

**Special
Edition!**

January 1986

American Horticulturist



**Seed Program
Catalogue
Enclosed!**

Endangered Plants Update

The Fish and Wildlife Service's (FWS) list of endangered plants continues to lengthen. Four new plants have been added to the List of Endangered and Threatened Wildlife and Plants, and four other species have been proposed for listing.

Buxus vablii. Vahl's boxwood is a small tree or shrub that has been listed as Endangered. Found only in two small, isolated populations, it grows in semi-evergreen forests located on limestone in northern and northwestern Puerto Rico. The 40 existing individuals of this species are vulnerable to extinction from potential habitat modification or destruction due to limestone mining and urban development.

Gardenia brighamii. Hawaiian gardenia or na'u is a distinctive tree that reaches 20 to 30 feet in height. It has a broad canopy of shiny, dark-green leaves and fragrant, white- to cream-colored flowers resembling those of



Gardenia brighamii, commonly called Hawaiian gardenia, was once found on five of the main Hawaiian Islands; today it occurs only on the islands of Lanai, Molokai and Oahu.

the Tahitian gardenia (*G. taitensis*). Once found on five of the main Hawaiian Islands, today it occurs only on the islands of Lanai (about six plants), Molokai (two plants) and Oahu (one plant). It is believed to be completely extirpated from Hawaii and Maui, and has been listed as Endangered. Grazing and browsing by domestic and feral animals, and the invasion of exotic plants are believed to be responsible for this species' decline. Also, Hawaiian gardenia's native dryland forest habitat has been replaced by urban development, fields and pastures.

Primula maguirei. Maguire primrose, a small perennial herb with conspicuous lavender flowers, has been listed as Threatened. Although it is not in immediate danger of extinction, Maguire primrose is restricted in range and highly vulnerable to habitat modification. There are currently only nine known populations, one of which contains about 100 plants; the remainder each contain fewer than 30. These populations are found in Logan County, Utah, on land managed by the U.S. Forest Service. *P. maguirei* grows on damp, north-facing ledges and crevices and on overhanging rocks along canyon walls. Collecting and rock climbing threaten all nine populations, while some also are threatened by potential highway construction.

Townsendia aprica. Last chance townsendia is a one-inch-tall herbaceous perennial in the aster family that has been listed as Threatened. Its 12 remaining population sites are scattered over an area in central Utah about 30 miles across. Approximately 2,000 individuals are now known to exist; most of these are on land managed by the Bureau of Land Management. About 80 percent of the habitat under Federal ownership is under lease either for coal, oil or gas—a concern to biologists because *T. aprica* occurs on silty soils that can be disturbed by coal mining as well as by gas drilling. Other threats to the species' survival include off-road vehicle use, cattle grazing and trampling, and highway construction.

In addition to these new listings, the FWS has proposed four species of plants to be considered for listing

AHS 41st Annual Meeting

San Francisco is the setting for the 41st Annual Meeting of the American Horticultural Society, August 13-17, 1986. The theme of the Meeting is "Back to Nature: Horticulture's Legacy to the Future." Educational sessions, and private and public garden tours will focus on plant conservation, edible landscaping, horticultural

therapy and Oriental gardens. Experts in these different areas will speak at the educational sessions and lead the garden tours.

Meeting participants will have the opportunity to visit Golden Gate Park, founded in 1871. This 1,017-acre tract of land has been developed from a wasteland of sand dunes into a park that is internationally known as a botanical treasure. Included in this visit will be behind-the-scenes tours of special garden areas within the park, such as the 70-acre Strybing Arboretum and the Japanese Tea Garden, which was created in 1894 and is an authentic example of Japanese landscape artistry.

A trip to Filoli in Woodside, California is also planned. This beautiful estate with its lovely gardens was built in 1900 and was once known as the Roth Estate. It is now owned by the National Trust for Historic Preservation.

For more detailed information about the upcoming 41st Annual Meeting, please write the Educational Department, American Horticultural Society, PO Box 0105, Mount Vernon, VA 22121.

American Horticulturist

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as Endangered. These include *Iliamna corei* (Peter's Mountain mal-low), a single population of which occurs on Peter's Mountain in West Virginia; *Mezoneuron kawaiense*, a Hawaiian tree that exists in only three small populations totalling fewer than 50 plants; *Chrysopsis floridana* (Florida golden aster), a perennial herb threatened by urban development, cattle grazing and heavy off-road vehicle use; and *Lindera melissifolia* (the pondberry), a small deciduous shrub whose survival is threatened by land clearing and drainage activities.

Loch Lomond coyote-thistle (*Eryngium constancei*), which is a perennial herb in the parsley family, has received temporary protection as an Endangered species because of a 240-day emergency rule issued on August 1, 1985 by the Fish and Wildlife Service. The rule was issued in response to an illegal dredge-and-fill operation in the vernal lake in southern Lake County, California, that is the species' only known niche. Two candidates for Federal listing under the Endangered Species Act—*Navarretia pauciflora* (few-flowered navarretia) and *N. pliantha* (many-flowered navarretia)—also were imperiled by the operation.

Under Section 404 of the Federal Water Pollution Control Act, the U.S. Army Corps of Engineers (COE) is responsible for issuing dredge and fill permits. Section 7 of the Endangered Species Act requires all Federal agencies, including the COE, to ensure that any actions it authorizes, funds or carries out are not likely to jeopardize the existence of a listed species. Due to the emergency listing of *Eryngium constancei*, a dredge-and-fill permit cannot now be issued by the COE without prior consultation with the FWS.

The Nature Conservancy is considering purchasing the vernal lake in order to ensure protection of its unusual plant resources, and the California Department of Fish and Game also is interested in the site. In the meantime, a court order has prompted the lake's owner to repair the physical damage to the lake bed caused by the operation. He also is required to reseed the disturbed plants, including the coyote-thistle.

—*Endangered Species Technical Bulletin, September 1985*

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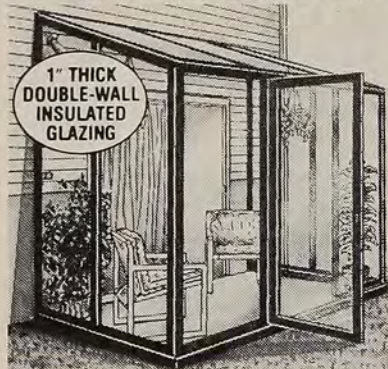
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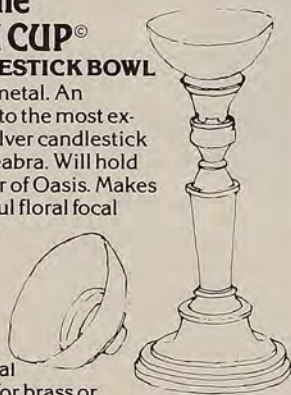
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THE CATALOG — 1.00

Student Award Announcement

Do you know of an especially gifted student of the plant sciences living in the United States or Canada, or are you one yourself? Take note—the American Association of Botanical Gardens and Arboreta (AABGA) is offering a Student Recognition Award again this year to a qualified individual who has demonstrated a special interest in horticulture or botany. Any undergraduate or graduate student enrolled in an accredited college or university at a minimum of 50 percent of a full academic schedule, or any student presently enrolled full time in an internship or training program at a public garden, is eligible to apply. Applicants must be enrolled in a curriculum related to public gardens.

Students must be nominated by at least two AABGA members in good standing, and a letter from a person familiar with the student's academic and work experience also is required. Applicants must submit a paper describing research or an original project initiated by the student that would be of value to public gardens. The submitted paper must be in English, and no longer than 2,000 words long. It should be typewritten and double-spaced. Nominations

and papers must be received no later than March 31, 1986.

The papers will be judged on originality, accuracy and completeness. They are expected to be neat, and to display proper form, grammar, spelling and punctuation. Applicants will be judged by the seriousness of their commitment to the field of public gardens.

The Student Recognition Award includes travel expenses for the AABGA Annual Meeting in Honolulu, Hawaii, June 25-28, 1986, plus registration fees, meals and accommodations. A citation will be presented at the Awards Luncheon, and the student will be expected to present his or her paper during the Annual Meeting.

For more information about covered expenses or to obtain a copy of last year's winning paper, write or call the AABGA, PO Box 206, Swarthmore, PA 19081, (215) 328-9145. Questions about the award and/or submitted papers should be addressed to Professor Woody Frey, Chair, AABGA Student Education Committee, Ornamental Horticulture Department, California Polytechnic State University, San Luis Obispo, CA 93407, (805) 546-2675.

AHS Awards Presented



Mrs. Catherine H. Sweeney, former AHS Board Member, and AHS President Edward N. Dane present the Society's new Catherine H. Sweeney Award to Mrs. Janet Meakin Poor at the 40th Annual Meeting of the American Horticultural Society in Chicago. This new award recognizes extraordinary and dedicated efforts in the field of horticulture.

The Society's next Annual Meeting will be held in San Francisco, California, August 13-17, 1986. For more information, turn to page 2.



The American Horticultural Society



Kenya and East Africa

March 5-24, 1986

Led by Dr. Gilbert Daniels, past president of the AHS, this trip to one of the world's most evocative countries includes visits to private gardens, arboreta, great tea estates, lakes, mountains, rain forests and moorlands throughout Kenya. The country offers an incredible spectrum of botanical wonders. Areas of great scenic beauty also provide ample opportunity to view the vast array of East Africa's extraordinary wildlife.



China, Horticulture and History

April 9-29, 1986

Share with us an unforgettable three weeks studying the flora, art and history of China. Under the tutelage of Andrew Lauener, an authority on Chinese plants and recently retired from the Royal Botanic Garden of Edinburgh, and of Dr. William Wu, a Chinese scholar of art history and archaeology, born in Shanghai and now living in San Francisco, we will travel from Hong Kong to Kunming, Xian, Shanghai and Beijing. Richard Hutton, president of Conard-Pyle/Star Roses and current board member of the AHS will also accompany our group.



Dutch Treat, Holland at Tulip Time

April 27-May 11, 1986

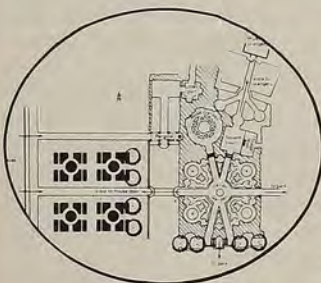
This year's trip is a variation on last year's highly acclaimed tour following paths to the country's thriving horticultural centers. We spend the first week in Amsterdam visiting the gardens of Mien Ruys, the Palais Het Loo, Haarlem and more. The second week we cruise Holland's canals aboard the luxurious hotel barge 'Juliana.' Our tour leader will be Mary Mattison van Schaik. Mrs. van Schaik, now a Vermonter, lived in Holland for 18 years and has owned a bulb importing business for 30 years. A member of the AHS, she is a popular lecturer and has been a Regional Director of the American Daffodil Society.



Scotland, Unspoiled and Unknown

May 25-June 8, 1986

Scotland is unquestionably romantic in legend and history and the landscape beautiful and unspoiled. We will visit private homes and gardens in the Western Highlands of Argyll, renowned for its rhododendrons and flowering shrubs. Traveling through remote and breathtaking scenery, we will tour the Isle of Gigha, Crarae Woodland Gardens, Inverewe and Inverness. We will be entertained in private homes and castle gardens. In Edinburgh we have the opportunity to explore the city at our own pace and to be entertained by some of Scotland's most enthusiastic and privileged horticulturalists. We are again fortunate to have Everitt Miller, former director of Longwood Gardens, as our leader.



In Search of Gertrude Jekyll

July 24-August 7, 1986

Our search for the gardens of Gertrude Jekyll will take us to the English countryside to visit the many homes and gardens that speak to the genius of this outstanding gardener and her remarkable partnership with Sir Edwin Lutyens. Throughout our tour we will meet with English authors, landscape architects and horticulturalists who will share with us their knowledge and affection for the work of Gertrude Jekyll. Our tour leader, Mac Griswold, is a garden writer and historian presently working on a book for New York's Metropolitan Museum of Art about the garden images in their own collection.

These trips are sponsored by the American Horticultural Society.

For further information please contact:

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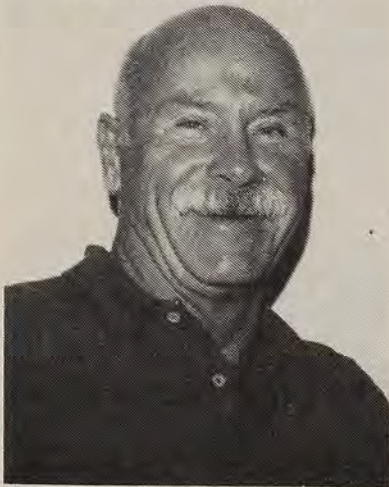
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*** Highlights ***

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Gardener's Dateline

JANUARY 17

**Wholesale Nursery Growers of
America, Winter Meeting**

Hyatt Regency Hotel, Chicago. (Held in conjunction with Mid-American Trade Show.) Information: Donn Sanford, 4300-L Lincoln Ave., Rolling Meadows, IL, (312) 359-8160.

JANUARY 15, 22 & 29

"Gardening by Design" lecture series

Shoenberg Auditorium, Missouri Botanical Garden, 4344 Shaw Boulevard, St. Louis, Missouri. Hours: 1 p.m. and 8 p.m. daily. Admission: Adults with children \$1; Senior citizens, free. Information: Jana Scharnhorst, (314) 577-5122.

JANUARY 28-29

1986 Horticulture Industries Show

Tulsa Convention Center. Information: Annette Klinge, Horticulture Industries Show, Inc., 4028 East 45th Street, Tulsa, OK 74135, (918) 743-9377.

JANUARY 30-FEBRUARY 1

**Southwest Urban Forestry
Conference**

Walnut, California. (Co-sponsored by the California Urban Forestry Council, Society of American Foresters, US Forest Service and California Forestry Department.) Information: Gary A. Moll, AFA, 1319 18th St., NW, Washington, DC 20036, (202) 467-5810.

JANUARY 31

**Bramble Grower's Association 1st
Annual Meeting**

Hershey Motor Inn and Convention Center, Hershey, Pennsylvania. Hours: 8 a.m. to 5 p.m. Registration: (Membership fee) Researchers, extension specialists and students, \$15; Consultants, industry representatives and county extension agents, \$35; Growers, \$35 plus \$2 per acre of brambles (up to 7 acres). Information: Dr. Harry Swartz, Dept. of Horticulture, University of Maryland, College Park, MD 20742, (301) 454-4311.

JANUARY 31-FEBRUARY 4

Minnesota Home and Garden Show

Minneapolis Auditorium, Minneapolis, Minnesota. Hours: Friday, noon to 10 p.m.; Saturday, 10 a.m. to 10 p.m.; Sunday, 10 a.m. to 8 p.m.; Monday, 1 to 10 p.m.; Tuesday, 1 to 9 p.m. Admission: Adults, \$4; Children 6 to 12, \$1.50; Chil-

dren under 6, free. Information: Trade Shows, Inc., 15235 Minnetonka Blvd., Minnetonka, MN 55345, (612) 933-3850.

JANUARY 31-FEBRUARY 9

**27th Annual Colorado Home and
Garden Show**

Hours: Opening Friday, 7 to 10 p.m.; Monday through Saturday, noon to 10 p.m.; Sundays, noon to 6 p.m. Admission: Adults, \$4; Children 6 to 12, \$1.50; Children under 6, free. Information: Jacquie Haughton, General Manager, Industrial Expositions, Inc., P.O. Box 12289, Denver, CO 80212, (303) 458-5615.

JANUARY 31-FEBRUARY 9

Vancouver Home and Garden Show

Exhibition Park, Vancouver, British Columbia. Information: Nelson B. Groves, Western Manager, Suite 202-2695 Granville St., Vancouver, BC V6H 3H4, (604) 736-3331.

FEBRUARY 1-2

Wildflower Symposium

New York Botanical Garden, Bronx, New York. Information: The New York Botanical Garden, Education Department, Bronx, NY 10458-5126, (212) 220-8747.

FEBRUARY 5-7

Southern Farm Show

North Carolina State Fairgrounds, Raleigh, North Carolina. Information: Southern Shows, Inc., P.O. Box 36859, Charlotte, NC 28236, (704) 376-6594.

FEBRUARY 6-9

Jacksonville Home and Patio Show

Civic Auditorium/Exhibition Hall Complex. Information: John Mullis, Managing Director, 2330 Oak St., Jacksonville, FL 32204, (904) 388-1038.

FEBRUARY 9-13

**The National Arborist Association's
48th Annual Meeting**

Hyatt Regency Hotel, Monterey, California. Information: Robert Felix, Executive Vice President, National Arborists Association, Inc., 174 Route 101, Bedford, NH 03102, (603) 472-2255.

FEBRUARY 12-16

**Midwest Flower Garden and Outdoor
Living Show**

Omaha Civic Auditorium, 1804 Capitol Ave., Omaha, Nebraska. Hours: Wednes-

day and Thursday, 6 to 10 p.m.; Friday and Saturday, noon to 10 p.m.; Sunday, noon to 6 p.m. Admission: Adults, \$3.25; Children under 12, \$1.75. Information: Lutheran Medical Center, 515 South 26th St., Omaha, NE 68105, Flower Show Office: (402) 536-6399.

FEBRUARY 12-16

Iowa Home and Garden Show

Veterans Memorial Auditorium, Des Moines, Iowa. Hours: Wednesday, 4 to 10 p.m.; Thursday, noon to 10 p.m.; Friday and Saturday, noon to 10 p.m.; Sunday, noon to 8 p.m. Admission: Adults, \$3.50; Children 6-12, \$1; Children under 6, free. Information: Trade Shows, Inc., 15235 Minnetonka Blvd., Minnetonka, MN 55345, (612) 933-3850.

FEBRUARY 18-19

North American Heather Society's 1986 Annual Meeting

Napa Valley, California. Hosted by: Pacific Union College, Angwin, California. Information and Reservations: Dr. Lloyd Eighthme, Pacific Union College, Box 54, Angwin, CA 94508.

FEBRUARY 18-23

25th Annual Flower, Lawn and Garden Show

Bartle Hall, Kansas City. Hours: 11 a.m. to 9 p.m. daily. Admission: Senior citizens, \$3; Adults, \$4; Children, \$1.50. Information: George L. Eib, Superintendent, Board of Parks and Recreation, 5606 East 63rd St., Kansas City, MO 64130.

FEBRUARY 21-23

EXPO '86: ARK-LA-TEX Home and Garden Show

Exposition Hall, Shreveport, Louisiana. Information: Page Enterprises, Inc., Route #3, Box 12, Gravois Mills, MO 65037, (314) 370-2277.

FEBRUARY 20-23

"Heart of Georgia" Home and Garden Show

Macon Coliseum, Macon, Georgia. Information: John Mullis, Producer, 5890 Zebulon Rd., Macon, GA 31210, (912) 474-9489.

FEBRUARY 22-MARCH 2

The Southern Spring Show

Charlotte Merchandise Mart, Charlotte, North Carolina. Information: Southern Shows, Inc., P.O. Box 36859, Charlotte, NC 28236, (704) 376-6594.

FEBRUARY 22-MARCH 2

Central Ohio Home and Garden Show

Ohio State Fairgrounds/Multi-Purpose Bldg. Information: Robert S. Hart, Producer, Hart Productions, Inc., 1172 W. Galbraith Rd., Suite 216, Cincinnati, OH 45231, (614) 457-7775.

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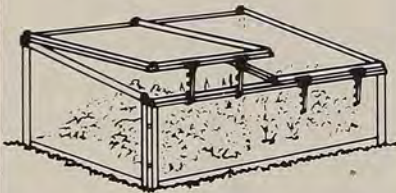
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FEBRUARY 26-MARCH 2

Calgary Home and Garden Show

Round-Up Center/Stampede Park, Calgary, Alberta, Canada. Information: Nelson B. Groves, Western Manager, Suite 202-2695 Granville St., Vancouver, BC V6H 3H4, (604) 736-3331.

FEBRUARY 27-28

Conference: Erosion Control—Protecting Our Future.

Sponsored by the International Erosion Control Association. Doubletree Hotel at Campbell Ctr., Dallas, Texas. Information: International Erosion Control Association, P.O. Box 195, Pinole, CA 94564-0195, (415) 223-2134.

FEBRUARY 28-MARCH 9

Cleveland Home and Flower Show

Hours: Opening Friday, 4 p.m. to 11 p.m.; Friday and Saturdays, 11 a.m. to 11 p.m.; Sundays, 11 a.m. to 8 p.m.; Monday through Thursday, 11 a.m. to 10 p.m. Admission: \$3.50 in advance, \$5 at the door. Information: Cleveland Home and Garden Show, 118 St. Claire Avenue, NE, Suite 100, Mall Building, Cleveland, OH 44114, (216) 621-3145.

MARCH 1-2

Texas Gardener 2nd Annual Garden and Home Show

Waco Convention Center, Waco, Texas. Information: Lisa Renée Barnett, Executive Director, Texas Gardener's Garden and Home Show, P.O. Box 9005, Waco, TX 76714, (817) 772-1270.

MARCH 1-9

Cincinnati Home and Garden Show

Convention Center. Hours: Saturdays, noon to 10 p.m.; Sundays, noon to 6 p.m.; Weekdays, 5 p.m. to 10 p.m. Information: Hart Productions, Inc., 1172 W. Galbraith Rd., Suite 216, Cincinnati, OH 45231, (513) 522-7330.

MARCH 6-9

Metropolitan Louisville Home, Garden and Flower Show

Kentucky State Fairgrounds, East Wing and East Hall. Hours: Thursday and Friday, 6 to 11 p.m.; Saturday, 1 to 11 p.m.; Sunday, 1 to 9 p.m. Admission: Adults, \$3; Children 6 to 12, \$1; Children under 6, free. Information: Home Builders Association of Louisville, Home Building Center, 1800 Arthur Street at Bloom, Louisville, KY 40217, (502) 637-9737, Tony Short, Director, Spec. Proj.

MARCH 8-16

115th New England Spring Flower Show

Bayside Exposition Center, Boston. Hours: 10 a.m. to 10 p.m.; Sundays, 10 a.m. to 8 p.m. Admission: Adults, \$6; Senior citizens, \$5; Children 6 to 12, \$1; Advance tickets, \$5. Information: Bonni Hamilton, (617) 262-8780.

MARCH 9-16

Philadelphia Flower Show

Philadelphia Civic Center, 34th and Civic Center Blvd. Hours: Sundays, 10 a.m. to 6 p.m.; Monday through Saturday, 10 a.m. to 9:30 p.m. Admission: Advance tickets, \$6.25; Adults, \$7; Children under 12, \$3.50. Information: The Pennsylvania Horticultural Society, 325 Walnut St., Philadelphia, PA 19106, (215) 625-8250.

MARCH 12-16

Washington Flower and Garden Show

Washington Convention Center, 900 Ninth Street, NW, Washington, DC. Hours: Wednesday through Saturday, 10 a.m. to 10 p.m.; Sunday, 10 a.m. to 7 p.m. Information: TJS Productions, 7668-B Fullerton Rd., Springfield, VA 22153, (703) 569-7141.

MARCH 15-16

Spring Wildflower Symposium. Natives Preferred: Using Native Plants in American Gardens

Lecture program co-sponsored by the American Horticultural Society and the US National Arboretum. Reservations required; fee to be determined. Information: Education Department, Attn: Native Plant Symposium, American Horticultural Society, Box 0105, Mount Vernon, VA 22121, (703) 768-5700.

MARCH 15-23

The New York Flower Show: Garden Fantasies

The New York Passenger Ship Terminal, Pier 90, 55th Street and the West Side Highway, New York, New York. Hours: Opening Saturday and Sunday, 10 a.m. to 9 p.m.; Monday through Thursday, 10 a.m. to 6 p.m.; Friday through Sunday, 10 a.m. to 9 p.m. Admission: Adults, \$6; Advance sale groups (10 or more), \$5; Children under 12, \$3. Information: Meryl Suben, Horticultural Society of New York, 128 W. 58th St., New York, NY 10019, (212) 477-7383.

MARCH 15-23

Indiana Flower and Patio Show

Indiana State Fairgrounds, West Pavilion Bldg., 1202 E. 38th St. Hours: Saturdays and Friday, 11 a.m. to 10 p.m.; Sundays, 10 a.m. to 6 p.m.; Monday through Thursday, 11 a.m. to 9 p.m. Admission: Adults, \$4; Children 6 to 12, \$1; Children under 6, free; Adult advance tickets, \$3. Information: Thelma and Ed Schoenberger, Co-producers, (317) 255-4151.

MARCH 15-23

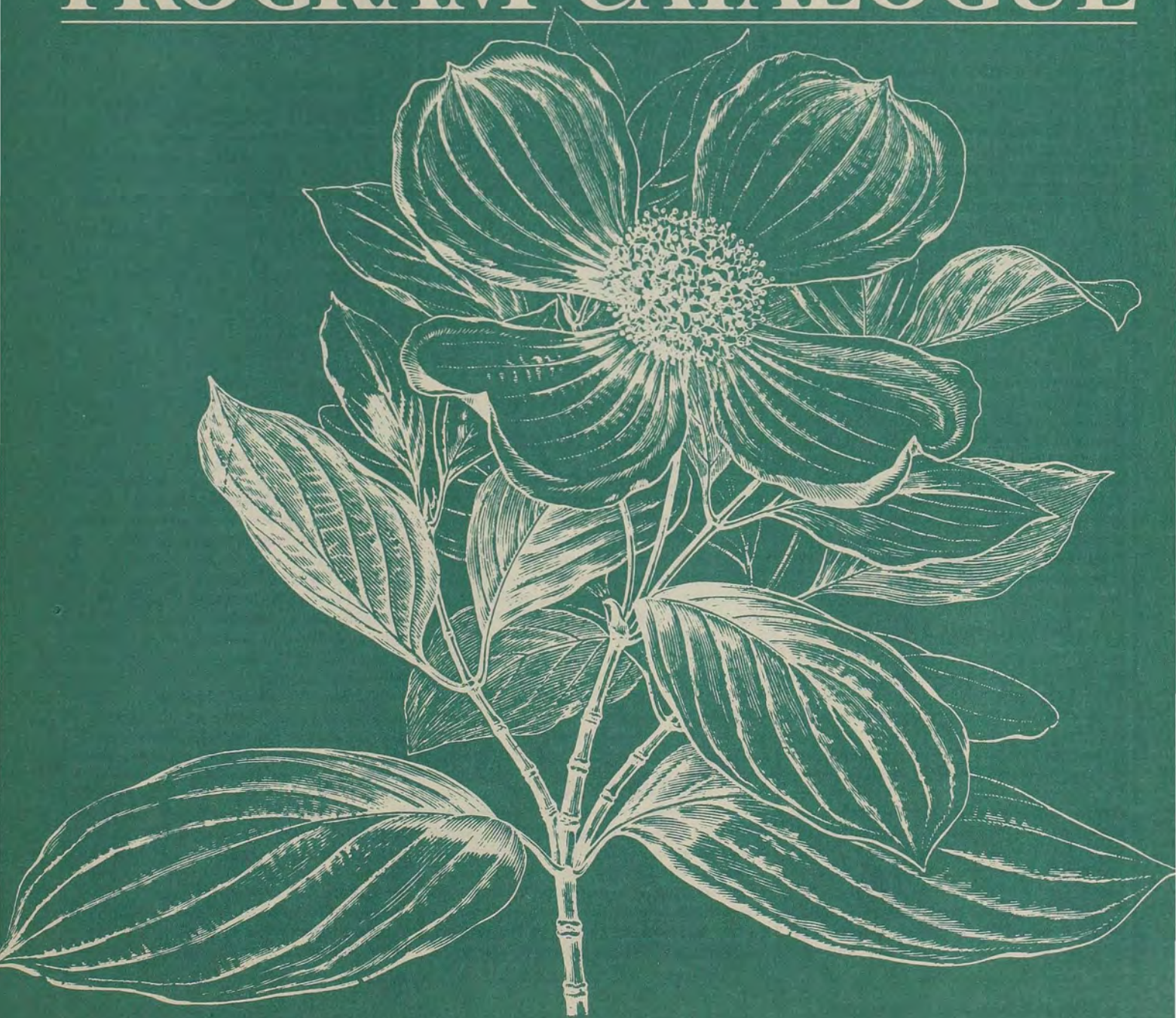
Builders Home, Flower and Furniture Show

Cobo Hall, Detroit, Michigan. Information: Builders Association of Southeastern Michigan, 20755 Greenfield, #804, Southfield, MI 48075, (313) 569-0644.

1986 AHS

SEED

PROGRAM CATALOGUE



HOW TO USE THIS CATALOGUE

For gardeners, January brings an itch for spring and thoughts of planting, pruning and spring flowers. Luckily for American Horticultural Society members, it also brings thoughts of the Society's Annual Seed Program and the many plants that can be grown from the seeds we distribute each year.

Take a few minutes to look through our 1986 Seed Program Catalogue. This year AHS members, as well as friends of the Society, have donated seed for a host of fascinating plants. The selections in this year's Catalogue range from common and much-loved marigolds, foxglove and columbine to rare species that are difficult to obtain from commercial sources. Ambitious gardeners will be pleased to see a special section devoted to bulbous and tuberous-rooted perennials. We also have special sections devoted to ornamental grasses as well as perennials and annuals that would be suitable for dried bouquets. Gardeners in the warmer portions of this country, and those lucky individuals who have greenhouses, will want to browse through our extensive list of tropical trees and shrubs. Finally, we have a wide range of perennials—both for the border and for the wildflower garden—as well as trees and shrubs and a few unusual vegetables. In short, there is something for everyone; perhaps you will find a few old favorites, a plant you have always wanted to try or a species you've never heard of before.

Once again, we are mailing your catalogue to you with your January *American Horticulturist* News Edition. This allows us to cut the costs of administering the popular Seed Program. Printing, production and mailing costs rise every year, and including the Seed Program Catalogue with the January News Edition is a way for us to contain these ever-increasing expenses. Cost-saving measures such as these, combined with the continued generosity of members who participate in the Seed Program, will help us continue to improve this membership service.

Selecting Plants

Use the table of contents on this page to help you select plants.

All of the seed distributed in the Society's Seed Program is donated to us by your fellow members and by seed companies, public gardens and plant societies from across the country. Although we have large quantities of many of the species listed here, in some cases, donors were only able to provide small quantities of seed.

Whenever possible, we will send you your first-choice selections. We request that you list alternate selections, however, so if the supply of any of your first choices is depleted we can send your alternate choices. Our vol-

unteers who fill your order can make substitutions for you, but only you know what is best for your own garden.

Selections of which we have unusually small quantities are marked "limited supply."

How To Order

Once you have selected the seeds that you would like to grow, complete the order form on page 16.

We hope you will help us defray the costs of our Seed Program by enclosing a voluntary donation with your seed order. The cost of this program increases each year, and only the generosity of those who donate seed and those who help us with contributions allows us to continue the program. We ask for a minimum contribution of \$1.00 if you request seven packets of seed, and \$2.00 if you request 14. We are sure you'll agree that the value of the seed you receive is much greater than a dollar. You can help us continue to expand and improve our Seed Program if you contribute more.

Please send your completed order form and contribution (cash or check made out to the American Horticultural Society) to Seeds 1986, American Horticultural Society, P.O. Box 261, Mount Vernon, VA 22121. (Because of the complexities of foreign exchange, foreign members need not include a contribution with their order.)

After sending us your order, **it is important that you keep this catalogue; you will need it to identify the seeds you receive.** All of the seed packets distributed in the Society's Seed Program are marked with only the master list numbers that appear in the catalogue.

Please note that we cannot fill orders received after June 1.

Beginner's Seeds

If you are new at germinating plants from seed, you may want to consider some of the selections listed below. They germinate quickly and are all easy to grow.

Annuals. Use the general germination instructions for annuals for the following easy-to-germinate plants: 3, 4, 6, 8, 16-21, 26 and 90.

Perennials. Use the general germination instructions for perennials for the following easy-to-germinate plants: 23-25, 34, 37, 39, 40, 44, 70, 71, 89, 102 and 106.

Observations

Once again, we ask for your help in compiling information on the seed listed in this year's program. This information is valuable both to the Society and to those who have donated the seed we are offering.

Just keep a brief record or log of your experiences with the seed you try. You might

include such information as the date you sowed your seed, the date the seed germinated, the number of successful germinations, and the date you transplanted or set out your seedlings. It would also help to include an evaluation of the seedlings' performance in the garden, including information on the planting site selected and the susceptibility of the plants to disease and pests.

If you know any special handling tips or have extensive information on any of the very rare species in this year's list, pass them along to us. Your information may help improve a fellow member's results with one of your favorite plants. The information need not be detailed; just tell it like it is.

When you have completed your report, send it to Steve Davis in care of the Society, P.O. Box 0105, Mount Vernon, VA 22121.

Also, please help us better serve you by giving us your ideas and recommendations concerning the Seed Program. Your suggestions and comments will help us as we develop next year's program.

Seed Program '87

Plan now to donate seed to the Society's 1987 Seed Program! Although seed companies and botanical gardens donate seed to this exciting program every year, the majority of the items we list are donated by you, our members. Those of you who can only harvest and donate small quantities of seed need not despair; this year several of the selections we are offering were donated in small quantities by several individuals. These small donations, added together, provided us with enough seed to offer to program participants. For more information on the 1987 Seed Program, write to Steve Davis in care of the Society, P.O. Box 0105, Mount Vernon, VA 22121.

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GENERAL GERMINATION INSTRUCTIONS

To germinate any of the seeds in this catalogue, use the following general planting instructions, and combine them with the specific sowing instructions given for annuals, perennials, and trees and shrubs on this page. Any exceptions or special requirements (for example, stratification or scarification requirements) are mentioned in the individual plant descriptions.

Outdoors, sow seed into a prepared seed bed, and keep the bed moist until the seeds have germinated and plants are growing vigorously. Seeds that are sown in the fall for germination the following spring should be watered in and protected for the winter.

Indoors, sow seed in flats or other containers that have an ample number of drainage holes. Plants identified as difficult to transplant can be seeded directly into peat pots or pellets that will, in turn, be planted directly into the ground, thus minimizing transplant shock.

Fill containers to within ¼ inch of the top with a commercial potting mix, or develop your own medium. A soilless medium consisting of equal parts of vermiculite, milled sphagnum and perlite is ideal.

Save this catalogue to identify the seeds you have selected!

Thoroughly moisten the medium and let it drain for two hours before sowing. To control damping-off, many gardeners and professional horticulturists soak seed flats in fungicide before sowing. Use a fungicide that is recommended for this purpose. It is probably a good idea to wait 24 hours after treatment before sowing seed.

Sow the seed by pressing it into the moistened medium until it can be covered with soil to a depth equal to the diameter of the seed. Place very small seeds on the medium, and cover them lightly with milled sphagnum. Mist the surface after sowing, and label the flats or pots so you will be able to identify the seedlings when they appear.

Keep the medium moist. Water from the bottom by placing the flats or pots in a container of water until the moisture can be seen coming to the top of the medium. To provide uniform moisture and humidity, cover the containers with clear plastic bags. Do not let the plastic rest on the medium or touch the seedlings.

Place the container in strong, indirect light. Maintain an approximate temperature of 60° to 75°F.

Poke small holes in the plastic coverings as soon as the seedlings emerge. This will improve ventilation and prevent overheating. Transplant seedlings to individual containers if there is a danger of overcrowding.

Transplanting is the second most crucial period in a plant's life after germination, so

it is important to make this transition as gradually as possible. Harden off seedlings by slowly exposing them to brighter light and lower humidity after they have produced their second set of true leaves. Finally, a few days before you plan to transplant, move the plants outdoors for a few hours per day to accustom them to their new environment.

Germination For Annuals

Indoors, sow seed six to eight weeks before the plants are to be set outdoors, which should be done after all danger of frost is past. Transplanting two weeks after the frost date in your area is generally safe. Many annuals will not start growing until the ground warms up in the spring, so early transplanting will not necessarily give them a head start.

Recommended temperatures for the growing medium are 65° to 70°F. Seed should germinate within 20 days unless otherwise indicated.

Outdoors, annuals can be sown into a prepared seed bed after all danger of frost is past.

All of the annuals listed can be sown according to these general instructions unless otherwise indicated. Exceptions to these rules, as well as specific sowing instructions that will improve results, are included in the individual plant descriptions.

Germination For Perennials & Biennials

Indoors, sow perennials four to six weeks before transplanting to the garden, which should be done after danger of frost is past. Although well-hardened perennial seedlings can withstand cool temperatures, transplanting about two weeks after the last frost date in your area is probably best.

Recommended temperatures for the growing medium are 65° to 70°F. Unless otherwise indicated, seed should germinate within 20 days. However, perennial seed may germinate slowly over a long period of time, even if a few individuals pop up almost immediately. Keep seeded flats moist for two to three months to avoid throwing away seed that is still viable.

Outdoors, sow seed in the spring two weeks after the last frost date, and in the summer or fall, up to two months before the first frost of autumn is expected.

All of the perennials listed can be sown according to these general instructions unless otherwise indicated. Treatments necessary to

satisfy seed-dormancy factors, exceptions to these rules and more specific sowing instructions that will improve results are included in the individual plant descriptions.

Germination For Trees & Shrubs

Indoors, sow seed of trees and shrubs anytime. However, be sure adequate light, moisture and proper temperatures are provided. If sown in the spring, grow the plants through the summer in containers and set them out in the early fall; or sow them in containers and grow them under controlled conditions for a year or more before planting them out in the garden.

Outdoors, sow them in a prepared seed bed in the fall. Be sure to protect the seed from alternating periods of freezing and thawing with a layer of mulch. Keep rodents away with a layer of wire mesh.

All of the trees and shrubs listed can be sown according to these general instructions unless otherwise indicated. Exceptions to these rules are included in the individual plant descriptions.

Stratification & Scarification

Cold stratification. Place seeds that require a period of cold stratification in order to germinate in a plastic bag with a small amount of moistened sand, peat moss or sphagnum moss, or a mixture of half sand and half peat. Close the bag with a rubber band or a twist-tie, and place it in the refrigerator (about 40°F) for the length of time specified in the individual plant descriptions. The mixture should be just damp, not soggy; otherwise, the seeds will rot. Sow the seeds according to instructions after the required period of time, or if they begin to germinate.

Warm stratification. Seeds that exhibit double dormancy must often be stratified at warm temperatures before they can be given a period of cold stratification. Place these seeds in a plastic bag, as prescribed for seeds to be cold-stratified, but keep them in a spot where they will be exposed to temperatures of 65° to 85°F.

Scarification. The seeds of many species are dormant because of hard seed coats that water cannot penetrate. Scarify these seeds by nicking the seed coat with a knife or filing it down with sandpaper or an emery board. Or, pour boiling water over the seeds and leave them to soak for 24 hours. Some seed requires both treatments.

ANNUALS

Annuals are among the easiest of garden plants to grow from seed. They also provide the gardener with a long season of bloom, and many are relatively carefree. This year, members and friends of the Society have donated seed of such old garden standbys as marigolds, impatiens and love-in-a-mist as well as a selection of rare species of *Pelargonium*. Use the information in the "Germination for Annuals" section on page 3 of this catalogue, and combine it with the specific sowing instructions (if any) that appear in the individual species descriptions.

1. *Abelmoschus manihot* (formerly *Hibiscus manihot*). Sunset hibiscus. Tender perennial from tropical Asia that is often grown as an annual. Grows to 6 feet or more in height and bears yellow, 6-inch flowers that are solitary or borne in racemes. Each flower lasts one day, but bloom is continuous from mid-August through October. Full sun to partial shade; moist, well-drained soil. Sow following a scarification treatment for hard seed coat.

2. *Agrostemma githago* 'Milas'. Corn cockle. Mediterranean native with grayish, grass-like leaves and long-stalked, 2-inch, rosy-purple flowers. Blooms appear from May through July. Grows to 3 feet in height. Tends

to be invasive. Seeds are poisonous if eaten. Will reseed. Full sun; well-drained, alkaline soil.

3. *Calendula officinalis*. Pot marigold. Popular bedding plant reaching 2 feet in height. Bears single or double, 4-inch flowers in white, cream, yellow, gold, apricot and orange. Blooms from early summer until frost. Very reliable and excellent for cutting. Good greenhouse pot plant. Full sun; rich, fertile soil. Keep well watered. Prefers cool climates. Cover seed; darkness required for germination.

4. *Cleome hasslerana*. Spider flower. Three- to 6-foot plant with large, 6- to 7-inch heads of airy, orchid-like blooms in shades of rose, pink, white or lavender. Flowers borne from midsummer to fall. Full sun. Will reseed at great rate. Remove seed pods prior to maturity to reduce next year's weeding. Sow outdoors in spring or fall.

5. *Crepis incana*. Hawksbeard. Daisy family member from Greece. Flower heads are magenta-pink in color. Height to 6 feet. Full sun; light, loamy soil.

6. *Dianthus armeria*. Deptford pink. Annual or biennial bearing clusters of flowers

on hairy, 1½-foot stems. Petals are ¼ inch long, toothed, bearded and reddish. For cultural and germination instructions, see #44.

7. *Erodium moschatum*. Musk herons-bill, musk clover. Member of the geranium family with dissected, fern-like foliage and 6- to 13-flowered umbels of rose-purple flowers. Height 6 to 18 inches. Sow seed indoors 12 to 16 weeks before transplanting.

8. *Gaillardia pulchella*. Blanket flower. 2-foot plant with 2-inch flower heads consisting of yellow disk florets and, generally, red ray florets tipped with yellow.

9. *Impatiens* 'Parfait' Mix. Single- or double-flowered plants bearing blooms in a variety of colors. Flowers from early summer to first frost. Full to partial shade; rich, sandy, well-drained soil.

10. *Kochia scoparia* forma *trichophylla* 'Childsii'. Summer cypress, burning bush. Dense, globe-shaped plant with narrow, fine foliage. Grown for its light green foliage that turns purplish-red in fall. Very showy. Full sun; dry, very well-drained soil. Prefers hot weather. Follow general germination instructions for annuals, but do not cover seed; light is necessary for germination.

11. *Mirabilis jalapa* Cultivar Mix. Four-o'clock. One- to 2-foot, tuberous-rooted plant with funnel-shaped, yellow, red, pink, white or violet flowers that open in the late afternoon, summer to frost. Full sun. Roots can be lifted and stored over winter.

12. *Nicandra physalodes*. Apple-of-Peru, shoo-fly plant. Old-fashioned garden annual to 4 feet in height. Bears solitary, blue, 1½-inch flowers in summer. Berries enclosed in papery, 5-winged "envelope." Sap poisonous to insects. May be invasive. Full sun; average, well-drained soil.

13. *Nigella damascena*. Love-in-a-mist. Annual with fern-like foliage and blue or lavender flowers with fuzzy green "veils" over them. To 15 inches in height. Interesting seed pods can be used in dried bouquets. Full sun; average soil with excellent drainage. Sow outdoors using general germination instructions for annuals; difficult to transplant.

14. *Pelargonium* species. Geranium. We have a small selection of 11 rare species of geraniums. Should you request this selection, and seed remains, we will send the seed of one species, our choice. We will try to honor preferences if indicated. 14a) *P. alchemilloides*. 14b) *P. alternans*. 14c) *P. canariense*. 14d) *P. capitatum*. 14e) *P. carnosum*. 14f) *P. cordifolium*. 14g) *P. cucullatum*. 14h) *P. elongatum*. 14i) *P. multicaule*. 14j) *P. papilionaceum*. 14k) *P. tabulare*. Sow seed indoors 12 to 16 weeks before planting outdoors. Limited supply.



15. *Salvia coccinea*. Texas or scarlet sage. Perennial or subshrub to 2 feet in height. Bears racemes of deep scarlet, 1-inch long flowers. Usually cultivated as an annual.

16. *Tagetes Cultivar Mix*. Marigold. Small-flowered cultivars with blooms in a wide range of yellows, reds and oranges. Full sun; average, well-drained soil. Remove faded flowers to induce bushiness and prolong flowering. Flowers appear from summer to frost.

17. *Tagetes 'Naughty Marietta'*. Marigold. Dwarf, 1-foot plants with 2½-inch, golden-yellow flowers splashed maroon at the base of the petals. Blooms from midsummer to frost. For cultural information, see #16.

18. *Tithonia rotundifolia*. Mexican sunflower. Tall, 6-foot annual for the back of the border. Bears spectacular, 3-inch, daisy-like, scarlet-orange flowers from summer through fall. For cultural and germination information, see #19.

19. *Tithonia rotundifolia 'Sundance'*. Mexican sunflower. Perfect, 3- to 4-foot annual for the back of the border. Bears spectacular, 3-inch, daisy-like, scarlet-orange flowers from summer through fall. Drought resistant. Full sun; well-drained soil. Light may benefit germination; do not cover seed.

20. *Zinnia Cultivar Mix*. Zinnia. One of the easiest garden annuals to grow. Bushy plants with stiff growth habit and blooms in a variety of colors. Sow outdoors using general germination instructions for annuals.

ORNAMENTAL GRASSES

These attractive plants are perfect for adding texture to a perennial garden, and they are also effective when used as accent plants. Their foliage and attractive seed heads catch the light and flutter in the breeze, providing billowy movement wherever they are planted. The seed heads are also perfect for dried bouquets.

21. *Briza minor*. Little quaking grass. Graceful, nodding, annual ornamental grass with 16-inch stems. Seed heads quiver and quake in breezes. Use general germination instructions for annuals, but maintain a medium temperature of 55°F.

22. *Coix lacryma-jobi*. Job's tears. Annual ornamental grass with bluish-gray to white fruit that is sometimes mottled or striped. Height to 3 feet. Full sun; average soil. Requires staking. Cut stems can be hung in a cool, airy place for drying. Use general germination instructions for annuals, but soak seed in warm water for 24 hours before sowing.



23. *Pennisetum alopecuroides*. Chinese pennisetum. Beautiful perennial ornamental grass reaching 3½ feet in height. Bristly, spike-like inflorescence borne in late summer and fall. The dark reddish-purple panicles are very airy looking. Full sun; well-drained soil.

Use the general instructions for perennials. Zone 7.

24. *Pennisetum setaceum 'Rubrum'*. Red fountain grass. Beautiful perennial ornamental grass reaching 3½ feet in height. Bristly, spike-like inflorescence can be up to 1 foot in length. Foliage and spikes are rose-colored. Full sun; well-drained soil. For germination information, see #23. Zone 7.

25. *Pennisetum villosum*. Feathertop. Perennial ornamental grass up to 2 feet in height. Densely bristled, feathery inflorescences are 4 inches long and 2 inches wide. Tawny in color. Used in the florist industry. Full sun; well-drained soil. For germination information, see #23. Zone 7.

26. *Setaria italica*. Foxtail millet. Three-foot ornamental grass with graceful, upright stalks and 5-inch seed heads. Full sun; average, well-drained soil. Use general germination instructions for annuals.

PLANTS FOR DRIED BOUQUETS

The following plants have interesting flowers or seed structures that are not only wonderful in the mixed border or wildflower meadow but are also perfect for dried arrangements. The silvery seed pods of money plant, the white clouds of baby's-breath and the bright colors of strawflowers are just a few examples of what these plants have to offer. Other selections that are considered good for drying include all of the ornamental grasses and numbers 13, 37, 47, 60, 66, 69, 91, 102 and 116.

Save this catalogue to identify the seeds you have selected!

27. *Alyssoides utriculata* (formerly *Vesicaria utriculata*). Bladderpod. Mustard family member bearing racemes of yellow flowers on 18-inch stems. Flowers followed by inflated, sac-like fruits. Use general germination instructions for perennials. Zone 5.

28. *Dipsacus sylvestris*. Common teasel. Six-foot biennial with thistle-like flower heads used in dried arrangements. Flowers are pale lavender. Full sun. Tolerates poor soil and dry conditions. Use general germination instructions for perennials. Zone 3.

29. *Gypsophila elegans*. Baby's-breath. Eighteen-inch annual bearing dense clouds of elegant, white flowers from June until frost. Excellent dried flower. Full sun; well-drained, alkaline soil. Use general germination instructions for annuals.

30. *Helichrysum bracteatum 'Bikini'*. Strawflower, mixed colors. Brilliant, 2-inch flowers borne all summer on 14-inch plants. Full sun. Excellent for dried arrangements. Use general germination instructions for annuals, but indoor sowing best. Do not cover seed; light required for germination.

31. *Lunaria annua* (formerly *L. biennis*). Money plant, honesty. Biennial grown for its interesting, round, flat fruit, which is silvery

and translucent once the seeds and valves (or coverings) have dropped. Flowers are purple or white, fragrant, and borne in clusters in spring and early summer. Plants to 3 feet. Sow outdoors in midsummer for flowering the following year, or sow indoors.

32. *Lunaria annua forma album*. White-flowered money plant. Biennial grown for its interesting, round, flat fruit, which is silvery and translucent once the seeds and valves (or coverings) have dropped. Flowers are white, fragrant, and borne in clusters in spring and early summer. Plants to 3 feet. Sow outdoors in midsummer for flowering the following year, or sow indoors.

33. *Onopordum nervosum*. Striking, 9-foot biennial native to Spain and Portugal. Leaves are covered with white hairs. Rose-purple flower heads are 2 inches across. Excellent for dried arrangements. Full sun; average, well-drained soil. Use general germination instructions for perennials. Probably hardy to Zone 7.

BIENNIALS & PERENNIALS

Biennials and perennials are herbaceous plants that live in the garden for more than one growing season; biennials for two and perennials for three or more. Their longevity and relative low-maintenance are two reasons for their increasing popularity. These plants may not have the long blooming period of many annuals, but biennials and perennials can be selected to provide flowers in the garden from the beginning of spring until late in the fall, and they do not need to be replaced every year. For example, oxlip and cowslip primroses begin to bloom in May; coral bells, shasta daisies and delphinium bring color to the garden through the late spring and early summer; coreopsis, sneezeweed and white moth mullein help extend the garden's display into autumn.

There are biennials and perennials in all shapes and sizes. Some low-growing ones, such as sea pink, make good groundcovers. Tall plants are excellent for providing color in the back of the border; we have a whole section devoted to these. A few are wonderful for their columnar effect, among them are delphinium and foxglove. Other biennials and perennials for use in the mixed border can be found in other sections of this catalogue, including the two sections devoted to wildflowers.

Use the information in the "Germination for Perennials" section on page 3 unless otherwise indicated. More specific sowing instructions that will help improve your results are included in the individual plant descriptions.

Perennials For The Border

34. *Anthemis tinctoria* 'Kelwayi'. Hardy marguerite. Short-lived, 3-foot perennial with very dissected foliage and summer-borne flowers. Flowers, which are daisy-like, are 1½ inches across and have bright yellow ray florets. Will reseed. Full sun; average soil. Tolerates poor soils and dry conditions. Zone 3.

35. *Aquilegia* Cultivar Mix. A combination of columbine cultivars in blues, whites and reds. For cultural and germination instructions, see #106.

36. *Armeria maritima*. Sea pink or thrift. Low-growing perennial with evergreen, grass-like foliage to 6 inches in height. Bears 1-inch heads of tiny, pink, white or red, bell-shaped flowers. Flowers appear in late spring and early summer. Good groundcover. Full sun; dry, light, sandy soil with excellent drainage. Soak seeds in warm water for 6 to 8 hours before sowing. Zone 3.

37. *Belamcanda chinensis*. Blackberry lily. Spectacular plant bearing late-summer clusters of 2-inch, lily-like flowers that are

orange with red spots. Flowers are followed by seed pods that open to reveal ornamental, blackberry-like fruit. Iris-like foliage is 1 to 2 feet long. Full sun to light shade; well-drained soil. Zone 6.

38. *Calochortus luteus*. Yellow mariposa lily. 2-foot plant with erect, bell-shaped flowers. Petals are 2 inches long and deep yellow with red-brown lines or blotches. Light, porous soil with perfect drainage. Will not withstand alternate freezing and thawing; winter protection needed in cold climates. Bulbs can be lifted after blooming and replanted in the fall to prevent rotting during summer months. Mulch well. Zone 7. Limited supply.

39. *Chrysanthemum parthenium*. Feverfew. Bushy, perennial herb with strongly scented foliage and numerous white-petaled, single or double, daisy-like flowers. Blooms in July and August. May be invasive. Full sun to partial shade; sandy, well-drained soil. Do not cover seeds; light aids germination. Zone 4.

40. *Chrysanthemum* × *superbum*. Shasta daisy. Attractive, 3-foot-tall plant that blooms from June through August. Flowers are white with yellow centers and may be single or double, daisy-like in form or resembling anemones. For cultural and germination instructions, see #39. Zone 4.

41. *Clematis integrifolia*. Solitary clematis. Erect, 3-foot species bearing solitary, nodding, bell-shaped flowers that are blue in color. For cultural and germination instructions, see #207. Zone 3.

42. *Clematis recta*. Ground clematis. Herbaceous perennial species to 5 feet in height. Bears fragrant, white, 1-inch flowers in many-flowered clusters from June to September. For cultural and germination instructions, see #207. Zone 5.

43. *Coreopsis lanceolata*. Lance-leaved coreopsis. Vigorous, 2-foot plant with 2½-inch yellow flowers borne on long, stiff stems from summer through autumn. Excellent cut flowers. Drought resistant. Germination takes 20 to 25 days. Do not cover seed; light aids germination. Zone 3. Limited supply.

44. *Dianthus barbatus*. Sweet William. Biennial, annual or short-lived perennial bearing flat, rounded clusters of red, white, pink, violet and bi-colored flowers. Full sun; light, well-drained soil that is slightly alkaline. Prefers cool, damp climate. Sow outdoors in spring for bloom the following year, or sow indoors and treat as an annual.

45. *Digitalis grandiflora*. Yellow foxglove. Perennial or biennial bearing 3-foot spikes of 2-inch, bell-shaped flowers that are yellowish marked with brown. Blooms late spring or early summer. For cultural and germination information, see #46. Zone 4.



46. *Digitalis purpurea* Cultivar Mix. Foxglove. Biennial bearing 1- to 6-foot spikes of 1- to 3-inch nodding, bell-shaped flowers that are white, pink and ivory. Blooms late spring, early summer. Partial shade; rich, loose, well-drained soil. Zone 5.

47. *Echinops ritro*. Small globe thistle. Excellent 1- to 2-foot accent plant. Leaves are glossy-green above and woolly-white beneath. Spiny, blue, 2- to 3-inch flower heads borne in midsummer. Full sun. Can be dried. Zone 4.

48. *Erigeron glaucus* 'Arthur Menzies'. Seaside daisy or beach aster. Compact, mat-forming perennial to 1½ feet tall. Bears pale green leaves and produces lavender-pink, daisy-like flowers in late spring. Groundcover. Full sun, except in hot, dry areas. Light, sandy, well-drained soil. Maintain medium temperature of 55°F during germination. Zone 3.

49. *Heuchera sanguinea* Cultivar Mix. Coralbells. Perennial with 1½-foot mounds of heart-shaped leaves and branched, 2-foot spikes of small bell-like, bright pink and red flowers. Blooms from May to July. Full sun; rich soil with good drainage. Sow outdoors in the fall or indoors anytime. Maintain a medium temperature of 55°F. Germination takes 10 to 15 days. Zone 3.

50. *Hosta ventricosa*. Blue plantain lily. Showy, dark green leaves and loose racemes of flowers borne well above the foliage.

Flowers are 2 inches long, bell-shaped and dark violet in color. Height to 3 feet. Zone 3.

51. *Hosta Cultivar Mix.* Mixture of hostas that are medium in size, and have green, blue or blue-green foliage. Flowers are lavender or purple. Zone 3.

52. *Liriope muscari.* Lilyturf. Evergreen, 1½-foot plant with grass-like foliage to 2 feet long and dense racemes of violet, grape-hyacinth-like flowers on spikes as high as the leaves. Blooms in September. Good ground-cover. Partial to full shade; well-drained soil. Sow indoors or out after soaking seed for 24 hours in warm water. Germination takes 30 days. Zone 6.

53. *Lychnis chalconica.* Maltese cross. Erect, 2-foot plant with dark green leaves topped by clusters of 20 to 50 bright scarlet flowers. Flowers are cross-shaped. Blooms first year from seed if started early enough. Do not cover seed; light required for germination, which takes from 20 to 25 days. Zone 4.

54. *Penstemon smallii.* Beard-tongue. Pink-purple-flowered plant whose inch-long flowers are striped with white inside. Height 2½ feet. A species native to North Carolina and Tennessee. Sow indoors 8 to 12 weeks before planting out, and maintain a medium temperature of 65°F. Zone 7.

55. *Primula elatior* and *P. veris* species mix. Oxlip and cowslip primroses. *P. elatior* bears umbels of 1-inch, sulphur-yellow flowers; *P. veris* umbels of bright-yellow flowers. Both bloom in early spring. Partial shade; rich, moist, slightly acid soil. Mulch to keep roots cool in warm climates. Sow outdoors in the fall or indoors following a 30-day period of cold stratification. Germination takes 20 to 40 days. Zone 3.

56. *Rosmarinus officinalis.* Rosemary. Four-foot herb whose dried leaves are used in seasoning. Bears small, pale blue flowers in spring. Fresh flowers are used to distill an aromatic oil. Full sun; well-drained soil. Sow indoors using general germination instructions for perennials. Germination takes 15 to 20 days. Zone 8.

57. *Saponaria officinalis.* Soapwort, bouncing Bet. Rhizomatous, 3-foot perennial bearing terminal clusters of white or pale pink flowers. Blooms throughout the summer, especially at night. Naturalized in the United States. Roots have been used medicinally; sap makes a lather. Can be invasive. Tolerant of poor soils. Zone 3.

58. *Silene dioica.* Red campion. Biennial or perennial with red and pink flowers borne in loose clusters. Blooms appear in summer and are excellent for cutting. Plants grow to 3 feet in height and are dioecious. Full sun to part shade. For germination instructions, see #53. Zone 5.

59. *Sisyrinchium striatum.* Blue-eyed grass. Tender perennial to 30 inches in height with grass-like foliage and dense spikes of small, yellowish flowers blooming in summer. Native to Argentina and Chile. Self-sows. Full sun to light shade; well-drained soil. Germination takes 20 to 40 days. Zone 8.

60. *Tanacetum vulgare.* Common tansy, golden-buttons. Rhizomatous perennial to 3 feet in height. Bears clusters of ½-inch, round, button-like, golden-yellow flowers in the summer. Dried leaves are used medicinally. Zone 4.

61. *Veronica Cultivar Mix.* Summer-blooming plants bearing masses of blue or white flowers on erect stems. Height to 2 feet. Full sun. Zone 4.

62. *Yucca baccata* var. *baccata.* Banana yucca. Native of southwestern U.S. with short, woody stems and stiff, sword-shaped leaves that have coarse, curly fibers on the margins. Flowers NOT shaped, white or cream tinged with **AVAILABLE** 0 inches long. Full sun. Soak seeds in cool water for 24 hours before sowing. Sow in spring in sandy, well-drained mix, water lightly. Maintain 70° to 85°F medium temperature. Probably hardy to Zone 8.

63. *Zauschneria cana.* California fuchsia. Tender, 2- to 3-foot perennial with tubular, reddish flowers borne in late summer. Gray foliage. Drought tolerant. Attracts hummingbirds. Germination period unknown. Zone 9.

Perennials For The Back Of The Border

64. *Alcea rosea* Double-Flowered Mixture. Hollyhock. Ten-foot biennial bearing spire-like spikes of double white, red or pink flowers. Flowers range from 2 to 4 inches across. Full sun; rich soil. Requires staking. Barely cover seed with soil; light is required for germination. Zone 3.

65. *Alcea rosea* Single-Flowered Mixture. Hollyhock. A mixture of single, pink-flowered plants. For cultural information, see #64. Zone 3.

66. *Baptisia australis.* Blue false indigo. Clover-like, blue-green leaves and indigo-blue flowers borne in late spring. Pea family member; seed can be inoculated with nitrogen-fixing bacteria as are legumes grown as vegetables. Full sun. Outdoors, sow in very early spring or in late fall. Indoors, nick hard seed coats before sowing in early spring. Zone 3.

67. *Baptisia tinctoria.* Yellow baptisia. Bright yellow flowers borne in summer. A

dye plant. Full sun; well-drained soil. May require staking. See #66 for germination instructions. Zone 5. Limited supply.

68. *Delphinium 'Giant Pacific' Mix.* Tall plant bearing purple, pink, blue or white flowers in early summer. Full sun; moist, rich, well-drained soil. Staking may be required. Keep well watered and fed. Remove faded flowers to prevent seed formation. Prefers cool climates. Zone 2.

69. *Eryngium giganteum.* Eryngo. Large, 6-foot plant bearing 4-inch heads of thistle-like flowers in blue and pale green. Full sun; light, dry soil. Seeds should be sown as soon as possible. Zone 5.

70. *Helenium autumnale.* Sneezeweed. Excellent, back-of-the-border perennial that is 4 to 5 feet in height. Bears numerous, long-flowering clusters of 1½-inch, yellow, daisy-like flowers with yellowish-brown centers. Blooms summer through fall. Remove faded flowers to encourage bushiness and prolong flowering. Full sun; rich, well-drained soil. Zone 3.

71. *Helenium autumnale 'Riverton Beauty'.* Sneezeweed. Cultivar differs from the species in that flowers are lemon yellow with purplish blotches. For cultural and germination information, see #70. Zone 3.

72. *Helenium bigelovii.* Coastal sneezeweed. Clump-forming perennial to 3 feet in height native to Oregon and California. Solitary, 2½-inch flowers are yellow with brownish-yellow, spherical centers. For cultural and germination information, see #70. Limited supply.

73. *Hibiscus coccineus.* Large, 6-foot perennial with 3-, 5- or 7-parted, palmately compound leaves. Flowers are deep red and have four 3-inch-long petals that open into a flat whorl. Full sun to light shade; well-drained soil. Germination takes 15 to 30 days. Zone 7. Limited supply.

74. *Hibiscus coccineus 'Texas Star'.* Annual or tender perennial. Bears large, red, 4-petaled flowers in mid- to late-summer. Will reseed. Foliage is dissected into 3 or 5 toothed fingers. Full sun to light shade; well-drained, moist soil. Germination takes 15 to 30 days. Zone 9.

75. *Inula helenium.* Elecampane. Robust, 6-foot perennial whose foot-long leaves are smooth above and velvety-tomentose beneath. Flower heads are 3 inches across and yellow in color. Blooms from July to September. Full sun; average, well-drained soil. Germination takes 20 to 40 days. Zone 4.

76. *Lythrum salicaria.* Purple loosestrife. A 6-foot perennial weed bearing terminal spikes of purple flowers from June to September. Stem leaves are willow-like and basal leaves are heart-shaped. May be invasive; grows in wet marshes, where it can choke out native species. Keep faded blooms

removed to extend flowering season and prevent seeding. Full sun to partial shade. Zone 3.

Save this catalogue to identify the seeds you have selected!

77. *Malva alcea* var. *fastigiata*. Mal-low. Attractive, 3-foot perennial bearing many stems filled with soft pink, five-petaled blooms in July and August. Full sun to light shade; average, well-drained soil. Zone 3.

78. *Malva moschata*. Musk mallow. Three-foot plant with intricately cut foliage and very showy, 2-inch, white or rose-mauve flowers with notched petals. Blooms from June to September. May be invasive. For cultural and germination information, see #77. Zone 3.

79. *Verbascum blattaria* forma *albiflorum*. White moth mullein. Annual or biennial to 6 feet in height with gray-green foliage and white flowers. Columnar plant that grows from a basal rosette. Flowers are loosely clustered in a terminal spire and open from June to September. Full sun; average, slightly alkaline soil with excellent drainage. Maintain an 86°F medium temperature during germination. Zone 3. Limited supply.

Irises

This year we are offering a variety of irises. Some are suitable for the water garden, most are splendid for the perennial or mixed border. Growing these from seed does present a challenge, but the possible results can make the time and effort well worthwhile.

80. *Iris douglasiana*. Douglas iris. Evergreen, Pacific Coast native with sword-shaped leaves to 1½ feet. Flowers, which are red-purple and lilac to cream or white, are borne 2 or more per stem. For cultural and germination instructions, see #84. Difficult to grow outside of native habitat. Zone 8. Limited supply.

81. *Iris missouriensis*. Western blue flag. Flowers, which are light bluish-lilac or white, and veined with lilac, are borne on branched, 2-foot stems. For cultural and germination instructions, see #84. Zone 3.

82. *Iris pseudacorus*. Yellow flag. Yellow-flowered iris for a moist spot in the border, or by a garden pool or stream. Can be planted in shallow water. Blue-green foliage and 3-inch flowers borne 5 or more per stem in late spring. Sow indoors or out following a 45-day period of cold stratification. Germination takes 20 to 35 days. Zone 6.

83. *Iris setosa* var. *nana*. Dwarf arctic iris. Alaskan and northeast Asian native with sword-shaped leaves less than 2 feet in height. Flowers have dark blue-purple standards. Full sun; average, well-drained soil. If sowing

indoors, provide a 2-week period of cold stratification before sowing. Germination is slow and irregular. Zone 2.

84. *Iris sibirica*. Siberian iris. A blue-purple-flowered plant with grass-like, 3½-foot leaves. Full sun to light shade; prefers slightly acid, moist soil. Follow general germination instructions for perennials, but indoors, sow following a 40- to 50-day period of cold stratification. Germination takes 20 to 35 days. Zone 3.

85. *Iris versicolor*. Blue flag. Native Eastern iris bearing violet or lavender flowers with boldly-veined sepals on branched, 3-foot stems. For germination and cultural information, see #84. Zone 3.

Wildflowers For Sunny Meadows

All of the following plants make excellent additions to the sunny meadow or wildflower garden. Most are also perfect for a sunny border or a corner of your yard that receives a lot of sun. Some are great for cutting or drying, while others have edible parts. All are native to the United States. For best results, combine the information in "Germination for Perennials" on page 3 with the specific sowing instructions presented.

86. *Asclepias exaltata*. Poke milkweed. Summer-blooming perennial to 3 feet in height. White flowers, which are flushed with rose or purple, are borne on peduncles that are shorter than the leaves. A native of the eastern United States. For cultural and germination instructions, see #87. Zone 3.

87. *Asclepias tuberosa*. Butterfly weed. Beautiful milkweed relative bearing clusters of orange flowers atop 2- to 3-foot plants. Will thrive in sandy, gravelly soil and in dry conditions because of deep root system. Difficult to transplant; sow indoors in individual pots following a 2-week period of cold stratification, which will speed germination. Germination takes from 21 to 28 days. Zone 3.

88. *Asclepias verticillata*. Horsetail or whorled milkweed. Summer-blooming perennial to 3 feet in height. Bears solitary or paired inflorescences of white flowers suffused with purple in the upper leaf axils. Linear leaves borne in whorls of 3 to 4. For cultural and germination instructions, see #87. Zone 3. Limited supply.

89. *Aster novae-angliae*. New England aster. Magnificent, 6½-foot plant for back of border. Deep violet to rose flowers appear August to October. Full sun to light shade. A period of cold stratification improves germination. Zone 3.

90. *Bidens polylepis*. Tickseed sunflower. Erect annual or biennial, excellent for naturalizing in locations with full sun and poor soil. Daisy-like flowers composed of pale yellow disk florets surrounded by showy, golden-yellow, 1-inch ray florets. Height to

3 feet. Blooms August through October. Will reseed. Surface-broadcast seed where plants are to grow. Zone 6.

91. *Echinacea purpurea*. Purple cone-flower. Large, 4-inch flower heads consisting of dark reddish-purple "cones" of disk florets surrounded by drooping, light purple ray florets. Excellent border plant and cut flower. Full sun to light shade. Will tolerate dry soil and wind. Sow indoors; a 30-day period of cold stratification improves germination. Zone 4.

92. *Eupatorium coelestinum*. Mist-flower, hardy ageratum. Bright blue- to violet-flowered American native bearing dense corymbs of small flowers from July through October. Full sun to almost full shade; average soil. Sow seed indoors in moist, well-drained medium, lightly covering seed with soil. Maintain temperature of 70° to 75°F. Zone 7.

93. *Eupatorium rugosum*. White snake-root. American native perennial to 5 feet in height. Bears open corymbs of small white flowers in late summer to autumn. Full sun to almost full shade. Zone 3.

94. *Lathyrus japonicus*. Beach or seaside pea. Low-growing perennial bearing racemes of 6 to 10 purple flowers. Often found growing along the New England coast where it withstands summer sun, wind and salt spray. Difficult to propagate; sow seeds in moist sand where plants are to grow. Scarification treatment will probably improve germination. Zone 4. Limited supply.

95. *Lespedeza capitata*. Round-headed bush clover. Ornamental, pea family member to 5 feet in height. Has silvery, hairy foliage, and bears yellowish-white flowers with purple spots in dense, head-like racemes. Soak seeds in hot water for 24 hours before sowing. Zone 5. Limited supply.

96. *Liatis aspera*. Rough blazing star. Attractive, 6-foot plant with 1 to several stems. Lowest leaves are up to 1½ feet long. Plant bears 25- to 40-flowered spikes of purple, 1-inch flower heads from late summer to autumn. Blooms best in full sun and rich, moist, well-drained soil. Germination takes 20 to 25 days. Zone 4.

97. *Monarda fistulosa*. Wild bergamot. Coarse, hairy-leaved, 3-foot-tall plants. Slender, lavender flowers are tubular and are borne in attractive, terminal, head-like clusters. Blooms in July and August and attracts bees and hummingbirds. Full sun to partial shade; moist, well-drained soil. Remove faded flowers to prolong bloom. Zone 4.

98. *Oenothera biennis*. Evening primrose. One- to 6-foot biennial bearing spikes of 2-inch, yellow-gold flowers that open in early evening throughout the summer. Roots may be eaten as a vegetable, and the shoots in salad. May be invasive. Full sun; well-drained soil. Tolerates dry conditions. Zone 4.

99. *Oenothera parviflora*. Small-flowered evening primrose. Biennial or perennial to 4 feet. Bears ½-inch, yellow-orange flowers in terminal spikes. Flowers open in early evening. For cultural and germination instructions, see #98. Zone 4.

100. *Oenothera* Species Mix. Evening primrose. Mixture of *O. biennis* and *O. parviflora*. For cultural and germination instructions, see #98.

101. *Rudbeckia californica*. California coneflower. Native species of California's Sierra Nevada Mountains. Reaches 5 feet in height, and bears large flower heads in summer and autumn. Ray florets are yellow and disk florets are greenish-yellow. Excellent for cutting. Thrives in moist, sunny locations. Limited supply. Probably hardy to Zone 8.

102. *Rudbeckia hirta*. Black-eyed Susan. Biennial or short-lived perennial that can also be grown as an annual. Three-foot plant with 3-inch flower heads consisting of golden-yellow ray florets surrounding a brownish-purple "cone." Flowers from late July to October. Zone 4.

103. *Tradescantia virginiana*. Spiderwort. Perennial herb to 3 feet tall with long grass-like leaves and bright blue, terminal flowers in May to June. Full sun to partial shade; rich, moist, well-drained soil. Tolerates poor soil. Sow fresh seed in fall, or sow outdoors in spring following a winter-long cold stratification period. Zone 5.

Shady Wildgarden Plants

Each of these plants is perfect for a wild shade garden or naturalized woodland setting, not to mention a shady perennial border or a shady spot in your yard. A few have interesting fruits, such as thimbleweed and may-apple. There are coarse-textured plants and fine-textured plants. Just about all are hardy in the northern U.S. A number of the irises we have available are also good for use in the shady garden. For best results, combine the information in "Germination for Perennials" on page 3 with the specific sowing instructions presented.

104. *Anemone virginiana*. Thimbleweed. Woodland plant to 1½ feet tall with compound leaves in a basal clump. Bears ½-inch, white or greenish-white flowers, 1 to 3 per stem, in June to August. Fruits look like thimbles. Natural habitat is dry or rocky sites. Partial shade; well-drained soil. Sow seeds outdoors in late fall or early spring. Zone 4.

105. *Aquilegia alpina*. Alpine columbine. Nodding, bright blue flowers bloom in July and August. Light shade; moist, well-drained soil. For germination instructions, see #106. Zone 3.



106. *Aquilegia canadensis*. Wild columbine. Nodding, 1½- to 4-inch flowers with red sepals, yellow petals and red spurs. Blue-green foliage. Outdoors, sow in early spring, about 2 weeks before last frost date. Indoors, provide a 3-week period of cold stratification, then germinate at temperatures of 70° to 75°F. Do not cover seed; light improves germination, which usually takes from 20 to 25 days. Zone 2-3.

107. *Aquilegia formosa*. Sitka or western red columbine. Nodding, 1- to 2-inch flowers with red sepals, yellow petals and red spurs. Plants bloom from May to August. Stems 2 to 3 feet tall. Native to woods and moist meadows from Alaska to Baja, California. For cultural and germination instructions, see #106. Zone 4. Limited supply.

108. *Aquilegia vulgaris*. European crow-foot, garden columbine. Violet-flowered plant with large, long-spurred flowers. Height to 2 feet. See #106 for cultural information. Seed can also be soaked for 24 hours, sown indoors and kept at a temperature between 60° and 70°F. Zone 4.

109. *Campanula americana*. Tall bellflower. Erect, unbranched annual to 6 feet. Bears spikes of pale blue, 1-inch flowers. The 5-lobed flowers are flat, not bell-shaped. Blooms from June to August. Shade; moist soil. Sow indoors 6 to 8 weeks before planting outside, and maintain a medium temperature of from 68° to 86°F. Will reseed. Germination takes from 10 to 14 days.

110. *Dicentra formosa*. Western bleeding-heart. Basal foliage is bluish-green, and nodding, rose-purple to white flowers are borne on 1½-foot racemes. Blooming time is late spring. Part shade; fertile, light soil with excellent drainage. Must be kept moist through the growing season. Sow outdoors in late fall or early winter for germination the following spring, or sow indoors in moist medium and freeze for 6 weeks. Germinate at temperatures from 55° to 60°F. Germination takes 30 days or more. Zone 3.

111. *Podophyllum peltatum*. May-apple. Perennial to 2 feet tall. Bears nodding, white, 2-inch flowers beneath an umbrella-like whorl of leaves. The 2-inch, yellowish fruits are edible, but the stem and root are

poisonous. Shade; rich, moist, acid soil. Sow in cold frame or open seed bed in early winter for germination in May. Zone 3.

112. *Polygonatum commutatum*. Great Solomon's-seal. Arching perennial to 6 feet in height. Bears clusters of 1-inch, yellowish-green to greenish-white flowers. Coarse-textured plant. Shade; deep, rich soil. Sow in spring following a winter-long period of cold stratification. Zone 3.

113. *Sanguinaria canadensis*. Bloodroot. Low-growing native wildflower with red sap that Indians used as a dye and warpaint. Bears waxy, white flowers tinged with pink. Blooms are 1½ inches across, and are borne on 8-inch scapes in early spring. Foliage dies down in summer. Light shade; rich, moist, slightly acid soil. Zone 3. Limited supply.

114. *Smilacina racemosa*. False Solomon's-seal, false spikenard. Arching perennial to 3 feet tall with finely hairy stems and large leaves. Small white flowers are borne in long terminal clusters and are followed by small whitish berries that turn red in fall. Partial shade; moist, slightly acid soil. Sow fresh seed outdoors in fall or sow outdoors in spring following a winter-long period of cold stratification. Plants will germinate second year after sowing, and will take several years to bloom from seed. Zone 3.

Bulbous & Tuberous-Rooted Plants

We have received seed of several bulbous and tuberous-rooted plants this year. Although these plants generally require a little more patience to grow from seed, they are certainly worth the time and trouble. There are some old garden favorites such as dahlias, gladiolus and several species of lilies, as well as some more unusual plants such as the gloriosa lily, calla and soap-plant. Please note that many of these plants must be lifted and stored at the end of the growing season in order to survive the winter in colder areas. For best results, use the general germination instructions for annuals for the plants that are hardy in Zones 9 and 10, and the instructions for perennials for the other species. Combine this information, which appears on page 3, with the specific information presented below.

115. *Agapanthus africanus*. Lily-of-the-Nile. Tender, tuberous-rooted perennial with evergreen, strap-like leaves that reach 1½ feet or more in length. Bears 12- to 30-flowered umbels of fragrant, 1½-inch-long, violet-blue flowers. Excellent tub plant for summer patio. Will bloom for several years without repotting. Full sun. Water and fertilize heavily during the growing season. Plant may go dormant in winter; dry off gradually and store in cool, dry location. Sow indoors maintaining medium temperature of 75°F and cover seeds lightly. Plants will flower 3 to 5 years from sowing. Zone 9.

116. *Allium aflatanense*. Bulbous perennial bearing globe-like, densely flowered umbels. Light violet flowers with yellow anthers are borne on a 2½- to 5-foot scape. Excellent for drying or use as cut flowers. Full sun; well-drained soil. Sow outdoors in fall or sow indoors following a 1-month period of cold stratification. Will take several years to bloom from seed. Zone 5.

117. *Camassia quamash*. Common camass. Bulbous perennial with long, strap-shaped leaves and large, loose clusters of deep blue to white flowers. Very adaptable. Prefers moist, fairly heavy soil. For cultural and germination information, see #126. Zone 5. Limited supply.

118. *Chasmanthe floribunda*. Member of the Iris family having stiff, bright green leaves to 2 feet long and 2 inches wide. Flowering stems are to 4 feet in height. Flowers are 2 inches long, orange-red in color and are borne in densely flowered terminal spikes or panicles. For cultural and germination instructions, see #122. Zone 9.

119. *Chlorogalum pomeridianum*. Soapplant or wild potato. Bulbous perennial with long, strap-like leaves and terminal panicles of white, purple-veined flowers that open in the afternoon. Lily family member native to western North America. Attracts bees. Bulbs yield a lather that can be used as a soap substitute. Full sun; semi-dry, loamy soil. Germination probably takes 2 months or more. Plants will take several years to bloom from seed. Zone 9.

120. *Dahlia Cultivar Mix*. Tender, tuberous-rooted perennial. This selection includes a wide range of flower types and colors, including single, **NOT** anemone, ball, pompon, incurved, **AVAILABLE** and informal. All colors are available. Plants are 3 to 6 feet in height. Available in summer to frost. Full sun; good, rich soil. Water well and feed heavily. Taller plants may need staking. Once tops are blackened by first frost, dig up tubers and store over winter in a plastic bag of dry peat moss in a cool place. Replant after frost in the spring. Zone 9.

121. *Fritillaria imperialis*. Crown-imperial. Bulbous perennial with brilliant red or yellow, bell-shaped flowers that appear in spring. Full sun; rich, well-drained soil. Follow general germination instructions for perennials, but seedlings will not flower for 6 years. Germination takes 20 to 40 days. Zone 6.

122. *Gladiolus Cultivar Mix*. Large-flowered hybrids to 2 feet or more in height. Foliage is sword-shaped. The 6-inch flowers come in a range of colors. Full sun; deep, well-drained, slightly acid soil. Sow indoors in late winter. Germination takes 20 to 40 days. Cormels will form first year; plant will flower in 2 or 3 years. Hardy to Zone 9. Corms should be lifted before frost and stored over winter.

123. *Gladiolus Cultivar Mix*. Small-flowered hybrids are up to 2 feet tall. Foliage is sword-shaped. The 2½- to 3-inch flowers come in a range of colors. For cultural and germination instructions, see #122.

124. *Gladiolus tristis*. Corn flag. Two-foot plant with grass-like foliage and fragrant yellow flowers that open at night. Full sun. Sow indoors in late winter. Germination takes 20 to 40 days. Cormels will form first year; plant will flower in 2 or 3 years. Hardy to Zone 7b (to 5°F). In northern regions corms probably can be lifted and stored in winter.

125. *Gloriosa* sp. Gloriosa lily. Tuberous, vining plant that grows to 8 feet in length. Reflexed, red, yellow and purple variegated flowers are lily-like. Blooms in summer outdoors and in winter in the greenhouse. For outdoor plants: full sun; very rich, well-drained soil; trellis or other support needed. Dig tubers when foliage yellows in fall and store at 55° to 60°F. For indoor plants: full sun; 65°F nights and 85°F days; mist frequently; rich, evenly moist soil. Withhold water and fertilizer after flowering, allow plant to go dormant, lift tubers and store for 4 months. Germination may take 2 months or more, and plants may take several years to bloom from seed. Zone 8.

126. *Lilium canadense*. Canada lily, meadow lily. Five-foot, summer-blooming perennial bearing 1 to 20 flowers in 1 to 4 umbels. Nodding flowers are 3 inches long, 3 inches across, and orange-yellow to red with purple-brown spots. Full sun; will tolerate dry conditions. Sow indoors following a 45-day period of cold stratification. Germination takes 20 to 40 days, and plants will take several years to bloom from seed. Zone 4.

127. *Lilium Cultivar and Species Mix*. A variety of lilies. Full sun; fertile, slightly acid soil that is evenly moist but well-drained. For germination information, see #126.

128. *Lilium superbum*. Turk's-cap lily. Beautiful, 8-foot perennial bearing late-summer stalks with up to 40 flowers. Flowers are 4 inches across and orange spotted with maroon. Petals are strongly reflexed and anthers are orange-red. Leaves are whorled. May require staking. Full sun; fertile, slightly acid soil with perfect drainage. For germination information, see #126. Zone 4.

129. *Zantedeschia 'Green Goddess'*. Calla lily. Stemless plant with large, glossy, arrow-shaped leaves that arise from thick rhizomes. Six-inch flower spathe is greenish-yellow and is borne on a stalk about 2½ feet in height. Indoors, keep at 50°F nights until roots develop, then raise temperature to 60° to 65°F, and keep moist once active growth begins. Outdoors, plant in full sun to light shade in very rich, well-drained, mulched soil. Dig up rhizomes before frost, store in cool, dry place until spring. Requires at least a 3-month dormant period. Sow seeds on surface of medium and maintain medium temperature of between 65° and 75°F. Do not cover seed; light required for germination, which takes from 3 to 5 weeks. Zone 9.

130. *Zephyranthes grandiflora*. (Sometimes listed as *Z. rosea*). Zephyr lily. Bulbous plant with basal, grass-like foliage and rose-red, 1-inch flowers borne on a 12-inch stalk. Blooms appear in autumn. Lift and store bulbs in winter. For germination information, see #129. Zone 9-10. Limited supply.

HOUSE, GREENHOUSE & TROPICAL GARDEN PLANTS

All of the plants in this section are suitable for tropical gardens. The smaller species can be grown indoors or in greenhouses in areas where they are not hardy. As the plants in this section illustrate, tropicals are a fascinating, diverse group of species. We have enormous trees, small flowering pot plants, vines, shrubs with interesting or edible fruits and more. Many of the plants listed in "Bulbous and Tuberous-Rooted Plants," and numbers 62, 63, and 74, are also tender perennials that can be grown out-of-doors in Zones 9 and 10. Follow the "Germination for Annuals" instructions unless otherwise indicated.

131. *Adenium obesum*. Desert rose. Slow-growing shrub or small tree to 15 feet in height. Succulent, fleshy trunks with 6-inch leaves clustered at the ends of the branches. Deep pink flowers are borne in flat-topped clusters. Milky sap is poisonous. Likes hot, dry conditions. Native to tropical Africa. May be difficult to germinate. Zone 10.

132. *Annona muricata*. Soursop, prickly custard apple. Small evergreen tree to 20 feet in height. Bears solitary, yellow flowers that are 1 inch long or more. The dark green, spiny, 8-inch fruit has white flesh and is edi-

ble. Used for sherbets and refreshing drinks. Very tender species native to tropical America. Hardy only in warmest parts of Zone 10. Limited supply.

133. *Annona squamosa*. Sugar or custard apple, sweetsop. Small evergreen tree to 20 feet in height. Bears 1-inch, greenish-yellow flowers. The yellowish-green, heart-shaped fruit is 3½ inches across. Widely cultivated in the lowland tropics and subtropical Florida. The most delicious of the annonas. Also a tropical American native, hardy only in Zone 10b. Limited supply.



134. *Asparagus asparagoides*. Smilax. Twining vine grown by florists. Excellent in hanging baskets. Glossy, 2-inch, apple-green leaves, thread-like stems. Bright, indirect light. Sow indoors anytime; maintain a medium temperature of 70° to 80°F.

135. *Asparagus setaceus* 'Nanus'. Dwarf asparagus fern. Low-growing cultivar with lacy, ferny foliage that is rich green in color. Light shade; light, fertile, slightly acid soil. Water and feed heavily in summer. Sow seed indoors after soaking in warm water for 24 hours. Germination takes 30 days. Zone 8.

136. *Caesalpinia gilliesii*. Bird-of-paradise shrub. Shrub or small tree bearing yellow flowers with bright red stamens. Fruits are up to 4 inches long. Soak seed in warm water for 24 hours before sowing. May be slow to germinate. Zone 8. Limited supply.

137. *Cananga odorata*. Ilang-ilang. Fast-growing evergreen tree native to tropical Asia. Bears 8-inch leaves and can be 80 feet tall in its native habitat. (Usually no more than 15 feet tall in tropical U.S.) Drooping, yellowish-green flowers are very fragrant. Oil is distilled from the flowers for perfume. Sow in moist, light soil mix. Sprinkle seeds and press lightly on surface. Cover with perlite, water lightly and cover with glass or plastic until seeds germinate. Maintain medium temperature of 75° to 85°F. Zone 10.

138. *Cassia didymobotrya*. Shower tree. Ten-foot shrub with foot-long leaves divided into 8 to 16 pairs of leaflets. A pea family member that bears erect racemes of ¼-inch flowers. Full sun; warm, humid conditions. A native of tropical Africa, it is naturalized in tropical America. Sow indoors in warm, moist medium. Do not allow to dry out. Germination is variable; 20 to 60 days. Zone 10b. Limited supply.

139. *Chrysalidocarpus cabadae*. Palm. Tropical palm producing a cluster of bamboo-like stems, 5 inches in diameter, that reach 30 feet or more. Leaves are pinnate. Leaflets are borne in a single plane and are regularly arranged. Bears small, bright red fruits. Sow on surface of warm, moist loam and cover

lightly with perlite. Maintain a medium temperature of 80°F. Germination takes 60 days or more. Zone 10.

Save this catalogue to identify the seeds you have selected!

140. *Clusia rosea*. Balsam apple. Epiphytic, tropical tree to 40 feet in height with large, thick, evergreen leaves. Pink and white flowers are 2 inches across. Bears greenish-white, inedible, apple-sized fruits that are used in arrangements. Seeds contain a sticky resin used in caulking boats. Resists salt spray. For germination instructions, see #137. Zone 10.

141. *Coffea arabica*. Common coffee. Arabian coffee plant. Shrub to 15 feet tall with glossy, dark, evergreen leaves and clusters of fragrant, pure white, star-shaped flowers. Brilliant red, fleshy fruits each contain 2 seeds, which are coffee "beans." Pulp must be removed before seeds can be used for making coffee or be planted. Zone 10.

142. *Diets vegeta*. African iris. Tender perennial with fan-like leaves and attractive flowers borne on 2-foot stems. Flowers are 2½ inches across. White outer perianth segments with yellow or brown spots. Crests of the styles are marked with blue. Humus-rich soil; allow to dry between waterings. Germination takes 20 to 40 days. Zone 10. Limited supply.

143. *Erythrina americana*. Mexican colorin. Deciduous, spiny tree with red to light rose flowers borne in short, dense racemes. Fruits are hairy and seeds are red. Full sun; average, well-drained soil. Sow seeds indoors after soaking in warm water for 24 hours. Maintain a medium temperature of 70° to 75°F. Zone 10. Limited supply.

144. *Guaiacum officinale*. Lignum-vitae. Tropical, evergreen tree to 30 feet in height. Bears few- to many-flowered clusters of blue to white blossoms. Very dense wood is used to make bowling balls, ball bearings, and other items that require very tough wood. Resistant to salt spray. Native to Panama, South America and the West Indies. For germination instructions, see #137. Zone 10.

145. *Pandorea species*. Bower plant. Subtropical, evergreen, woody vine that climbs without tendrils. Bears terminal panicles of white or pink flowers in late summer through fall. Full sun; rich soil. Zone 9.

146. *Portlandia grandiflora*. Slow-growing, evergreen shrub to 10 feet in height with large, shiny, dark green leaves. Bears large, white, 8-inch-long flowers that are shaped much like an Easter lily. For germination instructions, see #137. Subtropical. Zone 10.

147. *Senecio* × *hybridus* Mix. Florist's cineraria. Large-flowered, plants with

compact habit to 1 foot in height. Bear single or double, daisy-like flowers in a variety of colors. Large, **NOT** foliage. Excellent pot plant for cut use. Full sun or filtered light. Bring into bloom. Care to not overwater. While in bud and bloom maintain 50° to 55°F nights. Keep almost potbound for best flowering. Feed twice a month. Zone 10.

148. *Solanum macranthum*. Potato tree. Spiny, tropical shrub or small tree bearing bright blue, star-shaped flowers. The flowers fade to white as they age. The leaves are about 1 foot long and are toothed or lobed. For cultural and germination instructions, see #137. May be slow to germinate. Zone 10b.

149. *Solanum melongena*. Egg tree. Tender perennial that is grown as an annual or a pot plant. Bears violet-purple flowers and inedible white fruits that resemble eggs. Likes heat and humidity. Allow soil to dry slightly between waterings. Requires a long growing season for fruiting. Sow indoors using general germination instructions for annuals. Germination takes 15 to 20 days. Zone 10.

150. *Spathodea campanulata*. African tulip tree, flame-of-the-forest. Showy, 70-foot evergreen tree bearing scarlet, 5-inch flowers. Full sun; fertile, well-drained soil. Germination period unknown. Zone 10b.

151. *Stephanotis floribunda*. Stephanotis, Madagascar jasmine. Twining, woody vine to 15 feet or more in length. Evergreen leaves are thick and shiny. Fragrant, white, waxy, tubular, star-shaped flowers are borne in clusters of 6 to 8. Blooms are long-lasting and appear from April to October. Greenhouse tub plant. Prefers night temperatures of 65°F. Full sun; evenly moist soil. May be grown outside in the summer in partial shade. Zone 10. Limited supply.

152. *Tabebuia chrysostricha*. Golden trumpet tree. Evergreen, tropical tree to 50 feet in height. Flowers are golden-yellow, 2½ inches long and are borne in clusters up to 20 inches long in April and May. Densely hairy fruit is up to 8 inches in length. Well-drained soil; drought tolerant. Requires staking. Zone 10.

153. *Tabebuia rosea*. Rosy trumpet tree. Tropical tree to 80 feet in height with compound leaves of 3 to 5 leathery leaflets. Large clusters of showy, lilac-rose to white, tubular flowers appear in the winter. Fruits are narrow, 14-inch-long pods. Thrives in rich soil. Zone 10.

154. *Wilkesia gymnoxiphium*. 'Iliau. Hawaiian species that is found only on the island of Kauai. Daisy family member that reaches 8 or 9 feet in height and bears terminal inflorescences. Flower heads are yellow-green and 2 inches across. Full sun; well-drained soil. Sow seeds in a mixture of two parts perlite and one part peat after soaking in warm water for 48 hours. Keep moist. Germination varies. Zone 10.

TREES & SHRUBS

We have quite a variety of woody plants available this year—shrubs, small and large trees as well as vines. Some are valued for the showy flowers they bear, others for their brightly colored fruit, and some for their spectacular fall color. A number of species—Franklin tree, Amur maple, flowering dogwood and Washington hawthorn, for example,—are noteworthy in more than one season. We are also offering a number of unusual maples and interesting vines. You will most assuredly be able to find something to complement your garden.

These plants can be started from seeds following the "Germination for Trees and Shrubs" instructions on page 3 unless otherwise indicated. Exceptions to these rules are included in the individual plant descriptions.

Shrubs & Small Trees

155. *Athanasia crithmifolia*. Evergreen shrub to 4 feet in height. Finely divided foliage; new growth is silver-green. Umbels of deep yellow flowers appear at tips of branches in late spring. Full sun; average, well-drained soil. Native to South Africa. Difficult to germinate. Zone 7.

156. *Athanasia parviflora*. Evergreen shrub to 3 feet in height. Finely divided foliage; new growth is silver-green. Umbels of medium yellow flowers appear at tips of branches in late spring. Full sun; average soil with good drainage. Native to South Africa. Difficult to germinate. Zone 7.

157. *Callicarpa dichotoma*. Beautyberry. Four-foot shrub bearing pink flowers in summer and striking, dense clusters of lilac-violet fruit in late summer and fall. Full sun to partial shade; average, well-drained soil. Sow outdoors in fall or indoors following a 70-day period of cold stratification. Germination takes 1 to 2 months. Zone 5.

158. *Cephalanthus occidentalis*. Buttonbush. Small, twenty-foot tree or large shrub with glossy, 6-inch leaves and creamy, 1-inch flowers borne in showy heads. Blooms in summer and early fall. Found along streams; likes moist conditions. Sow in spring or summer, indoors or out. Zone 4. Limited supply.

159. *Cercis chinensis*. Chinese redbud. Deciduous shrub or small tree. Heart-shaped leaves with transparent margins and showy, rosy-pink flowers that appear earlier in the spring than other *Cercis* species. For best germination results, use a scarification treatment for the hard seed coats, followed by a 3-month period of cold stratification. Or outdoors sow in the fall. Zone 8.

160. *Cercis occidentalis*. California redbud. Deciduous shrub to 15 feet in height. Showy, spring-borne clusters of half-inch,

reddish-colored flowers. Full sun to light shade. Sow indoors or out. Zone 4.

161. *Chilopsis linearis*. Desert willow. Small, deciduous, 20-foot tree. Has willow-like leaves and a picturesque branching habit. Bears 2- to 3-inch terminal clusters of lavender flowers from June through October. Full sun; well-drained soil. Very drought tolerant. Germination takes 10 to 30 days. Zone 8.

162. *Colutea arborescens*. Bladder senna. Vigorous shrub to 15 feet tall bearing yellow flowers with red markings in May. Flowers are followed by 3-inch-long, inflated fruits. Grows in almost any soil. Pea family member native to northern Africa and southern Europe. Zone 5.

163. *Euonymus alata*. Winged spindle tree, burning bush. Deciduous, 8-foot shrub or small tree. Branches have corky wings. Yellowish flowers, reddish to purplish fruit and spectacular, red fall foliage color. Indoors, sow in spring following a 3- to 4-month period of cold stratification. Or in early fall for germination the following spring. Zone 4.

164. *Euonymus americana*. Strawberry bush. Deciduous, 8-foot shrub with beautiful fruit consisting of a pinkish-red capsule surrounding bright orange fruit. Sow indoors in perlite-peat mixture following a 4- to 5-month period of cold stratification. Zone 6.

165. *Fouquieria splendens*. Ocotillo. Spiny shrub to 20 feet in height native to the desert regions of the southwestern U.S. Sometimes used in hedge plantings, it bears tubular, red, 1-inch flowers in 10-inch-long panicles in spring and summer. Probably hardy to Zone 7.

166. *Franklinia alatamaha*. Franklin tree. Native American, 20- to 30-foot tree that is extinct in the wild, now known only in cultivation. Shiny, 6-inch, leathery leaves and bright orange fall color. Two- to 3-inch, cup-shaped, white flowers appear in August and September. Full sun to light shade; rich, moist, acid soil. Store seed in refrigerator until planting. Outdoors, sow in late fall, early winter. Indoors, sow following a 1-month period of cold stratification. Germination takes 25 to 30 days at temperatures of 70° to 75°F. Zone 6.

167. *Hibiscus syriacus*. Rose-of-Sharon. Shrub to 10 feet, bearing 3-inch, hibiscus-shaped flowers in white, reddish-purple or bluish-lavender. Blooms in summer. Will reseed at a great rate. Full sun to light shade. Sow outdoors in spring or summer, or indoors in spring. Zone 3.

168. *Ilex glabra*. Inkberry, winterberry. Stoliferous, evergreen shrub to 10 feet in height. Has flat, leathery, glossy green, toothed leaves. Bears clusters of white flowers fol-



lowed by clusters of black berries. Attracts bees. Good seashore plant. Moist soil; protection from winter winds and sun. For germination information, see #169. Slow to germinate. Zone 5.

169. *Ilex verticillata*. Winterberry. Deciduous shrub or small tree to 15 feet in height. Male plants bear flowers in clusters; females bear solitary flowers. Plants of both sexes needed for fruiting. Fruits are red, sometimes yellow, about 1/4-inch in diameter. Prefers fertile, well-drained soil. Sow indoors following a 2-month period of warm stratification followed by a 2-month period of cold stratification. Very slow to germinate. Zone 4. Limited supply.

170. *Myrica pensylvanica*. Bayberry. Deciduous to semievergreen shrub with aromatic foliage. Gray, waxy berries, which appear on female plants only, are 1/4-inch in diameter and are used in making bayberry candles. Tolerant of salt and infertile soil. Sow outdoors in the fall, or sow indoors after a 3-month period of cold stratification. Germination takes 5 months. Zone 4.

171. *Pieris japonica*. Japanese andromeda. Broad-leaved evergreen shrub with lustrous, deep green leaves. Bears drooping clusters of white, lily-of-the-valley-like flowers in early spring. Partial shade; acid soil. Germination takes 2 months. Zone 5.

172. *Rhododendron schlippenbachii*. Royal azalea. Deciduous shrub to 15 feet tall. Leaves are 5 inches long, in whorls of 5. Fall color is excellent. Fragrant, pale rose-pink, 3 1/2-inch flowers bloom in late spring. Protect from winds and hot sun; somewhat sun tolerant. Acidic, well-drained soil high in organic matter. Keep moist. Sow in pans of sandy peat, cover lightly with sphagnum moss or sand, and plant out in second year. Zone 5.

173. *Rosa villosa*. Apple rose. Wild rose native to Europe and Iran. Reaches 6 feet in height, and bears single, 2-inch, pink-to-red flowers. Valued for its red, 1 1/2-inch diameter fruits, which are edible. Full sun; rich, fertile, well-drained soil. Outdoors, sow in late fall or early spring for late spring germination. Or sow indoors following a 3-month period of cold stratification. Maintain 55°F medium temperature during germination, which takes 3 to 4 weeks. Zone 6.

174. *Spiraea latifolia*. Steeplebush, meadowsweet. Shrub to 4 feet in height with red to purplish-brown branches and clusters of small white to pale pink flowers. Blooms from June to August. Full sun; good, moist soil. Sow following a 3- to 4-month period of cold stratification. Zone 2.

175. *Syringa pekinensis*. Peking tree lilac. Beautiful native of China reaching a height of 40 feet. Large sprays of white flowers and attractive, purplish, peeling bark. Freely branching. Sow seed outdoors in fall. Cover with ¼ inch of soil and mulch for winter. Indoors, provide a 1-month period of cold stratification before sowing. Zone 5.

176. *Syringa reticulata* var. *mandshurica* (formerly *Syringa amurensis*). Manchurian tree lilac, Amur lilac. Shrubby, small tree to 12 feet in height. Bears loose, 6-inch panicles of yellowish-white, fragrant flowers. For germination instructions, see #175. Probably Zone 2.

Maples

177. *Acer diabolicum*. Devil maple. Rare, 30-foot tree with broad, 5-lobed leaves 4 to 7 inches in length. Full sun to light shade; well-drained, average soil. Sow outdoors in fall or indoors following a scarification treatment for hard seed coat and a 3-month period of cold stratification. Zone 6.

178. *Acer ginnala*. Amur maple. Beautiful large shrub or small tree to 20 feet. Bears small panicles of yellowish-white flowers in spring and has small leaves. Samaras turn red in autumn before foliage turns brilliant scarlet. Sow outdoors in fall and mulch for protection. Or, sow indoors in spring following a scarification treatment for hard seed coat, a 1- to 2-month period of warm, moist stratification, followed by a 3- to 6-month period of cold stratification. Zone 5.

179. *Acer miyabei*. Maple. Rare, 40-foot maple from Japan. Five-lobed, 4- to 6-inch leaves, corky bark and greenish-yellow flowers. For germination information, see #178. Shade during period of seedling establishment. Zone 6.

180. *Acer negundo*. Box elder. Deciduous maple with compound leaves. Height to 70 feet. Good for damp soils, but also grown in plains states, where summer drought and winter cold make it impossible to grow other species. Indoors, sow following a scarification treatment for hard seed coat and a 2- to 3-month period of cold stratification. Zones 3-9.

181. *Acer truncatum*. Shantung maple. Rare, 50- to 75-foot tree native to northern China. Glossy, 5-lobed leaves are 3 to 6 inches across. Golden-yellow to orange fall color. For germination information, see #178. Zone 5.

Large Trees

182. *Alnus glutinosa*. Black alder. Eighty-foot tree recommended for its ability to grow in wet soils. Prefers cool climates. Sow seed ½ inch deep after a 4-month period of cold stratification, followed by 3 days in freezer. Zone 4.

183. *Betula ermanii*. Birch. Deciduous tree to 60 feet in height. Native to north-eastern Asia and Japan. Grayish-white to reddish bark that flakes and peels. Leaves triangular-oval. Moist, sandy soil. For germination instructions, see #185. Zone 4.

184. *Betula lenta*. Sweet birch. Deciduous tree to 75 feet in height. Bark is dark red to almost black, turning to gray on old trees. Young twigs and bark are the main source of oil of wintergreen. Full sun to partial shade; moist, sandy soil. Sow in sand following 40- to 70-day period of cold stratification. Cover seed lightly. Germination takes 30 days. Zone 3.

185. *Betula populifolia*. Gray birch. Small, graceful, 30-foot tree useful for dry, poor soils or in boggy sites. Chalky bark and 3-inch, glossy-green leaves. Sow outdoors in late summer or early fall up to 2 months before first frost. Or, sow indoors in spring after a 1- to 2-month period of cold stratification. Cover seed lightly or not at all. Germination inhibitor destroyed by stratification or exposure to light. Germination takes 30 to 40 days. Zone 4.

186. *Cercidiphyllum japonicum*. Katsura tree. Beautiful, upright, branching tree to 100 feet in height. Very fast growing. New leaves are reddish-purple and change to bluish-green in summer. Fall color is yellow to yellow-red. Male and female trees necessary for production of fruit, which is bluish in color. Full sun; rich, moist, well-drained, acid soil. Zone 5. Limited supply.

187. *Cercis canadensis*. Redbud. Deciduous tree to 40 feet. Heart-shaped, light green leaves and abundant, showy, pea-like, pinkish-purple flowers borne in spring before the leaves appear. Sow outdoors in fall or indoors after a 2- to 3-month period of cold stratification. Use medium with high content of coarse sand. Germination takes 30 to 90 days. Zone 4.

188. *Cercis canadensis* 'Rosea'. Redbud. Deciduous tree to 40 feet. Heart-shaped, light green leaves and abundant, showy, pea-like, bright magenta flowers borne in spring before the leaves appear. Cultivar is less purple and more pink than the species. For germination information, see #187. Zone 4.

189. *Cladrastis lutea*. Yellowwood. Deciduous, 50-foot tree bearing 10- to 12-inch panicles of fragrant flowers in early summer. Bark is beech-like. Full sun to partial shade; average soil with good drainage. Sow outdoors in fall. Or, sow indoors following a

scarification treatment for hard seed coat and a 3-month period of cold stratification. (A scarification treatment of both nicking the seed coat and soaking in nearly boiling water may help break dormancy.) Day temperatures of 86°F and night temperatures of 68°F are recommended. Germination takes 1 to 2 months. Zone 5.

190. *Cornus florida*. Flowering dogwood. Beautiful small tree to 30 feet in height. Bears showy white flowers in spring and has red fruit and red autumn color in fall. Sow indoors following a 4-month period of cold stratification. Can be sown outdoors in fall, and in this case, seed may benefit from a summer-long period of cold stratification. Germination may take several months, or the seed may lie dormant for a year. Zone 5.

191. *Crataegus phaenopyrum*. Washington hawthorn. Beautiful, 25-foot tree with white, ½-inch flowers and bright red, ¼-inch fruit. Sow in fall for germination the following spring or in the spring following a 5-month period of cold stratification. Zone 5.

192. *Diospyros virginiana*. Common persimmon. Small, deciduous tree to 40 feet in height. Handsome foliage and excellent-tasting, edible fruit. Harvest fruit when yellow-orange and wrinkled. Unripe fruit is very astringent. Full sun; well-drained soil, but will tolerate poor soil. Sow seed in sand or peat following a 2- to 3-month period of cold stratification. Zone 5.

193. *Evodia hupehensis*. Evodia. Large tree to 60 feet in height. Bears 6-inch corymbs of white flowers and has interesting red-brown fruit that is ornamental. Rare in this country. Probably hardy to Zone 6.

194. *Gymnocladus dioica*. Kentucky coffee tree. Deciduous, 100-foot tree bearing foot-long racemes of greenish-white flowers in May and June. Seeds, which are borne in 10-inch, red-brown pods, were once used as a coffee substitute. Full sun; average soil. Sow indoors following a scarification treatment for hard seed coat. Alternate medium temperature between 85°F days and 70°F nights. Germination takes 20 to 30 days. Zone 6.

195. *Halesia carolina*. Silver-bell. Deciduous tree to 40 feet in height bearing white, bell-shaped flowers in clusters of 2 to 5. Blooms in spring before the leaves appear. Rich, well-drained soil; shelter from wind. Provide a 3- to 4-month period of warm stratification followed by a 3- to 4-month period of cold stratification before sowing. Zone 5.

196. *Juniperus virginiana*. Eastern red cedar. Large evergreen to 75 feet in height. Full sun; average soil. Soak fruit in water for several hours, then macerate to extract seed. Sow outdoors for germination the following spring. To sow indoors, soak seed in 1% solution of citric acid for 4 days followed by a 1- to 4-month period of cold stratification. Germination takes 20 to 60 days. Zone 3.

197. *Koelreuteria paniculata*. Golden-rain tree. Small, deciduous, 16- to 35-foot tree. Bears loose, terminal panicles of attractive yellow flowers from July to September. Flowers are followed by fascinating, triangular, balloon-like, 1½- to 2-inch seed capsules held on tree through fall. Sow outdoors in fall or sow indoors after a scarification treatment for hard seed coat followed by a 1-month period of cold stratification. Germination takes 20 to 45 days. Zone 5.

198. *Magnolia × soulangiana*. Saucer magnolia. Small, deciduous tree to 15 feet. Flowers, which appear before the leaves in spring, are purplish on the outside, white on the inside, and up to 6 inches across. Difficult to transplant. Sow outdoors in the fall or indoors following a 3- to 4-month period of cold stratification. Germination takes 1 to 2 months. Zone 5b. Limited supply.

199. *Prunus pensylvanica*. Pin or wild red cherry. Deciduous tree to 35 feet in height. Finely toothed, oblong-lanceolate foliage gives good red fall color. Bears white flowers in clusters of 2 to 5 and small, bright red fruits favored by birds. Sow seed indoors following a scarification treatment for hard seed coat and a 2- to 3-month period of cold stratification. Sow in sand-peat mix and bury seed to a depth of 1 inch. Zone 2.

200. *Ptelea trifoliata*. Common hop tree, water ash. Small tree to 25 feet in height. Has chestnut-brown bark and aromatic foliage. Bears greenish-white flowers in spring or early summer. Likes shady locations and porous soil. Sow outdoors in fall or indoors in spring following a 3- to 4-month period of cold stratification. Zone 5.

201. *Sassafras albidum*. Sassafras. Deciduous, 60-foot tree with small, bluish berries on bright red stalks. Beautiful red and orange fall color. Leaves and twigs are fragrant when crushed, and the oil of sassafras is distilled from the roots and the bark. Sow following a 3-month period of cold stratification at 40°F. Begin seed treatment as soon as possible after receipt. Then maintain 70° to 85°F medium temperature during germination, which takes 4 months. Zone 3.

202. *Sophora japonica*. Japanese pagoda tree. Interesting, 30-foot tree bearing loose panicles of half-inch, greenish-white flowers. Panicles up to 15 inches long. Best not to store seed; it is not long lived. Keep in refrigerator until ready to plant. Zone 5.

203. *Ulmus parvifolia*. Chinese elm. Resistant to Dutch elm disease. Reaches a height of 75 feet. Attractive, shiny leaves. Partially evergreen in mild climates. Easy to grow. Sow seed outdoors in spring. Zone 6.

Vines

204. *Campsis radicans*. Trumpet vine. Showy, bright orange-flowered vine. Trumpet-shaped blooms are 2 inches across and 3 inches long, and appear in late summer. Full sun; rich, fertile soil. Sow indoors using general germination instructions for trees and shrubs, following a 2-month period of cold stratification. Germination takes 1 month. Zone 5.

205. *Cardiospermum halicacabum*. Balloon vine. A woody perennial vine that

is treated as an annual north of Zone 8. Bears a profusion of small, white blooms. Height to 10 feet. Indoors soak seed in warm water overnight and sow in moist medium, or sow outdoors after last frost where the plant is to grow. Germination is slow and irregular. Limited supply.

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206. *Celastrus scandens*. American bittersweet. Deciduous, climbing or twining shrub that will grow to 25 feet with support. Beautiful, bright orange fruit useful in indoor arrangements and attractive to birds. Full sun to partial shade; ordinary soil. Male and female plants necessary for fruit production. Sow cleaned seed outdoors in fall, or sow indoors following a 2- to 6-month period of cold stratification. Cover seed to a depth of ½ inch with a mixture of ½ sand and ½ sawdust. Germination takes 20 to 36 days. Zone 4. Limited supply.

207. *Clematis ligusticifolia*. White virgin's bower. Vine to 20 feet long with compound leaves and clusters of white flowers, which are borne in summer. Plumey seed pods appear in the fall. Prefers a location where roots are cool and shaded, and the vines are in full sun. Rich, alkaline soil with excellent drainage. Water heavily. Sow outdoors in late fall for spring germination. Or, sow indoors in moist medium following a 3-week period of cold stratification. Germinate at medium temperature of 80° to 85°F. Germination may take several months. Zone 5.

VEGETABLES

Our vegetable selections this year include tasty plants that are relatively simple to grow and some that are ornamental as well. All should be sown following the "General Germination Instructions" on page 3 combined with the specific directions accompanying the individual plant description.

208. *Allium tuberosum*. Chinese or garlic chives. Bulbous perennial to 1½ feet tall bearing fragrant, globe-like, densely flowered umbels of white, star-like flowers. Excellent for drying. For cultural and germination instructions, see #116. Zone 4.

209. *Asparagus officinalis* var. *atilis* 'Martha Washington'. Garden asparagus. Long-lived perennial that produces an edible vegetable for harvest in the spring. Requires about 4 years to reach maturity from seed. Good, deep soil; proper fertilization and disease and pest control. Sow in spring after frost date. The following spring dig up roots and select the most vigorous for planting in a permanent location. Needs warmth for germination, which takes 7 to 10 days indoors or 10 to 21 days outdoors.

210. *Celeriac* 'Alabaster' (*Apium graveolens* var. *rapaceum*). Close relative of celery grown for its edible roots, which can be eaten raw or boiled. Also called turnip-rooted celery. Roots have celery flavor and can reach 4 inches in width and 3 to 6 inches in length. Full sun; very well-drained soil. Sow seed outdoors in early spring at a depth of ½ inch. Harvest 120 days after sowing.

211. *Celtuce*. A *Lactuca sativa* or lettuce hybrid, parentage unknown. Young foliage is excellent in salads, and heart of central stems tastes like celery. Central stem can be eaten raw or cooked. Full sun; average, well-drained soil. Sow outdoors in early spring for spring crop, or sow in late summer for fall crop. Good winter crop for Zones 9 and 10. 75 days from sowing to foliage harvest; 90 days to stalk harvest.

212. *Corn, Red Dent*. Edible, large-eared corn that turns dark red if allowed to remain on plant to maturity. Very colorful and ornamental. See #213 for cultural and germination information.

213. *Indian corn, dwarf*. A dwarf cultivar of *Zea mays* with variously colored ker-

nels. Ears are 2½ to 4 inches in length. Plants are 2 to 8 feet tall. Full sun; well-drained soil. Sow outdoors after all danger of frost is past and soil has warmed up. Plant at a depth of 1½ inches in several rows 24 to 30 inches apart. Within the rows, space plants 10 to 14 inches apart. Wind-pollinated; must be planted in several rows if ears are to be filled with kernels.

214. *Tampala* (*Amaranthus tricolor*). Four-foot vegetable grown for its edible foliage. Makes good spinach substitute when cooked. Eaten raw in salads, and stems can be cooked like asparagus. Has artichoke-like flavor. Full sun; average, well-drained soil. Sow seeds outdoors in early spring at a depth of ½ inch. Harvest 70 days after sowing.

215. *Tomato* 'Heartland'. A compact tomato that grows to only 3 or 4 feet in height. Although it is compact, this cultivar is indeterminate, so it produces fruit all season. Over 14,000 gardeners tested this plant in 1984 as part of a contest to find the best name for the plant. Full sun; well-drained soil. Sow indoors using general germination instructions for annuals.

SUGGESTED READING

All of the following books are available through the Society's Book Service. To order, use the coupon on the order blank on page 16 of this catalogue.

Ball Red Book: Greenhouse Growing. 14th Ed. Vic Ball, Editor. 720 pages. Essential reference on all aspects of commercial production of horticultural crops. Over 425 pages devoted to the cultural requirements of specific crops. Includes a chapter on seed germination, a table on when to sow for a certain bloom date, and some additional instructions. Hardcover, \$26.95. AHS member price, \$22.65.

The Step-by-Step Guide to Plant Propagation. Philip M. Browse. 96 pages. Illustrated, easy-to-read guide that has a chapter on seeds. Includes general information on seed collection, storage and sowing, as well as information on alpiners, bedding plants, herbaceous plants, woodies and some exotics. Also covers seed bed preparation and methods of breaking seed dormancy. Softcover, \$9.95. AHS member price, \$7.95.

Plant Propagation Principles and Practices. Hartmann and Kester. 662 pages.



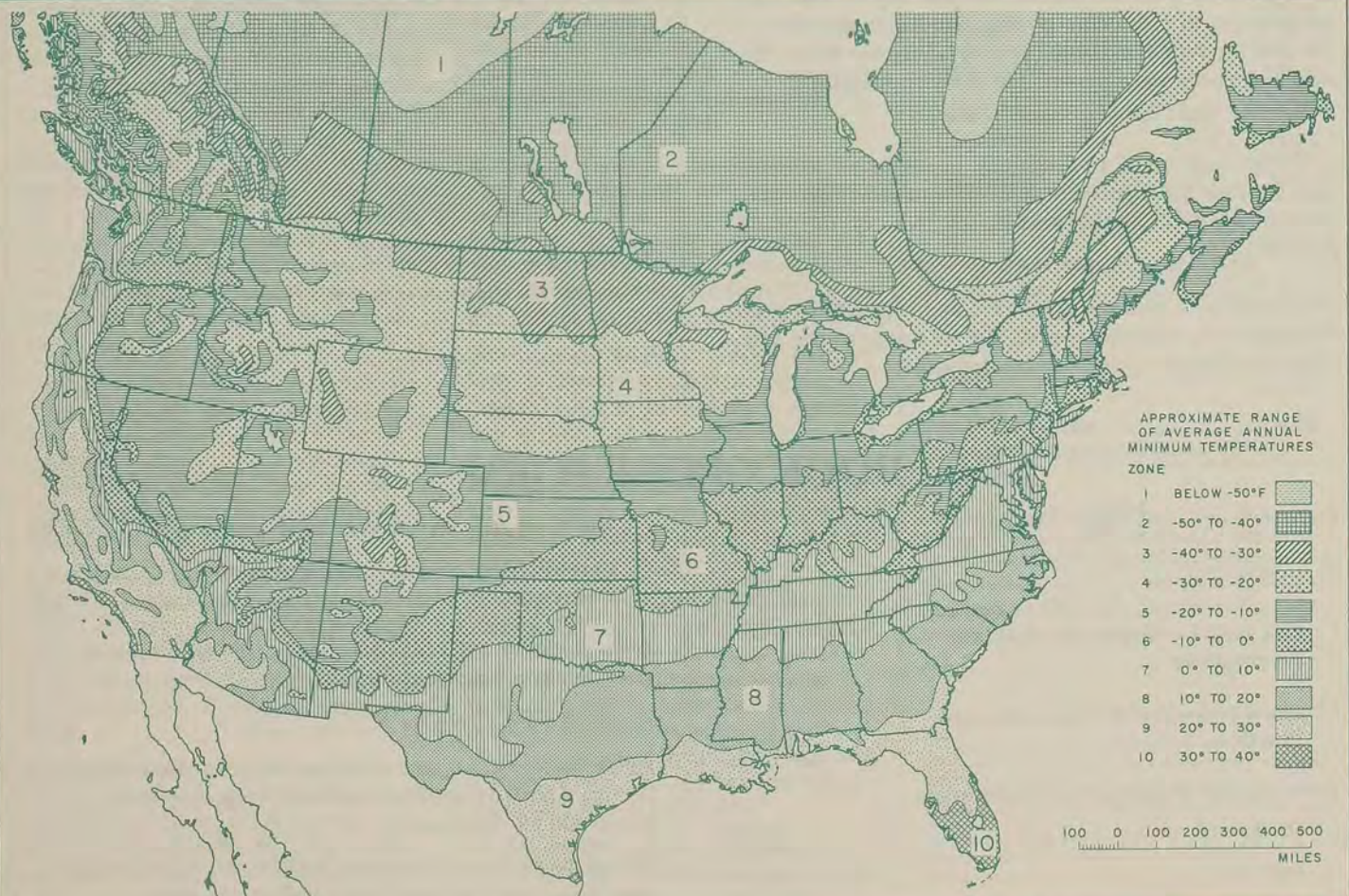
Considered one of the definitive textbooks on the subject. This book presents complete, up-to-date coverage of all phases of plant propagation. Approximately 130 pages are devoted to seed propagation alone, and an additional 100 pages cover the propagation of selected plants. Hardcover, \$31.95. AHS member price, \$28.27.

Growing and Propagating Wild Flowers. Harry R. Phillips. 331 pages. Extensive information on growing and propagating many species of wildflowers. Covers collecting, cleaning and storing seed; dormancy and pre-germination techniques; and propagation, cultivation and landscape uses for each plant. A chart of production timetables is also included. Hardcover, \$24.95; softcover, \$14.95. AHS member price, \$21.20 (hardcover), \$12.70 (softcover).

Growing and Saving Vegetable Seeds. Marc Rogers. 140 pages. Contains general information on seeds and specific information arranged by families. Each vegetable is discussed in detail. Problems you may encounter are presented along with their solutions. Softcover, \$7.95. AHS member price, \$6.36.

Plant Propagation for the Amateur Gardener. John I. Wright. 216 pages. General seed propagation information is covered briefly but completely. 150 pages are devoted to specific propagation information for individual plants. Includes a lot of material on seed propagation of numerous plants in an easy-to-read format. Hardcover, \$16.95. AHS member price, \$13.05.

U.S.D.A. HARDINESS ZONE MAP



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Encyclopaedia of Australian Plants Suitable for Cultivation. Volumes 1-3. W. Rodger Elliot and David L. Jones. First three volumes of a valuable reference work, particularly of use to gardeners in Southern and Western US. Volume 1 (336 pages) includes introduction, history of plants in cultivation and cultural information. Volume 2 (517 pages) and Volume 3 (516 pages) are the first two volumes of an encyclopedia of Australian plants (Volume 2, A-Ca; Volume 3, Ce-Er). Hardcover, \$159.90 for the set. AHS member price, \$135.90. Prices for individual volumes available on request.

Plants That Merit Attention—Volume 1: Trees. Janet Meakin Poor, Editor, 375 pages. Descriptions and illustrations of 150 species and cultivars of trees that are not common on a national basis, but which deserve to be grown more frequently. Hardcover, \$44.95. AHS member price, \$38.20.

Ball Red Book: Greenhouse Growing. 14th Ed. Vic Ball, Editor. 720 pages. Essential reference on all aspects of commercial production of horticultural crops. Over 425 pages devoted to the cultural requirements of specific crops. Hardcover, \$26.95. AHS member price, \$22.65.

Hortus Third: A Concise Dictionary of Plants Cultivated in the United States and Canada. The Liberty Hyde Bailey Hortorium. 1290 pages. Published in 1976, this remains the classic reference guide to cultivated plants

in this country and Canada. Includes botanical descriptions of hundreds of genera and thousands of species in cultivation. Some cultural notes, a common name index and information on botanical nomenclature also included. Hardcover, \$125.00. AHS member price, \$117.00.

Oaks of North America. Howard A. Miller & Samuel H. Lamb. 327 pages. Field guide to 75 species and varieties of oaks. Includes descriptions and illustrations, as well as range maps and winter twig and acorn characteristics for most species. Also includes a key to 112 Mexican species. Hardcover, \$15.95; softcover, \$9.95. AHS member price, \$14.35 (hardcover); \$8.95 (softcover).

Peppers: The Domesticated Capsicums. Jean Andrews. 186 pages. Fascinating book containing all you ever wanted to know about peppers. Beautiful color plates depict 32 cultivars, and the text includes complete historical, botanical and cultural information. Hardcover, \$35.00. AHS member price, \$28.00.

Exotica IV. Alfred Byrd Graf. 2,580 pages, 2-volume set. Revised edition of the comprehensive guide to plants from tropical and near-tropical areas. Includes 15,800 black-and-white and 405 color photographs. Concise descriptions of each plant. Hardcover, \$187.00. AHS member price, \$175.90.

Manual of Woody Landscape Plants. Michael A. Dirr. 826 pages. New edition of very useful book on trees, shrubs and woody vines for gardens. Includes many new species and cultivars not found in earlier editions. Hardcover, \$31.80; softcover, \$24.80. AHS member price, \$27.85 (hardcover); \$21.70 (softcover).

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Growing and Propagating Wild Flowers. Harry R. Phillips. 331 pages. Useful, informative book covering the essentials of growing and propagating wildflowers. Covers the basics of wildflower cultivation, and contains detailed information on individual species of flowering plants and ferns. Hardcover, \$24.95; softcover, \$14.95. AHS member price \$21.20 (hardcover); \$12.70 (softcover).

Garden Design: History, Principles, Elements, Practice. William Lake Douglas. 224

pages. Beautifully illustrated overview of garden design, including a brief history, as well as an examination of specific elements of the landscape (landings, entries, vertical changes) and of design elements such as paving, water and light. An excellent planning tool. Hardcover, \$35.00. AHS member price, \$28.00.

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Fungus Kills Gypsy Moth

The mere mention of the words "gypsy moth" sends shivers down the spine of any deciduous tree lover, but U. S. scientists may have acquired the ultimate weapon in the war against these pernicious pests—a fungus imported from Japan.

Richard S. Soper, Jr., insect pathologist at Cornell University in Ithaca, New York, traveled to Japan to collect dead gypsy moths from which he isolated four living strains of the fungus *Entomophaga aulicae*, apparently a potent killer. Although Japanese scientists first discovered the fungus early in this century, isolating and propagating living specimens was not possible until recently, Soper explained.

In laboratory tests at the Boyce Thompson Institute at Cornell University, Soper injected spores from his collected specimens into native gypsy moths, and the fungus killed more than 90 percent of the moths. According to Soper, the fungus lies dormant in the soil most of its life. After it becomes active and breeds, it releases tiny spores that land on the gypsy moth larvae's body. The spores then germinate and bore into their

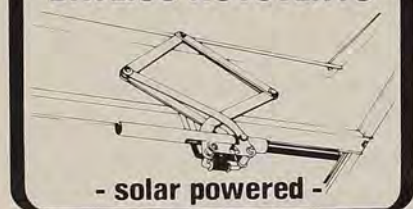
hosts to feed and grow.

Entomologist Mitsuaki Shimazu of the Forest and Forest Products Institute, Tsukuba, Japan, joined Soper in early 1985 to study the conditions under which the imported fungus would thrive in U. S. forests. The scientists first used growth chambers that simulate the environment of the northeastern United States, where gypsy moths are particularly destructive. Field tests followed in New York's broadleaf forests, and the fungus was as successful in killing gypsy moths that infested oaks, maples and beeches as it was under laboratory conditions. Future tests will concentrate on oak stands, which are the primary hosts of the pests.

Despite these positive results, many scientists do not anticipate rapid deployment of the fungus for use as a pesticide. Detailed evaluation of the available data must be made before widespread testing can be started. According to Ray Carruthers, a research entomologist for the Agricultural Research Service who also is working on the experiments, that could take years. Scientists with the U.S. Forest Service have no plans

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Plants Wanted

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Please send your "Plants Wanted" lists, including genus, species, common name and a brief description, to "Plants Wanted" in care of the Society. Please type or print neatly. We will publish them on a space-available basis after checking for sources in the Society's mail-order catalogue file.

• *Cinchona officinalis* (also listed as *C. condaminea*), a tree with rough, brown bark and leathery, ovate-lanceolate leaves. Bears deep pink flowers. Bark is a source of quinine. Native from Colombia to northern Peru. *Ephedra distachya*, joint fir, a species from southern Europe

and northern Asia that grows to three feet, but is often lower or trailing. Bears cones with somewhat spherical seeds. A source of ephedrine. *Ephedra minima*, a Chinese species of joint fir that grows only to five inches. Usually erect or climbing. San Diego Wild Animal Park, 15500 San Pasqual Valley Road, Escondido, CA 92027.

• *Quercus petraea*, durmast oak grows to 80 feet or more and has long-petioled leaves, much like those of *Q. robur*, English oak. Native to Europe and western Asia. Mrs. Mack H. Jolly, Jolly Enterprises, 3291 Lancaster Lane, Montgomery, AL 36106.

• *Salix viminalis*, osier or basket willow, a shrub or small tree that grows to 30 feet. Branchlets are covered with gray hairs. Grown as an ornamental and used for basketry. Deborah A. Reich, 215 Mulberry Street, New York, NY 10012.

to use the fungus in the future, but according to William Wallner, research project leader for Forest Insect and Disease Research, they also have not ruled out the possibility if studies show the fungus is highly successful. The Forest Service's skepticism was explained by Ken Knauer, assistant director of Forest Pest Management: "We're not holding our breath. The conditions the fungus has to have [to be successful] are extremely rigid, and the likelihood that they will all exist at once is extremely low."

If it is used as an insecticide in the future, Soper says the spore-producing parts of the fungus might be ground into a powder and sprayed over larvae-infested forests. As the powder got wet, it would produce the spores that attack the gypsy moth larvae.

—Russell Kaniuka, *Agricultural Research, June/July 1985; American Forests, November 1985*

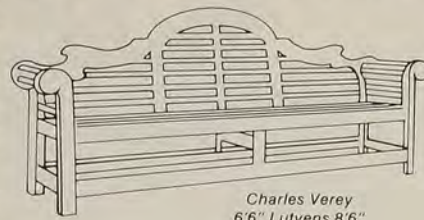
Book List Available

Society members may request free copies of our updated and improved Book Buyer's Service Book List by writing to Mrs. Jeanne Eggeman, PO Box 0105, Mount Vernon, VA 22121, or by calling her at (703) 768-5700.

The 16-page list, which features over 350 volumes, allows members to order some of the finest gardening books in print at very special discount prices. Even if you order only a book or two per year, you may well save enough money on these purchases to cover the cost of your Society membership dues!

The books are divided into categories such as Cacti and Succulents; Dictionaries, Encyclopedias, and General Reference; Herbs and Medicinals; Perennials; and Pests, Diseases, and Weeds. The list has something for everyone, and brings you books you probably could not find in your local bookstore or library.

Why not start planning for your 1986 garden by calling or writing for a copy of the AHS Book List right away? We'll be happy to send you your copy as soon as we hear from you.



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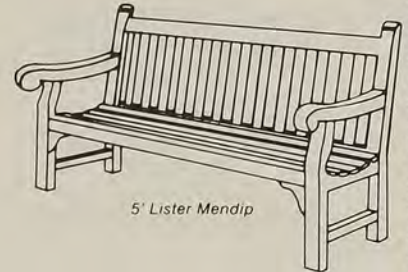
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AHS

Travel Program

The American Horticultural Society is sponsoring an exciting program of horticultural explorations for the 1986 season. Plan to join fellow AHS members on one or more of these exciting garden-related tours.

China Exploration: (April 9-29) Learn about the plants, gardens, art, architecture and history of China on an exploration through the coastal, mountain, subtropical and temperate areas of the country. AHS board member Richard Hutton will lead a good-will delegation to strengthen horticultural ties between China and America. William Wu, Co-Chairman of the Shanghai-San Francisco Friendship City Cultural Committee, and Andrew Lauener, an authority on Chinese plants, recently retired from the Royal Botanic Garden, Edinburgh, will lead the tour.

Aegean & Adriatic Cruise (April 19-May 5) Sail aboard the yacht *Argonaut* on a spring wildflower exploration amid the treasures of antiquity in Greece and the Greek islands, and tour the palaces and gardens of Yugoslavia and Italy. Explore Athens, Delphi, Mikonos, Venice, Villa d'Este and Lake Como. Dorothy Temple, former White House Florist, will lead a flower-arranging symposium on board. Co-leader is Martin J. S. Sands, Senior Botanist, Royal Botanic Gardens, Kew, England.

Spring England & The Chelsea Flower Show: (May 8-23) Visit public and private British gardens at the peak of spring bloom. See the Cornish Riviera and visit Clapton Court, Stourhead, Nyman and Wakehurst Place. Spend a full day at the Chelsea Flower Show. Tour Leaders: Sue McDonald, former Palm House Curator at Kew, and Helen Clapp, lecturer and historical expert.

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