presently apparent obstacles to the eventual production of first-quality deciduous azaleas for the gardens of the lower south.

Illustrations with these notes are from a pilot breeding project at the National Arboretum, Washington, D. C. They represent the earliest steps in character combination, but several further generations will be required before selection and recombination can be expected to produce quality of flower and habit combined, it is to be hoped, with southern climatic adaptability.

Left. *Rhododendron arborescens* — the sweet azalea. Natural range of habitat extends from the mountains to central Georgia.

Right: *Rhododendron bakeri* × *viscosum*—A first generation hybrid, pink-flowered, with stoloniferous tendencies.

Left: *Rhododendron viscosum* var. *aemulans*—A May-flowering azalea from the drier woods of southern Alabama and Georgia.

Right: *Rhododendron oblongifolium*—The May-flowering white azalea of east Texas.

Left: *Rhododendron bakeri* — Partial doubleness is of occasional occurrence in most species of native azaleas. Such selections provide ready-made first steps towards fully double hybrids. A double flower is illustrated here.

Right: *Rhododendron arborescens* × *atlanticum* — A promising cross towards production of a large-flowered stoloniferous white.

U. S. NATIONAL ARBORETUM PHOTOGRAPHS

The African Violet

Mrs. E. G. Magill

The Rose—which, it has been poetically repeated — "Is a Rose," has conceded some of its popularity to a host of violets from Africa.

In the past decade, phenomenal progress has been made in developing and improving the *Saintpaulia* (African violet) so that it is evident there are no limits in sight to their potentials.

The ever-increasing number of enthusiastic growers and collectors of the African violet is manifested in the growth of the African Violet Society of America, Inc., with its 14,000 members. However, membership has now reached beyond a national boundary to Canada, England, Australia and several other countries. The Society has sprung like a mushroom from six hobbyists, for whom the H. G. Hastings Company in Atlanta, Georgia, staged the first African Violet show, October, 1946, to its present number. That first display is reported to have drawn three thousand visitors. Each year since the Society has held an annual convention in major cities and staged both an amateur and commercial show. Beautiful trophies and sizeable cash awards have been such a challenge, competition is so keen it would seem an all-time high has been reached for growing super-plants. But leave it to the ardent grower to come up with something more spectacular.

From the parent Society has grown a number of state organizations — Missouri, New York, Ohio, New Jersey, Illinois and a group of states in the northeast area as a council, also three hundred city and rural chapters.

The question is often asked, "Is it really an African violet?" It is not a violet at all nor does it belong to the violet family. It has the distinction of being a part of that rather select family, the Gesneriaceae. Though superficially they look nothing alike, the large velvet-leaved *Gloxinia,* the entrancing *Episcia, Achimenes* and a long list of others are of this same family.

According to the publisher of *Curtis' Botanical Magazine* in quoting a letter he had received from the elder St. Paul-Ilaire: "The *Saintpaulia* was discovered by my son, who lives in East Africa, where he owns plantations of *Vanilla* and India-rubber trees. It was found in two localities: one about an hour from Tanga, in wooded places, in the fissures of limestone rocks, as well as in rich soil with plenty of vegetable matter. This place is not more than fifty to one hundred and fifty feet above the sea level. The second place is in the primeval forest of Usambara, likewise in shady situations, but on granite rocks, two thousand five hundred feet above the sea. It is much more plentiful in the former place. Several varieties have been discovered but all are blue."

Seed was sent by Baron Walter von Saint Paul-Illaire to England, plants were grown and exhibited at the International Horticultural Exhibit in 1893. They shared with *Eulophiella,* exhibited by Messers. Linden, the honor of being the two most botanically interesting plants in the exhibition. The *Saintpaulia* took the horticultural world by storm. Within two years of its flowering, it figured in five first-class horticultural publications. After this there seems to have been a lapse of publicity until 1901 when *Revue Horticole* again extols the African violet events. In the early days, the culture was given as that of the *Gloxinia.* All these years later we still grow them the *Gloxinia* way but the culture of the plant itself has many an otherwise green-thumb gardener puzzled.

Without a doubt there are as many theories on growing media, fertilizers, watering and containers for the cultivation of the African violet as there are hobbyists growing them. The oft-repeated warning, "If you have a method that works and gives you good results, stick to it," would be a mighty good motto for many a grower to pin above the work bench.

WAYNE W. WILLIAMS

Saintpaulia 'Ohio Bountiful'

Soils differ throughout the country and even in a small area. Here is a basic formula used by a large number of growers, 3 parts good black soil, 1 part peat, 1 part compost (about half manure), 1 part rotted manure, 2 parts sand or vermiculite. This mixture may be varied in any degree you may wish; do it, however, in small quantities until you know the results.

It will be several months after a plant is potted before any fertilizer is needed, if then. There is a large variety of plant food on the market, to say what is the best is an impossibility. Choose wisely and use with the utmost caution. Too often gardeners think "if a little is good, more would be better," with sad results. Feed your plants much as you do a child, a little at a time and often. They will burst into glorious bloom instead of flopping over with a full cramping stomach, or roots, as the case may be.

One of the two questions most frequently asked about African violet culture is, "How often do you water?" Too many conditions enter into this phase of culture for a specific rule to be set down for everyone. The temperature of a house, at 70° Fahrenheit the water can would not be filled as often as if it were 90°; texture of soil, peat requires more frequent watering than clay; exposure, plants sitting in a south window where the sun intensifies the heat against the window pane would dry out and evaporation from leaves would be greater than those in a north window; glazed pottery or plastic, can not be watered as often as the clay type. Test the top soil with your finger if you like but I prefer a metal gadget that can be swished through some antiseptic between each stir. When slightly damp on top, give the plant a drink. Do not allow the pot to sit in water more than a couple of hours; the plants do not like wet feet. Remember these plants once grew out of doors, they were watered from the top when it rained and siphoned it from the ground out of the rainy season. It makes no difference whether watering is done from top or bottom as long as it is done and the plants are not allowed to go for a swim.

The other question so often asked is, *"Why don't my plants bloom,* I have beautiful foliage but no flowers?" Definitely the answer is LIGHT. However, let me quickly emphasize that one element of culture does not surpass another. If poor starved soil is used, all the light that it is possible to get will not produce the flowering you want. At the same time, proper watering, as has already been mentioned, must be worked out or the best soil and perfect light will not give the results desired. A bit of experimenting will help you strike a balance between these factors.

Excellent blooming African violets can be grown in any exposure, north, east, south or west, *with qualifications.* It will be necessary to take inventory of your outdoor surroundings. A white house next door, snow or water reflect light. If, however, the houses in your locality are built close together or a beautiful big elm tree is overhanging an exposure, your choice of windows to use will of necessity be altered. You may even have to supplement the daylight. Should it be your good fortune to live in the wide open spaces with no shade trees, you will find yourself creating protection from the sun. A very thin curtain, tissue paper or awning will do the trick.

It would seem there is more error about what adequate light is than any other bit of plant culture. For most of us the eye serves as our light meter. Because the iris of the eye adjusts so readily to any degree of light, one can easily be led astray concerning a designated amount of light. A meter that measures candle foot is of great value, but it is not necessary to run around the house with a light meter in hand.

Perhaps a couple of true examples will explain the sensitivity of plants to light. Several years ago, a Red Bi-color African violet was sitting on a glass shelf at a west exposure with twenty other plants. Nineteen of them bloomed satisfactorily, Red Bi-color had one stem with one blossom about once in three months. After six months of this, the plant was given a friendly talking to and moved to the buffet in the dining room. There is a long narrow south window above that location through which sun filters at intervals. Two weeks after Red Bi-color was moved to its new abode, buds aplenty were visible. For more than a year from that time it was not without bloom, having as many as thirty and not less than seven at any time.

A greenhouse man who grows thousands of African violets told of his wife taking home a plant full of bloom. In due time that crop of blossoms was spent and the all too prevalent story was heard. Upon inquiry, it was learned that the plant was sitting on an occasional table, about three feet from the window. Lucky is the person who has

success growing African violets, or plants of any kind, on the usual location of an occasional table. Following suggestions, the table was moved as close to the window as was possible, but still the plant refused to bloom. This trial and error process was taking place during the late winter months. After six weeks of waiting without results, the plant was moved to a south window with a very, very thin curtain between it and the plant. About three weeks later five bud stems appeared. Like Red Bi-color, it continued to bloom over a long period of time and is still flowering to the satisfaction of the grower.

You must be the one to decide whether you want abundance of blossom or lush green foliage with fewer blossoms. Strong light will fade the foliage to a light yellowish color, but the leaf pattern will be more compact, with good bloom. Leggy petioles and little or no blossoms are the result of poor light. Experience will soon provide you with the knowledge of light that will give the results a good grower is striving for. The solution usually is, plenty of light without direct sun.

For the window-sill gardener who must live in an apartment or for whom window space is a problem, fluorescent lights are a good substitute. Any corner in any room from the bathroom to the basement can now be utilized for growing with excellent results. It need not be an elaborate set up of benches and multiple groups of fluorescent lights. There are beautiful table-lamp planters that afford sufficient light to produce fine specimen plants. On the other hand, if you are an enthusiastic grower collecting hundreds of plants, the basement can readily be converted into a wonderful greenhouse. Prepare benches of a height and width to suit the available space, suspend fluorescent tubes, 40 watt, daylight or cool-white, twelve to fourteen inches above the rim of the flowerpots. There is no hard and fast rule as to the distance artificial lights must be from plants. Some will bloom prolifically fourteen inches below the lights while others need to be several inches closer. Like the daylight we talked about, you must be willing to do a bit of shifting to learn where plants are happy. If the growing area does not get any daylight, it will be necessary to subject the African violets to at least fourteen hours of artificial light out of each twenty-four. When several hours of daylight are available, the artificial light exposure can be cut down a great deal. The more consistent light they receive, the more beautiful the plants will be in every respect.

Many types of containers are available to growers these days. The pretty pottery and plastic pots both come as wick-fed pots. With a very large collection, these can become quite expensive. It would seem the common clay pot is still the old faithful. However, I have seen Saintpaulias growing in everything from the dime-store mixing bowls to tin cans, and beautiful plants they were. I remember reading in one of Helen Van Pelt Wilson's books something to this effect, "A plant should be so well grown and so beautiful that an onlooker is not cognizant of the flower pot."

Like most every other plant that grows, the African violet is susceptible to disease and pests. The old adage, an ounce of prevention is worth a pound of cure, is just as good today as when first stated. Do isolate any new plant you bring into a collection or one that develops any suspicious look. Check plants each time they are watered so as to nip any intruder before it gets a stronghold. Spray at regular intervals with a good standard insecticide. Oh yes, you can get the leaves wet (in the shade, however, or brown water spots will develop on the leaves). Don't you recall we said they once grew outside where there is a long rainy season?

Cyclamen mite, broad mite and the mealy bug are most troublesome to the plants. Once infested with any of these, it tries the most genial patience to see them through the ordeal. Diligent dipping or spraying at weekly intervals is a must to clean up any one of them. In most cases, it is better to discard an infected plant than to run the risk of spreading it through an entire collection.

Fungi, such as crown and stem rot, plague many growers. Too much humidity without proper ventilation is a common cause of this ailment. Caution must be exercised in watering when the humidity is high. An electric fan can be used to stir the air. The use of fertilizer during the winter months, when

WAYNE W. WILLIAMS

Saintpaulia 'Bernice'

there is little or no sun, appears to encourage crown rot. Unless ample light can be supplied for continued growth, forget feeding from November to March. Stem rot can be controlled to a degree by covering the rim of pots with some type of aluminum foil to prevent the petiole from absorbing the salts that accumulate on the edge of the clay flower pot.

Springtails are bothersome things but not harmful. They appear where a great deal of organic matter is used. If you are a smoker, crumble the tobacco from cigarette butts in a quart jar, fill with water and allow to stand twenty-four hours before watering plants with it. Away go the springtails, manure flies, and many other creeping things in flower pots.

A well grown "Specimen" African violet is the envy of any flower lover. Competition is gaining momentum with every African violet show staged, until plants are being cultivated so that specimen plants are the rule and not the exception in the window-sill garden. There is a vast difference between the "show" and "specimen" plants. A specimen is always a show plant but a show plant is not necessarily a specimen. It is possible to place a show plant so that it can be mistaken for a specimen unless it is examined closely.

As most any grower will attest, it is a feat to develop a specimen plant. Many times, just when one is about to decide a plant is as near perfect as can be grown, an African violet has a way of sending its crown off northwest. This causes the foliage to grow heavier on one side than the other, consequently detracting from the perfect symmetry that gives a plant the largest number of points when being judged. A perfect wheel with compact spacing of leaves gives the desired shape sought for. Contrary petioles can be made to do just about anything you want them to by propping them in place with toothpicks or similar sticks. Floriferousness or quantity of bloom is the second virtue one strives for; cultural perfection, that is, freedom from disease, insects and marred foliage is third place, with size of bloom according to variety following very close behind and color of blossom according to variety bringing up the rear.

In order to have blue ribbon plants, the grooming must begin with a leaf when it is selected for propagation. As the plant matures, the suckers (they are small plants that develop between the petioles or along the crown) should be removed. All aforementioned phases of culture have to be closely adhered to and practiced diligently if a leaf is to develop into an elegant specimen plant.

Since the day *ionantha* and 'Blue Boy' were introduced, hybridizers have given us thousands of new varieties. A listing made by Carolyn Rector of San Pedro, California, records well over 4,000 varieties and I am told there are at least that many more that people know of that are not on her list.

By selective leaf propagation, the varieties have been improved in size of flower and pattern of foliage, the most outstanding change being in the white variety. Though 'Snow Prince' is not steadfast, it is possible to have a striking, large, glistening white blossom above good green foliage. Deeper pinks have come forth, 'Pink Cheer' leading that parade; many more double flowers have been developed with larger and clearer colored blossoms. Fantastic patterns in foliage with lush, rich shades of green from lettuce to ripe olive are to be had, such as Kellar's 'Holly,' 'Iowa' and the T.V. series. These, like the doubles, are to be had in any shade of the color chart, except yellow. Then there are the bi-colors and the variegated, both blossom and leaf. The latest creation to besiege African violetdom are the double pinks with their rosebud-like blossoms, 'Ohio Bountiful,' 'Pink Cloud,' 'Pink Dresden,' and a host of others. 'Harvey' and 'Shine Boy' seem to be the forerunners of something more interesting to come. The small blossom of 'Shine Boy' leaves much to be desired in it, but the smooth hairless leaf creates conversation. 'Harvey' is a great improvement over 'Shine Boy.'

Some of the so-called older ones still hold their place with the new. 'Blue Warrior' stays at the top of the list and has just about everything to be desired in a plant. A profusion of medium-blue blossom is held well above the darkest green velvet-like foliage with a red back. The foliage is deeply veined, making a beautiful quilted pattern. 'DuPont Lavender Pink' with its two to two and a half inch blossom held well above heavy foliage, densely covered with a blanket of fine hair, is always a breath-taking sight. 'Number 32' has a blossom color unique unto itself over a dark, quilted, shiny leaf. 'Violet Beauty' is another old faithful in many collections. A long list of others could be added, but . . .

NEAL V. CLARK, JR.

Cypress water from White Hill Lake reflects overhanging growth

Cypress pool, cypress knees, and cypress trees . . . . .

NEAL V. CLARK, JR.

LOUISA VENABLE KYLE

Rim of the sand dunes sixty feet high which border the southern bay shore area

Virginia Seashore State Park

LOUISA VENABLE KYLE & KATHARINE FONTAINE SYER

The Virginia Seashore State Park is 3,500 acres of wilderness, virtually unchanged since Captain John Smith and his company explored it in 1607. Ecologically, it is a transition zone. The variety of plant life is large, consequently. It is a giant test tube of sand and water in which the creation of Prehistoric times seems to occur before your own eyes. Geodetically, it is important in measuring the recession of our shore line and the rise and fall of the ocean. Its effects on winds and erosion is immeasurable. Hemmed in by sand dunes, bound by the sea and inland bays, it is still a forest primeval.

Few places in the eastern United States offer the variety of plants for botanists or naturalists who wish long range study programs of five to ten years. Here, due in part to its proximity to the Gulf Stream, nature lovers can see an unusual variety of flora. This wilderness is the northernmost range of some plants; the southernmost range of others.

On the more than thirty miles of trails, one can observe the whole procession of plant life—algae, fungi, lichens, mosses, ferns and flowering plants. The heart of the park lies as a protected amphitheater rimmed by ridges and dunes approximately sixty feet high. In places there is a sheer drop from the top of a dune to below sea level in a cypress pool.

From the sand ridges that run through the park, as well as around it, one looks down on the great swampy areas where the black cypress water reflects, like a mirror, the gray spanish moss pendant upon the giant cypress trees, or upon ponds filled with thousands of water lilies, or lakes where migratory birds rest.

The topography of these thousands of acres in Virginia Seashore State Park helps to give the variety to its plant life. On one side of a hill in the sand will grow seaside heather (*Hudsonia tomentosa*), delicate pink sand joint weed (*Polygonella articulata*), prickly pear (*Opuntia humifusa*), while on the opposite side of the same hill, growing in humus may be found orchids; such as

NEAL V. CLARK, JR.

White Hill Lake — a large fresh water lake at the base of White Hill, the highest point in Virginia Seashore State Park

cranefly orchid (*Tipularia discolor*), pink lady slipper (*Cypripedium acaule*), lady's tresses (*Spiranthes lucida*), ferns in great variety, and fungi. Partridgeberry and arbutus are found in abundance. As many as fifty pink orchids were counted in bloom on one of the trails in one morning. The cranefly orchid as well as the rattlesnake orchid are quite common.

Nationally known botanists have studied and listed the large range of plants found in this untouched forest.

The most complete study and list of native plants were made in 1942, by Frank E. Egler, of the New York State College of Forestry, at Syracuse. Since then many new species have been found.

The Virginia Seashore State Park is loveliest in spring, with tender green, beige and yellow tree foliage—a background for the shadbush and dogwood flowers. The native yellow jessamine climbs the pine trees and the red flowers of the maples open against the blue sky. The brown carpet of the woods is decorated with wildflowers and unfolding fronds of ferns.

It was thus on a clear and sparkling Sunday, April 26, 1607, that the three small ships, *Goodspeed, Discovery* and *Susan Constant,* landed and anchored at Cape Henry. After four months on the storm-tossed winter Atlantic, the explorers touched this land with joy and thanksgiving. They fashioned a rude cross and, kneeling about it, they thanked God for a safe journey. They then set out to explore the new land which they were to claim for England, but which today belongs to the people of the Commonwealth of Virginia.

Before they sighted land, the weary sailors mentioned in their log book, "a strange sweet savor wafted to them by the breeze from the west." It must have been the loblolly pines and red cedars which they smelled.

The Honorable George Percy, journalist of the party, wrote, in a glowing account, that, "We passed through excellent ground full of flowers of divers kind and colours and as goodly trees as I have seene, as Cedar, Cipresse and other kinds . . . Fine and beautiful strawberries foure times better and bigger than ours in England . . . We cannot set down a foote but tread on strawberries.

"We found faire medowes, fresh waters, that lay back of white hilly sand and was suggestive of the Downes" [Sussex, England].

Captain John Smith, writing in the early years of the seventeenth century, mentioned fruit trees in Virginia still found in this wilderness, "Plumbs there are of all sorts, the red and white like our hedge plumbs."

In describing the native persimmons, which are found throughout Virginia, he says, "The others which they [the Indians] call Pulchamis grow as high as palmetas. The fruit is like a medlar, it is first green, then yellow and red. If it is not ripe it will drive a man's mouth awire [*sic*] with much torment, but when ripe it is as delicious as an apricock."

Captain John Smith declared, "Heaven and earth never agreed better to fashion a place for man's habitat."

The "cipresse" that the early settlers noted grows into great trees whose weird trunk colors the water in the lagoons and their lovely feathery green spring foliage reaches for the sun. John Bartram, 1699-1777, whom Linnaeus, decribed as "the greatest natural botanist in the world," wrote of the American cypress, "The delicacy of its color, the texture of its leaves excells everything in vegetation."

The swamp-bay (*Magnolia virginiana*), a shrub in most places north of Georgia, grows to trees, twenty inches in diameter in this wilderness. Here grow half-a-dozen varieties of holly, as well as, red cedar, maple, oaks of all kinds including giant live oak, beech, loblolly or rosemary pine, black gum and cotton gum.

The Virginia Seashore State Park is remarkable also for its accessibility, being less than five minutes from areas of urban and resort living. Time and again, it has been eyed by land developers and other business men, but it is because of the vigilance of conservationists, botanists, zoologists, geologists and other scientists in many fields throughout the nation, who know its value, that it exists as a wilderness today.

Permission to study in the Virginia Seashore State Park must be obtained from the Virginia Department of Conservation and Development, (Mr. Randolph Odell), Richmond 19, Virginia.

A Book or Two

(Books designated "(Library)" are available for loan to the Membership)

All the Plants of the Bible.

Winifred Walker. Harper & Brothers, New York. 1957. 244 pages. Illustrated. $4.95. (Library).

Miss Walker has long enjoyed a reputation as a botanical artist of distinction, working in various fields that required of her not only the artist's skills but the accuracy that belongs to the scientist.

In a way, the present volume represents a labor of love, as it is a fulfillment of her long time wish to know about the plants of the Bible. Using Dr. Moldenke's earlier work, as a point of departure for her studies, she started on the five year program of painting the plants that now form the major part of the book, and the studies that go with each plate, texts from the Bible, both the usual version and some of the Apocrypha, with a page long discussion of the facts as well as the lore that has grown up about each one.

While some of the botanists may cavil at the informality of some of the presentation, the gardener and the Bible student will thoroughly enjoy seeing the plates, and reading the texts, possibly even learning the Hebrew names of the plants that they have long known in English or Latin.

The cover and frontispiece are in color, the remaining pictures in black and white. All show the nice quality of the brush work that distinguishes Miss Walker's work with no muddling about, no messing of uncertain colors, and straightforward draughtsmanship.

B. Y. M.

Taylor's Garden Guide.

Norman Taylor. D. Van Nostrand Company, Inc., Princeton, New Jersey. 1957. 509 pages. Illustrated. $5.95. (Library).

This book could perhaps best be described as a complete listing of choice plant materials and the uses to which they are best suited. It is divided into chapters pertaining to specific plant types such as evergreens, herbs, fruits, and perennials; to plants of various colors; to monthly flowering calendars; and to plants of many fragrances, plus numerous other categories.

Each plant is described briefly and fully as to height, color of bloom and berry, autumn coloring, foliage type, and any other helpful data.

The *Guide* would be most useful for one who is designing garden areas, or has little knowledge of plant materials. This is *not* for one who is seeking information on the growing and care of plants, as no cultural notes are given. Mr. Taylor has devoted his *Encyclopedia of Gardening* to this subject and therefore feels hat including it in this volume would be repetitious.

CAROL LANDA

Trees and Shrubs for the Southern Costal Plain.

Brooks E. Wigginton. University of Georgia Press, Athens, Georgia. 1957. 154 pages. Illustrated. $2.50. (Library).

This paper-bound, 154 page treatise by Brooks E. Wigginton of the Department of Landscape Architecture of the University of Georgia includes very brief discussions of the climate and soils of the selected region which is shown on a map that shows also average annual rainfall for various parts of the region. The author emphasizes the importance of basic plant materials in the development of a functional, restful and aesthetically pleasing garden. This is not essentially a treatise on horticultural methods. The book should help the beginner as well as the more advanced amateur in the selection of reliable plant material. Subject matter is organized in 8 chapters, namely, vines, groundcovers, dwarf, small, medium, and large shrubs, small trees, and large trees. The lists and adequate descriptions of plants fill 135 pages. There are two appendices with special lists of plants for the New Orleans area and for seaside and shore areas of Georgia, North Florida, and the Gulf Coast. There are no illustrations. An index is provided.

C. M.

The New England Vegetable Garden.

Samuel Ogden. The Countryman Press, Woodstock, Vermont. 1957. 144 pages. Illustrated. $4.95.

This book details the author's methods, preferences, and views as developed, chiefly, through his own experience in his own garden in the mountains of Vermont. The planting and harvesting dates, varietal recommendations and details of certain practices are applicable only to conditions similar to those of the author's district, but his philosophy of gardening, of crop and soil management, should be provocative to all gardeners, regardless of location.

The author indicates that he is now more interested in the esthetic, philosophical, and the less immediately "practical" results of gardening than in the current economic value of produce resulting from his efforts and experience. Since his earlier book "How to Grow Food for your Family" he has modified many of his views relating to soil fertility, plant nutrition, and pest control, in the direction of the views of the "organic gardening" enthusiasts.

In common with many who have come to appreciate the great importance of organic matter in the soil the author seems unaware that soil scientists and other "scientific agriculturists" also stress the importance of organic matter and have stressed it for generations; that a great body of sound scientific evidence shows that organic matter is essential in soils; and that manures and other organic matter plus judicious

use of fertilizer (and lime where needed) give better results under most conditions than either manures or inorganic substances alone. Farmers and gardeners' common neglect and disregard of scientific evidence regarding the importance of organic matter seem to be misinterpreted as a lack of appreciation of its importance on the part of the "scientific" agricultural investigators and writers. Fertilizers are recommended by them in addition to organic matter rather than instead of it.

The author's own garden site, soil conditions, management practices, planting schemes, and numerous pertinent other points are clearly illustrated by attractive drawings, diagrams, and plans; some of the procedures are illustrated in step-by-step detail. The author has developed highly productive garden plots on a site that presented difficult problems. The practices described are highly satisfactory to him under his conditions, but many gardeners may be either unwilling or unable to apply some of the devices or procedures described. They are all, however, of interest as illustrations of what one diligent, careful, and thoughtful gardener has been able to do under circumstances that originally appeared far from favorable.

There are detailed chapters on sites, soils, soil fertility, tools and equipment, soil preparation, planting schemes and planting, and cultivating and a chapter containing details on the growing of each of some two dozen specific annual vegetables. The author properly stresses the importance of accumulating well-prepared compost and describes its use in planting.

The author writes in a highly readable, clear, conversational style with no effort to conceal his own engaging personality. The book is a pleasure to read.

VICTOR R. BOSWELL

Seven Keys to Distinction in Flower Arrangement.

Anita Steele. Hearthside Press, Inc., New York. 1957. 127 pages. Illustrated. $3.50. (Library).

The seven keys are: Inspiration (the Master), Expression (through the language of design), Discrimination (in containers and accessories), Perception (in choice of plant material), Formation (the art of achieving depth), Simplicity (eliminating non-essentials), and you'll get the seventh when you buy the book.

Each chapter enlarges on the subject key and an additional chapter "Flower Shows, the Final Test" is the final test. Since the most important item in arrangement may be the possibilities for home decoration, Steele asks, "Why then are flower shows the final test?" This, too, is nicely answered in the book.

The analysis of the illustration, according to the numerical keys, plus the commentary by Margaret Dodson, is very helpful, although you may not agree with each rating, it will test your mettle as a judge.

The book is recommended for all serious arrangers and exhibitors.

G. P. W.

The Magic World of Flower Arranging.

Myra J. Brooks, Mary Alice & John P. Roche. M. Barrows and Company, Inc., New York. 1956. 192 pages. 16 color, 86 black-and-white illustrations. $10.00. (Library).

A flower arranger and two photographers have collaborated in creating an effective work of art in picturing and describing compositions which might be exhibited in various classes of a flower show schedule. They have taken as their source material the every-day things from the sea, sky, and earth and the creative possibilities in each from past, present, and the *dynamic* future.

Adelaide Wilson in her Foreword says "Truly this is not a book for a year but a guide for many years to come. All of us who attempt to create beauty with natural materials do indeed owe a debt to these talented enthusiasts."

M. C. L.

Botany for Gardeners.

Harold William Rickett. The Macmillan Company, New York. 1957. 236 pages. Illustrated. $4.50. (Library).

This is an excellent book for the serious gardener who wants to learn about plants. It is an accurate, non-technical book of botany that is about "how plants grow" rather than "how to grow plants." The author begins with the seed, what it is and how it grows and continues on through the many topics related to the growth of plants as the parts of the plant, their functions, food manufacture, how plants propagate, flowers, fruits, seeds and concluding with a chapter on plant diseases. The chapter on Flowers is an example of how the topics are covered. In this one there is a discussion of the influence of day length, temperature, and nutrition on flowering as well as a discussion of the parts of the flower and their arrangement which naturally leads into the topic of plant relationships.

This book fills an important need for those who want to know more about plants. It has good solid information, readable but not over technical, written for the lay gardener. It should be included on lists of books required for study in garden club schools.

CONRAD B. LINK

Using Wayside Plants.

Nelson Coon. Published by the author, Watertown, Massachusetts. 1957. 254 pages. Illustrated. $3.00.

This is a very personal volume. One senses it immediately on reading the preface, even before one is aware that the author has made almost all of the illustrations, designed the make up of the book and generally brought off a *tour de force* of some dimensions.

In the first chapter, the author presents his claim that this is a "How-to-do-it book" and that the first chapter is devoted to answering the inevitable questions of "who, what, where,

when, and why" a delightful list. It is a book filled with personal opinions and expressions of very personal taste. They are modestly set forth, but firmly and with conviction. What they are should be left to each reader to discover for himself, but it will betray no secret and spoil no reading to say that the author believes that every roadside, and there are a variety of such, provides not only major interest for any one who is informed, but food, craft material, medicine on the herbalist's level. The geographic area treated is the northeastern United States.

The illustrations are mostly line drawings, more with pen than otherwise though a few look as if done with dry brush. They are by no means equal in merit but all show the true character of the plant depicted. There will be many differences of opinion as to the layouts, the planning of pages, but no one can dismiss the book as dull! For this reviewer the most interesting part of the art work is the series of small decorative blocks that serve to head chapters and divide texts, all of them strongly reminiscent of Japanese work. The other drawings, combinations of brush, pen and spatter are the work of Miss Frances McGaw, and occupy full page arrangements.

The first chapter that begins to parade the contents has to do with foods, and includes a long series of recipes for "food" in every form including drink! What more could one ask?

This reviewer having been brought up to eat a portion of the items proposed here, and not relishing them too greatly, is perhaps not the best person to review the book, but in spite of his early dislikes, there are several new items here that tempt him.

B. Y. M.

How to Make Cacti Flower.

Edgar Lamb. Pitman Publishing Corporation, New York. 1955. 80 pages. Illustrated. $1.95. (Library).

This is a very readable and practical presentation of cactus culture, with, as the title infers, emphasis on flower production. The title tends to be a little inept since the author deals with other succulents as well as cacti. However, the differences between the various succulent groups are defined.

The purpose of the book is set forth clearly in the introduction. A list of plants, as appears in Part I, is always interesting for comparison. The numbers with the names as given will not be of too great use to people in the United States as they refer to an English collection. The list referred to also gives beginners an idea of what plants should be in a good collection. Good flowering types are included. Since the book is written from the point of view of greenhouse culture the procedures will have to be modified slightly depending upon the environment the reader can provide. Emphasis on rest conditions, proper winter temperatures, water, light, and ventilation is excellent since these factors control good flower production.

The 50 pictures of cacti and succulents that are included are good and should be a help to the beginner in identifying these plants.

The calendar of month by month instructions should also be helpful as a guide for doing things at the proper time. This again may require some modification according to individual conditions.

The list of plants and notes reporting on how the plants turned out at the end of one year illustrates one method of recording results which would be helpful over a period of years in determining the methods to use in successful succulent production.

This little volume's chief usefulness lies in the fact that one is supplied with the essentials without being required to wade through unnecessary technical descriptions.

J. A. Johnson, *President,*
Philadelphia Cactus and
Succulent Society

Handbook for Vegetable Growers.

James Edward Knott. John Wiley & Sons, Inc., New York. 1957. 238 pages. Illustrated. $3.95. (Library).

The author's choice of subject matter for this handbook shows rare discrimination. The listings, tabulations, diagrams, formulas and compilations presented afford exact documented information on a remarkably wide range of subjects that most vegetable growers and gardeners frequently want but can not find readily (or adequately treated) in many texts, "garden books," handbooks and popular publications, commonly available.

Of most value to the commercial grower and the advanced amateur, the results of modern technical research are presented for immediate practical use by growers and shippers; and there is a wealth of material of no less interest to the amateur. The book should prove to be a very useful supplement to the numerous incomplete sources of information reaching vegetable growers today.

Some of the tabulations and summaries of special usefulness deal with subjects such as: The botanical classification of vegetables; temperature requirements, days to emergence, rates of crop plant development; time to produce transplants of specific plants; area transplantable from unit area of plant bed; spacing, feet of row per acre, number of plants per acre at different spacings; quantities of plant parts to plant an acre; composition of manures and other organic materials; seeding of cover crops; nitrogen relations of cover crops; Truog's availability chart; pH ranges, liming, plant tolerance to pH and to salt; acid and alkali equivalents of fertilizers; nutrient removal from soils by crops; fertilizer solubility, starter solutions; fertilizer conversion factors; depth of rooting; water relations and irrigation; pesticide preparation and application; handy conversion tables of weights and measures; seed storage requirements; and isolation distances for seed crops.

Subject matter is presented chiefly in tabular, outline, or graphic form, with a minimum of conventional "text." Major parts are indicated by marginal markings for quick finding; the indexing is extensive and thorough; the whole is spirally bound in limp plastic cover, pocket size.

Victor R. Boswell

Reading the Landscape. (An Adventure in Ecology).

May Theilgaard Watts. The Macmillan Company, New York. 1957. 230 pages. Illustrated. $4.75. (Library).

This is a very different kind of book on plants since it is concerned with them as they grow under many kinds of natural conditions. It is a popular book in ecology. Mrs. Watts, who is the Naturalist at the Morton Arboretum, describes the plants that are found under many different conditions. This is done by taking visits to such places as the Sand Dunes along Lake Michigan; to a quaking bog; and a stream valley in Indiana, where she tells of the plants that are found and what changes are taking place in the plant populations. She tells of a visit to the Wheatland Plowing Matches and of the changes from the prairie to farm land, the introduced plants that have spread and the changes brought about by machines. Each chapter is illustrated with interesting sketches and includes a bibliography for the more technically minded to read.

Her final chapter on the Stylish House, or Fashions as an Ecological Factor is different as she describes the changes in landscape and indoor use of plants in a house from 1856 when the first white pine was bought from a traveling nurseryman plus those plants brought from the East plus the geraniums at the window. As the home is taken over by the eldest son canna beds are made in the lawn and a rubber plant is placed in the parlor. Each family makes changes down to the present but a few plants are always kept. The white pine, bleeding heart, apple tree and Christmas cactus have seen all of the changes with the house.

This is a book to read and enjoy. It makes you want to take a field trip with the author and have her help you Read The Landscape.

C. B. L.

Handbook of Mulches.

Guest Editor Paul Frese. A special printing of *Plants and Gardens,* Vol. 13, No. 1, Spring 1957. Brooklyn Botanic Garden, Brooklyn, New York. 80 pages. Illustrated. $1.00.

Following its custom of some years standing, the Garden has now issued a very useful discussion of mulches, their kinds and uses, with due notation of some of the difficulties that may follow under certain circumstances.

Dr. Avery defines a mulch as "man's version of what happens on the floor of a forest where over the decades tree litter accumulates and gradually decays. . . . ."

Man of course, in the several treatments that follow, uses a mulch as often to reduce his own labors of weeding and feeding rather than just to make an annual increment of organic materials, and going farther, admits that the mulch in its artificial form presents a form of garden decoration as well.

None of the authors comes from farther west than Iowa or Minnesota or farther south than Virginia.

The writers appear to have a considerable variation in the plants that they grow and mulch, and all seem to have found mulches to very considerable advantage. The only dissenting voice, and a very reasonable one, comes from Dr. Cynthia Wescott, who properly points out what troubles may arise when some of the diseases which are, fantastically enough, her daily bread, enjoy mulches too.

The discussions are very sound and the conclusions trustworthy within the region outlined. There are no discussions of costs, however, and nothing about the availability of the different mulching materials for those who would have to buy them, rather than collect them for themselves.

B. Y. M.

Gardening: A New World for Children.

Sally Wright. The Macmillan Company, New York. 1957. 183 pages. Illustrated. $2.75. (Library).

Gardening and the interest in growing plants can be an important part in the development of a child. A plant interest that develops early can continue to be a joy and satisfaction for years to come. The author of this book gives many suggestions for the beginning and development of such a plant interest. For example, sowing of seed is a simple thing to do and to watch the young seedings emerge but an added interest can be had by sowing them in a fancy pattern or in the outline of the childs name. The growing of dwarf varieties, child size, is another suggestion. Another, is the growing of plants for food for some family pet or perhaps even to provide a setting for a pet as a toad, or other animal in a terrarium or cage. Flower arranging is suggested, to be used in the home or for gifts as well as using flowers and plant materials for art work, plaques, corn husk dolls and other hobby activities. Plants with odor are of interest to children or those of some novel form or action as the sensitive plant, quaking oats or touch-me-not. Dish gardens or terrariums are convenient ways of continuing the interest through the winter months.

Parents and teachers who are concerned with developing a garden and plant interest in children will find many helpful suggestions. It is written for the adult.

Conrad B. Link

Cacti for Decoration.

Vera Higgins. Pitman Publishing Corporation, New York. 1956. 68 pages. Illustrated. $1.95. (Library).

Although the title would seem to indicate suggestions about the selection of these plants for a specific container or location, we find that only a very small portion of the book is actually devoted to this subject.

Directions on the care and culture of cacti and succulents are given fully, and over one quarter of the book is devoted to general descriptions of the most desirable of these for home use.

This should prove most helpful to the home gardener or apartment dweller interested in knowing about something easy to grow.

Carol Landa

How to Make Containers and Accessories for Flower Arrangements.

Jean B. Amer and Alma L. Gray. Hearthside Press, Inc., New York. 1957. 128 pages. Illustrated. $3.50. (Library).

A glance at the table of contents give one an idea of what to expect from this book: Nature's gifts from sea and shore; Bounty from mountain and plain; Working with wood; Articles from paper and paste; Foil, wire and other metalcraft; and the like. There are many ideas that might be useful to scout leaders, homemaker clubs (whatever they are), bazaar leaders, and their ilk. These ideas will not appeal, probably, to the expert flower arrangers and exhibitors.

Planning your work space is a chapter containing many excellent suggestions for all interested in the subject. The illustrations are very good, clear, and pertinent to the text; Robert Dudley adds interest with his drawings.

G. P. W.

The Lily Yearbook, 1957.

P. M. Synge and Miss G. E. Peterson, Editors. 148 pages. 37 plates. The Royal Horticultural Society, London. $1.65.

North American Lily Society Yearbook, 1957

Dr. George L. Slate, Editor. 146 pages. 34 plates. Obtainable from the editor, 37 Highland Avenue, Geneva, New York. $3.15 (Library).

Among other items, the British yearbook has a symposium on "my five favorite lilies" by Veronica Tennant, Dorothy G. Renton, and G. H. Preston; descriptions by Lawrence Beane of California of some of the undescribed lilies of Southern California associated with *L. humboldti,* accompanied by excellent line drawings of the flowers and bulbs; and a historical article on the Easter Lily and its clones and selected seedling groups by Lawrence Ogilvie. There are several short articles on lily culture and developments in New Zealand, Australia, and northern Transvaal; also, the usual reports of the Lily Show and of the Lily Group meetings (this time on California lilies, growing from seed, and "any questions").

The North American Society yearbook has a valuable and extensive article by Dr. Samuel L. Emsweller of the United States Department of Agriculture on propagation of lilies; descriptions of the rhizomatous lilies of the Pacific Coast with excellent line drawings of the bulbs or rhizomes (a duplication in part of the British yearbook article); an account of *L. speciosum* and its varieties by Dr. George H. M. Lawrence; and descriptions and culture of the Indian or Himalayan lilies by Edgar L. Kline. Other propagation articles cover propagation by scales in polyethylene, sawdust, and beds in cold frames or unheated buildings. There are several notes on culture of particular lilies here and abroad and a report on the Lily Show of the Garden Club of Virginia.

The American yearbook has less material of an ephemeral character than the British yearbook. The lily enthusiast, however, would willingly forego neither of these volumes and certainly should be a member of the North American Lily Society. Its members receive, in addition to the Yearbook, a quarterly bulletin to which it relegates much of its "housekeeping" information on shows, meetings, seed exchange, and the like.

FREDERIC P. LEE

Other Books Added to the Library

We Made A Garden.

Margery Fish. W. H. & L. Collingridge, Ltd., London. 1956. 120 pages. Illustrated. About $5.00. (Library).

The Complete Book of Lawns.

F. F. Rockwell & Esther C. Grayson. The American Garden Guild and Doubleday & Company, New York. 1956. 190 pages. Illustrated. $3.95. (Library).

Crop Protection.

G. J. Rose. Philosophical Library, New York. 1955. 223 pages. Illustrated. $10.00. (Library).

Classics of Biology.

August Pi Suñer. (English translation by Charles M. Stern). Philosophical Library, New York. 1955. 337 pages. Illustrated. $7.50. (Library).

Light, Vegetation and Chlorophyll.

J. Terrien, G. Truffaut, & J. Carles. (Translated by Madge E. Thompson). Philosophical Library, New York. 1957. 228 pages. Illustrated. $6.00. (Library).

Plant Physiology. (Fourth Edition)

Meirion Thomas, S. L. Ranson, & J. A. Richardson. Philosophical Library, New York. 1956. 692 pages. Illustrated. $12.00 (Library).

Soil Fertility and Fertilizers.

Samuel L. Tisdale & Werner L. Nelson. The Macmillan Company, New York. 1956. 430 pages. Illustrated. $7.75. (Library).

Soil-Plant Relationships.

C. A. Black. John Wiley & Sons, Inc., New York. 1957. 332 pages. Illustrated. $7.00. (Library).

The Genus Phlox.

Edgar T. Wherry. Associates of the Morris Arboretum, Philadelphia, Pennsylvania. 1955. 174 pages. Illustrated. $4.00. (Library).

Managing Southern Soils.

H. B. Vanderford. John Wiley & Sons, Inc., New York. 1957. 378 pages. Illustrated. $4.75. (Library).

Soil. The Yearbook of Agriculture, 1957.

Alfred Stefferud, Editor. United States Department of Agriculture (Superintendent of Documents, Washington 25, D. C.). 1957. 784 pages. Illustrated. $2.25. (Library). Can also be obtained free from your Congressman or Senator.

The Ford 1958 Almanac and Gardener's Guide.

John Strohm, Editor. Simon and Schuster, New York. 1957. 176 pages. Illustrated. $1.00. (Library).

The Gardeners' Pocketbook

Cochliostema jacobianum

Not more than a handful of plant specialists in the United States have ever seen a plant of *Cochliostema jacobianum*. Fewer still have seen it is flower. Nevertheless, this rare and intriguing plant is beginning to arouse interest in ornamental horticultural circles.

C. jacobianum is a handsome plant reaching three feet and more in height with numerous spreading leaves and large axillary peduncles bearing violet-blue flowers. It is a very large epiphytic member of the COMMELINACEAE with a growth habit completely atypical of the family.

About 1948, while I was living in Turrialba, Costa Rica, I received two small plants of what I took to be a bromeliad from one of the numerous plant collectors who visited our place. I do not know now who the donor was. These two plants were potted and continued to grow in my plant collection with no care until in 1950 when they started to flower—from the leaf axils! This flowering habit, and the flower, at once indicated that my "bromeliads" were members of the COMMELINACEAE. Thereafter, they began to receive better attention and soon were identified as *Cochliostema jacobianum* by Charles H. Lankester.

In 1952 one plant was given to L. Maurice Mason, a British plant collector and farmer, who carried it to Kew. Mr. Mason advised me later that it flowered; the first of this plant to be flowered there. The other plant remained in my possession until 1954 and it is still prospering in cultivation in Costa Rica.

I never saw any insects visiting the flowers. No seeds were ever produced until flowers were hand pollinated. Some of the resulting seed was germinated; the plants distributed locally. Some seeds were sent to several locations in the United States, including the Bailey Hortorium, and Fantastic Gardens, South Miami, Florida, and a number of plants were raised and flowered from these seeds. All the plants I know of in the U. S. are seedlings of the mother plant illustrated here.

This plant is quite adaptable and should become a popular patio, or veranda, plant in South Florida or areas of similar climate. Though an epiphyte in nature it will thrive in good rich potting soil or in a mixture made of soil, rocks, and broken tree bark. The plant will take full sun in the tropics if properly hardened to it. Under such conditions an attractive reddish brown pigment is developed along the leaf margins. It does very well under light shade, also.

I have kept a plant of this species as a house plant overwinter in Maryland but it does not reach its best development in the reduced light and low humidity of a heated home in winter. Plants are known to have flowered in greenhouses at Glenn Dale, Maryland, at Longwood Gardens, Pennsylvania, and at the Bailey Hortorium, New York.

The long history as satisfactory house plants of some of the other members of the COMMELINACEAE suggests the possibility of adapting this superb member through hybridization to house conditions. Its failure to set seeds except when pollinated also favors this possibility. Crosses have been attempted between it and *Setrecesia purpurata* and with some of the *Tradescantias* but without success. I was never fortunate in seeing this species in the wild in Costa Rica but it is known to be abundant there as an epiphyte in the forests near the Atlantic coast areas between Puerto Limon and the Panamanian border. Doubtless some collectors passing through these areas when plants were not in bloom have thought of them as bromeliads.

C. jacobianum was originally described from and is a native of the Andes of Ecuador. Standley's *Flora of Costa Rica* makes no mention of this species in Costa Rica aside from the following on page 163: "Werckle has published the following statement: 'In the mountains south of Turruvares a gigantic *Cochliostema* is abundant, and covers the thick

Cochliostema jacobianum

A close-up view of the inflorescences of a 30 inch plant, showing buds, fully opened flowers, and closed flowers which are spent. Note the fringe of hairs on the obovate petals.

trunks of the trees. It is a very beautiful epiphyte.' He reports it also from the Cordillera de Dota, as a plant 2 meters in height. The genus is known only from Ecuador, but probably it is represented also in Costa Rica."

The following quotation from a letter received August 2, 1957, from C. H. Lankester, Cartago, Costa Rica, is included below to record some of the early history of this plant in that country and to illustrate further its adaptability in cultivation.

"My first acquaintance with this lovely and intriguing plant was in 1905 when I saw it in great abundance on the hill above the house at Banana River where the manager of the group of farms of the United Fruit Company lived under the superintendence of Mr. Morrison. The hilltop had been cleared not very long before and wherever they fell from the trees they seemed to take root and grow. In those days my eyes were busy with birds, beasts, butterflies and other insects and though it was always enjoyable to see plants of exceptional beauty they were no object of pursuit and care. In that region, also, I saw a marvelous *Epidendrum* allied to *floribundum;* the example form had a great many stems and was a mass of myriad small blooms of brighter coloring than its ally.

"I did not see *Cochliostema* again for many years, perhaps thirty, and then John Sasa took me to his hydroelectric plant at Aguas Zarcas (Limon). We drove through the forest on a caterpillar tractor and reached a region where they must have been in millions. More intensely abundant possibly than any other epiphyte of the country, they filled the whole prospect of the forest, no tree being without its quota. . . . . .

"Contrary to all expectation they thrived at San Isidro de Coronado as did those I planted at Las Concavas (5,000 feet above sea level). The two plants there on a shady rock constantly produced offsets, many of which were given to friends here and in Panama.

"Last year at the Petrolera drilling sites many were seen and some collected. Tom Newbill took a lot to Fort Lauderdale, Florida.

"Werckle ascribed it to the hill called Turrubares west of Orotina, a very different locality. It never was my luck to go there."

The description below is from *Botanical Magazine* 94: t. 5705, 1868, by J. D. Hooker. This reference contains a beautiful colored illustration of this plant.

COCHLIOSTEMA JACOBIANUM

General Jacobi's Cochliostema

Nat. Ord. Commelyneae.—Monadelphia Triandria.

Gen. Char. Sepala 3, oblonga, obtusa, concava. *Petala* 3, subaequalia, sepalis latiora, fimbriata. *Staminodia* 3, villosa; 2 erecta, linearia; tertia abbreviata, plumosa. *Columna staminea* cucullata, marginibus involutis, antheras 3 spiraliter tortas includens; *antherae* 2 erectae parallelae, tertia inferior, transversa. *Ovarium* 3-loculare, obliquum; stylus ascendens, filiformis, stigmate simpliciusculo; ovula numerosa, 2-seriata. *Fructus* ignotus. — Hebrae *acaules, foliosae, Americae tropicae incolae.* Folia *basi vaginantia, oblongolanceolata.* Flores *in paniculas axillares dispositi, fugaces.*— Cochliostema, *Lemaire in Illust. Hortic. t.* 217.

Cochliostema jacobianum; glaberrimum foliis 3-4-pedalibus oblongolanceolatis acuminatis basi angustatis utrinque viridious marginibus brunneis, paniculis amplis axillaribus foliis brevioribus ramis oppositis et verticillatis, bracteis amplis albis et pallide purpureis, sepalis anguste oblongis obtusis roseopurpureis, petalis obovatis fimbriato-ciliatis caeruleis.

Cochliostema jacobianum. K. Koch et Linden, Wochenschrift, 1867, p. 322. *André, Revue Horticole,* 1868, p. 71. *Masters in Gard. Chron.* 1868, p. 264 (*cum ic. xyloq.,* et 323, *anal.*).

This superb plant certainly ranks among the grandest stemless Monocotyledons known, combining the foliage of a gigantic *Anthurium* with masses of inflorescence which, for size, delicacy, and beauty of tints, cannot well be surpassed. Nor in a botanical point of view is this plant less noteworthy, the structure and arrangement of the anthers of the genus *Cochliostema* being most curious, and for an excellent account of which I would refer to Dr. Masters' papers, above quoted. It is there assumed that the apparent number of stamens and staminodes is six, but the normal number nine. Of these nine the three outer

are represented by two blue staminodes, and a third staminode reduced to a tuft of yellow hairs; whilst the other six consist of two broken series of three each, the intermediate series being represented by the two upright spiral anthers within the hood and a suppressed stamen (of which there is no visible evidence), and the innermost series by the horizontal spiral anther and two suppressed stamens (of which there is no visible evidence). This explanation is ingenious, and is probably substantially correct.

C. jacobianum is a native of Ecuador, from which it was introduced by Mr. Linden, who exhibited it in full foliage at the Paris Exhibition of 1867, and sent to England the flower here figured. It has a faint sweet odour, not to be compared with that of the *C. odoratissimum.*

Descr. A stemless epiphyte. *Leaves* numerous, spreading, three to four feet long, sheathing at the broad base, then oblonglanceolate, four to six inches broad, deep green, edged with brown. *Peduncles* axillary, stout, suberect, as thick as the finger, white tinged with pink or purple, a foot long, bearing an immense panicle of flowers. *Bracts* opposite and whorled, oblong, concave, three to four inches long. *Branches* of panicle stout, four to six inches long, bearing at their apices short scorpioid, deflexed cymes; pedicels three-quarters of an inch long. *Flowers* two inches to two inches and a half in diameter. *Sepals* oblong, obtuse, concave, purple-pink. *Petals* obovate, longer than the sepals, of a fine violet-blue, fringed with soft purple hairs. *Staminodes* three, two lateral linear, purple, fringed; third a tuft of yellow hairs at the back of the staminal column. *Staminal column* (or hood) pedicelled, petaloid, blade concave, with involute margins, ovoid, produced into two long tubular points, being cleft through the middle to the base, enclosing three anthers. *Anthers* spirally twisted; one horizontal at the base of the hood, two vertical, one in each involute half of the hood. *Ovary* ovoid, three-celled; style filiform, curved; stigma minutely three-lobed.—*J.D.H.*

ERNEST P. IMLE,
U.S. Department of Agriculture,
Plant Industry Station,
Beltsville, Maryland.

Crape Jasmine as an Herbaceous Plant

In the gardens in the "Deep South" along the Coast there are not many herbaceous perennials, and many that appear, seem less happy than farther north.

Although the subject of this note, usually known in these parts as *Tabernaemontana coronaria* instead of *Ervatamia coronaria,* is a shrub in its home countries and in places where there is no frost, in this garden it becomes an herbaceous perennial, dying to the ground each winter, and then coming again, with more and more stems, that branch well and keep a crown full of flowers until cold weather. We have the common double flowered form, which is finely fragrant, its blossoms giving off their perfume best in the cool of the evening.

Since it makes so fine a show as a perennial, it is worth remembering in that role where it cannot be used as a shrub.

B.Y.M.,
Pass Christian, Mississippi.

Azaleas Thrive on "Poor" Soil

The Municipal Azalea Garden at Norfolk, Virginia, is outstanding for its large collection of azaleas, also rhododendrons and oleanders, covering many acres adjoining the airport. The older plants are tall (ten feet is not uncommon), dense, and well grown. They show every evidence of satisfaction with their soil and site.

The Virginia Truck Experiment Station recently made soil analyses of the soil of three planting sites: one planted in 1957; one, in 1955; and one, in 1945. The analyses showed a pH value of 5.3, 4.75, and 4.3, respectively. Available calcium was "low"; available magnesium, "low" or "very low"; available phosphorus and potash, "very low"; nitrates, "very low" or "low minus." Salt concentration was 10, 12 and 17 parts per million, respectively.

Azaleas apparently thrive, at least at Norfolk, on soil that most of us would regard as exceedingly "poor."

Frederic Heutte, Superintendent of the Bureau of Parks and Forestry at Norfolk, comments:

"The interesting fact about this test was that Dr. Stewart, who is in charge of the soil testing laboratory, telephoned me before sending the test in, and said that we were really in foul shape, until I told him what we wanted this test for, and that the plants were in top condition notwithstanding the long drought. He then said that no doubt the natural accumulation of humus did not reveal the true fertility that subsists these plants.

"Not any of these plantings has ever received fertilizer of any description, organic or chemical. When we set out a new planting, the first thing we do is to salvage the existing mulch and put it to one side. We then hand grub the area to eradicate all bramble and thin out the timber if necessary.

"You probably have also noted that we always select a wooded area where pine growth is predominant, because hardwood saps the moisture so quickly. Then we dig holes about the size of a bushel basket and throw in three shovels of good top soil and two shovels of peatmoss which we work into the subsoil. The plants are spaced about six feet apart in the case of Indicas and about five feet in case of Kurumes. The plants are then thoroughly watered and mulched. In most cases we have to import more mulch (pine needles and hardwood leaves). Three year old plants from cuttings are mostly used.

"The Hidden Factor in our azalea plantings that no test can reveal, is the steady accumulation of self-made humus as the result of azalea foliage droppings, helped by the addition of foilage falling from surrounding trees. In the case of the twelve year old planting, that humus is nearly six inches thick. I have always noted a sort of mycelia or hair-like growth in this humus covering. In this, I believe, lies the secret of our tremendous growth."

FREDERIC P. LEE,
Bethesda, Maryland.

A New Color Chart for Horticulture

The *Nickerson Color Fan,* published by the Munsell Color Company, may likely become the standard color chart for all who grow and work with plants and plant products.

It contains 262 standard color samples, and is arranged in the form of a fan. It has all the ingredients necessary to make it an indispensable reference for all horticultural purposes because:

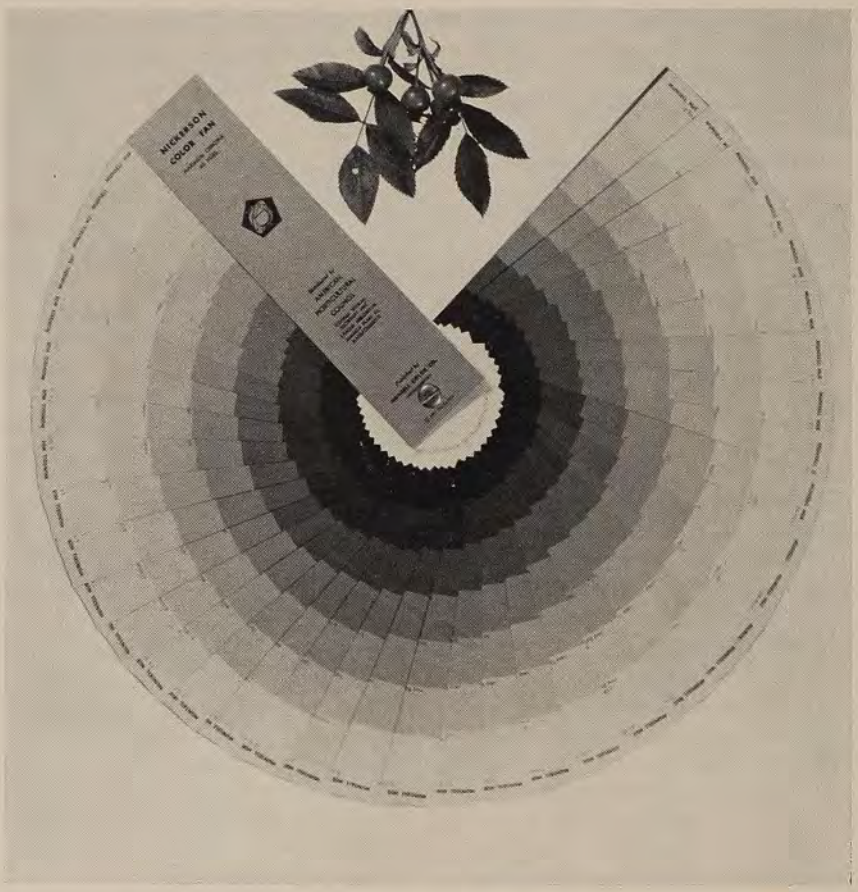
1. *Size:* It folds into a booklet 7½ inches long by 1¾ inches wide, which fits easily into pocket or handbag and can be a readily-accessible tool in the field, home, or laboratory.

2. *Price:* The price (postpaid) is $5.00 to individuals throughout the United States. It is available from the office of the American Horticultural Council, Arnold Arboretum, Jamaica Plain 30, Massachusetts.

3. *Color:* The colors have been selected especially for horticultural purposes as well as for the smooth transition they present from one color to another. This makes it possible to interpret and specifically designate colors that do not appear in the chart but are close to colors that are shown.

4. *Terminology:* The common color names used (which are printed on every color of the chart) have been accepted as standard and approved by the Inter-Society Color Council and the National Bureau of Standards. The names follow a simple standardized method which differentiates 262 blocks in the color solid —about the limit that one can remember.

5. *Numerical system:* The Munsell System of color organization, a recognized standard in America, has been used. The numerical notations are established in such a way that, with a little practice, one can estimate the numerical value of colors not appearing in the chart but close to those that are shown. This factor is probably one of the most important of all, since in many a former chart estimates of colors that did not appear were almost impossible to describe in simple terms.



The Nickerson Color Fan opened to illustrate its contents

There has been too little uniformity in recent years among American horticulturists, in the color charts which have been used. Several charts have been tried and some officially adopted but, unfortunately, there has been no unanimity of opinion concerning the merits of any particular one. Many years ago, the Ridgway Chart was given rather wide publicity and use; more recently, the Royal Horticultural Society Chart was recommended; but the present unavailability of both prevents them from being widely used.

Other charts are in general use, but either they lack a sufficient number of standardized colors or they are not widely accepted by more than one or two organizations. Several national horticultural organizations have "Color Chart Committees" now actively studying the problem as far as their individual organizations are concerned, showing that this is an important problem.

The American Horticultural Council has been extremely interested in the color-chart problem since 1949, when it was able to interest Miss Dorothy Nickerson in the project of producing a standard chart at a popular price. Being color technologist in the United States Department of Agriculture, as well as trustee of the Munsell Color Foundation, Miss Nickerson was well equipped to study the problem. She was able to interest the Foundation in the problem to such an extent that eventually this fan of standard colors was published by the Munsell Color Company in the summer of 1957.

Longwood Foundation made a grant to the American Horticultural Council

early in 1957, which made it possible to make these fans available to horticulturists throughout the country.

The Munsell system of color organization is one that is fast becoming a standard in many phases of industry and science. Prior to 1957, many charts were tried by various organizations, but none was given the wide acceptance that we believe will be merited by this *Nickerson Color Fan:* they were either too expensive for the average individual or they did not have a sufficient number of standardized colors.

Conversion tables have been made for the Ridgway chart and the Royal Horticultural Society chart so that all record notes made from them can be readily transferred to Munsell color notations. With each *Nickerson Color Fan* there is supplied a list of all Royal Horticultural Society Chart names with their corresponding Munsell notations.

Once the colors for the color fan were selected, it was no easy matter to select the proper non-fading dyes to print them, and to find a printing process by means of which they could be printed while at the same time maintaining a high degree of standardization. Then, too, came the final problem of producing the chart for a reasonable price. Printing problems were solved by use of the Tobey patented process, by which a series of juxtaposed colors can be coated at one time. All in all, it has taken much time and study on the part of several people to make this color fan available.

Finally, one more important point should be made. Those who have used color charts know that there are frequently times when the color of a flower or a fruit can not be matched in any chart. The Munsell system of color notations is extremely important in this respect since, with a little practice and knowledge of this system, (fully explained in a booklet which comes with the chart), one can estimate colors according to a numerical scale, even though they do not appear in the chart itself. This system of estimating hues (*i.e.*, red, green, yellow, etc.); color value (lightness of color); and chroma (or saturation of color), extends the color limitations of this 262-color chart over an extremely wide area.

Since the chart is fundamentally sound, is based on a system of color organization which is becoming accepted as standard in industry and science as well, and since the simple color names have been given wide acceptance, it is hoped that the horticultural organizations will quickly accept this *Nickerson Color Fan* as a standard. The many obvious advantages which will accrue from the use of a uniform chart, uniform terminology, and uniform color notations, can well be a great step for advancement in the use and description of color in American horticulture. — DONALD WYMAN, *Secretary, American Horticultural Council, Arnold Arboretum, Jamaica Plain* 30, *Massachusetts.*

Spilanthes oleracea

Spilanthes oleracea is a member of a genus of tropical and subtropical herbs belonging to the Composite Family. Although the *Spilanthes* genus has scarcely been recorded in horticultural literature, some of its species are interesting ornamental plants. *S. oleracea* is also a culinary herb and more recently has shown evidence of insecticidal properties. In Bailey's *Standard Cyclopedia of Horticulture,* there is a brief article on *Spilanthes* prepared by A. H. Moore who monographed the genus in 1906. In the discussion, the culinary merits of *S. oleracea* are stressed and two cultivars are listed — 'Para Cress' and 'Brazil Cress.' None of the current books on herbs, however, mention this plant and its use is undoubtedly limited. It was recently introduced under P. I. 236265 by the U.S. Plant Introduction Garden, Glenn Dale, Maryland, and there are no commercial sources listed at present.

S. oleracea is a compact, prostrate herbaceous plant. The leaves are opposite, triangular in outline, and crisp in texture. They have a pungent taste when chewed and also create an anesthetizing effect on the tongue. The flow-

Spilanthes oleracea

ers are yellow and borne in button-like composite heads. Ray florets are completely lacking, but there is such a profusion of bloom that the plants are very showy. The flower stalks develop in the leaf axils and a ramifying growth pattern results. This accounts for the neat, compact habit that suggests *S. oleracea* will be effective as a border plant along walks and for edging flower beds. It thrives in full sun, transplants easily, and tolerates considerable drought. *S. oleracea* is an annual. It is sown indoors in the spring and in the cultural manner used for the common summer bedding plants, like calendulas, marigolds, and zinnias; or outside after the danger of frost.

According to Moore's article, there is an interesting opportunity for hybridizing since some other species in this genus have attractive flower heads with white to pale pink ray florets and vary considerably in size, according to species.

Interested members, who would like to discover this plant for themselves, may secure small samples of seeds by written requests to the American Horticultural Society, 1600 Bladensburg Road, Northeast, Washington 2, D.C.

John L. Creech,
U.S. Plant Introduction Garden, Glenn Dale, Maryland.

Iris vicaria

This member of the *Iris* genus is typical in every way of the species of the Juno Iris section. The bulb, with thick, thonglike roots, is about one and one-half inches in diameter. It is planted in autumn in sandy, well drained loam, in full sun or semi-shade. The points of the leaves are visible at the surface of the ground late in the winter. The leaves grow rapidly during the early days of April, forming a small replica of a corn plant. Each leaf axil bears one or two white and pale blue flowers about three and one-half inches across the falls. As may be seen from the illustration, the standards are small and swirl around the base of the flowers. Seeds are freely produced and if planted when ripe, will bloom in about two or three years.

I. vicaria, as is true of other members of the Juno Iris section, comes from central Asia in the region surrounding what formerly was called Turkestan. A choice member of this section, not offered in this country, is *I. rosenbachiana,* with reddish purple, white, and yellow flowers, blooming just above the ground in the late winter or early spring. *I. bucharica, I. orchioides, I. sindjarensis,* and the hybrids 'Sindpers' (*I. sindjarensis* × *persica*) and 'Warlsind' (*I. warleyensis* × *sindjarensis*) are all offered at times in catalogs, but probably few of these will persist north of Washington, D.C.

FREDERICK W. COE, *Bethesda, Maryland*

A close-up branch of the Darlington Oak

The Darlington Oak

Catastrophes of nature, at the time, seem to bode no good, but Hurricane Hazel did bring the Darlington Oak to my attention. This is a potentially useful tree in the upper South. After the hurricane's visit through the U. S. National Arboretum in October 1954, the azalea hillside was a shambles of uprooted and lacerated trees. When the debris was cleared away, it was immediately obvious that many new trees would be needed to provide the necessary shade. A large number of replacement trees were selected from the nursery rows, among which were three Darlington Oaks of about 8-inch caliper and 15 feet in height. The ease and success with which these oaks were transplanted (they had never been root-pruned in the 12 years that they had been growing in the nursery) and their evergreenness in the new site prompted me to learn more about this oak.

The first note found in the literature was in *U.S.D.A. Farmers' Bulletin 1208,*

"Trees for Town and City Streets," published in 1922. This bulletin stated that the Darlington Oak is a form of the Laurel Oak (*Quercus laurifolia*) with a large round head and leaves a trifle narrower than those of the species and that it is not quite as evergreen. It stated further that the Darlington Oak is found wild around Darlington, South Carolina, and that apparently a good form of the Laurel Oak was introduced into that area in the early part of the 19th century.

From the foregoing account one might assume that the Darlington Oak was a selection of *Quercus laurifolia*, and that it was vegetatively propagated. If that assumption were right, it would be interesting to find the original tree or known vegetative propagules of it. That one probably would never see the original Darlington Oak, however, was made clear when Frederic Heutte, Superintendent of Parks and Forestry at Norfolk, Virginia, sent the Arboretum a bushel of Darlington Oak seed two years ago. These were gathered from the large number of trees planted in Norfolk with the explanation that they were always propagated from seed. The conclusion that any Laurel Oak grown from seed received from there would be called Darlington Oak is borne out by the interesting paper, "The Laurel Oak or Darlington Oak, (*Quercus laurifolia* Michx.)" written by W. C. Coker in the *Journal of the Elisha Mitchell Scientific Society*, Vol. XXXII, No. 1, April 1916.

Coker stated in 1916 that the nursery firm of P. J. Berckmans Company, Augusta, Georgia, listed a *Quercus darlington* and said of it, "This is a very handsome form of Evergreen or Live Oak. The tree is of more upright growth than the Live Oak. A magnificient species and very popular wherever known." Coker went on to say that the natural range for the Laurel Oak is not within thirty miles of Darlington and that it was introduced as an ornamental. He stated that it was brought in from the low country, which was presumably to the east and near the coast in what would be about 1816. The tree thrived in its new location, and because it produced an abundance of acorns annually and was easy to transplant it soon spread throughout the surrounding area. It was largely through the efforts of W. O. Woods of Darlington, a sincere lover of trees, that its ornamental virtues became known and that Darlington became the distribution center for this fine oak. This is how the Laurel Oak from this area became known as the Darlington Oak.

Having dispelled the idea that there is any significant difference between the Laurel Oak growing at Darlington and those found elsewhere in their natural range, what can be said for the Laurel Oak as a possible shade tree for use further north? In addition to the three specimens at the U.S. National Arboretum, two other trees are known in Washington, D. C. George Harding, Chief Horticulturist of the National Capital Parks, reports of one located between the Washington Monument and the National Capital Parks maintenance area which was planted from a four inch pot by Mrs. Grover Cleveland during the presidency of her husband. This tree is now approximately 70 years old and has a d.b.h. of about 3 feet and a height of 40 feet. The other specimen is located on the grounds of the Swedish Embassy.

There is no question that the Laurel Oak is hardy in Washington, D. C., and when properly located, it is for all practical considerations evergreen. The nursery specimens located in an exposed area gradually lost leaves through the winter and by spring had retained only about a third of their leaves, mostly toward the centers of the trees. When these trees were moved to the protective slopes of the azalea area, they retained all their foliage until shortly before new leaves appeared in the spring — despite temperatures as low as +1° F. The tree at the Swedish Embassy, which is shaded by the branches of towering nearby deciduous trees, similarly retains its foliage.

The Laurel Oak from Darlington is a splendid tree that deserves wider use wherever it will thrive.—Francis de Vos, *U.S. National Arboretum, Washington, D. C.*

Carex morrowi

A new and differently variegated form of *Carex morrowi* was found in Japan by John L. Creech, during his exploration there in 1955. It has been recently introduced in the United States, (P.I. 227627), but probably will not be available from nurserymen until 1959.

C. morrowi Boott is a handsome herbaceous perennial with variegated, grass-like foliage, winter hardy and evergreen to central New York. The plant grows to about eight inches tall with individual leaves measuring 15-18 inches long, growing in a gracefully arching manner. Several variegated forms are known but none is available commercially in the U.S. The variegations of the new introduction are linear, the center portion is creamy white edged with green, and differ from the form described by Bailey in the *Standard Cyclopedia of Horticulture,* which has the green central portion of the leaf blades edged with white.

Both forms are now grown at the Plant Introduction Garden; the new introduction is a strikingly handsome plant in comparison with the drabness of the previously-known form. Inquiry at the Royal Botanic Gardens, Kew, England, relative to the variegated forms disclosed that the form described by Bailey was known there, but the new variegation apparently was unknown.

This handsome plant should be welcome to American horticulture; as an edging plant in the flower border, a decorative pot plant, a specimen plant in large rock garden, or in the window box, especially during the winter.

The majority of the species of Carex, growing naturally, are found in moist, cool temperate regions, in a humus soil somewhat acidic. While this is the ideal, the requirements of *C. morrowi* permit considerable cultural latitude. The plant may be propagated by dividing the clump.

EUGENE GRIFFITH,
U. S. Plant Introduction Garden, Glenn Dale, Maryland.

Schizanthus . . . .

If one should come around a sharp bend of a dignified boxwood-hedge, and the eyes should focus on hundreds of the most sparkling, colorful miniature-orchid blossoms apparently hovering in the sunlight, he would have a most fortuitous introduction to the Schizanthus, the Butterfly-Flower, also the Poor-man's Orchid.

Unless the observer were a taxonomist with a more factual approach to a specimen, he would hesitate to associate this fragile annual from Chile with such utilitarian plants as the potato, the tomato and the tobacco, though they all do belong to the same family, the SOLANACEAE, the Nightshades. There are several species, but only one, *Schizanthus pinnatus,* is really useful for a more northern climate, and this species is the source of several hybrids and races, as *grandiflorum* and its different color forms. *S. pinnatus* is also responsible for the deeply-cut (schizo-cut) lilac and violet lips and the purple markings on a yellow background. × *S. wisetonensis,* a cross between *pinnatus and grahamii,* contributes the more deicate, pale colors, white, pink, bluish with carmine and maroon blush, and more compact, rounded flowers.

The pinnatisect leaves, the delicate structure of the calyx and the entire inflorescence, together with the luminous yellow-green of the entire plant, create the impression that the numerous blossoms are floating above it. Although the species *S. pinnatus* was introduced as early as 1822, and some of the hybrids have been favorites of several generations of garden and greenhouse owners, this lovely plant was pushed into the background. Perhaps it was not so much the somewhat difficult botanical name as its popular name 'Poor-man's Orchid,' because being poor is not fashionable, but real orchids flown from Hawaii are very much so. Perhaps there are so many new plants which stand the hectic ways of present-day living better than the Schizanthus with its Victorian delicacy.

But even now, every community has some time-defying characters, and these characters usually have a garden or greenhouse (green with algae and musty with age), and they are the ones that reserve a corner for the Schizanthus. When the summer sun draws out the pungent odor of the boxwood, let's hope there is a sunny spot with the brilliant blossoms of the Butterfly-Flower.

ERIK HANS KRAUSE
Rochester, New York

Ilex coriacea - Minority Comment

In the immediate neighborhood, the tall gallberry is not common though *Ilex glabra* is almost in the "weed" class. It well may be that in areas where it is dominant, it would show other characters than it bears here. Certainly, no one would confuse it with *I. glabra,* and the small colony on the place is made up of widely spaced plants that show a definite growth character. The main trunk and branches are all pale gray in bark colors — a color light enough to show as a pattern through the thin branching. The branches also have a slightly ascending habit that seems to be typical. Suckering is widely spreading.

The male plant is rather conspicuous when in flower, as the bloom is abundant and white enough to almost wreathe the twigs.

The ripening of the fruits here is most irregular. Apparently, the ripened berries are palatable, as they disappear almost as soon as they are definitely black in color. They do not fall off. To get a specimen that would show any quantity of black berries, it was necessary to cut the twigs and bring them into the house. All ripened, and the foliage kept fresh for two weeks in water. No fruits remained on the plant by September 15.

As compared to *I. glabra,* it never makes what would be called a comparable thicket. The leaves are definitely evergreen, but rather a dull matt green —one is not tempted to gather it.

Unless its flowers produce as excellent a honey as do the flowers of the ordinary gallberry, or unless it were required for a botanical collection, this gardener would never plant it.

B.Y.M.,
Pass Christian, Mississippi

A Rare Conifer

Athrotaxis

Having just returned from a four-month visit to European botanic gardens, I find it rather difficult to single out impressions from the mass of interesting observations. Impressive were the solid foundations that exist for such gardens, their advanced state of evolution, the public recognition that they constitute an essential part of communal culture, and the excellent state, and great size, of the plant collections grown. Every botanic garden prides itself on having some rare items not possessed by any other, not because of any selfish monopoly, but rather because of greater enterprise in the search for worth-while novelties. Some plants, of course, do travel very rapidly, and my own particular introduction from Mexico, *Sedum morganianum,* was met with nearly everywhere, usually in fine condition, nearly always as a hanging basket plant. This was particularly fine at the John-Innes Horticultural Institute, at the new Brussels Botanic Garden, and also at the New York Botanic Garden.

Even more rapid has been the spread, in cultivation, of the Dawn Redwood, *Metasequoia glyptostroboides.* It seems just yesterday that the first seeds of this were distributed by the late E. D. Merrill of the Arnold Arboretum; and, it is hard to believe that from this introduction have come all the specimens to be found throughout Europe.

Interest in this novelty has been considerable for the subject surely possesses news value. Here is a real "living fossil" from the wilds of China, thought to have been extinct for millions of years, but now turning up still alive, even if not kicking. In California interest was even greater, for there are native two of the world's greatest trees, the Redwood proper, *Sequoia sempervirens,* growing to 346 feet and the Big Tree, *Sequoiadendron gigantea,* probably the world's largest living plant. Californians may object to calling this old novelty Dawn Redwood, for to them there is nothing entitled to compare with their own magnificent trees, and unfortunately the the Chinese immigrant is *not* an evergreen. The Dawn Redwood, however, is closely related, both in structure of cones and in foliage, to the California redwoods and the known fossils of it were long classed as *Sequoia* prior to discovery of the living plants. This group of related plants has been placed within the CONIFERAE in a family of their own, termed the TAXODIACEAE, by R. Pilger. He included with them *Cunninghamia, Taiwania, Sciadopitys, Cryptomeria,* and the redwood's closest relatives, *Taxodium* and *Glyptostrobus.*

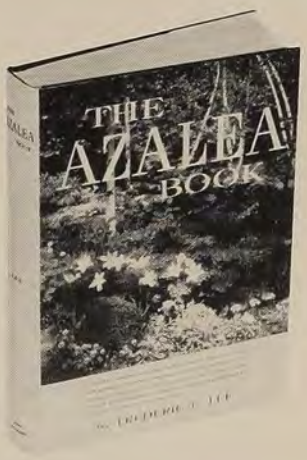
On our recent travels some other members of this family were met. They belonged to the genus *Athrotaxis.* Attempts in the recent past to introduce this into the United States were not very successful, perhaps because, being Australian, the trees were not considered to require much moisture. Actually, the genus is confined to the high mountains of Western Tasmania, occurring at elevations up to 4,000 feet in a region of exceptionally heavy rainfall. Certainly these trees should be hardy in the United States, for they thrive in Western Scotland, Cornwall in England, and Ireland, where I have seen numerous healthy, if still small, specimens. Of the three species of the genus, *A. cupressoides* may be recognized by its scalelike leaves, always closely appressed to the stems and not over one-eighth inch long. Reported to grow to 40 feet, *A. cupressoides* produces cones one-half inch in diameter greatly resembling those of *Sequoia.* Tallest species is *A. selaginoides,* the King William Pine, which becomes 100 feet and over three feet in diameter. It has somewhat spreading leaves to one-third inch long, with cones to three-fourths inch in length. The other species is *A. laxifolia,* with leaves like those of the preceding, but not over one-fifth inch long, also slightly spreading.

Plants previously imported from England seem to have been grown from cuttings, and, like some other conifers, failed to make any new leader. None are surviving today, and re-importations would appear in order, preferably of seeds from Tasmania. Successful cultivation would seem to call for rich, but well drained, soil, always abundantly moist, shelter from cutting winds, and a winter climate no more severe than that of the portions of Europe where these *Athrotaxis* species have succeeded.

ERIC WALTHER,
Research Associate,
California Academy of Sciences,
San Francisco, California

THE AZALEA BOOK

by FREDERIC P. LEE



The publisher, D. Van Nostrand Company, Inc., Princeton, New Jersey, New York City, Toronto, London, makes the following announcement:

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The author, a member of the American Horticultural Society, is a well known amateur horticulturist and specialist in azaleas and plants for the shady garden,—a partner of the law firm of Lee, Toomey, and Kent, Washington, D. C. He has had the assistance of other Society members: B. Y. Morrison, breeder of the Glenn Dale hybrids and former head of the Plant Introduction Section, U.S.D.A., and former director of the United States National Arboretum; Henry T. Skinner, present director of the Arboretum; Francis de Vos, horticulturist at the Arboretum; John L. Creech, head of the U. S. Plant Introduction Garden, Glenn Dale, Md.; Freeman A. Weiss, plant pathologist and director of the American Type Culture Collection; Frederick W. Coe, physician and amateur plant spcialist; and others. The members have contributed their services; all royalties go to the American Horticultural Society.

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