

AMERICAN HORTICULTURIST

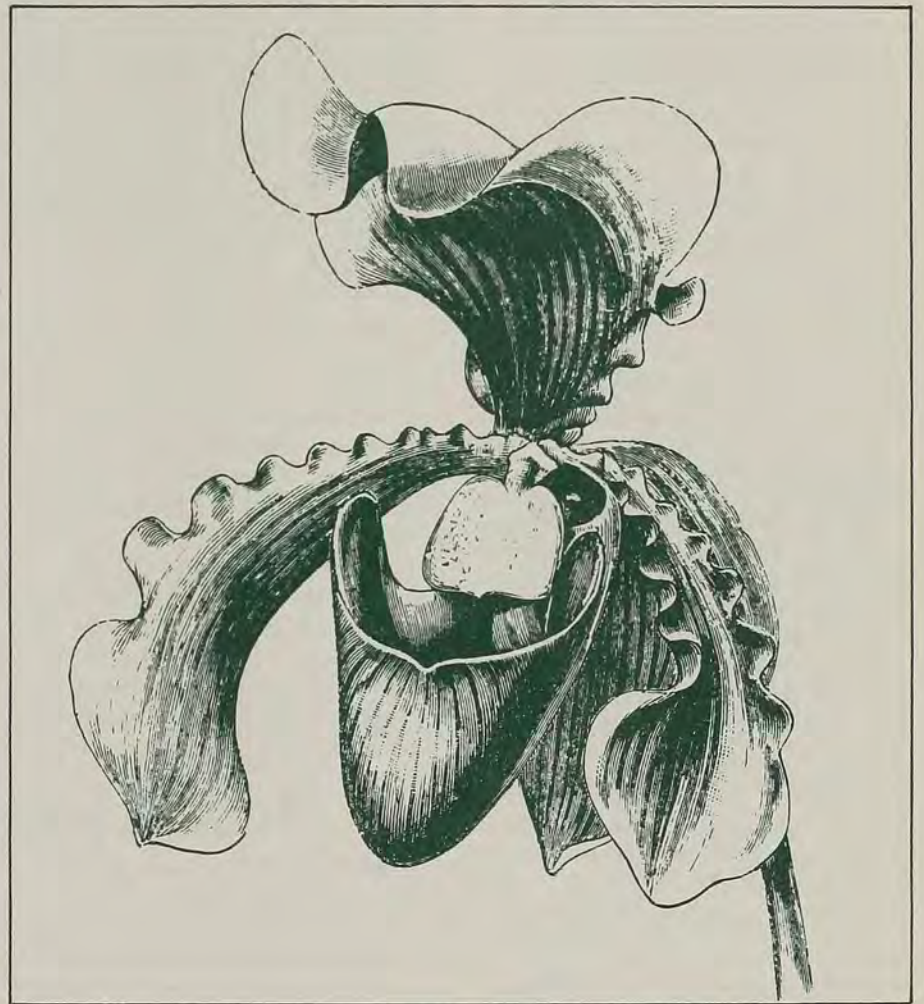
Commercially Grown Orchids From Seed: Help For Some Endangered Plants

A horticulturist at the University of Minnesota has made an important step toward preserving our native North American orchids. In experiments at the University, Peter Ascher has become the first person to grow these delicate terrestrials, many of which are endangered, from seed in a growth medium in which all the ingredients are known and defined. According to Ascher, in a few years, "we could be generating plants that could replace all commercial production." Laboratory produced plants would greatly reduce the demand for collected specimens and stress on wild populations.

The problem of growing terrestrial orchids in the greenhouse has plagued horticulturists for years. To survive, these plants must develop a mycorrhizal association with a fungus that wraps itself around the orchid's roots and supplies the plant with some essential, but unknown, nutrient. Ascher believes that not all species of terrestrial orchids require this mycorrhizal association throughout their life span, and that some may only require it during the early stages of their life cycles. If a plant could be grown past this point in a laboratory and could be transplanted into a pot successfully, growers could one day produce and sell terrestrial orchids without having to rely on division (a procedure that at this point is unable to keep up with demand) or threatening wild populations by collection.

Discovering exactly what combination of nutritional supplements is required by each of the 16 orchid species Ascher has experimented with has not been easy. He calls his cultures "shotgun experiments" that happened to hit their targets.

In the case of the lady slipper or-



chids, *Cypripedium* species, Ascher may have hit the target, but he has yet to hit the bullseye. In three years of test-tube growth plants have produced root systems and leaves, but Ascher and his assistants have not produced a plant that can survive transplanting into a pot. Thus far, only one of the species Ascher has worked with, *Epipactis gigantea*, commonly called the giant helleborine, has done well upon transfer from test tube to flower pot. This is

the only species that has flowered.

Ascher thinks the lack of winters in the laboratory may be the problem. "We haven't figured out the environmental trigger," he admits, but an alternating heat/cold cycle might be the answer.

There have been many other problems in nursing the sensitive orchids, but Ascher is confident he can solve them. If he succeeds, commercially cultured terrestrial orchids may be available in a few years.

River Farm Notes

It's mid-September as I write this and the heat of August is behind us, mellowed by chilled nights. No longer echoing from the gardens, the voices of neighborhood children ring out from packed school buses, and *Rudbeckia* is giving way to chrysanthemums: fall is on the way.

For me, fall is one of the two most cherished seasons of the year (spring being the other). Fall's abundant color makes tolerable even the inevitable increase in maintenance and planting. Of course, the more desirable temperatures probably do contribute to this feeling of well-being, but I prefer to think it is due simply to the magic of colors—colors subduing the tensions and frustrations that normally come in loud and clear.

The first few hints of things to come are making their appearances, and we expect that fall at River Farm will be nothing less than spec-

tacular. The dominant oaks, maples and sassafras hesitate to dress for the occasion, but our beloved dogwood and the winged euonymus, among others, already show exciting reds where unblemished green existed just days before. There is a magical transformation in progress, from the inconspicuous to the bold and brilliant. Oh, how I love this season.

It's sad to see our summer beauties wane, ready for the long winter's rest, but it's not quite so bleak when we remember just what awaits us in this year's last performance. As every gardener well knows, this show does not simply happen. It is created through countless hours of labor, which brings me to a related subject.

A very dedicated crew, composed of three full-time staff members, volunteers and interns, works constantly to maintain and develop our 25 acres of public gardens, trees and meadows.

In past summers we have been able to bring into our fold three horticulture students. They have given us the opportunity to establish educational displays worthy of the Society—our Ideas Garden, for example. Each day they work to the brink of exhaustion, receiving in return the horticultural experience of their lives.

In addition to enjoying the tangible results of our interns' daily ef-

forts, I feel deep satisfaction knowing that the Society, by giving these students practical training, is fulfilling one of its goals: to increase horticultural knowledge and interest throughout America.

I bring this program to your attention because it is in jeopardy. We find ourselves unable to offer these people what they deserve financially, what—in almost every case—they must earn to continue their educations. Instead of expanding this much-needed program, we face the prospect of cutting it back.

I am appealing to you, our members, to help us avoid such a gloomy possibility. We are establishing a Summer Internship Fund, and we will depend on you for the contributions which will allow the Internship Program to continue. I assure you, even your smallest contribution *will* make a difference. Help us with this educational opportunity; help us to bring knowledge to these young people, who constitute our future.

As this beautiful season continues, reminding me daily of the coming winter silence as well as growth, I hope I can look forward to next year's abundance knowing that the 1983 harvest will reflect the efforts of energetic, dedicated AHS interns. Let us work together in this endeavor. It is worth it to each and every one of us not to let this program suffer an untimely death.

—Steve Davis

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AHS Directory Published

Our new directory, *North American Horticulture, A Reference Guide*, is now in print. Those of you who ordered copies by September 1 should have them in hand. We hope you are as pleased with this new publication as we are, and we welcome your comments and suggestions for future editions.

Because the Society serves the needs and interests of professional and amateur horticulturists, our new directory is designed for an unusually diverse audience. We realize, however, that some of you would not use a reference of this type often enough to justify the cover price of \$50. The ever present problem of

rising prices combined with the vastly increased size and scope of this edition of our directory made it impossible for us to keep the price of the book within a lower bracket.

To those of you who do not plan to buy the directory for your personal library, please ask your local library to purchase a copy for its reference shelves. Perhaps your garden club could purchase a copy for a financially strapped school or public garden library. If you need an extra copy(s) of our brochure about the directory, please write to me in care of the Society. We believe each copy of the directory sold will benefit horticulture in North America.

—Barbara W. Ellis

New Board Members Elected

The Society elected 12 new directors to serve on its board at the 37th Annual Meeting in Cincinnati. Six are incumbents and six are new members. The incumbents are Mr. Edward N. Dane (the Society's new president), Mr. Jackson R. Eddy, Mrs. A. Lester Marks, Mrs. Edward C. Sweeney (the Society's new 1st Vice President), Mrs. William C. Weaver and Dr. John A. Wott.

The new board members are: Mr. Russell Clark, former President of the Massachusetts Horticultural Society and a partner in a Massachusetts investment firm; Dr. Thomas A. Fretz, former Associate Professor of Horticulture at The Ohio State University and now Professor and Head of the Department of Horticulture at Virginia Polytechnic and State University; Mrs. Bruce Gunnell, a Director of the Garden Club of America and a member of the Friends of River Farm; Ms. Carolyn S. Marsh, president and owner of Carolyn Marsh & Associates, Inc., a landscape design and installation



The Society's new president Mr. Edward N. Dane

company; Mr. Everitt L. Miller, director of Longwood Gardens, Kennett Square, Pennsylvania; and Mrs. Philip Temple, the official White House Florist, who unofficially served in that position during the last three administrations.

Society Announces 1982 Award Winners

Newly elected AHS President Edward N. Dane announced the 1982 American Horticultural Society award winners Saturday, October 2, at our 37th Annual Meeting in Cincinnati.

Fred C. Galle has been awarded the Liberty Hyde Bailey Medal, the highest honor the American Horticultural Society can bestow upon an individual. Mr. Galle has devoted 40 years to his interest in plants and gardens, always willingly contributing his time and knowledge to the many organizations with which he has had association. He has served as the president of the American Horticultural Society, the American Rhododendron Society and the American Association of Botanic Gardens and Arboreta. He has also served as a director of the Holly Society of America, as Secretary-Treasurer of the Georgia Horticultural Society and on the Advisory Council of the U. S. National Arboretum.

Mr. Galle has been with Callaway Gardens, Pine Mountain, Georgia

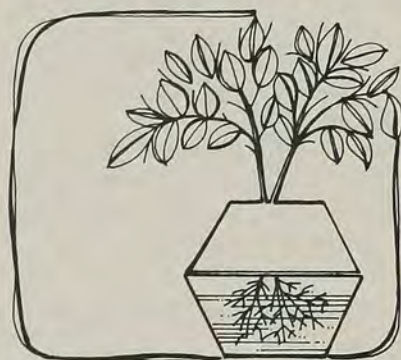
since 1953, serving as Director of Horticulture and now Curator. Before coming to Callaway he taught at the University of Tennessee and the Ohio State University, where he earlier received his B.S. and M.S. degrees.

Mr. Galle also writes frequently on subjects of interest to amateur and professional horticulturists. He is now engaged in the ambitious task of editing Frederic P. Lee's popular *Azalea Book*, which has not been revised since 1965.

The G. B. Gunlogson Award, given to an individual whose creative use of new technology makes home gardening more productive and enjoyable, was awarded to **James W. Wilson**, who most recently served as Executive Secretary of the All-America Selections/National Garden Bureau. As Secretary, he saw to it that hundreds of thousands of Americans learned about the latest developments in vegetable and ornamental gardening each

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year. By popularizing the concept of "All-America Selections," he made it possible for research scientists and commercial seed producers to justify the tremendous dollar investment involved in improving the quality of plants for our gardens.

In his spare time Jim has written countless magazine articles and a book on gardening. He also has served as a technical editor for a number of books by Ortho, Sunset and Countryside. He is presently working with Countryside on an anthology on home vegetable gardening.

This year the Society's Amateur Citation was awarded to **Stanley M. Rowe, Sr.** who, with his wife Dorothy, established a private arboretum in 1924. The Stanley M. Rowe Arboretum, in Cincinnati, now contains a remarkable collection of conifers, crabapples, magnolias, oaks and beeches on its 170 acres. The Rowe Arboretum has tested many plants for various research organizations over the years, and Mr. Rowe has produced a showplace that hundreds of amateur and professional horticulturists enjoy visiting each year.

Mr. Rowe also helped found the Cincinnati Nature Center in 1965 and is a past director of the National Audubon Society. He is a life member of the American Horticultural Society.

Eliot Wadsworth, II, the winner of the Commercial Citation this year, is a relative newcomer to horticulture, but in five years he has made quite an impact. Formerly an investment banker, Mr. Wadsworth bought White Flower Farm Nursery in 1977. Thanks to his outstanding management, his business maintains its reputation as one of the finest perennial nurseries in the country. White Flower Farm is also famous for its lovely and very educational mail-order catalogue. Through this publication, thousands of gardeners, beginners or old hands, are introduced to new and exciting plants each season.

Last year Mr. Wadsworth embarked on yet another horticultural adventure. He and *The New Yorker* joined forces to buy *Horticulture* magazine. His goal, in his own words, is "for *Horticulture* to be-

Martha Washingtons Like Cold Nights

To successfully grow Martha Washington geraniums indoors, *Flora-scope* newsletter reminds readers it is important to know these plants require night temperatures below 60° F to set flower buds. Be sure to keep them in a cool location if you want flowers. Once buds have been initiated the plants can be forced into bloom at higher temperatures. Garden centers and nurseries do sell precooled or prebudded plants.

Don't pinch these plants before they bloom or flowers won't appear until the plants go through another cooling process.

To improve the quality of your plants extend the day length to 16 to 18 hours using artificial light. Also, use a well aerated potting mix and keep the plants uniformly moist. Avoid using high ammonia nitrogen fertilizers, but do maintain a regular, balanced feeding schedule.

come to gardening what *Gourmet* magazine is to cooking."

As a successful nurseryman and a horticultural publisher, Mr. Wadsworth is a doubly deserving winner of this citation.

The writing citation was awarded to **Robert Smaus**, Associate Editor of the *Los Angeles Times Home Magazine* and a former contributing editor of *Sunset* magazine.

Mr. Smaus' articles on gardening reach over a million readers every week and, as his editor has written us, the articles are "timely, factual and presented with beauty befitting a garden."

He comes by his interest in gardening naturally. His grandfather was a pioneer landscape architect in the San Francisco Bay area and a keen gardener himself. Mr. Smaus has devoted volunteer time to horticulture as well, having served on the board of the Southern California Horticultural Institute.

The Landscape Citation was awarded to **Disneyland in California**. Bill Evans, Disneyland's original landscape contractor and horticulturist, must be given much of the credit for establishing the aesthetic standards the park continues to uphold. Today the staff of 49, headed by Ken Inouye, maintains seven acres of turf and nine acres of shrub areas containing plants indigenous to many countries. The crew cares for 2,500 trees and a sizeable amount of topiary, all of which they grow themselves.

As Mr. Inouye writes, "the entire park is a stage. . . flower beds are mystically changed overnight; trees appear to be in consistent symmetri-

cal form; weeds and excess leaves seem to be non-existent." The maintenance tasks involved in achieving this magical, fantasy world are formidable, as any gardener knows. But that they are done without sacrificing plant diversity and with an eye toward using forgotten plant varieties is especially significant to horticulturists. Disneyland deserves recognition for making their park not just a child's fantasyland but a plantsman's as well.

A new citation for local horticulture has been created to recognize an individual or group who has contributed to the improvement of horticulture in the host city for the Society's annual meeting. The first recipient of our local Horticultural Citation was **Marlene Holwadel**, founder of the very successful Adopt-A-Plot programs featured in the August issue of *American Horticulturist*. Mrs. Holwadel is also one of the two founders of the Cincinnati Park Board Volunteers. In that capacity she started the gift shop in the Krohn Conservatory and developed guided tours of both the Conservatory and the Mt. Airy Arboretum. In addition, she and her army of volunteers have contributed plants to the Conservatory and have made a number of important physical improvements to the Conservatory's buildings. She helped establish the Living Gift Fund to provide for tree plantings in city parks and raised money for the city's annual Fountain Square Christmas Display. In 1980 the *Cincinnati Enquirer* selected her as a Woman of the Year.

Jane Steffey was awarded the Society's Meritorious Service Award,

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recognizing her outstanding service and support of the Society's programs, services and activities. Few people have been greater friends and supporters of AHS; since 1971 Ms. Steffey has volunteered her time as our Horticultural Information Service Director, answering thousands of inquiries from our members who had gardening problems, needed guidance or were looking for special plants. Since 1980 she also has written a regular feature for *American Horticulturist*—Strange Relatives—which has become a favorite of our members.

Before coming to AHS as an almost full-time volunteer, Ms. Steffey worked in Washington for the USDA in the Agricultural Economics Program of the Extension Service. She also worked for the Soil Conservation Service in Ames, Iowa. In all, she worked for USDA 36 years. Her only non-government job was with Burpee's, for whom she worked immediately after graduating from Hood College with a degree in Botany.

She is a member of the Indoor Light Gardening Society and is a past president of her local chapter, a member of the Gloxinia and Gesneriad Society and of Garden Writers

of America. For five years she was garden columnist for *The Weekly of the Washington Post*.

Donald Egolf, winner of this year's Professional Citation, has devoted his professional life to improving plant stock for gardeners everywhere. After receiving his Ph.D. from Cornell University and attending the University of London for two years on a Fulbright Scholarship, he joined the U. S. National Arboretum. As Research Horticulturist there, he has introduced 30 new cultivars to gardeners since 1958, all from four genera, *Hibiscus*, *Lagerstroemia*, *Pyracantha* and *Viburnum*.

He is greatly responsible for making the breeding program at the U. S. National Arboretum one of the most comprehensive of its kind anywhere in the world. For these efforts the American Association of Nurserymen has recognized him with their Norman Jay Colman Award, and the Horticultural Research Institute has given him research grants for further study. Dr. Egolf also has been given the Hutchinson Award from the Chicago Horticultural Society and the Jackson Dawson Medal from the Massachusetts Horticultural Society.

Franklinia-Camellia Cross Successful

W. L. Ackerman, a research horticulturist at the U. S. National Arboretum, and Margot Williams of the U. S. Department of Agriculture, have successfully crossed *Camellia japonica* and *C. sasanqua* with *Franklinia alatomahia*. These intergeneric hybrids are the result of an extensive series of crosses, 6,574 in all, attempted between genera in the tea family, Theaceae, which includes *Camellia*, *Franklinia*, *Stewartia* and *Tutcheria*.

There is a great deal of work left to be done in this area, but according to Ackerman and Williams, "Any intergeneric hybrids developed between *Franklinia* and other members of Theaceae may be of ornamental as well as academic interest. Hybrids with *Camellia* would be of particular interest for their commercial potential. *Franklinia* is winter-

hardy in Massachusetts and when hybridized with *Camellia* should increase the cold-hardiness of the latter, or change the color and flower form of the former." The scientists experimented with using several chemicals in conjunction with the pollinations to induce fertilization and seed development of these hybrids. According to their report the effectiveness of these applications varied depending on the treatment used and the seed parent involved.

Of all of the crosses made the only successful ones that resulted in valid hybrids were made between *Camellia japonica* and *Franklinia* and *C. sasanqua* and *Franklinia*. Germination percentages were very low, and only two plants from the first cross and one from the second have survived.

—HortScience, August, 1982

Herb or Erb?

A simple four-letter word, *h-e-r-b*, has been the cause of much discussion as to its pronunciation. In America one is often considered uncultured if he pronounces the *h*; in England he is apt to be branded a cockney if he drops the *h*.

Until 1475 the word was *erb*, both in spelling and in pronunciation. It came to England from the Latin *herba*, through the Old French *Herbe* or *erbe*. At the beginning of the sixteenth century, the Latin *h* was re-attached to the word, but it remained mute until 1800. Since then pronunciation of the *h* has come into use; *herb* is correct in England. American usage still clings to the historical *erb*. Take your choice. When in London, say *herb*, when in New York, say *erb*; when in Rome . . .

—Brooklyn Botanic Garden
Handbook on Culinary Herbs

Slug Control

A few fall and winter maintenance tasks can help prevent a population of slugs from developing to ruin your garden next season. *Gardens For All, News* recommends that you slug-proof your yard by eliminating dark, moist, cool areas where slugs hide (the undersides of boards or shingles are examples), keep weeds and grass cut down, maintain a clean yard around the edge of your garden and edge it with bark, wood ashes, sand and other sharp or alkaline irritants.

"In the winter," the article suggests, "fill in crevices in basements and wells with mortar to eliminate hiding places. Keep basements and vegetable storage areas as dry as possible—slugs thrive in warm, damp places during the winter."

Finally, learn to recognize slug eggs, which are the way these pests overwinter. The oval, translucent, yellow eggs are laid in masses of 25 or more and can be found in almost all moist places where slugs are found hiding. Slugs can oviposit all year round, so watch for them indoors all year and outdoors from spring to fall.

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November 6

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Education Services, Rancho Santa Ana Bo-
tanic Garden, 1500 North College Avenue,
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November 12-14

Mid-America Orchid Congress and Peoria
Orchid Society Show
Holiday Inn
4400 North Brandywine Drive
Peoria, Illinois
Information: Mrs. Jeanette Dodge, 1805 W.
Sherman Avenue, Peoria, IL 61606

November 14-18

Professional Grounds Management Society
Conference and Trade Show
Vacation Village
San Diego, California
Information: Professional Grounds Manage-
ment Society, 7 Church Lane, Pikesville,
MD 21208, (301) 653-2742

November 29-December 3

Combined Meeting of the Entomological So-
cieties of America, Canada and Ontario
Royal York Hotel
Toronto, Ontario, Canada
Information: Jeffrey A. Gorma, ESA, 4603
Calvert Road, College Park, MD 20740

December 16

American Horticultural Society Christmas
Open House
River Farm
Mt. Vernon, Virginia
Information: Call or write the Department of
Education at the Society

Upcoming AHS Events

The following Society sponsored
tours and other events have been
scheduled for this winter and spring.
For information about any of these
events write the Society's Depart-
ment of Education.

November 1-17

Autumn in the Orient tour of Japan
and its gardens

December 16

Christmas Open House, River Farm

January 24-February 5, 1983

Floral Festival Cruise from Ft. Lau-
derdale, Florida to Acapulco

February 24, March 3, 10, 17 and 31

Winter Lecture Series at River Farm

March 19-22

Spring Symposium, Charleston,
South Carolina

April 1-24

"China Discovery" tour of the
warm provinces of Yunnan, Sichuan
(Szechwan) and the Southwest. The
prolific rhododendrons and azaleas
are a feature as are the Buddhist
cave sculptures at Dazu and sacred
Mt. Emei, the site of much botanical
research.

April 14-28

Spring tour of California's private
and public gardens, parks and nur-
series from San Francisco to San
Diego. The itinerary includes visits
to Strybing Arboretum, Hearst Cas-
tle, Descanso Gardens, a winery and
the Getty Museum.

April 28-May 18

Tour of Japan in the spring featur-
ing a visit to Kyushu, Japan's south-
ern island famous for its rhododen-
drons and azaleas. Also scheduled
are visits to public and private gar-
dens in Kyoto and Tokyo and lovely
Hakone National Park.

April 30-May 7

"Spring in Bermuda" tour of this is-
land's public and private gardens

May 12-26

Our annual trip to the famed Chel-
sea Flower Show. Also scheduled are
visits to public and private gardens
in Sussex and the Cotswolds, includ-
ing Sissinghurst and Pusey.

BOOKS FOR SERIOUS GARDENERS

Christmas discount to AHS members from the Society and Timber Press
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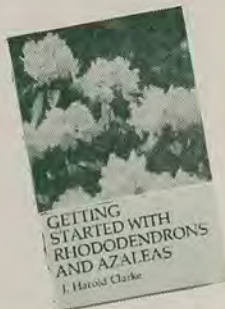
THE TERRACE GARDENER'S HANDBOOK Raising Plants on a Balcony, Terrace, Rooftop, Penthouse or Patio by **Linda Yang**. "... Both pictures and text bear the stamp of originality, enthusiasm, a fresh approach and sensible good horticulture ..." (Flower and Garden). 283 pages, 112 photos, 32 line drawings, paper, \$13.95 retail

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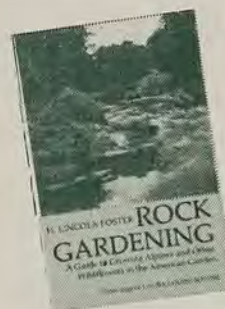
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Try Fothergilla for the Fall Garden

Of the wealth of plants a gardener may choose from to add autumn color to the landscape, members of the genus *Fothergilla* are too often overlooked. Members of the Hamamelidaceae or witch hazel family, which contains a number of spectacular plants for this use, the four or five species of *Fothergilla* are all native to the United States. They grow naturally from North Carolina to Alabama, but fortunately for gardeners, these small- to medium-sized deciduous shrubs are hardy far north of their natural range—up to USDA Zone 4. The Arnold Arboretum has grown them for many years, and I have grown them in my northern Illinois garden with much success.

Although regarded by some as spring blooming shrubs, these handsome plants exhibit a special glory in the autumn when their green leaves become a flame of bright yellow, gold and crimson. Their foliage will steal the spotlight for many days before the leaves fall to the ground, and it is for this attribute that they are most appreciated.

Surprisingly, these shrubs are little used in gardens, even though they are very easy to grow. The three most common species in the genus, named for Dr. John Fothergill, a distinguished 18th-century English plantsman and gardener, are *F. gardenii*, *F. major* and *F. monticola*. All have similar flowers and branching habits. They are rounded, compact, graceful shrubs that differ somewhat in height at maturity. The foliage is witch hazel-like—simple, alternate, oval or obovate and coarsely toothed. The veins of the two- to four-inch long leaves are very conspicuous.

Creamy white, fragrant flowers appear in the spring before the leaves unfurl. They are borne in dense terminal heads at the tips of the branches and are very showy, although they have no petals. The many yellow stamens enhance their bottle-brush-like beauty. The leaves generally appear just after the blossoms have fallen.

Besides beauty, fothergillas have other virtues to recommend them.



Fothergilla gardenii

They flower at a tender age, have an attractive, orderly growth habit, are easy to transplant, do not sucker or spread by creeping roots and require little pruning. They also seem to be free from attack by insects and diseases.

Any of the *Fothergilla* species make fine specimen shrubs, but they also may be used in a grouping. They prefer a slightly acid, well-drained, sandy/peaty soil and appreciate a sprinkling of bone meal at planting.

Of the species, *F. gardenii* is perhaps the choicest of the lot. Named for Dr. Alexander Garden, a physician practicing in Charleston, South Carolina, and the man for whom *Gardenia* was named, *F. gardenii* grows only three feet high and is an excellent plant to select for its creamy-white April flowers and golden-yellow fall foliage. One is apt to be disheartened by the price of this small shrub, but placed in a prominent spot in the garden where it can be enjoyed from all sides, a single specimen can be very worthwhile. Its small stature makes it a perfect selection for planting among herbaceous plants such as ferns, lig-

ularia or hostas, or in the front of a shrubbery border or small group of evergreens.

Of the other two most common species, *F. monticola* is a six-foot, spreading shrub, and *F. major* is a somewhat more pyramidal, less spreading, 10-foot-tall plant.

Fothergilla can be propagated from softwood cuttings taken in July, but they probably will take two years to establish. The plants do set seed, which is doubly dormant. To germinate it successfully, stratify in moist peat at room temperature for five months, followed by a cold period (40° F) of four months. *F. gardenii* can also be propagated from suckers and root cuttings.

F. gardenii and *F. monticola* are available from Gossler Farms Nursery, 1200 Weaver Road, Springfield, OR 97477, catalogue \$1.00. *F. gardenii* is available from Wayside Gardens, Hodges, SC 29695, catalogue \$2.00 and Woodlanders, Inc. 1128 Colleton Avenue, Aiken, SC 29801, catalogue \$1.50. *F. monticola* is also available from Greer Gardens, 1280 Goodpasture Island Road, Eugene, OR 97401, Catalogue \$2.00.

—Mrs. Ralph Cannon

A Problem for African Violets

Soil mealybugs are a serious pest of African violets, a problem made more complicated because the pests are very small and not usually visible without removing the plant from its pot and inspecting the roots very closely. Plants may be infested with moderate numbers of soil mealybugs for long periods without showing symptoms, but infested plants subjected to stress can exhibit serious symptoms such as yellowing leaves and rapid wilting.

Dr. Charles L. Cole, Texas A & M University, tested five insecticides to demonstrate soil mealybug control: Dymet, Knox-Out, Orthene 2G, Thiodan and Malathion. The insecticides were applied as a soil drench at the rate recommended on the label, and the plants were allowed to stand in the excess solution for two hours after treatment. Then the saucers were drained and the plants were placed under growing lights. After 28 days plants treated

with Dymet, Knox-Out, Orthene 2G and Thiodan showed 100 percent control. The plants treated with Malathion showed only 65 percent control after that period. According to Dr. Cole, for successful control of this pest it is important to thoroughly drench the entire root ball during treatment.

—*African Violet Magazine*
September, 1982

1983 Seed Program

Many generous companies and individuals have donated seed to our 1983 program, so many, in fact, that we cannot accept any more donations if we are to have time to bag and tag the selections we have on hand. We're delighted with the response and the selection we'll be able to offer you next year. Expect to get your seed catalogue in the mail about mid January.

Two New Books to Order

The Brooklyn Botanical Garden's new *Handbook on Culinary Herbs* is an excellent collection of articles on this popular group of plants. Articles by the curators of the herb gardens at the National Arboretum and the New York Botanical Garden feature their favorite plants, and other articles in the 64-page book discuss growing herbs in containers, propagation and how to identify the familiar families of herbs.

To obtain a copy request publication 98, *Handbook on Culinary Herbs*, from the Brooklyn Botanic Garden, 1000 Washington Avenue, Brooklyn, NY 11225. Send \$2.25 plus \$.80 postage and handling for the first Handbook and \$.10 for postage and handling for each additional Handbook.

A new edition of the Mailorder Association of Nurserymen's free booklet, "Gardening by Mail: Where To Buy It," is also now available. This useful publication lists 400 different plants, from *Abelia* to *Yucca*, and the names and ad-

dresses of 76 different mailorder companies where they can be bought. To order a copy send a large (#10), self-addressed envelope with two 20¢ stamps to the Mailorder Association of Nurserymen, Inc., Department AHS, 210 Cartwright Boulevard, Massapequa Park, NY 11762.

Verbena Germinates Better With Light

According to *FloraScope*, March, 1982, *Verbena* germination can be improved by giving the planted seeds light 24 hours a day. Cover the seed with a ¼-inch layer of vermiculite, use a fungicide to control damping-off, and keep the medium evenly moist. Temperatures of about 70° F are recommended. The layer of vermiculite helps maintain an even moisture level in the medium, and thus improves germination.

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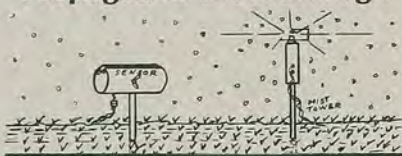


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Pines Can Get Nematodes Too

A new cause of pine tree death came to light in February, 1979 when a sample of wood from a 40-year-old Austrian pine (*Pinus nigra*) was sent to the Plant Pathology Diagnostic Laboratory at the University of Missouri-Columbia for analysis. The tree had wilted severely during the summer of 1978 and died before the end of the summer.

The cause of the tree's death might have remained a mystery if Dr. S. Ouchi, a Japanese Plant Pathologist, hadn't been visiting the University. Most pine mortality is attributed to conditions such as root damage, improper moisture, winter damage, chemical injury, attack by bark beetles or disease, but Dr. Ouchi had a hunch the pine died for another reason. He suggested the laboratory staff soak a sample of the log's center in water. When this was done literally thousands of nematodes emerged. Dr. Victor Dropkin, a nematologist, identified the microscopic organisms as *Bursaphelenchus xylophilus*. This was the first time pine wilt was brought to the attention of American scientists.

A curious, intricate relationship exists between these nematodes and their vectors, a wood-boring insect commonly called the long-horn beetle. Adult beetles emerge from dead trees carrying nematodes in their tracheae. Selecting trees under stress from a variety of causes, the insects begin feeding. The nematodes migrate from the beetles' throat and enter the tree through feeding injury caused by the beetles.

Once the nematodes enter a tree, population growth is rapid—a generation takes only five days during the summer. The tiny organisms begin feeding on the cells lining the resin canals of the tree. As these cells are damaged the infested tree becomes unable to transport water and soon wilts. Needles change from green to yellow and finally brown. The tree retains its dead needles, and looks as if it had been near a fire. By the onset of winter it will be dead. In Japan the disease generally affects the entire crown of the tree, but in this country it can cause the symptoms to appear in a portion of

the crown, or even on a single branch.

Dr. Ouchi first suspected nematode infestation because it is an all too familiar problem in his country, having reached epidemic proportions in sections of Japan since its discovery in Nagasaki in 1905. In their intensive studies of the disease Japanese scientists have identified three types of control measures, which are still being investigated, that seem to offer some degree of success.

- Sanitation—removing and or burning infested wood to prevent the spread of insect vectors.
- Pesticides—experimental spraying with insecticides. Also, systemic nematocides and insecticides are being tested.
- Genetic resistance—some individuals within a species of pine are more resistant than others and these are being tested in breeding programs.

In our country research is just getting underway. According to Dr. Mark Lovel, an entomologist at the University of Missouri-Columbia, American research will focus on the nematodes, their vectors, the susceptibility of various pine and other tree species to the wilt and the role of toxins in tree death. Experiments indicate the presence of nematode-produced toxins, and the way in which these toxins affect healthy trees is not well understood.

How can healthy trees be protected from pine wilt? Data is incomplete, but several steps appear to be effective.

- When planting trees select pines known to be tolerant of the disease.

● The beetles are attracted by trees that are already under stress, so provide optimum cultural conditions. Adjust pH and fertilize if tests indicate this is needed. Water deeply if the weather is dry. Don't prune the trees unless it is absolutely necessary, because observers note that pruned trees often suffer infestation while unpruned trees nearby escape attack. Clean up all limbs and debris under trees, and use insecticides to protect valuable trees if pine wilt is present in your area.

● Finally, sanitation is an important aspect of any control program. If you have a dead pine and suspect pine wilt, write or call your local county extension agent or the Department of Plant Pathology at your state university. They will give you instructions on preparing a sample of wood for diagnosis and will tell you where to send it for analysis.

If your sample is positive for pine wilt, cut down the tree and burn all wood immediately, including branches, needles and stump. Do not put wood from a diseased tree onto a woodpile because the beetles infesting the tree will complete their life cycle there and fly to healthy trees to spread the disease.

Pine wilt appears to be endemic in American forests, but scientists need more confirmed reports to accurately determine the geographic and host distribution of the disease. Share with others the information needed to diagnose this disease. Vigilance on the part of concerned gardeners can go a long way toward helping prevent further spread of this threat to our forest and ornamental evergreens.

-Marjia Bahr

Pine Wilt Susceptibility

Not all pines are equally susceptible to pine wilt. The following is a partial listing of the sensitivity of some species of pine.

SUSCEPTIBILITY	SPECIES
High	Monterey, red, sugar, jack, loblolly
Moderate	Virginia, ponderosa, Scotch, western white, lodgepole
Low	Southwestern white, Jeffrey, Eastern white

The sensitivity of other species of evergreens to pine wilt is not yet fully known. Spruce (*Picea glauca*), larch (*Larix laricina*) and cedar (*Cedrus deodora* and *C. atlantica*) have died from the disease. As more data is accumulated other species may join the list.

Perennial Corn

Rafael Guzman, a young Mexican botanist, may have made the botanical find of the century when he discovered *Zea diploperennis*, a wild perennial relative of corn previously unknown to science. This newly discovered plant produces fertile offspring when crossed with corn, thus providing plant breeders with very important genetic material that could lead to corn cultivars with immunity to several serious diseases. It also provides the potential for breeding perennial corn. Shortly before he discovered *Z. diploperennis* five years ago Guzman also rediscovered *Z. perennis*, which scientists thought was extinct in the wild. This perennial species is tetraploid, so unlike *Z. diploperennis*, it produces sterile offspring when crossed with corn, a diploid species.

Perennials generally are more resistant to systemic plant diseases than annuals, and *Z. diploperennis* has proven to be no exception. It is immune to or tolerant of most of the serious viral diseases of corn, and initial hybridizing efforts seem to indicate this valuable immunity can be bred into commercial corn cultivars. According to L. R. Nault and W. R. Findley (*Desert Plants*, Winter 1981-1982), *Z. diploperennis* "may help provide resistant germplasm for foliar and root pathogens as well as insect pests such as corn earworms, stalk borers and rootworms." Their studies also suggest the species "may provide genes for greater stalk and root strength, multiple ears per plant and tolerance to poorly drained soil."

There are obvious advantages to growing perennial corn, and, according to Nault and Findley, there are some disadvantages. Perennial popcorn or sweet corn could be perfect for the homeowner who doesn't need an entire field of plants and doesn't want to replant each year. Perennial corn may be perfect in developing countries where annual races are poor producers. Nault and Findley mention two disadvantages. "A perennial must divide its nutrient resources between the seed and its rhizomes, the overwintering structures. Therefore, a perennial corn



plant might not be expected to produce as much grain as an annual. Also, it might not be possible to grow a perennial corn plant in the northern corn growing regions of the United States where winters are often severe. Frost occurs in the mountains of southern Jalisco where *Z. diploperennis* grows, but the ground does not freeze as it does in the Cornbelt states."

—*Desert Plants*, Winter 1981-1982

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Rhododendron Guidebook Available

Rhododendron enthusiasts and gardeners with an interest in purchasing some of these lovely plants will want to obtain a copy of *Greer's Guidebook to Available Rhododendrons*, written by Harold E. Greer, owner of Greer Gardens, a prestigious West Coast nursery boasting one of the world's largest and most complete collections of rhododendrons.

Most of this 150-page book is de-



voted to a list and description of over 580 species of *Rhododendron* and about 1,300 cultivars. Each description gives an approximate height in 10 years, a hardiness rating, flowering season and a quality rating as well as a description of the plant. The parentage of each cultivar is indicated, and each species description is accompanied by classification information, its origin and an indication of what the species name means.

The book also features over 100 color photographs and a chart indicating the distinctive features of the cultivars listed.

Greer's Guidebook to Rhododendrons lists for \$12.95, but it is available to Society members at a discount price of \$11.35, including

postage and handling. Mail your order to Dorothy Sams, American Horticultural Society, PO Box 0105, Mt. Vernon, VA 22121. Virginia residents, add 4% sales tax.

Fire Ant Control

A new method for extinguishing the fire ant could be on the market next year thanks to the discovery of a juvenile hormone called MV-678. Developed by U.S.D.A. research chemist Meyer Schwarz, this compound disrupts the development and metamorphosis of the immature fire ants. It will be marketed by the Stauffer Chemical Company.

The compound can be applied in very low dosages (1/6-ounce per acre) and is mixed into a bait consisting of soybean oil and corn grits. Worker ants feed the hormone to the immature ants, which then develop abnormally or fail to develop at all. Eventually, without new workers to gather food and tend the brood, the fire ant society crumbles. MV-678 degrades quickly when left to the elements, but inside a colony workers hold the hormone in their bodies where it remains active for months. Although it takes several months to destroy an ant colony, most disappear with virtually no adverse impact on the environment.

Scholarship Notice

The Herb Society of America offers an annual grant of up to \$2,500 for the study of herbs. The subject of the study could involve history, medicinal research and usage from a historical perspective, fragrance, flavor, crafts such as drying, horticulture, landscaping, economic importance, both past and present, chemurgy, taxonomy, hardiness, political and social influence past and present or symbolism in art or literature. In fact, the possibilities are as limitless as the useful plants themselves.

For information on the Scholarship Program of The Herb Society of America, write Mrs. Booker Worthen, Chairman, 31 Edgehill Road, Little Rock, AR 72207.