

## Membership Invited to Submit Board of Directors Nominations

It is not too early to begin thinking about nominations for the Board of Directors election scheduled for the Annual Meeting in Boston, September 24-28, 1981. President Daniels has appointed the Nominating Committee for 1981. It consists of Mrs. John M. Maury, Chairman, Mrs. Benjamin P. Bole, Jr., and Dr. John A. Wott. Members are encouraged to submit names (send in care of the Society) to the Nominating Committee. Suggestions should be accompanied by resumés detailing the candidate's horticultural and/or professional interests.

## Announcing The 1981 Directory of American Horticulture

AHS is now gathering information for an expanded edition of the *Directory of American Horticulture*. Intended as a reference work for both amateur and professional horticulturists, the Directory will be completely updated and expanded.

The Society is pleased to announce that this edition will be published by Charles Scribner's Sons this year. This assures us that the Directory will be widely circulated in the U.S. and Canada. As in past editions, the Directory will include listings and descriptions of horticultural organizations, societies, associations, botanical gardens and arboreta, educational institutions and government agencies. We also plan to include such topics as a list of horticulturally notable cemeteries, quarantine rules and regulations for travelers, plant registration authorities, major flower shows, pesticide and herbicide use and equipment sources.

AHS hopes to make this book a thorough "answer book" for horticulturists. To enable us to make this Directory as complete as possible, we need your help. If you know names and addresses of horticultural organizations that you think should be in-



cluded, please submit them as soon as possible to Jane S. Keough, Project Coordinator, American Horticultural Society, Mt. Vernon, VA 22121. We are especially interested in receiving information about those institutions or organizations *not* included in past editions.

## 1981 Seed Offering

By now you should have received your 1981 seed offering in the mail. As we have emphasized in the past, please return your order promptly to assure that you get your first choices. We cannot fulfill orders received after July 1, 1981.

If you are a new member who joined the Society after January 1, 1981, our seed offering would not have been mailed to you, however, **you can participate** by letting us know of your interest. Simply address a post card to Seeds 1981, on which you have placed your name, address, membership number and a note telling us of your wish to be part of this year's program, and we will mail you a seed order packet.

This year's list of 41 seeds repre-

sents a group of very interesting and unusual plants, all donated by some of the country's finest seed companies. So that you will know to whom we owe so much, the following is a list of those companies and the seed they donated to this important program:

**Applewood Seed Company**, 833 Parfait Street, Lakewood, CO 80215.

- Anaphalis margaritacea* (pearl everlasting)
  - Anethum graveolens* 'Mammoth' (mammoth dill)
  - Aquilegia alpina* (alpine columbine)
  - Asparagus setaceus* 'Nanus' (asparagus fern)
  - Briza maxima* (quaking grass)
  - Briza minor* (little quaking grass)
  - Campanula carpatica* (Tussock bellflower)
  - Carthamus tinctorius* (safflower)
  - Dracaena indivisa* (dracena)
  - Dianthus deltooides* (maiden pinks - cultivar mix)
  - Ipomopsis rubra* (standing cypress)
  - Lagenaria siceraria* (Corsican gourds - cultivar mix)
  - Lavandula angustifolia* subsp. *angustifolia* (true lavender)
  - Matricaria recutita* (chamomile)
  - Myosotis alpestris* (garden forget-me-not)
  - Myosotis scorpioides* var. *sempreflorens* (marsh forget-me-not)
  - Solanum pseudocapsicum* var. *hendersonii* (Christmas cherry)
- Bodger Seeds, LTD**, Box 390, El Monte, CA 91734.
- Cosmos* 'Sunny Gold' (Mexican aster)
  - Lobularia maritima* 'Wonderland' (sweet alyssum)
  - Rudbeckia hirta* 'Marmalade' (Coneflower)
  - Tagetes* 'Queen Sophia' (marigold)
  - Tagetes* 'Yellow Galore' (marigold)
  - Zinnia* 'Pacific Yellow' (zinnia)
- Environmental Seed Producers, Inc.**, P.O. Box 5904, El Monte, CA 91734.
- Achillea millefolium* (yarrow)
  - Atriplex semibaccata* (Australian saltbush)

*Collinsia heterophylla* (Chinese houses)  
*Consolida ambigua* (rocket larkspur)  
*Coreopsis tinctoria* (plains coreopsis)  
*Digitalis purpurea* (foxglove)  
*Eschscholzia caespitosa* (dwarf California poppy)  
*Eschscholzia californica* (California poppy)  
*Gypsophila muralis* (baby's breath)  
*Linanthus grandiflorus* (mountain phlox)  
*Nemophila menziesii* (baby blue eyes)  
*Oenothera cheiranthifolia* (beach evening primrose)  
*Oenothera pallida* (evening primrose)

**Herbst Brothers Seedsmen, Inc.**, 1009 N. Main Street, Brewster, NY 10509.

*Tagetes* cv. (marigold - cultivar mix)  
*Zinnia* 'Zenith Torch' (zinnia)

We also received seed from the **Huntington Botanic Gardens** (*Echinocactus grusonii* - golden barrel cactus) and from the **U.S. Plant Introduction Station** at Glenn Dale, Maryland (*Franklinia alatamaha* - Franklin tree).

## AMERICAN HORTICULTURIST

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## River Farm Notes

JANUARY 16, 1981. This article is being written on a cold, wintry day, a fact that seems to be greatly affecting my ability to write of spring plantings and summer blooms, but, nonetheless, I shall do my best to give you a preview of what our River Farm grounds will have to offer our visitors in 1981.

To give this preview proper attention, this and several future editions of River Farm Notes will cover some of our major individual gardens. This first "installment" will be devoted to the roses of River Farm.

Even when the number of rose species and varieties was limited to a handful, its praises were sung by troubadours and minstrels the world over, and by such poets as Sappho and Anacreon. Today we have literally thousands of cultivars, and this world of roses has become something wondrous indeed. At River Farm we can offer our visitors a glimpse of this world through our three beautiful rose gardens. These consist of our Old Rose Garden, so called only because it was our first such endeavor (1978); our informal Cutting Garden, which began as an overflow from the creation of our Old Rose Garden; and our newest addition, our official All-America Rose Selections display garden.

Visitors to our Old Rose Garden will see that its center consists of four identical beds, each containing the same 12 pairs of cultivars. The secret to the beauty of this garden is that each cultivar has been placed to complement its neighbor. From the center isle radiating to the end of each bed is the pure pink of the aptly named 'Perfume Delight', the rose pink of 'Electron', the rich yellow of 'King's Ransom', the orange-red of 'Tropicana', the vibrant pink of 'Miss All-American Beauty', the soft pink of 'Royal Highness', the golden-copper of 'Arizona', the buttercup-yellow of 'Oregon', the shrimp-pink to deep rose-red of 'Color Magic' (one of my favorites), the silvery-lavender edged in ruby-red of 'Paradise', the soft apricot of 'Medallion' and the rich red of 'Mr. Lincoln'. Oh, how I long for the first blooms of May!

These four center beds are flanked and complemented by a huge, bold, 100-year-old boxwood hedge on one

side, perennial wall beds (dotted with roses) on two sides and a small rose bed that fronts a young boxwood hedge on the remaining side. These beds contain an informal yet well planned mixture of floribundas, hybrid teas, climbers and tree roses and offer such color as only 'Europeana', 'Charisma', 'First Edition', 'Peace', 'Seashell', 'Command Performance' and 'Climbing First Prize' can provide; each and every one is a true delight.

Our second rose garden is the Cutting Garden, an overflow garden that contains an "unplanned" mixture of cultivars from both the Old Rose Garden and the AARS display garden. Even in these unplanned rows the rose shows itself to be something special, something to be truly admired.

Our third garden, the AARS display garden, was developed in the spring of 1980 when it was literally lifted from the remnants of a storm-ravaged garden that had been planted only the year before. A new planting design was developed, replacement plant material was brought in and our born-again rose garden began to take shape. We were tested once again by the elements, however, when a lengthy, July/August drought struck us, and we suffered the concurrent and almost continuous failure of our well equipped, our only source of water. At times the watering of hundreds of roses was performed by bucket brigade, but our efforts were rewarded; our tender, young roses survived the ordeal and even put on new growth. In the months of September, October and November these very same plants provided us with a profusion of glorious color.

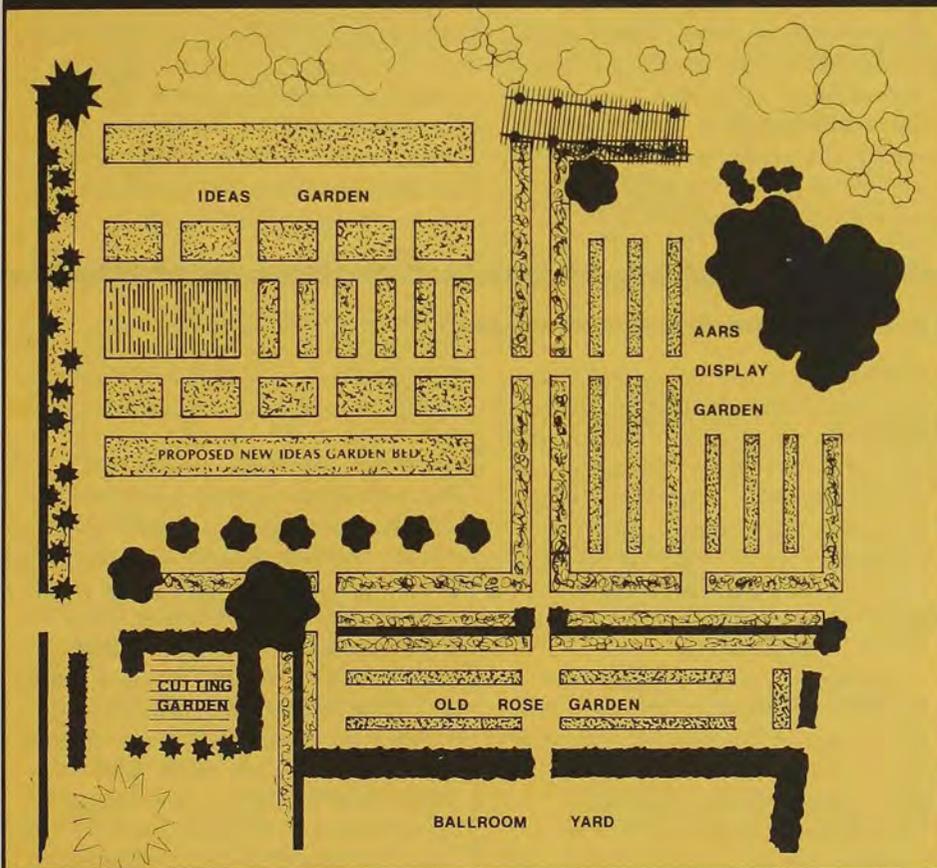
We enjoyed the beautiful pink blend of 'Aquarius', the soft blue of 'Blue Moon', the perfect red of 'Chrysler Imperial', and the many attributes offered by such acclaimed beauties as 'Circus', 'Color Magic', 'Coral Star', 'Crimson Glory', 'Double Delight', 'Eclipse', 'Friendship', 'Gypsy', 'Hello Dolly', 'Hotel Hershey', 'Jack Frost', 'Karl Herbst', 'Kordes Perfecta', 'Lady Elgin', 'Love', 'Mariana', 'Midnight Magic', 'Mirandy', 'Miss All-American Beauty', 'Paradise', 'Patchwork', 'Peace', 'Pink Peace', 'Queen Elizabeth', 'Redgold', 'Royal Highness', 'Southern Belle', 'Spirit of 76', 'Sunblest', 'Thanksgiving', 'Tropi-

## River Farm Landscape Plan in Works

Work has begun on an overall landscaping plan for River Farm that will enhance its visual appearance as well as provide demonstration gardens and educational displays. The basic concept of the plan is to continue in the tradition of River Farm's most prominent owner, George Washington, who was continually introducing new species, varieties and cultivars of plants to his farm. Future visitors to River Farm can look forward to the exciting displays this new plan will foster. Preliminary designs for an herb garden, a demonstration orchard and the new entrance way have been completed.

Contributions to our special River Farm Landscape Fund will allow us to make these exciting plans become a reality. We wish to thank all of the members who have responded thus far and to emphasize that additional contributions will be deeply appreciated. If you would like to make a donation to this fund, please send your check to Landscape Fund, attention Tom Richards, AHS, Mt. Vernon, VA 22121.

Plans are also under way to extend our Ideas Garden with an additional 90 × 10 foot bed (see drawing). If you would like to help us in this effort, please send your check to Ideas Garden in care of Tom Richards at the Society.



cana', 'Williamsburg' and 'Yankee Doodle'. Almost 250 plants of these 36 cultivars have been interwoven into a truly beautiful tapestry, an ever changing work of art.

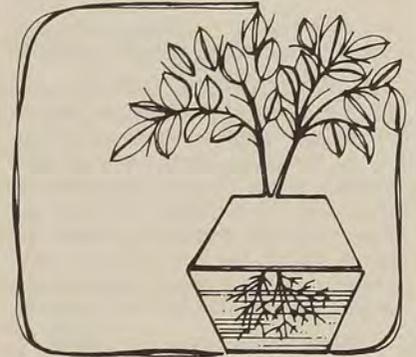
In a few short months we will be adding new plants: 10 plants each of the four 1982 AARS award winners. These include a beautiful apricot-colored hybrid tea, a hybrid tea with an exciting blend of reds, a glowing-orange grandiflora and a floribunda

that offers a delicate ivory color. This will be their first year in public gardens, and they should definitely not be missed by anyone who fancies the rose.

We hope this brief tour of our River Farm rose gardens and their 500 plants of almost 60 cultivars has enticed you to visit us or one of the many other public rose gardens this country has to offer. You will find it very much worth your effort.

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## 1981 Awards Nominations Sought

Members are invited to recommend candidates for the Society's 1981 awards. The Awards and Citations Committee will be meeting soon to nominate individuals and would welcome suggestions from the general membership of candidates for the Liberty Hyde Bailey Medal, the G.B. Gunlogson Award and the seven Citation awards.

The Liberty Hyde Bailey Medal is the highest award the Society can bestow on an individual. Past recipients include such notable horticulturists as Dr. Donald Wyman, author of *Wyman's Gardening Encyclopedia* and consultant to *American Horticulturist*; the late David Burpee, president of W. Atlee Burpee Company, Inc.; and Alfred Byrd Graf, author of *Exotica* and the *Exotic Plant Manual*. To qualify for this prestigious award an individual must be a resident of the North American Continent and must have made significant contributions in at least three of the following areas of horticultural activity:

teaching, research, writing, plant exploration, administration, art, business and leadership.

The G. B. Gunlogson Award is given for the creative use of new technology to make home gardening more productive and enjoyable. Last year's recipient, Dr. Calvin Lamborn, was the developer of the 'Sugar Snap' pea, the most important breakthrough in vegetable breeding in years.

Citations are awarded to individuals, firms or institutions who have accomplished something unusual and of national importance in one of the following seven aspects of horticulture: scientific, commercial, professional, amateur, teaching, landscape architecture and horticultural writing.

If you would like to suggest nominations for any of these categories, please forward the name(s) of your nominee(s) as well as pertinent biographical information to Mrs. John Maury, Chairman, in care of the Society, no later than May 31.

## R. M. Carleton Reports New Compost Method Saves Weeks

Thanks to a newly developed composting method, millions of American gardeners will no longer need to wait months or even years for garden wastes and other organic matter to be turned into compost. The new method, which uses a felted plastic bag, can turn these valuable raw materials into rich, mellow compost in less than two weeks.

Skeptical? I was too when John Bradshaw and Jack Warrington, the developers of this new process, visited me several months ago. Since then I have actually seen their demonstration in four places: in Canada, here in Sarasota, Florida, on Grand Cayman Island and on Bermuda. The Bermuda demonstration was really quite a show. A British soils scientist, Bradshaw, Warrington and I ground up a biomass made up of weeds, citrus peels, melons, mangoes, tomatoes, a whole chicken (slightly decayed), several corrugated cartons and a pair of woolen trousers. In eight days what came out of the package looked like moist, ground-up tobacco.

Surprisingly, this new method was developed by an engineer/inventor,

Jack Warrington, who had no previous gardening experience. His summer home in the Canadian woods north of Toronto lies on the rocky Precambrian layer that is overlaid with barely six inches of soil. After he had failed to grow vegetables on this unpromising foundation, he asked John Bradshaw, a well-known Canadian garden authority, for help. Bradshaw's advice was to build raised beds and add all the compost possible.

After struggling with composting for some time, Warrington found it an inefficient, frustrating experience. Here the story takes an unusual twist. As an outdoor enthusiast, Warrington had discovered that a felted plastic material, du Pont's Tyvek®, would allow the escape of both excess heat and moisture without becoming uncomfortable in changing weather. He designed his own jacket that proved so satisfactory his friends were soon asking him to make duplicates.

After turning over the compost question in his mind, he recalled that organic breakdown also needed close control of heat, air and moisture. He made a number of bags out of left-over Tyvek® and filled them with or-

ganic matter that he had chopped up by running over it with a rotary mower. He stored the bags overnight in a cellar at a temperature of 65°F, and by morning they were noticeably warmer. Placed in the sun they grew warmer each day and in seven to 10 days the internal temperature registered as high as 130°F, a temperature seldom reached in conventional composting in less than three or four months. Soon all the bags in the experiment contained finished compost superior to that produced by ordinary methods. It is surprisingly uniform and need not be screened to get rid of undigested twigs, stems and leaves. As a soil amendment, there is none of the nitrogen shortage associated with compost that has not been thoroughly decomposed.

The Warrington composting method is simple. The mass of organic matter to be composted should be ground several times; ideally it should be cut into bits about the size of a grain of wheat. An ordinary rotary mower can be used without modification but is likely to choke on tough material such as palm fronds, twigs and vines. Warrington devised a special type of blade as a replacement for the one supplied with such mowers that does the job with ease. After grinding the material, he fills the bags, adds a spadeful of garden soil and two or three quarts of water and ties them shut. Since the movement of heat, air and moisture is important, bags should not be piled higher than two deep. Storage temperatures of at least 65°F are essential, since organisms responsible for organic breakdown are not active at lower readings.

An interesting feature of the Warrington process is that woody wastes can be used to produce a superior mulching material without the drawbacks of nitrogen starvation so often associated with the use of these materials, since the initial stages of decomposition take place within the bag.

At present neither the special replacement blade for rotary mowers nor the all-essential permeable plastic bags are available commercially, but plans are under way to market them this spring. — *R. Milton Carleton*

(Editor's note: *American Horticulturist* news will keep readers informed about these developments.)

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## Disease-Resistant Apple Cultivars Available

At long last disease-resistant apple cultivars are available to home gardeners. The product of breeding programs begun in the 1940's, these new cultivars show varying degrees of resistance to apple scab, cedar apple rust, fire blight and powdery mildew.

Breeding programs received an important head start from a geneticist, Dr. C. S. Crandall, who, in 1914, crossed an Asiatic crab apple, *Malus floribunda*, with the apple cultivar 'Rome Beauty'. About half the seedlings resulting from the cross inherited apple scab immunity from the *M. floribunda* parent. Dr. Crandall then made crosses among these seedlings to produce a second generation and set them out in an orchard that lay abandoned until 1943 when Fred Hough, now head of the Rutgers breeding program, noticed that many of the trees were free of apple scab.

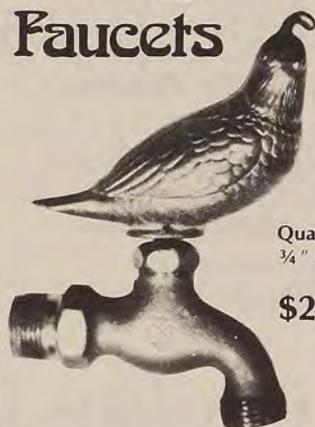
This discovery soon led to the development of programs to breed disease-resistant apple cultivars. Purdue and the University of Illinois began a cooperative venture in 1945 that was joined in 1950 by Rutgers University. The New York State Agricultural Experiment Station began a program in 1949. Now there are similar programs in Nova Scotia, France and England. Most of the resistant cultivars re-

leased to date are descended from plants in Dr. Crandall's orchard.

It takes years and several generations of crosses to produce an eating-size apple with *M. floribunda* parentage. 'Liberty', one of the best of the new releases, is the result of four generations of crosses. While the final cross was made in 1950, the cultivar was not ready for release until 1978. Scientists say they were extremely lucky to produce an acceptable cultivar in so short a time.

Hundreds of crosses producing thousands of seedlings are made each year. Fortunately, plants susceptible to disease can be rogued out in many cases during the early stages of the process, and all the seedlings need not be grown on to maturity. Greenhouse grown seedlings are exposed to apple scab spores when they reach the two leaf stage; the survivors are then exposed to cedar apple rust. The plants still growing vigorously after this stage may also be injected with fire blight. Of the 260 seedlings produced at Purdue the year the 'Liberty' cross was made, only 38 survived to this stage of the testing. The survivors are planted in a nursery under high disease conditions and grown on for from four to nine more years until they fruit. To expose

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## Disease-Resistant Apple Cultivars

Cultivar	Source	Description	Resistance rating			
			Apple scab	Cedar apple rust	Fire blight	Powdery mildew
PRIMA	B,C,D	Ripens late summer. Large red fruit, slightly tart.	1	4	2	2
PRISCILLA	B,C,D	Ripens mid-September. Apples are slightly tart.	1	1	2	3
MACFREE	A	Resembles MCINTOSH.	1	3	2	—
NOVA	A	Resembles CORTLAND.	1	1	2	3
EASYGRO						
SIR PRIZE	A,B,C,D	Ripens mid-October. Yellow fruit.	1	3	4	2
LIBERTY	A,C,E	Ripens early October. Medium-sized fruit, deep-red, sweet.	1	1	2	2

A—The New York State Fruit Testing Association, Geneva, New York 14456.

B—Stark Brothers Nursery, Louisiana, Missouri 63353.

C—Bountiful Ridge Nurseries, Princess Anne, Maryland 21853.

D—Hilltop Orchards, Route 2, Hartford, Michigan 49057.

E—Kelly Bros. Nurseries, Inc., Dansville, New York 14437

1—Very resistant. No control needed.

2—Resistant.

3—Susceptible.

4—Very susceptible.

4—Indicates lack of information.

Courtesy of R. Lamb and H. Aldwinckle  
N.Y. State Agric. Exp. Station, Geneva, N.Y.

the seedlings to the maximum amount of disease possible, scab-infested 'McIntosh' trees and cedar trees, the alternate host for cedar-apple rust, are grown throughout the nursery. The trees are also exposed to fireblight and mildew since the nursery is not sprayed with bactericides or fungicides. Few seedlings survive this environment. In the last stage of this long process, the varieties with the best fruit are top grafted onto older trees and evaluated for hardiness, bearing, consistent apple quality; of these, one or two or perhaps none will be considered worthy of naming and release.

Fortunately the programs continue and so new releases can be expected from now on. The new disease-resistant cultivars can be used as parent material for future crosses. Mildew immune crab apples have been observed in the last five years, and a long term goal is to breed this immunity into apples. It will take years before this immunity can be crossed into quality eating size apples.—*Organic Gardening, December 1980.*

### Tips on Sowing Impatiens Seed



Gardeners planning to sow impatiens for their garden this spring would do well to heed the tips presented to the International Bedding Plant Conference by Nona Wilfram, a representative of Pan-American Seed Company, a major seed producer.

1. Until you are ready to sow, store your impatiens seed in an airtight container in the refrigerator.
2. Fungicides, especially Captan, can cause damage, so avoid using them before sowing.
3. Sow seed in rows in clean containers filled with sterilized media, cover the seed lightly with vermiculite and place them in indirect sunlight.
4. It is important to keep moisture levels uniform. Wrap the containers in plastic, cover small pots with inverted plastic cups (see *American Horticulturist* news, January, 1981,

page 12) or mist frequently with warm water.

5. A soil temperature of 72°F is ideal; use a soil heating cable or other source of bottom heat.
6. Michigan State University recommends that a 40-watt red light bulb be placed eight inches above the germination container.
7. Germination should take approximately 14 days.
8. As soon as the seeds germinate, remove the plastic or cease misting and apply a soil drench of Lesan or Benlate.
9. Grow the seedlings in light shade at night temperatures of 65° to 70°F. Feed the plants with a weak solution of fertilizer once and don't water after 2 p.m.
10. Two to three weeks after germination the seedlings should be ready for transplanting into individual containers. After transplanting, apply another soil drench of Lesan or Benlate.
11. Reduce the nighttime temperature to 60°F. Feed the seedlings with a weak fertilizer solution every few waterings. Overfeeding will cause the plants to stretch. Do not overwater; the growing medium should be allowed to dry out between waterings.
12. At this point, most commercial growers apply a growth regulator such as B-9 or A-Rest to keep the plants compact. Home gardeners can keep their plants from getting too leggy by pinching the plants back once or twice before they are transplanted into the garden.

### Erratum

In the January issue of *American Horticulturist* news an error appeared in the article headed "A 'Cure' for Agent Orange." Agent Orange is not another name for the herbicide 2,4-D; it is a 50/50 mixture of the technical grade, unformulated butyl esters of 2,4-D and 2,4,5-T that was used only by the military. A dioxin that can occur as a contaminant in 2,4,5-T is a highly toxic substance.

A number of naturally occurring organisms are able to ingest and degrade the herbicide 2,4-D. The importance of the development at Batelle Laboratories lies in the fact that scientists were able to locate and transfer the genetic material that gives a bacterium this characteristic.

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## Groundcovers for Southwest

Two new drought tolerant groundcovers suitable for use in southern Arizona have been tested and released by scientists at the University of Arizona. The releases are the result of a project at the University aimed at exploring, collecting, propagating and testing desert plants for landscape use. To evaluate their performance as urban plants, the releases have been tested in conventional field test plots as well as plots located on the campus of the University.

The trailing indigo bush, *Dalea greggii*, was collected in northern Mexico and should not be confused with an Arizona native incorrectly known by that name and now classified as *D. pulchra*. The plant bears small, blue-lavender flowers that are interesting at close range, but its major landscape interest is its dense, spreading mound of attractive gray-green foliage. Once established, *D. greggii* survives prolonged drought, but supplemental irrigation during the hottest and driest parts of the year is needed to maintain the plant's attractive, dense form. Plants grown on the University campus (located in USDA Zone 8) survived a historic 16°F freeze in December 1978, and in fact did not even stop growing. Since young, actively grown plants were damaged during the freeze, researchers recommend plants be hardened off in the fall by restricting water and fertilizer. *D. greggii* seems adaptable to any soil type and does not require fertilizer. Surprisingly, in a rabbit infested area where another species of *Dalea* was eaten to the ground, *D. greggii* did not appear to have been nibbled.

The Baja primrose, *Oenothera drummondii* var. *thalassaphila*, a native of south-central Baja California, was originally tested for use as an attractive desert perennial but proved to be a vigorous spreader more suitable for use as a groundcover as it crowded out other perennials in the test plots. Baja primrose bears single, 2½-inch yellow flowers in the spring on erect six- to eight-inch stems. It flowers heavily during the spring and intermittently through the summer. While the pink flowers of the Mexican primrose, *Oenothera drummondii* var. *childsii*, are more showy than its Baja relative, the Baja

primrose does not have an "off season" and is attractive all year as long as it is not exposed to prolonged drought. Baja primrose proved hardy during the 16°F freeze; in such cold spells the plant develops reddish leaves.

While thus far these plants have been tested only in Arizona and are now available at the retail level in that state, they may prove valuable for use in other areas with similar climates.—*Desert Plants*, V.2, #2, Summer, 1980.

## Sweet Corn Evaluations



Home gardeners will appreciate the sweet corn cultivar evaluations conducted by gardener Dick Raymond at the request of the National Association for Gardening. His results, published in the Winter, 1980 *Gardens for All, News*, may make plant selection much easier for the coming season as well as prompt gardeners to plant more than one cultivar in order to extend their harvest.

Fifteen cultivars were grown and evaluated in the tests. Mr. Raymond's favorite cultivars are listed below by average number of days to maturity.

'Spancross' averages 58 days to maturity and is a delicious, dependable sweet corn that will offer its yellow ears early in the season. It will produce well in cool weather, and the ears show good resistance to birds. The stalks are short and so resist wind damage.

'Early Sunglow' is a 62-day cultivar that also produces well in cool

weather. Birds sampled part of the crop, but the damage was limited. 'Explorer', a 64-day cultivar that is resistant to cold, wet conditions, bears tight ears that foiled the birds in the test garden. Both cultivars resisted wind damage.

Three early-harvest, bicolor hybrids were included in the tests: 'Sugar and Gold' (67 days), 'Butter and Sugar' (73 days) and 'Honey and Cream' (78 days). 'Sugar and Gold' was recommended for areas with shorter growing seasons as it is an extra-early bicolor that will bear well under cool conditions. Bird damage proved to be a problem. 'Butter and Sugar' was rated as one of the "super corns." According to Raymond, "for flavor and appearance it's in a category with some of the later maturing varieties. It's always the second corn I plant in my garden [after 'Spancross'], and successive plantings every two weeks keep this one going all season long." 'Honey and Cream' is another delicious bicolor similar to 'Butter and Sugar'. Both cultivars proved resistant to damage by wind and birds.

Mr. Raymond recommended two late season cultivars for freezing, 'Aristogold' (85 days) and 'Candystick' (90 days). 'Aristogold' produces sweet, tender kernels and a generous amount of corn when cut from the cob. Wind and bird damage were minor problems with this cultivar. 'Candystick' is a new introduction that bears long, slender ears. The cobs are extremely small and so are excellent for freezing whole since they take up very little space. The yellow kernels are very sweet and hold their flavor for a long time. 'Candystick' was not damaged by wind or birds.

'Silver Queen' is a 92-day, silver-white-kerneled corn that is "well worth waiting for." Mr. Raymond always plants some "even though I have to wait nearly all summer to harvest it. It is truly one of the finest quality sweet corn varieties." 'Bi-Queen' is also a 92-day cultivar that is very similar to 'Silver Queen' but bears bicolor kernels. Both cultivars proved resistant to wind and bird damage.

One open-pollinated sweet corn, 'Country Gentlemen', a 96-day cultivar, was included in the tests. While lacking some of the "class" of the hybrids, it is sweet and flavorful,

freezes well and is excellent for cream-style corn. Its kernels are white and are "crammed onto the cob in an irregular pattern making every bite a mouthful." To obtain best results, open-pollinated cultivars such as 'Country Gentlemen' should be isolated to prevent cross-pollination. This old-time favorite is resistant to damage by birds and wind.

Sweet corn seed is available from Burpee Seed Company, Warminster, PA 18991 and Stokes Seeds, Inc., 737 Main Street, Box 548, Buffalo, NY 14240.

### Soil Mixes for Desert Plants

The findings of a mini-symposium conducted by *Desert Plants*, "Soil Mixes for Greenhouse and Nursery Growth of Desert Plants," published in their November 1979 issue, will give home gardeners an idea of the surprising variety of soil mixes botanical gardens and commercial producers of desert plants really use.

In nature a plant's root system is well insulated from the temperature extremes characteristic of desert climates. Extensive root systems, with taproots, laterals and feeder roots, also protect against drought. Container-grown plants, on the other hand, have artificially restricted root systems and a correspondingly small soil volume. Under these conditions desert plants require a soil mix that will help moderate extreme temperature changes and drought. Plants often must be watered daily if grown in the hot summer sun.

Here is a sampling of the variety of approaches to soilless mixes these groups took: One of the most popular mixes mentioned by the symposium's participants was the U.C. Mix, a soilless mix consisting of equal parts peatmoss and sand that has been limed to an acceptable pH. A grower in Vista, California uses equal parts pumice, humus and sand for his desert plants. This mix is adjusted for delicate species of *Crassula* and *Haworthia* by adding one part number-six charcoal to three parts of the mix. Another grower recommended combining a 34-cubic-yard truckload of lavic cinder (scoria) with 30 cubic yards of composted bark! A cactus nursery in Tucson used equal parts peatmoss, perlite and sand. Arizona State University uses the U.C. Mix for

most of their plants, but succulents are grown in a medium consisting of half U.C. Mix and half sand. The University of Arizona uses a mix consisting of ¼ sandy loam, ⅓ plaster sand, ⅓ composted pine bark, ¼ perlite and ¼ vermiculite.

In almost all cases the composition of the mixes as well as pH were adjusted to meet specific requirements of the different species grown. Obviously, plants grown in the soilless mixes will require regular fertilization. Many growers incorporate slow release fertilizer in their mixes. Seedlings were most often germinated in a mixture of 50 percent perlite and 50 percent vermiculite. In all cases, the soil mix for plants grown in large beds was different from the container mixes.

### Fire Ant Control Developed

Scientists at the Texas Agricultural Experiment Station, College Station, have identified the trail pheromone of the red imported fire ant, *Solenopsis invicta*. This breakthrough discovery will enable researchers to develop improved control measures that are species specific.

The trail pheromone is a specific scent that permits fire ants to mark a trail that other members of their species can follow. By isolating the chemical makeup of the scent, scientists have paved the way for developing control measures that are based on a species-specific attractant that can be used as bait. Similar measures have proved successful in controlling other types of pests such as the Japanese beetle. Traps baited with such attractants also have been used to sample populations of insects such as the gypsy moth.

During the last 40 years the fire ant has spread across the Southeastern United States at an alarming rate. It is an aggressive pest that has a tendency to attack and sting en masse, making it a potential danger to both humans and livestock. The large, solid hills built by colonies of fire ants can cause extensive damage to farm equipment and to gardens. Scientists believe that many of the previous measures aimed at controlling the pest actually aided its spread by reducing or eliminating populations of competing species. — *American Nurseryman*, December 1, 1980.

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# CALENDAR

## FEBRUARY 28-MARCH 8

Southern Living Show  
Merchandise Mart  
Charlotte, North Carolina  
Hours: 10:00 a.m. - 9:30 p.m. Monday  
through Saturday, 11:00 a.m. - 6:00 p.m.  
Sundays  
Information: Southern Living Show,  
1945 Randolph Road, Charlotte, NC  
28207, (704) 376-6597

## FEBRUARY 28-MARCH 8

Central Ohio Home and Garden Show  
Multi-Purpose Building  
Ohio State Fairgrounds  
Columbus, Ohio

## MARCH 5, 12, 19 AND 26

Lecture Series  
American Horticultural Society  
River Farm  
Mt. Vernon, Virginia  
Information: Phone or write Dorothy  
Sowerby at the Society (703) 768-5700

## MARCH 7-15

Indiana Flower and Patio Show  
Indiana State Fairgrounds Exposition and  
Expo-Pavilion Buildings  
Indianapolis, Indiana  
Information: P.O. Box 20189, Indianapolis,  
IN 46220, (317) 255-4151

## MARCH 8-15

Philadelphia Flower Show  
Civic Center  
34th and Civic Center Boulevard  
Philadelphia, Pennsylvania  
Hours: 10:00 a.m. to 6:00 p.m. Sunday,  
10:00 a.m. to 9:30 p.m. Monday through  
Saturday  
Information: (215) 625-8262

## MARCH 11-15

Lawn and Garden Fair  
Tennessee State Fairgrounds  
Nashville, Tennessee  
Hours: 10:00 a.m.-9:00 p.m. Wednesday  
through Saturday, 10:00 a.m. - 6:00 p.m.  
Sunday  
Information: Lawn and Garden Fair, P.O.  
Box 50063, Nashville, TN 37205

## MARCH 14-21

Boston Spring Flower Show  
Theme: Gardening in Your Own Backyard  
Commonwealth Pier Exhibition Hall  
Boston, Massachusetts  
Information: (617) 536-9280

## MARCH 22-APRIL 20

Pittsburgh Spring Flower Show  
Phipps Conservatory  
Pittsburgh, Pennsylvania  
Hours: Daily 9:00 a.m. to 5:00 p.m. and  
7:00 p.m. to 9:00 p.m.

## MARCH 26-28

American Daffodil Society  
Convention and Show



Del Webb's Newporter Inn  
1107 Jamboree Road  
Newport Beach, California  
Information: American Daffodil Society  
1500 Dogwood Road, Staunton, VA  
24401

## APRIL 5-8

Williamsburg Garden Symposium  
Williamsburg, Virginia

## APRIL 10-12

Central Florida Orchid Society, Inc.  
26th Annual Spring Show  
Winter Park Mall  
Winter Park, Florida  
Information: (305) 876-2625

## APRIL 11-12

Society for Louisiana Irises  
Convention and Show  
Ira S. Nelson Horticulture Center  
Lafayette, LA

## APRIL 11-27

Dogwood Arts Festival '80  
Knoxville, Tennessee  
Information: Dogwood Arts Festival, P.O.  
Box 2229, Knoxville, TN 37901

## APRIL 13-16

5th International Rock Garden Plant  
Conference  
Nottingham, England

## APRIL 17-18

Southern California Iris Society Spring  
Show  
Fashion Park  
400 S. Baldwin Avenue  
Arcadia, California  
Hours: 12:00-9:00 p.m. Friday, 10:00 a.m.  
6:00 p.m. Saturday

## APRIL 18-26

48th Annual Historic Garden Week in  
Virginia  
Garden Club of Virginia  
Information: Booklet (50¢) Historic Garden  
Week Headquarters, 12 East Franklin St.  
Richmond, VA 23219, (804) 644-7776

## APRIL 19-22

National Council of State Garden Clubs  
Convention  
Atlanta, Georgia

## APRIL 25

American Rhododendron Society-Azalea  
Chapter Annual Show  
Northlake Shopping Mall  
Atlanta, Georgia  
Information: Donna Coleman (404) 482-1289

## APRIL 25-26

1981 Spring Garden Show  
Louisiana Cooperative Extension Service  
Delgado College  
New Orleans, Louisiana  
Hours: 10:00 a.m. - 6:00 p.m.  
Information: (504) 486-3736, (504) 486-3737

## MAY 9-10

Geranium and Pelargonium Show and Sale  
Southwest Branch of the International  
Geranium Society  
Community Building, Plummer Park  
7377 Santa Monica Boulevard  
Hollywood, California 90046  
Hours: Saturday noon to 5:00 p.m., Sunday  
10:00 a.m. to 4:00 p.m.  
Information: (213) 222-6809 or (213)  
469-8665

## MAY 13

21st Annual Meeting of the American  
Boxwood Society  
Blandy Experimental Farm  
Boyce, Virginia  
Information: American Boxwood Society,  
Box 85, Boyce, VA 22620

## MAY 17, RAIN DATE MAY 24

Spring Open House  
American Horticultural Society  
River Farm  
Mt. Vernon, Virginia  
Information: Phone or write Dorothy  
Sowerby at the Society

## MAY 17-23

African Violet Society of America, Inc.  
Annual Convention and Show  
Sheraton Palace Hotel  
San Francisco, California  
Information: Convention information,  
African Violet Society of America, Inc.,  
P.O. Box 1326, Knoxville, TN 37901

If your horticultural club or association is planning an event that may be of interest to our national audience, please send us information concerning the nature of the meeting, the dates, times and location at least three months prior to the time the meeting will take place. We will be happy to include it in our *Calendar* unless space limitations prevent us from doing so.

## Put These Dates on Your Calendar

Society sponsored activities in the months to come include several exciting tours, our Spring Open House and our 1981 Congress in Boston.

This month, area gardeners are taking advantage of our Thursday morning **winter lectures** at River Farm. Four lectures remain in the series: Pruning, Home Landscape Design, Plant Pests and House Plants.

All of us at the Society are looking forward to our **Spring Open House**, scheduled for May 17 (rain date May 24) here at River Farm. Plans are being made to expand last year's program. Plant societies, artists and craftsmen interested in participating should contact Dorothy Sowerby at the Society.

This spring the Society is offering members three chances to explore the British Isles. Members aboard the luxury cruise ship *MTS Argonaut* will tour Scotland, Wales and the **Island World of Great Britain** from May 21st to June 2nd. An exploration of the south and west of **England**, including a visit to the famed Chelsea Show, is planned for the 7th through the 21st of May. Members also will have a chance to tour **Scotland** on

an exploration scheduled from May 26th through June 9th.

Also this spring members will have an opportunity to tour **Switzerland and Northern Italy** from May 21st to June 4th.

Upcoming activities this fall begin with our **1981 Congress**. Participants will attend a reception sponsored by the Massachusetts Horticultural Society and lectures by notable horticulturists. A visit to the famed Arnold Arboretum is planned as well as tours of several private gardens on the North Shore. Plan to join us in Boston from September 24th through the 28th.

This fall, members also will have the opportunity to attend the Royal Horticultural Society's Autumn Show on an exploration of **England** that will tour **Yorkshire and East Anglia** from September 10th to the 24th. Finally, a second tour of **Switzerland and Northern Italy** is planned for September 24th to October 8th.

For more information, brochures and reservation cards for any of the above activities, write to Dorothy Sowerby in care of the American Horticultural Society.

## Sterling Book Prices Revised

The book list included in the November 1980 *American Horticulturist* news has been a great success and orders are still flooding in. Unfortunately, there have been price increases on some of the books offered. The new prices are as follows:

	New Retail Price	AHS Discount Price, Including Postage and Handling
<i>Bromeliads</i>	\$50.00	\$36.25
<i>Chrysanthemums-Year Round Growing</i>	24.95	18.70
<i>Garden Conifers in Color</i>	9.95	8.25
<i>Garden Shrubs and Trees in Color</i>	9.95	8.25
<i>Heathers in Color</i>	9.95	8.25
<i>Pocket Encyclopaedia of Roses in Color</i>	9.95	8.25
<i>Turf Culture</i>	22.50	17.00
<i>Cactus Growing for Beginners</i>	4.95	4.70
<i>The Illustrated Reference on Cacti and Other Succulents. Volumes 1-5</i>	20.95*	14.65*
<i>Lexicon of Succulent Plants</i>	37.50	27.50
<i>Pocket Encyclopaedia of Cacti in Color</i>	9.95	8.25
<i>Culpeper's Complete Herbal</i>	12.95	10.35
<i>Discover the Trees</i>	7.95	6.85
<i>The Herbalist</i>	10.95	8.90
<i>Pocket Encyclopaedia of Wildflowers</i>	9.95	8.25
<i>Wild Flowers-A Photographic Guide</i>	12.95	10.35

\*Price for each volume

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Payment for all classified advertisements must be made in advance. All copy subject to the approval of the Society.

## Winterthur Gardens Conference

The third annual Winterthur Gardens Conference, "Objects and Outdoor Spaces," will address attitudes toward and the uses of gardens and other outdoor spaces in America over the last three centuries. Five outstanding scholars will use gardens, garden furnishings and ornament to explore the ways in which changing values, technology and social structure have shaped our environment.

The program will be on Saturday, March 28, 1981 from 9:30 a.m. to 4:15 p.m. in the Copeland Lecture Hall of Winterthur's Garden Pavilion. It is open to the public. Pre-registration is necessary; general admission is \$6. Call or write the Education Division, Winterthur Museum and Gardens, Winterthur, DE 19735, (302) 656-8591, ext. 243 for more information.

## Hotline for Lawn Problems

Homeowners who want a quick answer to a specific lawn question now can dial an easy-to-remember, toll-free number, (800) 543-TURF, and talk to an expert at O.M. Scott & Sons. The new "Hotline" is in operation nationwide, except in Ohio where the number remains (800) 762-4010.

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## Philadelphia Flower Show

Visitors to this spring's Philadelphia Flower Show, scheduled for March 8-15 at the city's Civic Center, will be able to enjoy a barge decorated for a party in a Pennsylvania canal town, along with thousands and thousands of blooming flowers and green scenes. Other special features include old-fashioned shops, a Victorian bandstand and a bell tower. The show will also include regularly featured competitive classes and major exhibits staged by nurseries, plant societies, florists and garden clubs. For more information, contact the Pennsylvania Horticultural Society, 325 Walnut Street, Philadelphia, PA 19106, (215) 625-8262.

# GARDENER'S MARKETPLACE

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## AZALEAS & RHODODENDRONS

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## BONSAI

INTERNATIONAL BONSAI, the definitive quarterly magazine filled with step-by-step instructions on bonsai training. Illustrated beginner's articles in each issue also features Japanese gardens and rare plant material. 1981 subscription (4 issues) \$12.00. INTERNATIONAL BONSAI, P.O. Box 23894-AH, Rochester, NY 14692.

## BOOKS

All-color TROPICA, enlarged 2nd Edition, 7,000 photos, \$115.00. Pictorial Cyclopaedia EXOTICA, 12,000 photos, \$78.00. EXOTIC PLANT MANUAL, 4,200 photos, \$37.50. EXOTIC HOUSE PLANTS, 1,200 photos, \$8.95. Shipped prepaid if check with order. Circulars gladly sent. ROEHRS, Box 125, E. Rutherford, NJ 07073.

BOUGHT AND SOLD. Rare and Out of print botany books. Catalog—\$1.00. Nadolny, Box 53, New Britain, CT 06037.

## BROMELIADS

THE BROMELIAD TREASURY offers a selection of decorative species and hybrid Bromeliads at very reasonable prices. Unique 18 page DESCRIPTIVE LIST, \$1.00, refundable with first order. Please mention this ad. 639 Bend Drive, Sunnyvale, CA 94087, Phone (408) 245-2729 Eves. & Weekends.

10 Medium, different, labeled bromeliads ready for potting. \$12.50 Postpaid. 3 page listing for stamp. Cornelison's Bromeliads, 225 San Bernardino, North Ft. Myers, FL 33903.

## CARNIVOROUS PLANTS

Carnivorous, woodland terrarium plants and supplies. Book, *The World of Carnivorous Plants*, \$6.50 postpaid. Illustrated catalog 25¢. Peter Pauls Nurseries, Canandaigua, NY 14424.

## CATALOGS

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#### POSITION AVAILABLE

Assistant Garden Editor for *Southern Living* Maga-

zine. Responsibilities include copy writing and working with photographers on horticultural and landscape design subjects. Applicant must have degree in horticulture and previous writing experience. Prefer knowledge of southwest garden problems. Send resume and qualifications to Dr. John Floyd, Southern Living, P.O. Box 523, Birmingham, AL 35201.

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## Rose Pilgrimage '81

Organizers of Rose Pilgrimage '81 have invited amateur and professional rosarians as well as the scientific community to participate in the 5th World Rose Convention in Jerusalem October 25 through 29, 1981. Individuals interested in presenting papers on roses in municipal and public gardens, preservation and prolonging vase life of cut flowers, and new methods and techniques of irrigation and water utilization are asked to contact the organizing committee at the address listed below. Other special features of the convention will include a show of new varieties and an exhibition of books on roses, roses in art and on stamps and coins. For more information on the Convention write Rose Pilgrimage '81, 5th World Rose Convention, P.O. Box 3054, 122 Hayarkon Street, Tel Aviv, Israel.

## Endangered Plant List Published

A listing of 3,000 native plant species that may qualify for Endangered or Threatened status has been published by the U.S. Fish and Wildlife Service Office of Endangered Species. According to Bruce MacBryde, in the November/December issue of *Garden*, "This Notice of Review communicates the state of our knowledge as well as our ignorance."

The list includes about 1,600 taxa (species, subspecies and varieties) that appear to meet the requirements for federal protection. Another 200 species on the list are thought to be extinct. If rediscovered, they would be high on the list of candidates for protection. The balance of the plants listed are, according to MacBryde, "placed in limbo because we don't yet know enough about them to decide if they are truly in jeopardy."

Scientists estimate that approximately 10 percent of the native plant taxa in the continental United States are at risk. In Hawaii the figure is estimated at 50 percent. [For more information about the endangered species question, see MacBryde's article, "Why Are So Few Endangered Plants Protected?", in the October/November 1980 issue of *American Horticulturist*.]

A short introductory section of the

Register lists regional offices where information relating to particular plant taxa can be obtained. The service also welcomes information concerning the status of any of the species listed. To obtain a copy of this publication, request the *Federal*

*Register, Endangered and Threatened Wildlife and Plants: Review of Plant Taxa for Listing as Endangered or Threatened Species* at the Office of Endangered Species, U.S. Fish and Wildlife Service, Washington, D.C. 20240.

## Six AHS "Bestsellers" for Your Library

During the past 18 months Dr. Gilbert S. Daniels has reviewed many books of special interest to gardeners in issues of *American Horticulturist*. Most of them are available to members at considerable discounts. Among all the books reviewed thus far, the six titles listed below have been particularly popular with members. We list them once again for those of you who may have missed the reviews the first time around, in addition to a new book we are making available, *Greenhouse Grow How*.

Should you be interested in buying any of the books, simply fill out the form below and send it to the address indicated, along with your check. Be sure to take advantage of the discounted price!

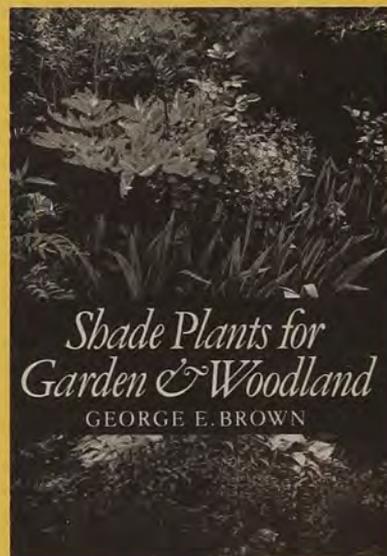
*JAPANESE MAPLES*. J. D. Vertrees. Timber Press, Forest Grove, Oregon. 1978. 178 pages; hardcover, \$39.50. AHS discount price, \$30.89 including postage and handling.

An authoritative and beautifully illustrated work on a group of garden plants with tremendous variety, this book is actually even more than the title intimates. Not only are all of the cultivars of *Acer palmatum*, the Japanese maple to most of us, described and illustrated in color, but all of the other species of *Acer* found in Japan are also included, along with many of their cultivars.

*A DICTIONARY OF BOTANY*. R. John Little and C. Eugene Jones. Van Nostrand Reinhold Company. New York, New York. 1980. 400 pages; hardcover, \$18.50. AHS discount price, \$16.05 including postage and handling.

The language of botany (and horticulture), as in all science, uses many words that are not in the general vocabulary of the average gardener. This is not because the botanist is trying to be obscure in his language. On

the contrary, the description of plants and how they grow requires concepts for which there are no words in ordinary English. This botanical dictionary covers all aspects of the plant sciences. For the serious amateur (or indeed the professional) who wants to be able to use all of the literature, this dictionary is an essential reference work.



*SHADE PLANTS FOR GARDEN AND WOODLAND*. George E. Brown. Faber and Faber. London, England and Boston, Massachusetts. 1980. 240 pages; hardcover, \$27.00. AHS discount price, \$22.85 including postage and handling.

This English publication is a welcome addition to the American gardening bookshelf. Choosing plants for the shady garden is always something of a problem. Most of this book is devoted to "A Dictionary of Shade Plants." Genera and species tolerant to various degrees of shade are described, together with brief notes on culture and propagation. Both woody and herbaceous plant material is included. Definitely a worthwhile treatment of an often troublesome aspect of gardening.

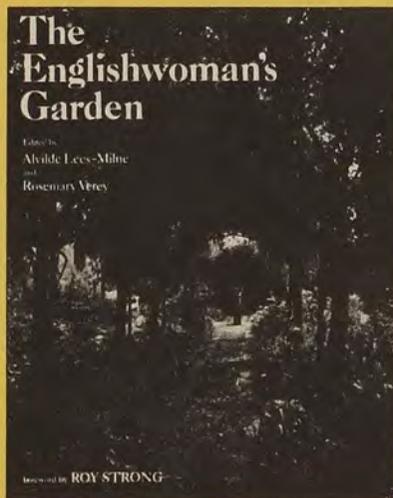
**MINIATURE ORCHIDS.** Rebecca Tyson Northen. Van Nostrand Reinhold Company. New York, New York. 1980. 189 pages; hardcover, \$26.95. AHS discount price, \$20.10 including postage and handling.

Northen's *Home Orchid Growing* has been the number one primer for orchid fanciers for many years. *Miniature Orchids* is a work of comparable quality and should be the second book purchased by anyone interested in orchids. As the title indicates, all of the hundreds of species described are miniature plants (under six inches in height), so that many different kinds can be enjoyed in a very small space.

**RODALE'S COLOR HANDBOOK OF GARDEN INSECTS.** Anna Carr. Rodale Press. Emmaus, Pennsylvania. 1979. 241 pages; hardcover, \$12.95. AHS discount price, \$12.25 including postage and handling.

If you want to know what is eating your garden, this book will tell you. Excellent color illustrations, combined with easily used introductory keys, make insect identification easy. Where appropriate, eggs and larval stages also are illustrated. A brief description of the insect, together with information on life cycle, host plants and general feeding behavior further increase the utility of this work.

**THE ENGLISHWOMAN'S GARDEN.** Alvide Less-Milne and Rosemary Verey (editors). Merrimack Book Service. Salem, New Hampshire. 1980. 156 pages; hardcover, \$24.95. AHS discount, \$17.95 including postage and handling.



The story of 36 beautiful English gardens is told by each owner—plant likes and dislikes, climatic and architectural problems, gardening practices, as well as the history of each garden make for a series of interesting accounts. The many colored photographs show the end result. Of particular interest are the large number of these gardens that have been

developed or rejuvenated since World War II. Like a pleasant walk through a garden with its owner, this new work should give you lots of ideas and inspiration.

**GREENHOUSE GROW HOW.** John H. Pierce. Plants Alive Books. Seattle, Washington. 1977. 241 pages; hardcover, \$19.95. AHS discount price, \$18.85 including postage and handling.

One of the most informative, useful "how to" guides on greenhouses and greenhouse growing is now available through the Society. *Greenhouse Grow How* is the perfect reference work for those who own greenhouses, for the prospective greenhouse purchaser, for gardeners dreaming of plant rooms and for windowsill gardeners. Author John H. Pierce, a well-known authority on greenhouses, has included a wealth of information in the form of diagrams, photographs, illustrations, charts and text on such topics as solar heat, greenhouse coverings, cooling and shading, nutrition and growth regulation and control. The book includes actual plans for automatic shading and watering systems, solar heating, a cold frame and a balcony greenhouse, to name only a few. The extensive lists of sources for materials and information are also extremely helpful.

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## New Plants Listed as Threatened or Endangered

Rulemaking actions passed during the last quarter of 1980 by the U.S. Fish and Wildlife Service dealt with six species of plants considered to be at risk. Two species were added to the Federal Register with Endangered or Threatened Status and four others were proposed for consideration.

*Potentilla robbinsiana*, Robbins' cinquefoil, has been listed as Endangered, and Critical Habitat has been established for the plant (F.R. 9/17/80). A member of the rose family, *P. robbinsiana* historically was found in the alpine areas of New Hampshire and Vermont. Overcollection, hiker traffic and the related disturbance it can cause to fragile alpine areas have reduced the plant's populations and it now only occurs on land administered by the Forest Service in New Hampshire. According to the Service, "Natural factors also play a role in plant mortality. Because of the harsh climate above timberline, only 40 percent of the seedlings survive each year, and during the first few years after germination, the mortality rate of the plants is very high."

Mountain golden heather, *Hudsonia montana*, has been listed as a Threatened species and its Critical Habitat designated in Pisgah National

Forest in South Carolina. The plant is another example of a species threatened by the ever-increasing number of visitors to fragile natural areas.

*Phacelia formosula*, a species discovered in 1918, has been proposed for listing as an Endangered species (F.R. 9/2/80). This member of the waterleaf family, Hydrophyllaceae, is found growing only along one-quarter mile of sandstone bluff above the Michigan River in Colorado. The plant's limited habitat is threatened by heavy use of off-road motorcycles and the continued disturbance caused by resulting erosion.

A second member of the orchid family has been proposed for listing as an Endangered species (see "Two New Plants Listed as Endangered", *American Horticulturist* news, November 1980). *Isotria medeoloides*, the small whorled pogonia, exists in only 16 known populations in the eastern U.S. and Canada. There are an estimated 150 to 175 remaining individuals. The Endangered Species Technical Bulletin describes the plant as being "most often associated with relatively open areas in deciduous hardwoods; either beech-birch-maple or oak-hickory. Suitable habitats range from dry, rocky, wooded slopes to moist streambanks." Housing developments and golf courses have

caused the loss of populations in many areas due to habitat alterations.

*Euphorbia skottsbergii* var. *kalaeloana*, a native Hawaiian shrub commonly called the 'Ewa Plains 'akoko has been proposed for listing as an Endangered species. The plant is the only survivor of three plant taxa native to the 'Ewa Plains on the island of Oahu. Currently the major threat to the species lies in construction of dockside facilities being considered in conjunction with the development of a deep-draft harbor. Competition with nonnative weedy species is also a problem, and scientists believe that the decline of the native pollinating insects may have reduced the plant's reproductive success. No Critical Habitat has been proposed for the plant.

Malheur wire-lettuce, *Stephanomeria malheurensis*, was proposed for status as an Endangered species (F.R. 10/31/80). This plant is known from only one small population in Harney County, Oregon. Its habitat is threatened by impending mining in the area, and habitat invasion by cheat grass, *Bromus pectorum*. Designation of Critical Habitat is included in the proposal.—*Endangered Species Technical Bulletin*, October 1980 and November/December 1980.

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