

American Horticulturist



August 1991

A Publication of the American Horticultural Society

\$2.50

RECALLING CHRYSANTHEMUMS
ENCHANTED EVENINGS, FRAGRANT NIGHTS
MICHIGAN'S FERNWOOD
HEALING THROUGH HORTICULTURE

08



0 73361 64751 1

STUDY TOURS

TRAVEL/STUDY TRIPS FOR THE AHS GARDENER

SEPTEMBER 30-OCTOBER 20, 1991 GARDENS OF ASIA

Join AHS Executive Director Frank Robinson on a program that encompasses Thailand, China, and Japan. Highlighted are excursions to the ruined city of Ayutthaya; hillside villages near Chiang Mai; a jungle safari on elephant-back to the village of Karen near Mae Hong Son; Beijing and the forbidden city; Xi'an and the tomb of Emperor Qin Shi Huangdi with its army of terra cotta figures; Shanghai's Yu Garden and Museum of Art and History; the beautiful gardens of Suzhou; Kyoto's holy Saihoji Moss Temple, Nijo Castle, and Ryoanji Rock Garden; and Nikko's botanical gardens. And by special invitation, we will visit the Imperial Palace Gardens as well as the Jindaiji Botanical Gardens in Tokyo.

OCTOBER 17-24, 1991 GARDENS OF CALIFORNIA

This will be a most unique voyage in San Francisco Bay from which we will navigate up the Sacramento and Napa Rivers. With the help of AHS members and friends we visit a wonderful collage of private gardens in Woodside, Piedmont, Berkeley, Lafayette, Orinda, Walnut Creek, Sacramento, Davis, and Napa. Program highlights include four private gardens belonging to board members of the historic Filoli estate including James and Lurline Coonan, Mr. and Mrs. Eugene C. Trefethern Jr. of Napa, and Ruth Bancroft, whose garden in Walnut Creek

was featured in the October 1989 issue of *American Horticulturist*. This program is being led by Mrs. Harry Van de Kamp of Paso Robles, California, a former AHS Board Member whose collaboration with this program makes it a once-in-a-lifetime opportunity.

JANUARY 25-FEBRUARY 1, 1992 GARDENS OF THE VIRGIN ISLANDS

An exceptional exploration voyage to the British and U.S. Virgin Islands on board the *Nantucket Clipper*. Ports of call will include Saint Thomas, Saint John, Tortola, Virgin Gorda, and Peter Island. This unique program is being led by former AHS President Carolyn Marsh Lindsay and Bob Lindsay and AHS Board Member Andre Viette and Claire Viette. Participants will see the gardens of the Lindsays' and the Viettes' parents and private homes and gardens of their personal friends, including the spectacular gardens of AHS member Paulina du Pont Dean, whose gardens were featured in the December 1989 *American Horticulturist*. The small size of the yachtlike *Nantucket Clipper* makes it possible to sail into isolated bays, quiet anchorages, and deserted beaches known only by experienced yachtsmen who are intimate with these waters.

FEBRUARY 19-MARCH 3, 1992 EGYPT AND NILE CRUISE

Explore the earliest of the Western civilizations and the life-giving influence of the Nile River. The itinerary includes Cairo, Luxor, and Abu Simbel as well as a five-day cruise on the Upper Nile from Luxor to Aswan on board the *Nile Goddess*. Visit numerous historic gardens, including the Manial Palace Gardens in Cairo and the botanical garden on Lord Horatio Herbert Kitchener Island at Aswan. Program leaders are AHS Immediate Past-President Carolyn Marsh Lindsay and Bob Lindsay.

Leonard Haertler Travel Company, 7922 Bonhomme Avenue, Saint Louis, MO 63105, (800) 942-6666, (314) 721-6200 (in Missouri).

Daitokuji Temple in Kyoto. Participants in an October tour of Asia will visit several Kyoto gardens.

PHOTO COURTESY OF THE JAPAN NATIONAL TOURIST ORGANIZATION



American Horticulturist

Volume 70, Number 8

August 1991

ARTICLES

A Little Night Music

by Tovah Martin 10

When dark descends over the garden, rest your eyes and follow your nose.

Some Enchanted Evenings

by Mary Beth Wiesner 16

Oenothera is a twilight highlight.

Plus: Some thoughts on seedpods and nomenclatural blunders.

A Legacy of Ferns

by June Hicks 22

Kay Boydston planted 10,000 ferns on her sixteen-acre property, and left them for all to enjoy.

Where Have All the Chrysanthemums Gone?

by Elisabeth Sheldon 30

A tribute to a giant genus that is no more.

The Many Faces of Horticultural Therapy

by Thelma E. Honey 37

The first of a two-part series on the ways plants enhance troubled lives.

DEPARTMENTS

Commentary 4

Letters 5

Book Reviews 7

Classifieds 44

Pronunciations 46



AUGUST'S COVER

Photographed by Elvin McDonald

Flowers that waft strong fragrances into the night, like this *Brugmansia* 'Charles Grimaldi', tend to be white, yellow, or pink. If you lack a greenhouse or semitropical climate, *Brugmansia* can be pruned back severely in autumn and allowed to go dormant. Beginning on page 10, Tovah Martin describes this and other plants with aromas worth losing sleep over.

EDITOR: Kathleen Fisher. ASSISTANT EDITORS: Mary Beth Wiesner, Thomas M. Barrett. EDITORIAL ASSISTANT: Martha Palermo. DESIGN DIRECTOR: Joseph Yacinski. MEMBERSHIP DIRECTOR: Kathleen B. Amberger. ADVERTISING: American Horticultural Society Advertising Department, 2700 Prosperity Avenue, Fairfax, VA 22031, telephone (703) 204-4636. COLOR SEPARATIONS: Chroma-Graphics, Inc. EDITORIAL ADVISORY BOARD: Dr. Gerald S. Barad, Flemington, NJ; Philip E. Chandler, Santa Monica, CA; Dr. Harrison Flint, West Lafayette, IN; Peter Loewer, Asheville, NC; Dr. Elizabeth McClintock, San Francisco, CA; Frederick McGourty, Norfolk, CT; Janet M. Poor, Winnetka, IL; Maire Simington, Phoenix, AZ; Jane Steffey, Sykesville, MD; Dr. James E. Swasey, Newark, DE.

Replacement issues of AMERICAN HORTICULTURIST are available at a cost of \$2.50 per copy. The opinions expressed in the articles that appear in AMERICAN HORTICULTURIST are those of the authors and are not necessarily those of the Society. Botanical nomenclature in AMERICAN HORTICULTURIST is based on HORTUS THIRD. Manuscripts, art work, and photographs sent for possible publication will be returned if they are accompanied by a self-addressed, stamped envelope. We cannot guarantee the safe return of unsolicited material. AMERICAN HORTICULTURIST, ISSN 0096-4417, is the official publication of the American Horticultural Society, 7931 East Boulevard Drive, Alexandria, VA 22308, (703) 768-5700, and is issued six times a year as a magazine and six times a year as a News Edition. The American Horticultural Society is a nonprofit organization dedicated to excellence in horticulture. Membership in the Society includes a subscription to AMERICAN HORTICULTURIST. National membership dues are \$35; two years are \$60. Foreign dues are \$45. \$12 of dues are designated for AMERICAN HORTICULTURIST.

Copyright © 1991 by the American Horticultural Society. Second-class postage paid at Alexandria, Virginia, and at additional mailing offices.

Postmaster: Please send Form 3579 to AMERICAN HORTICULTURIST, 7931 East Boulevard Drive, Alexandria, VA 22308.

American Horticultural Society

*The American
Horticultural Society
seeks to promote
and recognize excellence
in horticulture
across America.*

OFFICERS 1990-1991

Mr. George C. Ball Jr.
West Chicago, Illinois
President
Mrs. Helen Fulcher Walutes
Mount Vernon, Virginia
First Vice President
Mr. Richard C. Angino
Harrisburg, Pennsylvania
Second Vice President
Mr. Elvin McDonald
Brooklyn, New York
Secretary
Mr. Gerald T. Halpin
Alexandria, Virginia
Treasurer

BOARD OF DIRECTORS

Mrs. Suzanne Bales
Bronxville, New York
Dr. William E. Barrick
Pine Mountain, Georgia
Dr. Sherran Blair
Columbus, Ohio
Mrs. Mary Katherine Blount
Montgomery, Alabama
Mrs. Sarah Boasberg
Washington, D.C.
Dr. Henry Marc Cathey
Washington, D.C.
Mr. Russell B. Clark
Boston, Massachusetts
Mrs. Beverley White Dunn
Birmingham, Alabama
Mr. John Alex Floyd Jr.
Birmingham, Alabama
Mrs. Julia Hobart
Troy, Ohio
Mr. David M. Lilly
Saint Paul, Minnesota
Mr. Lawrence V. Power
New York, New York
Dr. Julia Rappaport
Santa Ana, California
Mrs. Flavia Redelmeier
Richmond Hill, Ontario, Canada
Mrs. Jane N. Scarff
New Carlisle, Ohio
Mrs. Josephine Shanks
Houston, Texas
Mrs. Donald B. Straus
New York, New York
Mrs. Billie Trump
Alexandria, Virginia
Mr. Andre Viette
Fishersville, Virginia
Ms. Katy Moss Warner
Lake Buena Vista, Florida

EXECUTIVE DIRECTOR

Mr. Frank L. Robinson

COMMENTARY

What will American horticulture look like by the end of the '90s? Far different, I suspect, than it ever has or does now. Change is in the air!

We keepers of the earth are arising from bent knees in our garden plots, brushing the soil from our fingers, and proudly declaring our bigger role in maintaining our nation's environmental health and social vigor. We know there are horticultural solutions to many of our nation's ills: reduction of carbon dioxide build-up through tree planting; food production in urban community gardens; horticultural therapy for troubled populations; water conservation through adaptive plant material and other aspects of Xeriscaping; composting to enrich soil and reduce pressure on our landfills; landscapes designed to make cities more livable and functional; public gardens for recreation and education; research for preserving germplasm and insuring our ability to feed and clothe ourselves in the future.

We know all of this is horticulture. Now we need to be sure all of America knows it.

It is time to work together for these larger goals—survival and quality of life! A major opportunity stands before us. On June 27, the American Horticultural Society convened representatives of fourteen national horticultural organizations at River Farm to plan a National Forum on American Horticulture to be held toward the end of 1991. The National Forum will be a "green congress" of every major plant-related group in the United States—a chance for cooperative vitality such as American horticulture has never seen before. Clearly, given the extent of interest in horticulture across America through local, regional, national, and specialty organizations, the whole is greater than the sum of its parts.

Coupled with this vector of change, the Board of Directors of AHS is undertaking a new strategic planning initiative for the Society itself. Our original mission, which has guided us since 1922, is still appropriate and valid as we approach our seventieth year. However, the manner in which we carry it out deserves re-evaluation in a rapidly changing society and marketplace.

The destinations to which these two initiatives will lead us are still unclear. Your guidance and support, as members with vested interests, are always welcomed and valuable.

The cultivation and use of plants is an important and exciting endeavor. Horticulture means more to all of us than we often take time to appreciate. In the next decade it can take on a role revolutionary in American culture.



Frank Robinson
AHS Executive Director

LETTERS



MICHAEL S. THOMPSON

'Bonica'

Worthwhile Roses

The excellent article on landscaping with roses by the late Robert Staton ("New Shapes for New Uses," June) covered many of the new roses we feature at the synoptic garden in our state arboretum where we present a wide collection of shrubs suitable for landscaping in our area. A mass of pink 'Bonica', a spreading carpet of 'White Meidiland', and arching canes of 'Scarlet Meidiland' draping over a stone wall are some of the ways these roses can be used.

However, Mr. Staton failed to include our most popular new shrub roses, the David Austin English roses. These come in several sizes and colors, grow very, very well, and combine the marvelous forms of old roses and their delicious fragrances with excellent repeat blooming. One whiff of 'Gertrude Jekyll' may turn you into a rose addict for life!

Do beware, though. None of the roses we have are totally care-free although they may require less care than our hybrid teas. Such wonderful additions to any landscape are certainly worth a bit of effort and repay the gardener a thousandfold.

Ellen Minet, Rosarian
Planting Fields Arboretum
Oyster Bay, New York

Unbalanced Commentary

I have been a member of the American Horticultural Society since 1985 and have read the magazine and News Edition with enjoyment and pleasure. Over this period, I

have noticed that AHS has gradually moved from chemical gardening to more natural gardening, promoting native plants and alternative pest management strategies. Therefore, I find George Ball's "Commentary" in the June issue absolutely appalling.

He says that eliminating the use of pesticides would threaten the livelihood of thousands of vegetable and fruit growers who use pesticides judiciously. But a recent report by the Natural Resources Defense Council (*Editors note: See the July News Edition, page 4*) shows that if all of current agricultural uses of pesticides were halved, there would be no loss of crops and an actual increase in income, due to a decrease of money spent on the chemicals. This adds to the body of literature on this subject, including a 1989 National Research Council report published by the National Academy Press entitled *Alternative Agriculture*.

He also suggests that pesticides are carefully regulated. The Environmental Protection Agency, the federal agency that regulates pesticides, reported in a draft January 1991 report that only five of 691 active ingredients have been fully tested and evaluated for acute and chronic health effects and environmental impacts, and even these five have not been tested for neurotoxicity and immunotoxicity.

The EPA is grossly and chronically underfunded, understaffed, and run by political appointees of the president. This is supported by two reports by the Government Accounting Office, *Pesticides: EPA's Formidable Task to Assess and Regulate Their Risks* and *Nonagricultural Pesticides: Risks and Regulation*.

The companies that make these toxic chemicals are also the ones that provide the government with the data that say how safe these poisons are, and whether or not they are neurotoxins, teratogens, mutagens, and just plain old carcinogens. This is a prime example of the foxes guarding the chicken coop.

I agree that the public needs a balanced view of the issue. Unfortunately, the

AHS Affiliates

Members of the following institutions are participants in AHS's Affiliate Membership Program, a new networking opportunity available to most botanical gardens, plant societies, and horticultural groups.

Botanica, The Wichita Gardens
Wichita, Kansas
Dallas Arboretum
and Botanical Garden
Dallas, Texas
Friends of Fellows Riverside Gardens
Youngstown, Ohio
Friends of the University
of California Botanical Garden
Berkeley, California
Illinois Native Plant Society
Westville, Illinois
Kentucky Native Plant Society
Richmond, Kentucky
Matthaei Botanical Gardens
Ann Arbor, Michigan
Memphis Botanic Garden
Foundation
Memphis, Tennessee
Nebraska Statewide Arboretum
Lincoln, Nebraska
Texas State Horticultural Society
College Station, Texas
Wellesley College
Friends of Horticulture
Wellesley, Massachusetts

AHS MEMBERSHIP SERVICES

Your satisfaction with our member service is very important to us. If you have a question or problem concerning your membership, please contact the Membership Department for assistance.

You can help by giving complete information when you call or write. Please refer to the five-digit number that is on the mailing label on your magazine or News Edition. The number helps us to identify quickly your membership record for corrections.

Changing Your Address?

Please allow 6-8 weeks advance notice. Attach a current mailing label in the space provided (or write in your old address) then fill in your new address on the lines below.

Old Address: _____ Member #: _____

Name: _____

Address: _____

City/State/Zip: _____

New Address:

Name: _____

Address: _____

City/State/Zip: _____

Mail to: Membership Services, AHS, 7931 East Boulevard Drive, Alexandria, VA 22308.



Award Winning Daylilies

DIRECT FROM GROWER!

Beautiful Color Catalog \$3 (\$5 coupon included)

Daylily Discounters

Route 2, Box 24, Alachua, FL 32615 (904) 462-1539

"Commentary" is unbalanced and full of inaccuracies.

Sarah R. Sullivan
Seabrook, Maryland

Source of Concern

I would like to express my deep appreciation for your "Commentary" in the June issue. The environmental movement has become, despite its apparently good intentions, a growing source of concern.

Suzanne V. Girkins
Toledo, Ohio

Both Sides Now

Congratulations on your fine "Commentary" in the June issue. I hope *American Horticulturist* continues to present both sides of issues in a reasonable fashion, and remains a positive environmental force at the same time.

Art Ode
Lincoln, Nebraska

Complex Issue

I agree with George Ball in many of his opening remarks, for extremism on any issue is undesirable. However, I am dismayed that the individual who sets the tone for the AHS would write a commentary dealing with such broad aspects of a complex issue, involving chemicals, agriculture, and the environment.

The AHS, while confining itself to horticulture, should not espouse the use of pesticides in agriculture. Information is available that documents two things: the application rates originally prescribed by manufacturers of chemicals for farming have been off by as much as 50 percent and more; and experiments comparing crop yields with and without pesticides have shown that greater yields may be obtained when no chemicals are used.

Robert Resnik
Bethesda, Maryland

CORRECTION

A photograph of the American beautyberry, which appeared on page 19 of the June magazine, should have been credited to Robert E. Lyons: PHOTO/NATS.



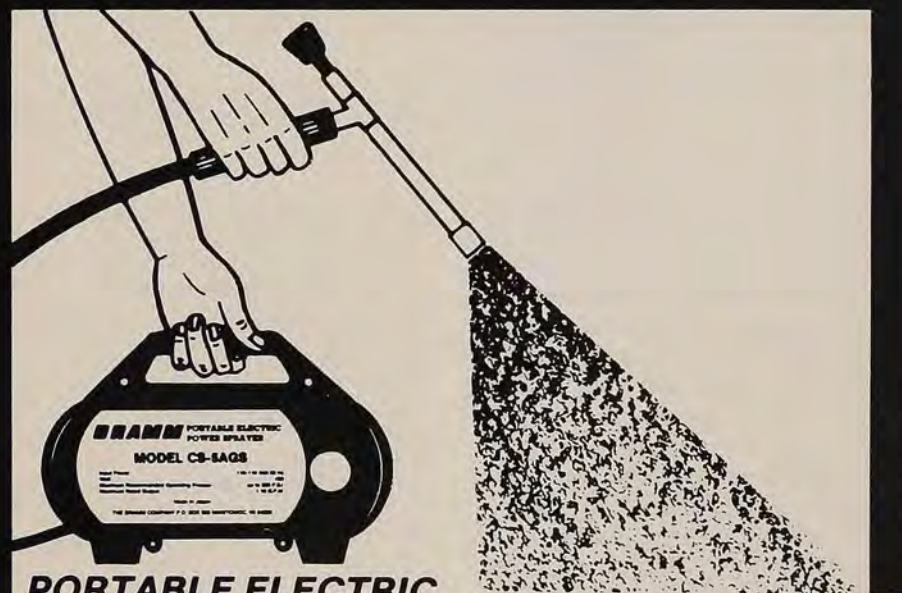
"Schultz-Instant"

**The Natural Way to
Bug-Free Plants**
Made with Natural Pyrethrins

the
**NATURAL
PYRETHRINS**
Insecticide

Kills: Aphids • Whiteflies • Gnats
Mealy Bugs • Red Spiders • Moths
Spider Mites • Mosquitoes • Etc.

Available at leading Garden Centers and Plant Departments, Garden Clubs: SEND FOR OUR FUND RAISING OFFER
Schultz Company, 14090 Riverport Drive, Maryland Heights, MO 63043



**PORTABLE ELECTRIC
POWER SPRAYER**

DRAMM
Exceptional Garden Products

DEPT. A H, P.O. BOX 1960, MANITOWOC, WI 54221, U.S.A.
(414) 684-0227 FAX (414) 684-4499



BOOK REVIEWS

The Japanese Iris

Currier McEwen. University Press of New England, Hanover, New Hampshire, and London, England, 1990. 153 pages. Color photographs and black-and-white line drawings. Publisher's price, hardcover: \$29.00. AHS member price: \$25.50.

More than six decades ago, in *Iris in the Little Garden* (1927), Ella Porter McKinney wrote: "No single phrase so aptly describes the attraction of the irises we call Japanese as Reginald Farrer's 'insolence of beauty'."

Considering the extraordinary beauty of Japanese irises and the fact that they have been growing in European and American gardens for more than 130 years, it is remarkable that until now there has been no comprehensive monograph in a European language on this perennial. With the publication of Currier McEwen's *The Japanese Iris*, this omission from our horticultural literature is corrected. It is no overstatement to say that McEwen has written the definitive book on Japanese irises. There is much useful and interesting information for both the specialist and nonspecialist gardener. Chapters are

devoted to the history of the Japanese iris, classification, culture, landscape uses, diseases, pests, hybridizing, and a number of other topics.

If one just had to find some shortcoming with this book, perhaps one could fault the author for underplaying his own accomplishments in the field of Japanese irises. McEwen, now in his 90th year, was before "retirement" the dean of medicine at New York University. He is chairman of the Scientific Committee of the American Iris Society and is recognized in Europe and Japan, as well as in this country, as the authority on Siberian and Japanese irises. Four of his Japanese iris cultivars—"Purple Parasol", "Returning Tide", "Raspberry Rimmed", and "Blueberry Rimmed"—have won the Payne Award, the highest honor bestowed on a Japanese iris by the American Iris Society.

In addition to the comprehensive text, *The Japanese Iris* has five special appendices that deal with Japanese irises in other countries, Japanese iris gardens open to the public, sources for obtaining irises, identification of contemporary hybridizers, and methods for induction of tetraploidy, which creates new flower forms by doubling the plants' chromosomes. There is also an excellent glossary to help the reader with scientific and technical terms and an extensive list of references.

The stunning pictures of irises and gardens will probably prompt some people to purchase the book just to put on their coffee tables. One color plate worthy of special note is that of the hauntingly beautiful hybrid 'Sayo-no-tuki'. A white flower with huge yellow signals from which purple veins radiate, 'Sayo-no-tuki' was only recently introduced in this country, and when available, sells for hundreds of dollars. There are also some excellent pen-and-ink drawings by Robert A. Bauer.

Everything you will need to know to successfully grow Japanese irises is contained in this book. For those who would like to try their hand at hybridizing—an excellent hobby requiring only iris blooms

BEAUTY FROM BULBS



Serving America's finest gardens for over 80 years.

John Scheepers, Inc. offers the most spectacular collection of flower bulbs to enhance your garden's beauty.

Send for FREE catalog

Send for your free color catalog featuring Holland's largest selection and finest quality of flower bulbs.

Name: _____

Street: _____

City: _____

State: _____ Zip code: _____



John Scheepers, Inc.
P.O. Box 700
Bantam, Connecticut 06750
(203) 567-0838

The Japanese Iris

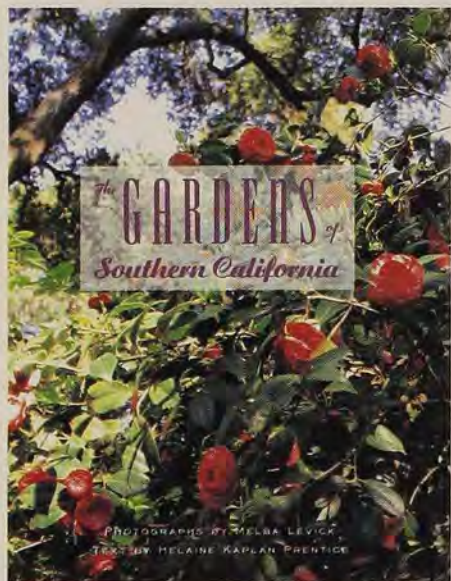


Currier McEwen

and patience—all the instructions needed to start from scratch or to do advanced work is here. The floral designer, the landscape architect, the general plantsman and plantswoman will also find much of value.

—Clarence Mahan

Clarence Mahan is immediate past president of the Society for Japanese Irises.



The Gardens of Southern California

Helaine Kaplan Prentice. Photographs by Melba Levick. Chronicle Books, San Francisco, California, 1990. 255 pages. Color photographs. Publisher's price, hardcover: \$35.00. AHS member price: \$29.75.

California Public Gardens, A Visitor's Guide

Eric Sigg. John Muir Publications, Santa Fe, New Mexico, 1991. 323 pages. Color and black-and-white photographs. Publisher's price, softcover: \$16.95. AHS member price: \$14.40.

If your itinerary includes a sojourn to California gardens, these two books ought to be on your reading list. One will tempt you with beautiful photographs before you go and the other can be packed in your bag for reference once you get there. Both portray California history through its lavish gardens and the dynamic settlers who created them.

The Gardens of Southern California presents the southland that, to quote the author, "became an unfenced garden for magnificent exotic plants . . ." This is a coffee table book with exceptional photographs on every page that infuse you with

the air, so Mediterraneanlike, and the scent of southern California. (Is it the citrus blossoms that make you stop and look around for a plant whose heady aroma is both unmistakable and elusive?)

California Public Gardens, A Visitor's Guide tours the gardens not just in southern California, but throughout the state. It's an informally written paperback with personal annotations that convey a perceptive understanding of history. Practical information about location and admission is provided, but maps would have increased its usefulness.

Both texts entertain by connecting the gardens to the people of California. For instance, delving into the history of the Roman empire to explain the milieu of the J. Paul Getty Museum, Eric Sigg, author of *California Public Gardens, A Visitor's Guide* notes similarities between ancient Rome and Los Angeles: climate, an open-air way of life, bathing rituals, roads and aqueducts, and "a ferocious appetite for material consumption and public display, at once driving the cities' achievements but in some ways undercutting the well-being of their residents."

In *The Gardens of Southern California*, author Helaine Kaplan Prentice compares J. Paul Getty's determination to recreate a Roman villa and garden to an event from his youth. As she tells it, he frequently sneaked his father's car out at night until the time he found it chained to the cement floor, wine stains discovered. Not to be discouraged, he built his own "low-slung

two-seater with a Lincoln engine . . . and he was off again." As Kaplan notes, "Garden history is human history."

Even though population pressure and lack of funding may jeopardize their existence, California's public gardens perpetuate the vision of it as a paradise. Whether you visit the gardens in person or plan an armchair tour, these books can take you there.

—Debra Meager

Debra Meager is a free-lance writer and landscape designer who lives in Nevada City, California.

The Random House Book of Herbs

Roger Phillips and Nicky Foy. Random House, Inc., New York, 1990. 192 pages. Color photographs. Publisher's price, softcover: \$22.95. AHS member price: \$19.45.

This is an herb book to savor with pure delight.

Well, almost.

A number of the book's 400 photos are excessively green and muddy. Rest assured, however, that most of them are acceptable to excellent.

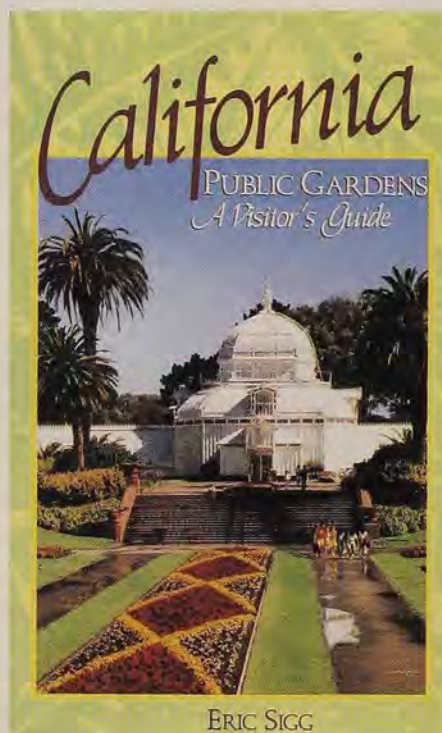
This photo caveat having been duly noted, one can dwell on the book's virtues—most notably its style, a continuation of the fine precedent Phillips set in his books on roses, shrubs, and bulbs. Especially helpful for novices are the studio photos of specimen plants—thirteen kinds of thyme arranged on one page, for example. This simplifies plant identification and affords one the refreshing opportunity to learn them as a group, related but each with its own individuality.

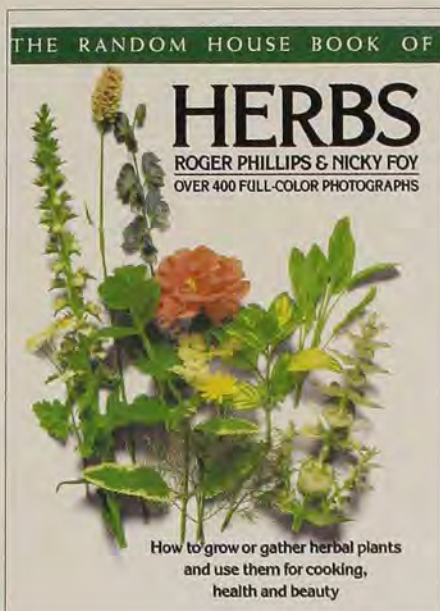
The herbs throughout this valuable handbook are presented in their major use category: salad herbs, vegetables, berries, herb teas, scented herbs, strewing herbs, dye plants, and medicinal herbs. This format should prove useful to hobbyists whose interests may be specialized, as in solely culinary herbs or potpourris or herbs for health.

The authors have researched well; the text is excellent. Within each section the plants are arranged chronologically in order of flowering. (Another aid to identification.) Growth habits and plant culture are described for the 400 herbs presented, along with historical lore, region of origin, principal uses, and occasional recipes.

Though essentially a reference book, it's entertaining to read. Examples:

Gardeners may think of ivy (*Hedera*





helix) as just an attractive climbing ornamental, but the authors find it much more fascinating: "In ancient times ivy was thought to be the enemy of the [grape] vine and thus able to prevent intoxication, which is why Bacchus, god of the vine, is always depicted wearing an ivy wreath."

Purslane (*Portulaca oleracea*)—that pernicious weed! For if any bit of stem remains after weeding it in the garden, it takes root and you start your labors all over again. But perhaps you like it as a salad herb, and if so you are linked with a bit of history, for it's been used as a potherb and salad ingredient for centuries, and also used for dry coughs and shortness of breath. The authors have borrowed this recipe for a summer salad: Mix together young, chopped purslane leaves with twice the amount of lettuce leaves. Add chervil, borage flowers, and marigold petals and serve with oil and lemon dressing.

The typeface is small but this is not so bad, for it allows larger pictures. For many gardeners, photos are the principal attraction, and color photos abound here.

It's not a garden design book; design gets one large paragraph. Instead, the authors have given us a distinctive, comprehensive guide to plant recognition, utilization, and enjoyment.

—Frank Good

Frank Good is garden columnist for the Wichita Eagle-Beacon.

A Reunion of Trees

Stephen A. Spongberg. Harvard University Press, Cambridge, Massachusetts, and London, England, 1990. 272 pages. Black-

and-white photographs, black-and-white and color illustrations. Publisher's price, hardcover: \$35.00. AHS member price: \$29.75.

Stephen Spongberg, horticultural taxonomist with the Arnold Arboretum near Boston, has mined materials not ordinarily used by horticultural writers to bring us a lively, flowing account of 400 years of fascination with and discovery of temperate ornamental trees and shrubs.

The story that holds the book together and propels the reader is the history of plant exploration, largely in Europe, North America, Japan, and China. Dozens of plant explorers are pictured, profiled, and quoted. The excitement of plant hunting is capped by descriptions and often pictures of prize introductions.

One story takes place on Deshima, a 32-acre island manmade by the Japanese in 1634. Seven years later, having restricted their contact with Europeans to representatives of the Dutch East India Company, they restricted the company's travel within Japan to Deshima. German physician Engelbert Kaempfer began a two-year stint at Deshima in 1690, and through friendliness—and heavy drinking—with visiting Japanese, persuaded them to bring him plants for his "medicinal" garden on the island. When he returned to Germany he wrote a book about plants that illustrated, among others new to botany, the maidenhair tree. *Ginkgo biloba* nuts did not reach Holland until the 1730s, and the ginkgo tree was not introduced into America until 1784. Kaempfer did not know that the ginkgo had long before been imported into Japan from China or Korea; no natural stand has ever been found. *G. biloba* is the last of the many ginkgos growing 225 years ago.

Two centuries after Kaempfer, in 1899, 22-year-old Kew graduate Ernest Henry "Chinese" Wilson was sent to China expressly to obtain the dove tree (*Davidia involucrata*) after a dried specimen was included among 500 new species sent to Kew by adventurer Augustine Henry. After enormous difficulties Wilson found Henry's tree, which had been serving for the previous year as the beams and posts of a house. Eventually he found eleven live trees, and the first of 13,000 seedlings bloomed at Kew in 1911. But to Wilson's disappointment, a French missionary had already introduced the dove tree into cultivation in 1897.

History is not all that the reader will learn from this book. Did you know that each tendril of *Parthenocissus tricuspidata*,

the Boston ivy of "hallowed hall" fame (introduced to Western horticulture from Japan by 21-year-old John Gould Veitch in 1860), has five to ten adhesive disks that secrete a vegetable glue that can support up to two pounds per disk, according to experiments by Charles Darwin? The tendrils shorten by forming a tight spiral, pulling the stem closer to its attachment.

Spongberg also intersperses a whiff of taxonomic history and a brief history of the Arnold Arboretum. He describes outstanding ornamental species and cultivars for gardens and landscapes throughout North America, with emphasis upon the Northeast. The book could have been made more useful by including maps and a list of readily available reissues of related books. Overall, he has written a felicitous mixture of story lines, botanical particularities, and horticultural temptations.

—James C. Pearson

James C. Pearson is a southeastern Pennsylvania psychiatrist and a rhododendron buff.

Book Order Form

- ☐ The Japanese Iris \$25.50
UNE255
- ☐ The Gardens
of Southern California \$29.75
CHR297
- ☐ California Public Gardens,
A Visitor's Guide \$14.40
JMP144
- ☐ The Random House
Book of Herbs \$19.45
RAN194
- ☐ A Reunion of Trees \$29.75
HUP297

Postage and handling: \$2.50, first book; \$1.50, each additional book. Virginia residents add 4½% sales tax. Please allow six weeks for delivery. Prices are subject to change without notice.

Enclosed is my check for \$ _____

☐ Visa ☐ MasterCard Exp. Date: _____

Acct. #: _____

Signature: _____


Ship to: _____

Street: _____

City: _____

State / Zip: _____

MAIL TO: AHS Books, 7931 East Boulevard Drive, Alexandria, VA 22308.



Once omnipresent in the evening garden, the tuberose's funereal associations may have caused its popularity to wane.



A Little Night Music

*Cereus partying is just one possibility
offered by evening-scented flowers.*

B Y T O V A H M A R T I N

Dusk creeps slowly upon the greenhouse in summer. Ghostly shapes grope into the aisles, eerie outlines lurk in the background. After dark, the greenhouse is transformed into a theater of the absurd. Flowers that cater to nightlife stand out in the darkness. They're generally white, whisper pink, or glowing yellow. Although they aren't gaudy, night-blooming flowers are usually immense. They can't risk being overlooked in the prevailing gloom. Fragrance becomes a more prominent player when visual messages are likely to fall upon blind eyes. Night-

From The Essence of Paradise: Fragrant Plants For Indoor Gardens by Tovah Martin. Copyright © 1991 by Tovah Martin. Reprinted with permission of Little, Brown and Company (Inc.).

ANITA SABARESE

blooming flowers often lure their pollinators with seductive aromas. Bats prefer flowers with an open-faced, jawlike form and a musty, fruity odor. Moths are partial to equally heady scents.

Most encounters between nostrils and nocturnal flowers are fleeting affairs. Many vespertine blooms open for only a few evanescent hours, or for a few memorable but brief nights. They send out powerfully distilled shots in the dark aimed at romancing transient bats or moths that might be within smelling proximity. Although the come-hither nectar of night flowers is not designed to seduce human nostrils, it is sufficiently potent to take any mortal's breath away. It's often a tad vulgar, as if a supply of perfume meant to last a few weeks had been splurged on a single evening. Night-blooming flowers were obviously meant to attract from a distance, rather than wooing with the intimacy of close encounters.

Night-blooming cereus

Like a meandering old home, the greenhouses where I work have many nooks and crannies. The aisles confound customers with brief scenic detours down dead-end corridors, and the glasshouses are linked by tiny walkways with low-slung ceilings that the average-size visitor must stoop to explore. My favorite is a treacherous doorway that leads outside from the oldest greenhouse. The door itself could not accommodate anyone over six feet. But until recent generations, everyone in the family stood quite a few inches shorter than that height. Yankees are notoriously frugal in all things, and they hate to let space go to waste. To take up the extra room aloft, someone planted a *Hylocereus undatus* and encouraged it to arch over the frame. Ever since, visitors of all heights have cursed that climbing cactus.

By anyone's standards, it was a foolish planting. *H. undatus* has thick, succulent, three-cornered stems with sharp edges that could easily curtail anyone's crew cut or deflate a bouffant. To make matters worse, this cactus climbs by aerial roots that dangle awkwardly at eye level and entangle anyone within reach. Stepping through that door is a feat fit only for midgets such as myself.

For 364 days of the year, everyone wonders why we tolerate that antisocial vine. Then, one warm summer evening while trying to navigate through the door, someone notices a crop of spiny buds standing turgid and waiting to pop. We rush to the phone,



TOVAH MARTIN

Above: At dusk, the foot-long trumpets of Brugmansia suaveolens swell and flare.

Right: Cestrum nocturnum is a dowdy flower; its olfactory portrait is a different story.

Opposite: A coffee tree with a full crop of flowers smells like expensive after-bath cologne.



TOVAH MARTIN

ring up all our friends and neighbors, and invite half the town to come view one of nature's most entertaining late-night shows.

This is an event that only insomniacs fully appreciate, but it's worth missing a few hours of sleep to witness. The festivities don't begin until 9 p.m. when the foot-long buds slowly unwrap one petal at a time. As the darkness deepens, the white and creamy yellow cactus flowers extend until they reach fully a foot across. Layers of flouncing petals surround a filigree of urchinlike stamens and the entire entourage skirts a long, thin pistil forked much like a snake's tongue. In this *Hylocereus*'s native Brazil a horde of hungry bats would be hovering about, summoned by the musty scent, and a fleeting nocturnal encounter would eventually result in a bountiful crop of edible red fruit. The

flowers remain erect until daybreak. In cool weather, they can hold firm until 9 a.m. Then, like all things that carouse throughout the night, they collapse. The morning after finds *H. undatus* holding a crude collection of deflated buds dangling from its spiky stem.

One mail-order catalog suggested that this bat-pollinated night bloomer is, indeed, the perfect plant for your belfry. Their claim is undoubtedly true. But lanky, leggy *H. undatus* could also be grown in the average home environment if given a bright window. The question is: Do you have the space? And do you want to devote that space to an awkward vine that blossoms once in a blue moon? For gardeners who decide against supporting such an overgrown underachiever, viable alternatives are available.

In the confusing world of common names,



ANITA SABARESE

there are several cacti that also call themselves night-blooming cereus. If you receive an invitation to a cactus party, you're likely to find that the star attraction is not *H. undatus* but *Epiphyllum oxypetalum*, an equally awkward but more popular house plant that begins blossoming earlier in its career and can be pruned to semimanageable proportions. The *Epiphyllum's* blossoms are comparable to *Hylocereus undatus* flowers in size and shape. In fact, the only difference is their color—the *Epiphyllum's* flower is white and champagne rather than white and yellow.

If you should decide to indulge, you'll have no problem cultivating these cacti. Basically, they're grown just as you would cultivate the closely related Thanksgiving, Christmas, and Easter cacti. A dry apartment is entirely suitable, as long as it

receives good light, but not direct sun, which can scorch the stems.

Brugmansia

Wandering down the aisle in our tallest greenhouse, you pass a series of exotic fruit and camellia trees flanked by old cut-flower roses and abutilons. Traffic flows briskly through most of that greenhouse, but there's always a bottleneck in front of the *Brugmansia*. Unlike most night bloomers, the angel's-trumpet, *B. suaveolens*, is open for business during daylight hours as well as the night shift.

Daytime visitors invariably admire the huge white trumpets that dangle loosely by the hundreds from this Brazilian member of the Solanaceae. Little do they know that the angel's-trumpet is twice as impressive after dark. When dusk begins to deepen,

those foot-long trumpets swell and flare, standing out from their branches. They look stunning, and they also send out haunting scent signals that float lightly throughout the house. The *Brugmansia's* essence has no obvious analogy. It's a sweet, mildly fruity scent heavily laden with a prevailing musk that lends the angel's-trumpet a slightly sinister aftertaste.

Despite the *B. suaveolens's* heavenly beauty, it is a devilish plant. Every part of the seven-to-ten-foot tree is poisonous; the seeds and leaves are particularly dangerous. The symptoms of ingestion vary from headache and nausea to hallucinations, coma, and death. At one time, the plant was employed as an anesthetic during minor surgery. South American tribes once used closely related *Datura* species in initiation ceremonies, putting youths into a stupor wherein they would forget their childhood and accept manhood. And in Colombia, wives and slaves of deceased rulers were drugged with *Datura* before being buried alive in their master's tomb. Many South American cemeteries are still adorned with this ghostly tree. For a pretty plant, it certainly harbors its share of negative associations.

Brugmansia suaveolens is a bit buxom for the average indoor gardener. Our tree is sternly pruned to eight feet tall with an expansive eight-foot wide crown. We chisel away at that crown, attempting to keep it within bounds. To choreograph the blossom show, we let the branches of long, velvety leaves grow out just long enough to produce blossoms on the tips, and then we practice the tonsillar arts again.

How do we know when to shear? We simply check the calendar. Our angel's-trumpet produces blossoms punctually with every other full moon throughout the year, putting on a particularly gala performance during the midsummer months. The sun also plays a crucial role in producing blossoms on the *Brugmansia*. In order to bloom, the tree must have full sun. Your brightest south window should do the trick; anything less luminous is likely to fail. *B. suaveolens* might set its first buds as a tiny plant in a three-inch pot, but it won't remain small for long. If you haven't got the space, but yearn for those oversized trumpets, you can put your plant outside over the summer. Then trim the foliage and stop watering in autumn, forcing it to slip into dormancy. Store the tree in a cold cellar or garage until spring. The foliage is easily damaged in frost but the trunk will endure temperatures down to 30 degrees.

Brugmansia species drink shamelessly. You can scarcely overwater this plant. They also eat ravenously; angel's-trumpets demand frequent fertilization to keep the foliage green. Fertilize with a balanced feed (such as 20-20-20) every two to three weeks in the spring, summer, and fall and once a month with a watered-down dilution during the winter.

Cestrum

Cestrum nocturnum is not the sort of plant that immediately attracts notice. By anyone's standards, *C. nocturnum*, also known as the night-blooming jessamine, is a dowdy flower. The foliage is handsome enough, resembling willow leaves. But who wants a willow on their windowsill? Nor do the flowers, which should be the plant's redeeming quality, come galloping to its rescue. During the day, when the inch-long, greenish cream blooms close tight, they are easily overlooked. At night, when the oboe-shaped blossoms flute open, they are only a tad more attractive.

C. nocturnum's olfactory portrait is a different story entirely. When the night-blooming jessamine begins wafting forth its aroma, the perfume is sufficiently dense to saturate the air in several rooms. It coats the atmosphere with an otherworldly attar, sweeter than dinner wine, more intoxicating than the finest champagne, and more romantic than a potent aphrodisiac. This is dangerous stuff, overwhelming to some tastes.

Due to the night-blooming jessamine's nickname, many gardeners assume that *C. nocturnum* and jasmines are closely related. Actually, the two are not even kissing cousins. Jasmines are in the Oleaceae, the olive family, whereas *Cestrum* resides in the Solanaceae. In addition to culinary celebrities such as the tomato and potato, the Solanaceae are also riddled with several less edible relatives including deadly nightshade, belladonna, and *Nicotiana*. Like the latter, *Cestrum nocturnum* is definitely not appropriate around small children. The symptoms of poisoning include dizziness, nervousness, and paralysis.

C. nocturnum opens only at night. Attempts to fool the flowers into another cycle always fail. If you're not a night person, *C. diurnum* is a daytime alternative, looking almost identical to its nocturnal sister, but possessing a more compact growth habit with dense clusters of terminal snow white flowers. Its fragrance isn't nearly as dramatic, and it doesn't perfume the surrounding air. If you come close

and inhale, you'll find that *C. diurnum* exudes a light peppermint candy scent.

In an effort to accommodate those who seek the best of all worlds, hybridizers attempted to provide twenty-four hour entertainment with a cross between *C. nocturnum* and *C. diurnum*. Alas . . . this is one of humanity's carefully laid plans that went awry. The hybrid is dowdier than either parent, the growth habit is rank, the flowers are a sickly ocher color, and I can't detect the slightest fragrance emanating from the petals at any time of day or night.

Cestrum species are simple to grow. They'll tolerate a shady exposure, but profuse blossoms on relatively compact plants are only achieved with bright light. Any growing temperature above freezing will do, though very hot conditions in winter can force loose, weak shoots. Cool temperatures are preferable.

Coffea arabica

You certainly don't need to possess a green thumb to be entertained all night by coffee. The ripe beans roasted to a deep aromatic mocha and brewed into a beverage contribute substantially to mass insomnia. But indoor gardeners have discovered that the coffee tree offers more than one good reason to stay up long after bedtime. If you grow your own java, the moonlit aromatic escapades of its starry white flowers will keep your eyes open and your nostrils alert long after most other gardeners have gone to sleep.

Unlike many night bloomers, the flowers of *Coffea arabica* are open equally wide during the day and after dark. If you apply your nose rather intimately to the flowers, you'll find that they are mildly fragrant while the sun is up. After dark, it's a whole different story. A coffee tree burdened with a full crop of pristine white flowers smells intensely floral and evocative, like expensive after-bath cologne. No need to probe with your proboscis at night—the perfume fills the room.

Our greenhouse-grown coffee tree blossoms in early June, again in July, and occasionally a third bloom will follow. In the average home, it will probably merge the whole show into a single midsummer spectacle. The flowers last only a few days before turning to brown mush.

Not long after the flowers fade, bright green, round beans begin to appear and start their slow ripening process. Six and a half to seven months later, you'll harvest your first crop of red berries. If you're lucky, the proceeds of that first picking will



BETSY FUCHS: PHOTONATS

If you're invited to a night-blooming cereus party, the star attraction is likely to be Epiphyllum oxypetalum, above. More unusual as a house plant but bearing similar flowers is the musky-scented Hylocereus undatus, right.

perhaps yield the makings for a single morning's mug full of coffee.

C. arabica, the Arabian coffee, is actually native to Ethiopia, Mozambique, and Angola from whence it was introduced to Arabia in 600 A.D. and finally into Europe in the sixteenth century. Coffee was considered a delicacy prior to 1825, and coffee production was a rather meager enterprise until the turn of this century. In Brazil, where three-quarters of the world's coffee is grown, most producers harvest over a long period of time, plucking ripe berries every two weeks and mechanically fermenting, washing, sizing, grading, and roasting the beans. That's the high-tech procedure. But some small-scale farmers still use the time-honored method of collecting all the berries in one picking, gathering dropped fruit from the ground



DICK KEEN

along with drupes still clinging to the bush, and sun drying the whole crop simultaneously before roasting. By doing things the old way, there's no reason why you can't process your own morning's beverage.

Actually, we've never indulged in a cup of homegrown coffee. We plant our entire harvest of seeds. The United States Department of Agriculture does not allow importation of unroasted coffee beans, so our mother plant is responsible for rearing our annual inventory of seedlings.

Despite its fragrant flowers, coffee is generally grown as a foliage plant. The shiny, four-inch long, deep bronze leaves are extremely handsome. Although the coffee tree will tolerate a shady window, it demands more humidity than is available in the average home. If your home has at least 40 percent humidity, you might give

it a try. Temperatures should not dip far below 55 degrees at night.

Polianthes tuberosa

At one time, tuberose ranked right alongside jasmines as the world's most popular fragrant flowers. Mention aromatic blossoms, and tuberose were on the tip of everyone's tongue. Describe a scene set at eventide, and tuberose always seemed to be in the picture. Their long, grasslike leaves emerge from knobby bulbs and mass around spires of numerous waxy white blossoms. Tuberose blossoms are agape both day and night, but their scent is mute until dusk. As Matthew Prior (1664-1721) wrote:

The scented tuberose and jonquil declare
The stronger impulse of an evening air.

In the early nineteenth century, when evening gardens (often called moon gar-

dens) were all the rage, tuberose were omnipresent. At a time when proper ladies went to great lengths to preserve their milky fair complexions, a moonlit stroll in the garden was preferable to venturing out in the blazing sun. Gardens were planted with an evening's entertainment in mind.

Times change. Heaven knows, *Polianthes tuberosa* isn't any less aromatic than it was a hundred years ago. Those pearly white flowers still spill forth their fragrance as ardently as ever. But somehow the plant has slipped out of fashion.

What happened to the tuberose? The fact that we traded in our peaches-and-cream complexions for a darker, suntanned countenance might have something to do with the tuberose's downfall. But most of the damage was done by the florist industry.

Continued on page 43



Some

Enchanted Evenings

Get to know Oenothera and dusk may become your favorite time of day.



One summer evening when I was about seven or eight years old, my mother and I discovered a beautiful, lemon yellow wildflower growing along the side of the road. Feeling like plant hunters on an expedition we dutifully checked our wildflower guide hoping to find its name. And there on page 113 of the Zim and Martin Golden

BY MARY BETH WIESNER

MARILYN WOOD, PHOTONATS

A PLANT WITH WINGS

BY HELEN D. MORTENSEN



When I was a child, we called a plant that we found blossoming on the Dakota prairie a gumbo lily. Local plant lists named it prairie poppy. Nursery catalogs now routinely offer it as evening primrose or Missouri primrose. But what is it really?

It is definitely *not* a lily. Though its open-faced tissuelike blossoms do resemble one, it is certainly no poppy. Nor is it a primrose, evening or day. But the last name is partly right, for the plant we are considering is *Oenothera missouriensis*, a native Midwestern wildflower.

O. missouriensis, with its showy yellow blooms and its low growth and easy cultivation, makes an attractive perennial for the border or the rock garden.

But it is to that gardener whose interest lies in watching and learning how nature has assured the distribution of her seed crops that *O. missouriensis* will be especially intriguing.

The flower bud forms along the main stem of a spray, at the base of a leaf, on what appears to be a short, stocky stem. But almost immediately, this stem begins to swell and elongate into a recognizable seed capsule. By the time the capsule is one inch long, a strong tubular stem, averaging four inches in length, has developed from the pod's tip, holding the blossom well above the plant where it can easily be visited by bees and insects. When the flower fades, both it and the stem fall off, leaving the seed pod firmly attached to the plant.

As I watched this daily drama unfold a few years ago, I became more and more fascinated. For by now, four very distinct winglike ridges had grown around the pod. I chose two pods to watch and claim for closer examination when they were ripe.

As the summer days slid by, the center of each capsule had shrunk to a hard core nearly two inches long and the wings were one inch wide; though almost transparent, these were stiff and tough as plastic. Finally, the whole pod became a delectable shade of brown and looked for all the world like a new Keebler snack creation.

At last my harvest day came—a beautiful early fall day, bright and windy. I went to the garden to get them, but alas! Where were my pods?

I found them at the far corner of my neighbor's lawn. Poised daintily on the cut grass, they swayed gracefully in the breeze and turned over lazily as a gust of wind caught them.

Then I paused in awe at the realization of the perfection of nature's design. For with their four stiff, tough wings, these almost weightless seed capsules are meant to roll as the strong fall winds sweep across the plains. My pods had felt the age-old call, and had already begun their journey to start a new colony of *O. missouriensis*.

I felt almost guilty when I took them in to study. I used them in a dried arrangement until March, when I slit open the tough core to find four neat rows of pinhead-size seeds. From the two seed capsules I raised forty-seven sturdy seedlings of *O. missouriensis*, which now grow happily in my borders and those of my friends.

Helen D. Mortensen is a free-lance writer who lives in Green Bay, Wisconsin.

Nature Guide *Flowers* was a color drawing of our mystery plant—the evening primrose. The plant we stumbled across was probably *Oenothera biennis*. No matter that it was a common wildflower, we felt like we had discovered a treasure. Our family moved to Pennsylvania a few years later and found evening primroses growing along another road and in our new garden. They were old friends in a strange new place.

"Like a ball-room beauty," Neltje Blanchan wrote about *O. biennis* in 1926 in *Wild Flowers*, "the Evening Primrose has a jaded, bedraggled appearance by day when we meet it by the dusty roadside, its erect buds, fading flowers from last night's revelry, wilted ones of previous dissipations, and hairy oblong capsules, all crowded together among the willow-like leaves at the top of the rank-growing plant. But at sunset a bud begins to expand its delicate petals slowly, timidly—not suddenly and with a pop, as the evening primrose of the garden does."

The garden evening primrose that Blanchan refers to is probably *O. macrocarpa*. Also known as *O. missouriensis*, it may be one of the most common evening primroses offered in garden catalogs. This is a night-blooming species with the common names of Ozark sundrop, glade-lily, and Missouri evening primrose. The golden yellow, saucer-shaped blossoms of this plant are like tissue paper and may be up to four inches across. Plants are low growing with shiny green leaves, a good choice for the rock garden or perennial border. The Missouri evening primrose will grow in dry, difficult sites.

O. macrocarpa is one of over 120 species in the genus *Oenothera*, which contains night- and day-flowering annuals, perennials, and biennials. (Day-blooming *Oenothera* species are usually called sundrops or suncups. But don't get too comfortable with that distinction. The typical confusion over common names becomes even more of a puzzle with the *Oenothera* species since some day bloomers are called evening primroses and some night bloomers have been called sundrops.) According to Richard Headstrom in *Suburban Wildflowers*, the herbalist John Parkinson gave them the common name evening primrose because the scent of the blossoms reminded him of the wild primroses in English meadows.

The often-fragrant yellow, white, or rose blossoms of the evening primrose are a wonderful addition to the garden. They have been cultivated since the early 1800s when



Page 16: *Oenothera missouriensis* is one of the most popular evening primroses for the garden.

Page 17: The author at age seven. Left: The blossoms of *O. speciosa* turn pink after blooming.

these natives of South and North America were exported to England and became popular ornamentals.

During the first year, most evening primroses form a rosette of fine-pointed leaves in flat clusters. The size of the rosette (not its age) determines when the plant will put up a flowering stalk and bloom. When the rosette is five to six inches wide the plant will bloom the next year.

Evening primroses seem to be fairly pest free. Spittlebugs may feed on the juice in the lower leaves, making them curl at the edges like spinach. Japanese beetles sometimes find *O. biennis* to be a tasty treat. The small green or white caterpillars of the noctuid moth (*Rhodophora florida*) may gnaw on evening primrose buds, where, during the day, the adult moths rest on the partially closed blossoms, their rose pink and yellow wings carefully hidden among the petals. Some botanical authorities say that *R. florida* moths also pollinate the evening primrose blossoms, but this is really the nighttime job of the hawkmoths (*Hyles* species).

The petals of the evening primrose unfold in the early evening. This unveiling may take anywhere from a few minutes to a half an hour. The Southern Exposure Seed Exchange offers what they call *Oenothera glazioviana* 'Tina James' Magic Primrose' that they say opens two-thirds of the way within ten seconds and opens fully within one to two minutes, providing some pretty exciting gardening entertainment.

Some evening primroses may remain open during the morning, on cloudy afternoons, or in the fall when the sun is weaker.

Blanchan says that the plants change habit and stay awake all day toward the end of the summer, "when so much seed has been set that the flower can afford to be generous," but this theory has never been proven.

The average plant will produce about 6,000 seeds, which are a food source for goldfinches. Seeds may remain dormant for years until the conditions are right for germination. The seeds of some species (including *O. biennis* and *O. glazioviana*) contain an oil that is the source of gamma-linolenic acid. Until this acid was discovered in evening primrose oil, it was found in large amounts only in human milk. The acid may have many important medical uses including treatment of obesity, hangovers, high serum cholesterol, schizophrenia, and multiple sclerosis.

Beth Anderson, a resource botanist with the National Wildflower Research Center, recommends the following additional species for the home garden:

O. fruticosa is a good choice for Eastern gardeners. It is a perennial with light canary yellow, day-blooming flowers and lance-shaped leaves. It has two subspecies. *O. fruticosa* subsp. *fruticosa* is usually listed as plain *O. fruticosa*. It is slightly smaller and the flowers and leaves may be spotted with purple. *O. fruticosa* subsp. *glauca* is usually listed as *O. tetragona*. Ordinary garden soil is fine for these low-maintenance plants. They should be planted in full sun; those planted in shade will be leggy with few flowers. Plants are low growing and make good fillers for borders. In *Growing and Propagating Wild Flowers*, Harry R. Phillips recom-

mends planting these sundrops with blue-eyed grass, Stokes' aster, and spiderwort for a striking blue-yellow combination. *Penstemon smallii* and butterfly weed also make good companion plants.

Oenothera speciosa has been called the Mexican evening primrose and the showy evening primrose; *Hortus Third* says it is the white evening primrose. Plants native to Mexico have purple blossoms and bloom during the day; those native elsewhere have night-blooming, pure white

DON'T WRITE, IT'S RIGHT

Before you set pen to paper to complain about our misspelling of *Oenothera missouriensis*, we want to note that this, according to the rules of nomenclature, is correct. Although the proper Latin epithet paying tribute to the Missouri River would be "*missouriensis*," and although many otherwise impeccable references spell the species as such, the original reference to the Missouri evening primrose in *Curtis's Botanical Magazine* was spelled, incorrectly, without the "i". The rules of nomenclature declare that the first mention of a species, if it is published in a reputable journal, is what it should be called forever after. The result was a historic misspelling of a historically incorrect name (see page 20).

—Thomas M. Barrett, Assistant Editor

JUSTICE IN THE COURTS OF BOTANICAL LAW

BY JAMES H. LOCKLEAR



MARY / FROM CURTIS'S BOTANICAL MAGAZINE

What do gardeners fear the most? Root rot? Borers? Water rationing? While these are all serious concerns, they pale in comparison to our worst nightmare—being caught using an improper botanical name.

We have all experienced it; the self-satisfied sneer, the “tsk, tsk,” and the inevitable condescending lecture when some nomenclatural nit-picker discovers us using the wrong scientific name for a

plant. Whether it happens in casual conversation or while speaking to a garden club, there can be no more embarrassing moment than being caught in a taxonomic transgression.

Scientific names, like bindweed, can never really be mastered by the horticulturist. There will always be botanists who, having achieved tenure at their institutions, have nothing better to do than declare perfectly good scientific names invalid. If they publish their pronouncements in a professionally recognized scientific journal or book, and no other botanist challenges them, their word becomes law and humble folk like us must submit.

How do we keep up with these changes? Not to worry. There are those among our own who strive to stay current in these matters. Perhaps these fellow horticulturists actually enjoy reading botanical literature. Most of us know from experience, however, that their real aim is to arm themselves so they can lie in wait for their nomenclaturally impaired brethren.

Are we forever doomed to this sort of bullying? Probably so. But the next time you are pounced upon by the nomenclature police, remember the Missouri primrose; the tale of this garden flower should soothe the wounds and brighten the heart of the most humiliated horticulturist.

Like many other native American plants now in cultivation, the Missouri primrose made its commercial debut overseas, first offered for sale in 1813 by a nursery in London, England. “Messrs. Fraser’s Nursery for Curious American Plants” obtained seeds of this species from its discoverer, Thomas Nuttall, one of the most important botanical explorers in the history of the United States.

Fraser’s catalog that year was entitled “A Catalogue of New and Interesting Plants, Collected in Upper Louisiana, and Principally on the River Missouri, North America.” Eighty-nine species were listed for sale, all propagated from seed collected in America by Thomas Nuttall.

While few modern-day horticulturists have ever heard of Fraser’s catalog, it is very well known to botanists who conduct research on the various plants listed in its pages. For fourteen of these plants, the descriptions in the catalog, presumably written by Nuttall, represent the very first published account of those species. Particularly important are the names used in the catalog; as the first ones published for these species, the rules of botanical nomenclature establish them as their “offi-

cial” scientific names. The Missouri primrose was among those described for the first time in Fraser’s catalog.

In November 1813, a few months after the publication of Fraser’s catalog, an article on the Missouri primrose appeared in *Curtis’s Botanical Magazine*. Established in 1787, this British publication often featured plants that were just entering the horticultural scene. The article on the Missouri primrose was written by the editor, John Sims. His description of this species was based on plants raised from Nuttall’s seed at Fraser’s nursery.

The Fraser Brothers must have been very appreciative of Mr. Sims; no doubt his article, and the beautiful illustration that accompanied it, increased their sales of this new, exotic plant. For Thomas Nuttall, however, Sims’s article may not have stirred such positive emotions.

Nuttall’s discovery had been listed in Fraser’s catalog as *Oenothera macrocarpa*, the latter part of the name meaning “large fruit,” a reference to the large seed capsules of this species. For some unknown reason, however, Sims ignored Nuttall’s name and instead bestowed another, *O. missouriensis*, upon the plant. Because of the prestige and wide circulation of *Curtis’s Botanical Magazine*, Nuttall’s “*macrocarpa*” slipped into obscurity while Sims’s “*missouriensis*” (later changed to “*missouriensis*” by some unknown scribe) was embraced by botanists and horticulturists alike.

This apparent instance of binomial banditry might still remain in the botanical world’s skeleton closet had it not been for James L. Reveal, now of the University of Maryland. In 1968 Dr. Reveal published a detailed analysis of Fraser’s catalog, and came to the rescue of Nuttall’s “*macrocarpa*,” asserting that it should be given preference over Sims’s later published name. As a result of Reveal’s work, botanists have gradually come to accept *O. macrocarpa* for the Missouri primrose.

A little reflection may be necessary here in order to grasp the magnitude of this event. Typically, matters of botanical nomenclature are settled by making reference to a name published in a professional scientific journal. In the case of the Missouri primrose, however, botanists were compelled to submit to a very unlikely authority—a nursery catalog! Pardon the feelings of revenge, but there is something satisfying about the thought of a “mere dealer’s list of plants and shrubs,” as one nineteenth-century botanist described Fraser’s catalog, holding sway over the botanical establishment.

Our enjoyment of this triumph, although well deserved, unfortunately must be tempered with a certain amount of regret. Dutifully following the botanists for over a century and a half, we too have been using the wrong name for the Missouri primrose.

So what are we to do? Should we change our catalogs and reference books and garden labels because of a few months’ difference in publishing dates 178 years ago? Is it worth this effort to be nomenclaturally correct?

Under other circumstances we might be justified in resisting yet another name change; but in the case of the Missouri primrose perhaps we shouldn’t be so stubborn. After all, what better way to recognize our greatest moment in the courts of botanical law?

James H. Locklear is director of Dyck Arboretum of the Plains in Hesston, Kansas.

flowers that turn pink with age. This Western species is low growing and makes an interesting ground cover. The flowers unfold on erect, branched stems in early summer. *O. speciosa* spreads by rhizomes and, in well-prepared soil, it may become aggressive; plant it in poor, well-drained soil with full sun for the best results.

O. biennis is the most common evening primrose species, and at four feet it's also one of the tallest. *O. biennis* grows in much of the United States and southern Canada. Its lemon-scented, yellow blossoms open in the evening from June to September. The plant has hairy leaves that are often tinged with red. Other common names include king's cure-all, sand lily, German rampion, and night willow herb. *O. biennis* transplants easily and can be propagated by seed. It's a good choice for the meadow garden since its blossoms aren't as showy as some of the other species'.

O. caespitosa, the desert evening primrose or gumbo lily, has fuzzy gray green leaves and heart-shaped, white or pink petals that open rapidly. This is a night-blooming perennial with three-inch showy blossoms that can be solitary or appear in clusters. Its scent is said to be a mixture of lemon and tuberose. Flowers bloom in July and August. *O. caespitosa* prefers full sun and a light, somewhat sandy loam. The species is low growing, about four to eight inches tall, and is a good choice for the rock garden.

O. deltoidea, the birdcage evening primrose or dune primrose, has white tissuelike blossoms similar to *O. caespitosa*, but it flowers from March or April through June. This is an annual, night-blooming, low-growing desert plant ranging from eastern Oregon to southern California, Arizona, and Utah. When the plants die the stems curve upward and inward forming a basket-shaped "birdcage."

O. pallida produces large, fragrant, white flowers that fade to lavender. It favors sandy soil and is tolerant of salt spray. Gardeners from the Western states up to the eastern Northwest will appreciate this species, which forms large clumps and binds soil well. *O. pallida* is a night-flowering perennial.

O. hookeri, Hooker's evening primrose, is now called *O. elata* but most catalogs still list it as *O. hookeri*. It may grow up to three feet tall. Gardeners from the Pacific Northwest to Kansas will find *O. elata* to be a fine addition to the garden. Large butter yellow blossoms flower from June to September. The sepals of this perennial

are reddish and the petals become orange as they wane after a night of blooming.

Warren L. Wagner, curator of Pacific botany at the National Museum of Natural History, is a taxonomic expert on the *Oenothera* genus. He adds the following to the list of good plants for the garden:

O. acaulis, which has been called the dandelion-leaved sundrop, is a native of Chile with very short stems or no stems at all. Its leaves are hairy, oblong to oval, and are deeply toothed. This species blooms at sunset and has cup-shaped, fragrant, four-inch white flowers that fade to pink. *O. acaulis* will bloom all summer. The plant is a biennial or short-lived perennial.

O. argillicola, the narrow-leaved evening primrose, is endemic to the shale barrens of the Appalachian mountains of Virginia and West Virginia. This is a night-flowering biennial or perennial with large yellow flowers that turn orange-red as they age. *O. argillicola* blooms from July to September and grows to four-and-a-half feet tall.

O. glazioviana is listed in garden catalogs as *O. erythrosepala* or *O. lamarckiana*. It is a large biennial or perennial suitable for the wild garden. Red buds snap open within seconds to extra large, yellow blossoms. *O. glazioviana* arose through hybridization and is now naturalized all over the world. During the day the plant may be awkward looking, but Louise Beebe Wilder says "... when the great Lemon-

coloured moons shine out against the gathering dusk and the light ravishing scent floats out upon the damp evening air, one is enchanted in spite of oneself."

Mary Beth Wiesner is an assistant editor of American Horticulturist.

SOURCES

As explained in this article, some *Oenothera* species are referred to by several different botanical names. They are listed here by the names found in the catalogs.

Far North Gardens, 16785 Harrison, Livonia, MI 48154, (313) 522-9040. Catalog \$2. *O. acaulis*, *O. tetragona*.

Forestfarm, 990 Tetherah Road, Williams, OR 97544-9599, (503) 846-6963. Catalog \$3. *O. missouriensis*, *O. tetragona*.

J.L. Hudson, Seedsman, P.O. Box 1058, Redwood City, CA 94064. Catalog \$1. *O. argillicola*, *O. biennis*, *O. erythrosepala*, *O. hookeri*, *O. pallida*.

Plants of the Southwest, 930 Baca Street, Santa Fe, NM 87501, (505) 983-1548. Catalog \$1.50. *O. caespitosa*, *O. deltoidea*, *O. missouriensis*, *O. pallida*, *O. speciosa*.

Southern Exposure Seed Exchange, P.O. Box 158, North Garden, VA 22959. Catalog \$3. *O. glazioviana* 'Tina James' Magic Primrose'.

White Flower Farm, Litchfield, CT 06759-0050, (800) 888-7756 or (203) 567-0801. Catalog free. *O. fruticosa*.



Oenothera deltoidea is a desert plant with tissuelike white blossoms.

TED AND GWENDOLYN BRAND

A Legacy of Ferns

A Michigan woman's fondness for these ancient plants was the spark behind an unusual public garden.

B Y J U N E H I C K S



Day after day, Kay Boydston and her husband, Walter, transported as many ferns as their car would hold to the wooded hills of their property near Niles in southwestern Michigan. Kay would plant them, sometimes wading into an icy stream or sliding down a muddy bank, often working into the evening with the car headlights providing her only light. Walter would keep her company, sitting and reading his favorite magazine, *The Saturday Evening Post*.

Over the next forty years Kay Boydston's passion for ferns would propel her to plant some 10,000 of them on the couple's sixteen acres. Boydston died in 1988, but today her woodland garden is the heart of a much more diverse, 105-acre nature center, botanical garden, and arts and crafts

center twenty miles from South Bend, Indiana, called, appropriately, Fernwood.

Stan Beikmann, the center's director, calls Fernwood's "one of the largest and most outstanding collections of ferns in the Midwest." Outdoors, thanks to Boydston's fern forays that began fifty years ago, there are 100 different kinds. In the Kay Boydston Fern House, completed three years ago, there are 100 different species, and plans are to obtain 200 more.

It's appropriate that a fern conservatory be dedicated to this enthusiast, whose love of these woodland plants was first inspired by the dramatic fern house designed by Jens Jensen and built at the turn of the century at Garfield Park in Chicago. In 1933, the 36-year-old mother of three children was asked to help supervise construction of the fern and alpine diorama for the Century of





Opposite: The late Kay and Walter Boydston with a granddaughter, Danelle.

Left: Among ferns on the rock wall of the conservatory are, from top left and down, Asplenium musifolium, A. marianum, A. kenzoii, and Hemionitis arifolia.

Pink color is provided by a nonfern, Sinningia speciosa.

At the top right is a staghorn, Platycerium bifurcatum and below it, maidenhair ferns.

Above: A water wheel dedicated to Walter Boydston, who died in 1981.

AN INTRODUCTION TO FERNS

Those examining ferns closely for the first time at Fernwood are apt to be struck by their surprising variety of sizes and patterns. Ferns range in size from the tree ferns of the tropics, which reach sixty to 100 feet and are crowned with dissected fronds as long as twenty feet, to the smallest American fern, *Trichomanes petersii*. Usually mistaken for moss, it grows on dripping limestone cliffs in northern Alabama. It has fronds only one-cell thick, and a quarter will cover an entire colony.

The ferns that exist today are but a fraction of those that flourished ages ago. Cryptogams, or flowerless plants, originated in the Paleozoic era, long before seed-bearing plants. A great deal of superstition was once attached to ferns, because no one could understand how they reproduced without seed pods. Now of course we know that ferns go through a two-part reproductive cycle: The adult ferns drop spores that form into tiny heart-shaped plants called prothallia, which have both male and female organs under their leaves. On a drop of water a sperm finds its way to an egg cell, which divides to form a sporophyte, which is the beginning of a new fern plant.

Today the cryptogam tribe has dwindled, giving way to flowering plants, to the point that it represents only about one-fiftieth of the earth's flora. There are still about 170 genera comprising about 8,000 species found in all parts of the world except the Antarctic Circle. In the Arctic regions around Baffin Bay about twenty-five species are known, although many of them are dwarfed.

Two of the ferns that Kay Boydston recommended for beginners are seconded as good choices by Fernwood Director Stan Beikmann:

The Christmas fern is an evergreen native to Eastern North America. It can be identified by a pointed or rounded bump called an ear on the top edge of the frond near the stalk. The one- to three-foot fronds were used by early settlers of the Northeastern United States as Christmas decorations. It forms dense, soil-retaining mats and can be grown in Zones 3-8.

The marginal shield fern, another Eastern American native, has sturdy leaves that stay evergreen throughout severely cold winters. It is often found at the base of boulders and like the Christmas fern, helps retain soil on slopes with its dead, matted leaves from the previous season. Its leaves are lance shaped with leathery, heavily veined pinnules (the primary division of the blade) and large, coarse brown scales on the petiole, or central stem of the frond. The color changes from yellow-green in the spring to gray green or blue-green as the season progresses.

Although some gardeners might have Kay Boydston's luck and learn of site development that makes rescuing ferns possible, Beikmann warns against collecting in other circumstances.

For those with some patience, ferns can be started from the spores on just part of a single frond without damaging the parent plant. Spores can also be obtained from the American Fern Society, which has an annual spore exchange.

For more information, write the American Fern Society, Department of Botany, University of Vermont, Burlington, VT 05401.



PHOTOS BY JUNE HICKS

them quite accommodating in her leaf-mold-rich soil, and they made a fine contrast in color, texture, and form.

Almost immediately after moving in, the Boydstons discovered generous quantities of these ferns in two woods about twenty-six miles apart and received permission from the owners to dig them up and transplant them. Kay Boydston chose a favorite spot by a bridge near an area that she had named Corkscrew Falls, and began to cover its banks with ferns. She was anxious to have more kinds, but disciplined herself for the first three years as she learned more about the care of her ferns and how to landscape with them. The Boydstons found that it was easiest and best to transplant the ferns in the fall when there would be no damage to fronds and the ferns would come up just as though they had always grown there. For the most dramatic effect, Boydston quickly learned, it was best to plant large numbers of one kind in a clump, rather than mixing several types together in a small space. After all, this is how nature does it.

In 1944 the couple bought ferns for the first time—again choosing marginal shield ferns—in two batches of 500 each, all of which were planted on the high south bank of the stream as it curves away from the

Progress Chicago Exposition.

From then on, she was hooked, and like many gardeners before and after, she wanted more space to enjoy her hobby. When the Boydstons bought their property in 1941, Kay set a goal: she would plant 1,000 ferns a year for the next ten years. "I could hardly wait to start," she told me in a 1975 interview, "once I decided that woods where ferns abound were so much

more beautiful, quiet, and peaceful than those without." The first year she fell a bit short and planted only 750, but she exceeded her aim in succeeding seasons.

The only ferns on the property when the couple bought it were Christmas ferns (*Polystichum acrostichoides*). Boydston decided to add more of these, along with marginal shield ferns (*Dryopteris marginalis*) and maiden-hair ferns (*Adiantum pedatum*). She found



Opposite: The unfernlike hart's-tongue fern appears in many places at Fernwood, including here at the edge of the rock garden.

Left: In the spring, Virginia bluebells line many of Fernwood's trails.

bridge. To plant them, Kay walked the stream and planted as high as she could stretch, then, lying on top of the bank, as far down as she could reach. The gap between had to be planted by slipping and sliding down, burlap-wrapped plants in hand, using a stick or small shovel as a brace.

She recalled: "I well remember that the three days it took to plant the first 500 were clammy cold with rain from drizzle to shower the whole time. It seemed like I'd never be warm or dry, but those crates of ferns kept me going in spite of dire warnings from my mother, who was living with us, about the pneumonia I would surely get." She and the ferns both finished the experience in excellent health.

For a long time the thought of planting her favorites anywhere else didn't occur to Boydston. But she had long looked with a disapproving eye out the back of her house to a cement-banked pool that had been there when the couple moved in. She finally had one of its walls knocked out, and discovered that this created a natural spring trickling over the gravel "instead of a manmade, poor excuse of a pond with no beauty at all." It was the perfect place for more ferns. From then on while hiking the grounds, she was continually spotting new areas that seemed

just right for expanding her collection.

Boydston would eventually describe the fern trails and their development in a series of wonderful booklets. Nearly all of the native Eastern American ferns are represented, along with what she called the "crazy mixed-up British ferns." Ferns found along shaded lanes in England, she explained, produce endless variations that may be incised, crested, or unusually fancy.

The American ferns, which are somewhat more subdued in their genetic variations, were relatively easy to collect. Whenever Boydston learned that a farmer was getting ready to expand his fields, she would ask permission to remove all the ferns before the woods clearing began. She also did a lot of collecting at Big Bear Cave just north of Fernwood, where plants were being destroyed as it was developed as a recreation area.

But Boydston also ordered ferns from catalogs and traded with other fern fanciers, such as Dr. Edgar T. Wherry of the University of Pennsylvania. She also became adept at starting ferns from spores.

For the most part, she stayed with Eastern North American natives suited to temperate climates. Those most difficult for her to grow were those that grow naturally in acidic soils, such as the oak

fern (*Gymnocarpium dryopteris*). Acid lovers don't seem to adapt to Fernwood's soil, which while moist and rich, is an alkaline, sandy loam.

Although ferns were always Boydston's favorite plants, she collected many others, reading ravenously until she felt she had digested one genus—*Viola* for instance—growing as many as she felt could possibly adapt to Fernwood, and then moving on to something else.

Thus the grounds contain a large number of gardens: one with berried shrubs and trees to attract birds, herbaceous and tree peonies, and a perennial island with graceful ornamental grasses and more than 100 types of hostas; a lilac garden near the lily pool; another perennial garden; an azalea-rhododendron allee; and a rock garden that contains an extensive collection of dwarf conifers, saxifrages, heaths and heathers, and many species of primroses.

But after twenty years of developing all these areas, the Boydstons became concerned about what would happen to their beloved property after they were gone. The answer was the Plym Foundation, which had supported a number of civic projects in the Niles area, including a hospital, library, and park. Fernwood was incor-



PHOTOS BY JUNE HICKS

porated in 1964 and sold to Mary L. Plym, but Kay Boydston was given a lifetime lease and made director. This enabled her to continue living, planting, and gardening on the grounds until she died, and hers remained Fernwood's guiding spirit as it entered its new life as a public garden. She would not only expand the current gardens and add new ones, but would conduct or arrange classes on subjects on everything from bird watching to weaving.

Because of the garden's rural location, additional acreage was relatively easy to obtain. The year after the property was incorporated, the Plyms bought and added the sixty-five acres that became the current arboretum, tallgrass prairie, and lower woods. In 1969 eleven acres on the Saint Joseph River were purchased and a craft cabin added. In 1975, another thirteen acres were added in memory of Jean G. Hussey, an avid home gardener who was a Fernwood board member, bringing it to its current total of 105 acres.

But the jewel in Fernwood's crown, and a fitting tribute to the woman who labored in the cold, wet dusk to plant her new batches of ferns, is the Boydston Fern House on the north side of the Mary L. Plym Visitor's Center, which was finished in 1988. The architect had originally situated the fern house on the south side of the center; strong protest from the horticultural staff persuaded him to move it. Ferns need as much indirect light as they can get, but not direct light, notes Educational Horticulturist Dr. Betty Hamilton.

Formerly a research associate in the Oklahoma State University biochemistry department, Hamilton, like Boydston, was an avid fern hobbyist. On a visit to Michigan she dropped by Fernwood out of curiosity and so impressed Beikmann with her knowledge of the subject that he invited her to return as consultant to the fern house project. Before she even arrived, she began to plan the habitat sections that would make it possible to grow a wide range of ferns in the 1,000-square-foot conservatory.

The building rises twenty-seven feet from the lowest level to its highest peak through the multilevel visitor's center. A balcony on the top floor overlooks the whole setting, which can also be viewed through large plate glass windows from the library on the first floor.

Beikmann designed the interior, taking some of his ideas from the Garfield Park fern house that had so inspired Kay Boydston many years earlier. But to some

extent he had to design it layer by layer to make certain that the floor would hold the seventy-two tons of "holey boulders" of Wisconsin limestone that would help create microclimates appropriate to different types of ferns. At the same time the rocks were arriving by flatbed truck, Hamilton arrived permanently from Oklahoma to make sure that each of the stones was tipped back slightly so that soil would stay in place beneath them. "If they were straight or tipped even a little forward, how would the soil stay in place, and where would I put my ferns?" she asks.

It took three days to build the limestone peninsula that forms the conservatory's central feature; the largest boulder weighed three tons. The construction was supervised by another Oklahoman, Ben Oki, a bonsai master who had come to Fernwood about six years earlier to design and install its Japanese garden. The practice of bonsai, explains Beikmann, gave Oki expertise in the artful arrangement of stones.

Entering the fern house from above, one finds tiny ferns native to desert areas on the right, while further down on the left, large weedy ferns dominate. Some of these have been so aggressive that they can elbow out almost everything else, says Hamilton. In nature, these ferns tend to invade disturbed soil. *Nephrolepis oblitterata* receives its name from the fact that it tends to obliterate everything around it. *Hypolepis punctata*, or downy ground fern, forms colonies and its fuzzy fronds can grow to ten feet.

High among the rocks surrounding the waterfall that flows down the limestone peninsula are plants that would be found in exposed rocky areas such as coastlines. Thick leathery leaves help conserve moisture and sturdy rhizomes may grow down under the soil to reach scarce moisture. The silver staghorn (*Platycerium veitchii*) growing atop the rock also has a fine covering of dense white hairs to protect it from strong sunlight.

The waterfall, stream, pond, and bog are home to a collection of ferns needing constantly damp feet. The Florida tree fern (*Ctenitis solanei*) grows where its roots always reach water, while the hairy clover fern (*Marsilea vestita*) thrives in mud. Water spangles (*Salvinia minima*), a Florida native, prefers to float.

Growing in one corner are the largest plants in the collection, a pair of Australian tree ferns (*Cyathea australis*). Native to tropical woodlands, they have been nicknamed "Ralph" and "Alice" after the



Opposite: A view through the door into the lower level of the fern house while it was under construction.

Left: In the finished fern house, from the same view, Betty Hamilton sprays the ferns. In the background are the Australian ferns. Above: Epiphytes growing along the waterfall include rabbit's-foot fern, silver staghorn, and Southern maidenhair.

A TRIP TO FERNWOOD

Visitors to Fernwood will see not only the extensive indoor and outdoor fern collections and the gardens started by Kay Boydston, but other collections added since Fernwood was incorporated. An herb garden with 200 kinds of herbs is being moved to a new location where it will surround a large stone dovecote and contain hard, curving paths so those with disabilities can get closer to the plants. The thirteen-acre Jean Hussey memorial garden, added in 1975, is a demonstration area for home gardeners. The Cress Lippincott rose garden uses roses in a naturalistic design adaptable to the home landscape. There's a demonstration garden with new varieties of annuals and vegetables, an iris-daylily border, a collection of vines recommended for the home landscape, the David S. Rector pioneer garden that typifies an American wilderness door-yard garden, the Ben Oki-designed Japanese garden, and a tallgrass prairie added in 1976. A small restaurant serves lunch, and during the summer, there are classes ranging from "Frond Hunting at Fernwood" to "Open Studio for Artists."

If you'd like to learn more about ferns but are too far from Michigan to make a trip to Fernwood possible, other fine fern collections include those of the New York Botanical Garden; Longwood Gardens at Kennett Square, Pennsylvania; Fairchild Tropical Garden in Coral Gables, Florida; the Conservatory at the San Antonio Botanical Center; and the Hardy Fern Society at the Rhododendron Species Foundation in Federal Way, Washington.

Fernwood is open from 9 a.m. to 5 p.m. weekdays, 10 a.m. to 5 p.m. Saturdays, and noon to 5 p.m. Sundays. Admission is charged to nonmembers 13 and older. For more information write Fernwood, 13988 Range Line Road, Niles, MI 49120, or call (616) 683-8653 or 695-6491.

"Honeymooners" characters. Alice was the tallest when the two arrived from California, but Ralph has since overtaken her. "Now she's trying to get caught up," says Hamilton. The smaller ferns beneath them are also natives of tropical woodlands. As Hamilton points out, some of the plants are familiar house plants, such as the brake ferns (*Pteris* spp.) and holly ferns (*Cyrtomium* spp.). Others are totally exotic. *Photinopteris speciosa*, for example, has leaves like a ginger and a large white rhizome.

A wall of moist rocks forms an intriguing part of the tropical woodland habitat. Seven species of maidenhair ferns, spleenworts (*Asplenium bulbiferum*), and hare's-foot ferns (*Polypodium aureum*) have spread out and formed a soft curtain over the water-worn stones.

Hamilton has found that only a slight difference in light and moisture will make a big difference in the health and growth of a fern. "Depending on their likes and dislikes, I test the ferns in different spots. I carry them with me and find a place where they look good. If they do well, then they stay. If not, I move them until they're happy." So successful has she been with some that she has to weed them out. "Look at this *Dryopteris wallichiana*, for instance. In here it doesn't grow by the book. It doesn't need the sperm and the egg but reproduces through asexual budding. It throws off new plants all the time."

Although ferns look delicate, they are much tougher than most people would guess. This is certainly true of most of the Eastern North American native ferns that Kay Boydston selected for her outdoor garden. Not only can they survive, but they can propagate themselves quite readily. Walking maidenhair (*Adiantum caudatum*) forms colonies by tip-rooting where its fronds touch a solid surface. The Southern maidenhair (*A. capillus-veneris*) spreads rapidly by spore and grows happily on and in cracks on limestone, and *Nephrolepis pectinata*, a relative of the Boston fern, spreads rapidly by means of slender stolons.

One of the most interesting ferns on the grounds today is the hart's-tongue fern (*Phyllitis scolopendrium*), which Boydston started from spores from New York State and other parts of Michigan. Several large clumps grow at the edge of a pond in the rock garden, but visitors often bypass this fern, one of America's rarest, without a second glance because it's so unlike the

usual concept of a fern. Rather than divided, lacy fronds, it has uncut, evergreen fronds that are deep green on top and lighter below, like a deer's tongue.

Great favorites with many people are the large colonies of maidenhair ferns with their circular flat fronds. Although there are some 200 species of maidenhair ferns native to North America and Asia, *Adiantum pedatum* is the only one that thrives outdoors this far north. There are dwarf maidenhairs in and near the rock garden.

Another interesting species is the hay-scented fern (*Dennstaedtia punctilobula*), which smells like new-mown hay when its fronds are crushed. The fronds are delicately cut and pale green.

At three to four feet tall the royal ferns (*Osmunda regalis*) make an imposing sight, especially when grouped as they are alongside ponds. Like the hart's-tongue, they don't match preconceived notions of ferns. They are twice cut with pinnules spaced far apart, giving them an unusually airy look.

While the ferns are the drawing card for new visitors, for many of those who have been going there for ages the real charm of Fernwood lies in the fact that this was for many years the home of the sociable Boydstons, whose friends came by the carload on weekends and often joined Walter and Kay on their pontoon boat for a summer barbecue. Kay Boydston would be pleased to see the Fernwood parking lot today. Where only a handful of cars might have been seen a few years ago, since the completion of the visitor's center it is almost always full. And she would delight in the constant stream of students to the arts and crafts classes.

But Beikmann and Hamilton think she would be especially thrilled by the conservatory named in her honor, which she did not live to see completed. Boydston's health did not allow her to take an active role in planning the building, but as the interior design neared completion, Beikmann noted an interesting coincidence: The peninsular outcropping of stone in the middle of the structure, which allowed development of a gently sloped, U-shaped walk that can be used by visitors with disabilities, greatly resembled Kay Boydston's design for the Chicago exposition where she had fallen in love with ferns more than a half century earlier.

June Hicks was garden editor of The Detroit News for thirty-two years. She retired in 1987.



DOROTHY S. LONG: PHOTO/NATS



Left: Nephrolepis pectinata, a relative of the Boston fern, spreads rapidly by means of slender stolons.

Above: The easy-to-grow marginal shield fern is characterized by coarse brown scales.

JUNE HICKS

Have other people been as confused about chrysanthemums as I've been all these years? We all know about "football mums" at the florist's, and the so-called "hardy mums" in pots at the garden center. We may grow "cushion mums" and some taller ones in our gardens. But when I've seen shasta daisies, painted daisies, and even feverfew listed with chrysanthemums (and lately listed as something else entirely) I've been joggled. And what about costmary, also once classified as a chrysanthemum? The costmary in the herb corner of my garden is a far cry from those basketball-size chrysanthemums that probably represent the whole tribe to a lot of people.


I'd been poking into books and making charts to the point where I thought I'd gotten the situation under control. But then the taxonomists pulled the rug out from under me once again. An article in the latest issue of *Baileya*—the journal of horticultural taxonomy from Cornell University—decrees that the genus *Chrysanthemum* has withered away to almost nothing. Of the fifty or so species in cultivation that had

been included in *Chrysanthemum*, only three remain; the rest have been parceled out to the likes of *Ajanía*, *Dendranthema*, *Nipponanthemum*, and at least eleven other genera. So what began as an article on underappreciated garden chrysanthemums has turned into a remembrance of a genus lost, at least among taxonomists. I personally intend to keep using the old names, now that I've worked so hard to get used to them, and to invite the rest of the gardening world to go on strike with me. Let the taxonomists have their *Argyranthemum* and *Leucanthemopsis*.

Before the changes, the chrysanthemum section seemed to take up more space than any other in plant reference books. Liberty Hyde Bailey's *Cyclopedia of Horticulture*, in three big volumes, devotes fourteen pages to them. Chrysanthemums, of which there were about 160 species, belong to the daisy family or Compositae and are native to the temperate regions of Europe, Asia, Africa, and America. They are annual or perennial herbs, often partly woody, with pungent foliage, their leaves ranging from being nearly entire to much dissected. Their heads are many flowered; the flowers on the wild species all have single daisy

Where Have All the Chrysanthemums Gone?

This genus boasts many delightful daisylike flowers completely unlike the ubiquitous fall favorite. At least, it used to.



*The painted
daisy, formerly
Chrysanthemum
coccineum, is now
a Tanacetum,
say taxonomists.*

mums

petals, and hybrids are usually doubled, with many ray florets and few disk florets. In the wild, chrysanthemums come in white, yellow, and pink.

The Chinese and Japanese have had a long love affair with chrysanthemums. They appear to have been breeding the forms native to their part of the globe since 500 B.C., developing blossoms of various shapes and sizes, in every color but blue. The Chinese varieties have been mostly tightly incurved and the Japanese, reflexing or loosely incurved—shaggier, in short. The Chinese productions weren't discovered by Westerners until 1688 when some were taken to Holland. They failed to survive there but showed up in France in 1789, and in England in 1795. In 1846 Robert Fortune, working for the Royal Horticultural Society, sent many pompom varieties home from China. They were so well received that, fifteen years later, when he sent back specimens of the fantastic varieties the Japanese had been developing for over 1,000 years, the English growers considered the newcomers to be in poor taste and wouldn't accept them for about twenty years.

Most of these original chrysanthemum cultivars have become—or remained—show flowers. They are grown to be sold to florists or entered in exhibitions; hence they reside in greenhouses where they are fed, disbudded, pruned, and cosseted so as to produce the largest, most astonishing creations possible. Our National Chrysanthemum Society has thirteen divisions for these, with such descriptive names as regular or Chinese reflex, incurve, spoon, quill, and spider. All of these, the society has cheerfully assumed, were *Chrysanthemum x morifolium*. I wonder what they'll call themselves now that the taxonomists have informed them that their charges are not chrysanthemums at all, but *Dendranthema x grandiflorum* cultivars? However, we will not be dealing with these in this piece, but rather with the chrysanthemums that grow out in the sun, wind, and rain. Real garden flowers. There are many of them, but too few tough enough to be depended upon to get through our difficult winters in the Northern United States. Southern gardeners, especially those who live in the Eastern states, can grow many chrysanthemums that we cannot; we treasure those we have, treat them as kindly as we can, and keep experimenting with different species and cultivars.

Some of the plants that do well in the



ELVIN McDONALD

Above: The Japanese import Chrysanthemum pacificum (now Ajania pacifica) is becoming more widely available.

Right: The oxeye daisy (Chrysanthemum leucanthemum, now Leucanthemum vulgare) has less "weedy" cultivars.

Opposite: Feverfew, Chrysanthemum parthenium, now joins the painted daisy as a Tanacetum.



MARYL

South will live farther north but are seared by frost before their blooming period is well under way. *Chrysanthemum nipponicum*, the Nippon daisy (now called *Nipponanthemum nipponicum*), is one of these. I grew it happily here, enjoying its green foliage, its low, spreading, compact shape, being grateful to it for having no diseases and no allure for insects, but grieving when its long-awaited white flowers were given no chance to perform. I might try it again in a different spot.

Chrysanthemum weyrichii (reclassified as *Dendranthema weyrichii*) looks very similar to the Nippon daisy—low, nicely cut dark leaves. It comes as 'White Bomb' and 'Pink Bomb' and I'm embarrassed to report that I failed decisively with both of them. My robust looking plants simply collapsed in a heap their first August, as if from a heart attack, while to the naked eye nothing was amiss. They are supposed to be able to endure cold and heat (Zones 3-8). Unfortunately no one was nearby who could have performed an autopsy. If you are cleverer than I you can use these chrysanthemums with the late summer-

blooming asters.

Chrysanthemum arcticum, the Arctic daisy (now *Dendranthema arcticum*), is another low-spreading one (six inches tall and twice as wide), hardy to Zones 2 and 3, as well it might be, coming from Alaska and Kamchatka in the Soviet Far East. It carries pinkish white, starry single flowers on spreading branches and makes a fine plant for a rock garden or for the front of the border. One reference book says it blooms extremely late and may be overtaken by frost. But if it's hardy in Zones 2 and 3, why should frost hurt it? I mean to try it, if I can find plants or seed.

D. yezoense from Japan—which I know as *Chrysanthemum yezoense*—is often sold as *C. arcticum*, but grows about six inches bigger in each direction. It is also a good white-flowering rock garden plant and comes in pink and yellow as well. It's said to be tougher than *C. arcticum* and might bloom earlier in the fall. Louise Beebe Wilder's description of her *C. arcticum* sounds like *C. yezoense* and she said it bloomed from late summer on.

C. 'Clara Curtis' is a great boon to us



Northerners; even if we lose some of the plants in a bad winter, there are usually enough pieces to reset for a good show in late summer. This chrysanthemum was called *C. x rubellum* for as long as anyone can remember and then, God alone knows why, appeared as *C. zawadskii* or *C. zawadskii* var. *latilobum*. The taxonomists have now pushed it over to the *Dendranthema* genus. The plant was found, record- less, in a Welsh nursery in 1929 and is believed to be a hybrid, with *zawadskii* for one parent—but since even the experts don't seem to be sure, why don't we let it alone? In Britain there are fifteen or more cultivars of this plant; two *Chrysanthemum x rubellum* cultivars available to stateside gardeners are the 'Dutchess of Edinburgh' in coppery red and 'Mary Stoker' in buff. The *C. x rubellum* foliage is paler, thinner, and more finely cut than that of ordinary garden chrysanthemums, but the plant's habits are the same: it is shallow rooted and starts sending out its new underground shoots while it is still flowering. The single pale pink daisies begin to open in late July or early August and make a most satisfying one-and-a-half-foot mass for many weeks. It is usually still blooming towards the front of the border when the rosy Japanese anemones come out farther back. With luck, the pink boltonia, which I've found blooms much earlier than the white one, would perform at the same time, back near the anemones, with perhaps a big pouf of *Artemisia* 'Powis Castle' between them. New plan for next summer.

Long ago I raised some of the so-called Korean chrysanthemums—hybrids of cultivars of *Chrysanthemum zawadskii* and *C. x morifolium* (both are now *Dendranthema*)—from seed. They were medium-

JESSIE M. HARRIS



height singles in a good range of colors, but I didn't have sense enough to value them. I let them dwindle away while I ordered plant after plant of the midheight hybrids that were much more sumptuous in appearance. Now, considerably chastened, after having spent a lot of money and time on pampered baby dolls that were never intended to cope with this climate, I'm ready to order more seed of Korean mixed. I might try some 'Autumn Glory' too, while I'm about it.

I did get one good plant during those years of experimenting: an old cultivar called 'Aztec', a fluffy eighteen-inch red and gold. It blooms for fully two months, doesn't have any health problems and accepts with equanimity everything that comes along in the way of weather. One of my greatest treasures. I like to have a wide row of them on the edge of the garden, with the fields and woods in the background so that in the fall they are repeating up close the blazing colors of far away.

If I lived in California or somewhere in the Southern part of the country I'd try what I know as *Chrysanthemum frutescens* (but what taxonomists now call *Argyranthemum frutescens*), the lovely pale lemon or white marguerite that looks, in pictures, to be all a flower should be—fresh, pure, and elegant. I could grow it as an annual, perhaps, if ever I saw the seed offered. I did grow a pale yellow annual chrysanthemum last summer—a small, semidouble called 'Primrose Gem'. It was that, too, producing masses of flowers on bushy plants all summer long, beginning in mid-June, as I recall. One should try a few new annuals every summer, to change the scene. 'Primrose Gem' picked up the colors of a crystalline, long-blooming, very pale creamy yellow daylily in the border and also that of a medium-height iris, to say nothing of making all the surrounding blues of flax, *Platycodon*, and *Cynoglossum* look bluer.

Nancy Goodwin of Montrose Nursery in Hillsborough, North Carolina, likes the cultivar of the wild field or oxeye daisy, *Chrysanthemum leucanthemum* (or if you must, *Leucanthemum vulgare*) 'May Queen'. She says she's had it for twenty years and can vouch for the fact that it's not weedy. It produces its white flowers from early summer until late fall, at least in Carolina. Graham Stuart Thomas says it's strange that there is no garden form of it in England, although in Germany they have a good one called 'Maistern' ('May Star'). Perhaps it's Mrs. Goodwin's 'May Queen'.

Right: *Chrysanthemum pacificum* (*Ajania pacifica*) is outstanding for its foliage.

Opposite: The yellow-flowered feverfew 'Golden Ball' is less hardy than its white-fringed parent species (see page 33).

And then there is the shasta daisy, once *Chrysanthemum maximum* and not too long ago changed to *C. x superbum*. Now it seems to be *Leucanthemum x superbum*. Whatever the name, some wonderful versions—tall and short, single and double—are to be found. The doubles retain their daisy character since, unlike so many of the chrysanthemums, they haven't yet been doubled to a fare-thee-well so that they have turned into puffy spheres.

There are many fringed and many crested ones, but of those I've encountered, 'Aglaya' and 'Wirral Pride' are the two best in those categories. Try 'Wirral Pride' if you'd like a noble-looking white daisy with a double row of nonfringed petals and a fluffy yet restrained cream crest in the center. Although some writers poke fun at it, I love 'Aglaya', at least one of the versions I've had from nurseries, and they do differ. The one I've kept on here is beautifully fringed and crested without having lost its elegant shape. A similar but rather frenziedly feathered one is 'Stamm Potschke'. With this one, they've gone too far.

The largest single shasta daisy is 'Majestic', but 'Thomas Killen' is almost as large and has a cream crest as well. 'Cobham Gold' has been described as being yellow but is, in fact, creamy white with a yellow crest. Nice, but not as tall and sturdy as 'Wirral Pride'.

I've been pleased through the years with the semidouble 'Little Miss Muffet', which, although short at eight to twelve inches, doesn't look stunted like some of the new dwarfs. If it sits in the same spot for several years it tends to grow taller, to fifteen inches or more, so it should be divided every other spring. While you're at it, you can put little colonies of it here and there, all down the front of the border. It's a clean,

dependable, cheerful individual and adds sparkle to whatever group of plants it joins.

Shastas have the reputation of not being very hardy but I've not lost any to cold so far. I divide them only in spring, of course, and I do throw evergreen boughs over them in autumn when I have enough to spare.

The unusual Japanese chrysanthemum, *Chrysanthemum pacificum* (*Ajania pacifica*), is becoming more widely available. It is a foot tall, spreading out and making mats of gray green scalloped leaves, edged white. The flowers aren't very jazzy—just yellow tansy buttons—but the foliage alone should make it worth growing. Those who have tried it say it will tolerate dry, lean soil and withstand Zone 5. I hope they're right.

Costmary (once *Chrysanthemum balsamita* var. *tanacetoides*, and now *Tanacetum balsamita* var. *tanacetoides*) is among those chrysanthemums that have had culinary importance, or still do. From western Asia, it was used by the Egyptians, Greeks, and Romans and has always had a role in the cuisine of Spain. The English and early Americans used it for brewing; they laid the leaves in the bottom of baking pans to flavor cakes and in their Bibles to nibble on in church when trying to stay awake. Costmary isn't much for looks, with its large, leathery leaves and yellow button flowers, but it does have a heady aroma. Other species of chrysanthemum are used in Japanese cuisine, with their leaves and/or flowers, fresh or dried, being pickled, boiled, or fried and eaten with raw fish or in salads and soups. In the spring, I often put the pungent and refreshing leaves of the wild field daisy in my salads.

I've always thought painted daisies were *Pyrethrum*. But even though I was secretly incredulous, I had to take the word of



MARYL



Hortus Third and other authorities that there is no such thing and that *P. roseum* is really *Chrysanthemum coccineum*. Now I learn that the painted daisy is rightfully a *Tanacetum*. Well, they don't act like chrysanthemums, I must say. Everything about painted daisies is wonderful except for their habit of going yellow and dead-looking in late summer, at least in my garden. A friend triumphantly claims that her plants bloom twice if cut back after the first blooming. It may be that mine need dividing and nourishing, but every year I have to cut the yellow foliage to the ground. I'm always sure they're dead, but early the following spring the scroll-shaped shoots emerge, announcing the imminent arrival of the lovely lacy foliage, and soon there are three two-and-a-half-foot clumps of wide-eyed daisies, single and semidouble, in shades from the palest pink and medium rose to a deep vibrant crimson. Like the shasta daisies, they've not been bred to lose their character, so they remain daisies, with single or double rows of petals, some of them with crested centers. Half the plants from seed for double flowers come out, as a rule; single. Single or double named cultivars are offered in several colors and can be increased by division.

Also now a *Tanacetum* is feverfew, which I know as *Chrysanthemum parthenium* but often find listed under *Matricaria*. An herb native to Europe and Asia, it appears to be growing wild in the United States now too. Heaven knows it's skilled at taking care of itself. Often the parent plant, or half of it, dies in the winter, but there are always enough self-sown seedlings for the border, the cutting bed, and the compost heap. Some people like the single-flowered feverfew but I love the double. Its seedlings retain the same form

ELVIN McDONALD



THE TAXONOMISTS' SIDE

Nothing comparable to the *Chrysanthemum* upheaval has ever happened to such a popular plant. Beginning in the early 1950s taxonomists started looking more closely at the *Chrysanthemum* complex, discovering new relationships and reclassifying. What started as an unwieldy genus with over 200 species was gradually worn away. Now at most three Mediterranean natives are allowed to claim the mantle of *Chrysanthemum*—*C. carinatum*, *C. coronarium*, and *C. segetum*. All are daisylike annuals with deeply cut leaf margins and yellow or yellow and white flower heads. Everything else has been assigned to at least fourteen other genera.

"It is a fairly large complex," says Edward A. Cope, extension botanist and assistant curator at the Liberty Hyde Bailey Hortorium of Cornell University. "And it has been handled differently by different people over the years. There was a lot of nomenclatural confusion to begin with." Cope and his colleague Robert J. Soreng have attempted to set things straight in a recently published article in *Baileya* in which they detail the current taxonomy of cultivated chrysanthemums. "As you learn more about it," says Cope, "the concept of a genus changes."

Taxonomy is the science of the classification of organisms in established categories. As taxonomists study certain plants more closely, and as new disciplines (such as cytology, the study of cells) and new equipment (like the electron microscope) make new knowledge possible, reclassification occurs. Taxonomists take pains to convey that nomenclatural changes reflect advances in knowledge, and that no classification is permanent. "The world," says Cope, "is not black and white."

They also appreciate that wide-scale reclassification is difficult for gardeners to digest—or in some cases to stomach. Cope tells of an ornamental horticulture professor at Cornell who heckled him from across a courtyard recently: "Sheez! The *Chrysanthemum* complex! People are going to be mad." When asked if he was worried about how chrysanthemum growers and societies would take the news that their genus has been obliterated, he replied with a laugh, "There was a need for this, for both the horticulturist and the botanist. I guess I didn't really have trepidation. We're well insulated up here in the ivory tower."

—Thomas M. Barrett, Assistant Editor

although some are whiter and fuller than others. The pretty yellow-flowered feverfew, 'Golden Ball', didn't prove hardy here, nor did the charming new miniature 'Santana'. The latter left some seedlings, at least, so I can carry it along. There's a feverfew with golden foliage, 'Aureum' or golden feather, an annual often used in bedding-out schemes in parks, and one with crimped green foliage, similar to that of restaurant parsley.

Chrysanthemum serotinum (Many of us know this one as *C. uliginosum*, and I certainly can't countenance *Leucanthemella serotina*!) is said to be able to endure the cold of Zone 5 but lasted only a couple of years here. I'm going to try again. What a creature it is—a kind of super daisy! From four to six feet tall with four-inch leaves and three-inch white daisies with sulfur green eyes, it's marvelous with monkshood.

It's sad to have to admit that chrysan-

themums, most of them, are plagued with many afflictions—aphids (various), caterpillars, tarnish bugs, leafminers, gall midges, spider mites, thrips, and mealybugs, besides various fungi, wilt, viruses, powdery mildew, and rust. If you don't use chemical sprays or dusts you'll have your work cut out for you trying to keep them in good shape. As is usually the case, the species are much less disease prone than the hybrids, but you have to keep an eye on even those. As with all plants, you can help them to fight their enemies if you give them what they want in the way of moisture and nourishment. Excepting the rock garden species, chrysanthemums want a good rich soil with plenty of organic matter—old cow manure or compost, ideally. They need deep watering during hot dry periods but good drainage is essential to prevent their roots from rotting. Most need full sun or at least sun all morning long.

I've learned that chrysanthemums have a better chance of making it through the winter if they are constantly divided. Lift the plants in the spring, shake them apart, extricate the stout young rooted shoots and plant them, at least a foot apart, in refreshed soil. Each two-inch baby plant will make a mass of flowers in late summer or fall, hard as it is to believe. If you want to keep the taller ones from flopping and make them more bushy, pinch them back at six to eight inches and again when the new growth reaches the same height. Don't, at least in the North, pinch them back after the first part of July. In the fall, after the summer's growth has been frozen brown, cut it to the ground. You will see next spring's leaves emerging below the dead stems. Cover them with pine boughs or some other nonmatting, nonweedy material.

I'm trying to finish this piece without lashing out against people who say "mums" and people who sell the colored chrysanthemums all year round, when they are, and surely should remain, the very essence of autumn. But I simply must bring up something that I find both exasperating and mystifying—the peddling of chrysanthemums as hardy when most of them aren't. "Hardy" should mean being able to stand at least a few nights of 20 degrees below zero. Just last year a woman told me she had a local landscaping firm plant a garden for her, putting in, among other things, hundreds of dollars worth of "hardy mums." They wouldn't have had much chance even if they had been planted in the spring, but being planted in the fall, of course the following spring they were all dead. "What did I do wrong?" she asked. Chrysanthemum producers seem to count on people blaming themselves for garden failures.

Once at a perennial conference in Ohio I sat across the luncheon table from a young man who said he did nothing but raise chrysanthemums for garden centers. I asked, "Do you tell the vendors which ones are hardy and which are not?" He looked at me pityingly, shrugged, and said, "Lady, I have a family to support."

Are gardeners never going to weary of buying plants that die? Will they always blame themselves, or will they finally catch on? Perhaps they will, and the peddlers will just start calling them "hardy" something else.

Elisabeth Sheldon is the author of A Proper Garden.

The Many Faces of HORTICULTURAL THERAPY

*This ancient art and budding science enhances the lives of an ever-expanding number of special populations.
First of two parts.*

BY THELMA E. HONEY

"**T**o begin our group," says Richard Sackett, "I want each of you to go into the greenhouse and choose a plant that somehow represents something that you like about yourself. Maybe you're a colorful person; maybe you're willing to reach out; maybe you're a bit thorny

and find your defenses a comfort to you. Whatever! There are no wrong answers!"

In Asheville, North Carolina, Sackett is using plants to make it easier for psychiatric patients to talk about themselves, their relationships, and their problems.

Meanwhile in Pittsburgh, Pennsylvania, Betty Morgan finds that working with plants helps troubled teens learn to control their tempers.

In Corrales, New Mexico, horticultural

skills are allowing persons with mental retardation to live more independently.

And in Pueblo, Colorado, female offenders take pride in the college hours they earn in horticulture.

These programs are just a few of the country's premier offerings in horticultural therapy—the use of simple gardening techniques to enhance the quality of life for individuals with mental, physical, emotional, developmental, and/or social



COURTESY OF THE KLUGE CHILDREN'S REHABILITATION CENTER

At the Kluge Children's Rehabilitation Center, a gurney allows a boy to rake the raised bed.

problems. Those who benefit range from preschoolers to seniors in their 80s or 90s.

The formal discipline called horticultural therapy and the structured programs are relatively new. But the principles involved have been used for centuries. Ancient Egyptian physicians recommended that disturbed patients walk in the gardens. In the eighteenth century, United States mental institutions employed patients in garden and farm work as part of their treatment. The first known greenhouse for treatment of people with mental illnesses was opened in 1879 in Philadelphia at what is now Friends Hospital.

Why is horticultural therapy effective? Researchers are just beginning to look for a psychological or even physiological explanation. But on a more obvious level, gardening does the same thing for special populations that it does for the rest of us: provides physical exercise, brings us into the fresh air, challenges us mentally, relaxes us when we're tense, and gives us another living thing to nurture. Which of these things are emphasized, of course, depends on the population being served.

Some horticultural therapy programs are targeted at helping just one population; others involve people with a wide range of disabilities.

The Kluge Children's Rehabilitation Center at the University of Virginia Medical Center at Charlottesville is an example of the latter. Each week, about ten inpatients—and sometimes some outpatients as well—ranging in age from 5 to 20 years are busy in its ten-by-twenty-four-foot greenhouse, two raised beds, and herb garden. They may have had amputations or brain injuries, or have cancer, cerebral palsy, spina bifida, mental retardation, or visual impairments.

Each activity is designed to improve a specific skill. Watering with a hose or watering can, raking and digging soil, and moving potted plants improves gross motor skills of the arms and body. Fine motor skills, such as finger dexterity and eye-hand coordination, are developed through planting seeds, weeding and pruning, using a spray bottle, removing harmful bugs from plants, and making and using plant identification labels.

Basic tactile awareness—smell and touch—is enhanced by observing fragrant flowers and herbs, the textural differences between sand and peat moss and perlite, and between wet and dry potting mixtures, and differences in air temperature. Visual discrimination is increased by plant and flower

identification tasks. The clients' ability to listen and remember is improved through following directions, for instance, to "find the plant with the large flowers," and through distinguishing the different sounds made by beans and other seeds in a shaker.

Participants learn about social interaction, too, when they work and socialize with other patients, staff, and volunteers. Raking or hoeing can help lessen aggressive behavior, and caring for plants rarely fails to strengthen a youngster's self-image and increase a sense of responsibility.

"The Adopt-A-Plant program is the most popular, probably because the child leaves with something tangible," says therapist Maureen Oswald. Patients and local 4-H members work together to create a "plant buddy"—a pompom animal on a Popsicle stick accompanying a plant that each child takes home.

"Since the horticulture program exists on donations, volunteers are priceless!" Oswald says. Members of the Rotary Club designed and built the garden's raised bed. Local nurseries and home building supply stores donated tools and landscaping material. Giant Food financed the greenhouse, and Master Gardeners help in a number of ways. Providing professional support are Teresa Morris, supervisor of the gardens at Albemarle Farm; Linda Hosticka, the greenhouse manager of the University of Virginia's biology department; and Henry Oswald, Maureen's husband and the owner of a local nursery.

The **Royal Botanical Gardens** in Hamilton, Ontario, has a Teaching Garden, supervised by Brian Holley, that is open to people of all ages and abilities. "Our goal isn't to teach kids how to garden," says Holley, "so much as to give them a feeling for the garden and make them want to spend time there." Holley has worked with school children troubled by short attention spans, enrolled in English-as-a-second-language programs, and severely disabled with cerebral palsy, and has found that for the most part, kids are kids.

"One of the best things to do in the garden is plant potatoes," he says. "It doesn't require any fine motor skills, and digging them up again is just like a treasure hunt." All children get restless if an activity goes on too long, so he mixes outdoor gardening, talking about plants or composting, and crafts or cooking. "The favorite activity this year was making planters out of old sneakers." All children like to eat, and another project was making



COURTESY OF THE ROYAL BOTANICAL GARDENS

peanut butter and jam sandwiches from scratch, processing peanuts and strawberries. "I find that most kids have no sense of process," Holley says, and this helps children with or without disabilities understand that much of our food comes from the garden. Likewise, all the children enjoy making potpourri, because smell, like taste, is a universal pleasure.

Holley likes to say that in his program, people are as important as plants. And Betty Morgan of the **Pittsburgh Civic Garden Center** says that while plants are important to their program, behavior comes first.

Morgan's station wagon is crammed with tools, plants, pots, bags of soil, and other gardening paraphernalia as she makes her weekly rounds to client agencies. Participants are likely to greet her with queries such as "Hey, Ms. Betty, when are we going to plant our pumpkins?" Since 1987, the center has served approximately 600 socially and/or emotionally disturbed youngsters. These may be teen mothers, juvenile offenders, or children in special education schools. Morgan meets weekly with three to four groups of eight to twelve



children and agency staff for an hour of plant activities. The agency staff is trained, with the help of a 300-page activity manual, *Growing Together*, to take over the program after one year.

The program is designed to give young people and adults new skills that will increase their self-confidence and pride. Activities are aimed at providing a fun way to help clients work on their own goals for self-improvement. One 14-year-old described his personal goal as learning to “freeze out with swifter quickness.” Working with plants, explained Morgan, lessens hot-tempered youngsters’ desire to punch out the kids seated beside them.

“I always have one other goal,” she says. “To help these young people learn that they can do many new and sometimes complicated things if they will just slow down, try, and take it one step at a time. We are trying to teach life skills to a very needy population.”

Horticultural therapist Richard Sackett calls his unique program at Appalachian Hall, a private, 100-bed hospital in Asheville, North Carolina, “*The Greenhouse: A Gallery of Metaphors Facilitating Thera-*

peutic Processes.” By using plants as metaphors, he enables patients to disclose information about themselves, build rapport with other patients, and make an emotional link with the plants.

Sackett says patients always begin these exercises feeling uncertain and confused, or by resisting or scoffing, and end by exploring and discovering things about themselves, making important decisions about their lives, and sharing concern about and support for others.

At one point, patients are instructed to choose two plants to represent a relationship between themselves and a significant other. “Clancy” presents a single potted azalea with two main stems that form a “v” and explains that the plant represents both him and his wife, who though separate individuals, will always be one in their mutual affection and concern. The metaphor reveals the level of Clancy’s denial of reality, since the group already understands that his wife is close to ending the marriage. Facing up to this reality will be Clancy’s next hurdle in therapy.

Sackett conducts his forty-five-minute gar-

Opposite: Children of all abilities have enjoyed turning old sneakers into planters at the Royal Botanical Gardens in Ontario.

Above: Amy Osborne is learning responsibility, and the importance of cleanliness, at the Kluge Center.

den therapy sessions three times a week for four to eight adults whose problems include manic-depression, thought disorders such as schizophrenia and paranoia, and most commonly, depression. The goals include increasing self-esteem and the ability to accept responsibility and limits; improving social, communication, and leisure skills; and providing physical exercise.

As a companion activity to gardening, he shares “songs of the garden”—some silly, some romantic—for patients to listen to or sing along. This encourages self-expression and cooperation, and provides some playful recreation and a chance to celebrate group or individual achievements.

Many horticultural therapy programs

THE GARDEN AS A PATH TO WELLNESS

Horticultural therapy is an old art, but only a budding science. In the past few years, therapists' employers as well as leaders of the profession are encouraging them to publish research showing that working with plants makes a quantifiable difference in peoples' lives.

Throughout most of its history, horticultural therapy was seen as useful primarily with the mentally ill. In the United States, one of its earliest proponents was Dr. Benjamin Rush, a signer of the Declaration of Independence and professor of the Institute of Medicine and Clinical Practice in Philadelphia, who observed that working in a garden seemed to help reduce symptoms in one of his psychiatric patients. In 1879, the first known greenhouse for the use of mental patients was built at what is today Friends Hospital in Philadelphia.

Horticultural therapy, like the field of clinical psychology, burgeoned at the end of World War II, with the establishment of Veterans Administration hospitals. Volunteers and members of the National Council of State Garden Clubs involved returning soldiers in a variety of plant-, flower-, and garden-related projects. In the 1950s, Dr. Karl Menninger, on the staff of the Winter VA Hospital in Topeka, Kansas, was enthusiastic about patients being involved in greenhouse operations and later made such activities part of treatment for patients at the Menninger Clinic in that city. Such therapy, Menninger has said, "is one of the simple ways to make a cooperative deal with nature for a prompt reward."

The first master's degree in horticultural therapy was awarded by Michigan State University in 1955. Four years later, the use of this approach to helping the physically disabled came of age when the Institute for Rehabilitative Medicine at New York University Medical Center opened a horticultural therapy greenhouse for patients who had experienced strokes, industrial accidents, and spinal cord injuries. Now called the Rusk Institute, it opened a new 4,000-square-foot outdoor therapy garden this spring.

During the 1960s, demand grew as did the number of universities offering courses in what had become known formally as horticultural therapy. In 1973, twenty professionals in the field met in Upper Marlboro, Maryland, to form the National Council for Therapy and Rehabilitation through Horticulture. In one year the organization grew to 335 members in forty states, Canada, and England. Now known as the American Horticultural Therapy Association (AHTA), it has instituted a peer review procedure to certify qualified therapists. In addition to the typical benefits of such an organization, such as publications and an annual meeting, it sponsors a program called Horticulture Hiring the Disabled through which horticultural employers are linked with trained job applicants who have disabilities.

In spite of this long history and recent growth, horticultural therapy is not without problems and detractors. The field, like others among the occupational or activity therapies, has been criticized by other health care professionals as being too "soft" in documenting its actual outcomes. Do people involved in gardening projects really make better progress than those receiving attention or keeping busy in other ways? Being able to prove horticultural therapy's effectiveness is crucial to getting reimbursement from insurance companies, or getting funding to launch new projects.

Three years ago, an AHTA newsletter reprinted excerpts from an article from the *Journal of Rehabilitation* in which the author had found no significant impact by horticultural therapy on children with cerebral palsy when the program was conducted by a part-time volunteer. Although she acknowledged that the outcome might have been different if the program had been conducted by a trained professional, the author observed: "Despite its long and multifaceted history, little quantifiable research evidence is available to justify the use of horticultural therapy as a legitimate form of 'activity therapy.' Rather, its justification has been based on the feeling that growing things is good for people."

Steven Davis, now acting executive director of the association, ran the excerpt—flawed as the research was—to remind AHTA members that "we cannot afford professional complacency" and to underscore "our need to prove without a doubt that horticultural therapy is valid and necessary."

He believes that members have responded to this need. Editors of the association's sixth annual research journal received more manuscripts than they can handle, he said. The 1989 journal contained a scale designed to better measure the results of therapy; the 1990 journal had a special supplement on conducting horticultural research. Members are asking for more workshops and lectures on how to conduct research, and the keynote address at the 1991 meeting was "The Reimbursement Challenge of the '90s: Therapeutic Outcomes and Professional Recognition."

For too many horticultural therapists, conducting and writing up research has had to be an after-hours activity for which there was little if any direct reward. Few of them are in academic settings, where publishing is required. Two universities have dropped their degree programs—Davis contends that interest in the field peaked before the association had matured enough to steer it—so that now only Kansas State University has bachelor's or master's degree programs in the field. However, a growing number of hospitals and rehabilitation centers are encouraging their therapists to conduct and publish research, Davis says. And the association will soon publish the first textbook devoted to horticultural therapy, which he believes will encourage more courses and eventually more degree programs to be offered.

Members of other disciplines, ranging from psychology to landscape architecture and human geography, are also conducting studies that show the beneficial impact of plants on people. Research shows that we don't just imagine that plants make us feel good, but that their presence can hasten physical healing and produce physiological changes similar to those brought about by meditation or other highly relaxed states. This spring, an organization called the People-Plant Council was organized to pull together all the studies and disseminate their findings.

Says Davis: "There's a huge audience out there that's eager to use horticultural therapy, and now the association is ready to help that happen."

—Kathleen Fisher, Editor

For more information on the People-Plant Council, write Diane Relf, Coordinator, Department of Horticulture, Virginia Polytechnic Institute and State University, Blacksburg, VA 24061-0327.



not only provide the indirect benefits of physical exercise, stress reduction, or better self-image, but also teach a job skill that may pave the way to independent living by a person with mental retardation or a former prisoner.

La Paloma Greenhouse in Corrales, New Mexico is a project of the Association of Retarded Citizens of New Mexico. Sid Taylor directs this sheltered workshop for adults with mental retardation, most of whom also have mental illness and/or drug dependency. Some are already able to live independently; others will probably always live in group homes or with relatives. The program is intended to increase the independence and improve the lifestyles of those in both groups, and their ability to interact with other people. Every two weeks participants receive a salary, based on their ability and productivity. It's a time that's eagerly awaited; receiving money for work is a big esteem booster.

Participants learn to grow, sell, and deliver plants; tasks are assigned according to ability level. Watering is considered a higher level skill. Participants are told to

water bedding plants from each side of a wide table, down the center of which is a string to help insure that plants won't be overlooked or watered twice.

In addition to the bedding plants, participants grow poinsettias for Christmas and geraniums in the summer in the two greenhouses, and sell them wholesale to churches and other institutions as well as retail to the public.

Through the horticultural training component of the **Choctaw Vocational Rehabilitation Project** in Philadelphia, Mississippi, members of the Mississippi Band of Choctaw Indians with various disabilities are becoming wage earners in mainstream industry.

The tribal council and Chief Philip Martin established the training and assistance program in 1987 and have kept the low-budget effort going through innovation and ingenuity. Tender care keeps old equipment in working condition, and small grants supplement the income from plant and produce sales.

Classroom work emphasizes soil preparation, planting, cultivation, and harvesting. Clients get hands-on experience in the forty-

Justine Archunde and Freddie Greenier work on La Paloma's new greenhouse, completed in 1990.

by-fifty-foot greenhouse, and on four acres of blueberries, one acre of blackberries, and twelve acres of vegetable crops. In the greenhouse, clients propagate ivy, wandering Jew, and ferns for hanging baskets, and also grow bedding plants, including petunias, coleus, salvias, marigolds, periwinkle, and zinnias. Eventually these will beautify the tribal offices at Pearl River and the eight small communities of the Mississippi Choctaws.

The berries, Southern field peas, corn, greens, beets, cucumbers, and other vegetables are marketed, with any surplus being distributed to needy members of the community.

Clients are also taught interview skills and goal setting. They usually remain in the program for a year, although some have obtained jobs within three months after enrolling. Project staff keep in touch with the client and employer for at least sixty days.



Deleata Sutton works in a poinsettia-filled greenhouse at the La Paloma program.

In Canon City, Colorado, the **Pueblo Community College** offers thirty hours of college credit to inmates at the **Colorado Women's Correctional Facility** who are enrolled in Plant Sciences Technology. The two-semester vocational training course includes basic horticulture, landscaping principles, floral design, and hands-on greenhouse experience.

Horticulture instructor David Hackenberry launched this program in June 1989. Of the first three groups—about fifteen new students enroll each semester—roughly a quarter have completed the course; early parole or transfer to another facility lowers the percentage of graduates.

In addition to showing the students a path toward a marketable skill or enjoyable hobby, the program provides some immediate rewards: bedding plants to beautify the grounds and vegetables and herbs for the facility kitchen. The bright

flowers, the delicious produce, and fresh air offer a bit of positive reinforcement in a system that too often rewards only negative behavior.

Other horticultural therapy projects draw together diverse segments of the population.

Throughout the United States, there are thirty-one men's garden clubs involved in partnerships with forty-seven institutions; 200 club members serve as garden advisors to an estimated 1,600 young persons and adults. This arrangement is exemplified by the **Greater Kansas City Men's Garden Club's Gardening from the Heart** program, which sponsors partnerships with six institutions. At the **Ozanam Home for Boys**, there is a greenhouse, raised bed gardens, and a seventy-tree orchard. Horticultural therapist Mary Craddock is in charge of the program, in which an average of thirty-five youths participate, with five garden club members

serving as advisors. Both boys and girls participate in Gardening from the Heart programs at the **Crittendon Center**, where horticultural therapist Linda Bogner is in charge of the greenhouse, and at the **Spoford Home**.

At **Villa Saint Joseph**, a skilled nursing care facility in nearby Overland Park, Kansas, wheelchair-bound residents garden in containers on windowsills and the patio. At **Kingswood Manor** retirement home, program participants are able to raise plants in outdoor gardens. Ten adults work in outdoor gardens at the **Swope Parkway Mental Health Day Care Center**.

In Nashville, Tennessee, an even more unlikely partnership has formed between members of the **Tennessee Federation of Garden Clubs** and prisoners at the **Middle Tennessee Reception Center**.

In 1984 Jeffrey T. Philpott, vocational instructor at the center, where inmates are screened for assignment to other penal institutions, initiated a program to teach marketable horticultural skills.

At first, they grew only greenhouse tomatoes to sell to other prisons. In 1986, they added bedding plants to landscape the center grounds, although flowers seemed out of character at a prison. But visitors soon began praising the warden for the brilliant colors and the appearance of the grounds, says Philpott. "Wardens from other institutions soon noticed the difference plants could make." Plants not only beautify but also reduce the stress level of an environment—clearly a benefit in a prison facility.

In 1987, members of the **District II, Tennessee Federation of Garden Clubs**, visited the center and were so impressed that they volunteered to help market the produce, help graduates with job interviews, and expand the program to other prison facilities.

Each month the garden club organizes a program with speakers on topics ranging from the spiritual heritage of the land and Nashville's historic gardens to interview training and nursery management to bonsai and orchids and birds and butterflies. More active programs have included making flower arrangements, wreaths, and bird houses to sell or use at the center. Inmates arranging flowers? That's only the beginning.

"When we were planning the **Mother's Day** program, May baskets came to mind," said Charlotte C. Branstetter, garden therapy chair of the federation. "Can you see prisoners making May baskets? We thought they might be insulted, but we didn't have any better idea, so we decided to try

RESOURCES

For more information on the institution/club partnerships sponsored by the Men's Garden Clubs of America, write to Program Chairman Lloyd J. Craft, 811 North Santa Fe Trail, Kansas City, MO 64145.

For more information on the availability of horticultural therapy programs in your area, write the American Horticultural Therapy Association, 9220 Wightman Road, Suite 300, Gaithersburg, MD 20879, or the Canadian Horticultural Therapy Association, P.O. Box 399, Hamilton, ON K2C 3W7, Canada.

it." This unlikely program received the most enthusiastic response of any they had done.

The relationship has gone beyond horticulture. The garden club makes sure that holidays and special occasions such as graduations are celebrated in style. The giant hamburger feed was one of the most popular events of the year. "At a recent graduation we served banana splits, and some of the inmates ate three," Branstetter said.

The benefits spill over into the community. Nonprofit organizations buy the bedding plants to beautify schools, hospitals, libraries, churches, post offices, and public rights-of-way. Inmates landscaped one intersection in Nashville with 6,000 bulbs. Recently, the Nashville Metro Parks Department and the Department of Transportation agreed to a program through which inmates will grow and place plants in Davidson County's interstate interchanges.

Since Philpott began it seven years ago, more than 100 prisoners have completed the course, learning such skills as soil testing, crop and bedding plant production, composting, greenhouse environmental control, plant propagation, and fertilizer application. Students have two hours of classroom instruction in the morning, and in the afternoon, gather at the greenhouse to put what they've learned into action. The program is likely to be imitated elsewhere: it has already won five state and national awards.

Thelma E. Honey, a free-lance writer who lives in Albuquerque, New Mexico, is a former board member of the American Horticultural Therapy Association. In the October issue she will describe programs for accident victims, veterans, and senior citizens, and tell readers how to become volunteers or help start a therapy program.

A Little Night Music From page 15

Tuberose always seemed to turn up at funerals. They were as conspicuous as calla lilies at gravesites. As a result they were fraught with negative associations.

Now that floral designers have turned their attention to sully the image of chrysanthemums, it seems as though tuberose could safely accomplish a comeback. Perfumers have never forgotten the flower. The essence of tuberose is often discreetly added to the formulation of the world's premiere perfumes. Chloë, for instance, leans heavily on the tuberose scent. Perfumers extract the attars of tuberose and jasmine by the painstaking process of enfleurage, in which the blossoms slowly impart their aroma into racks of fat. Tuberose provide the world's most expensive essential oil, selling for \$2,000 a pound.

For a very small fraction of that fee, you can grow your own tuberose. The bulbs are no longer readily available at local garden centers, but they can be acquired through many mail-order nurseries. Plant the knotty tubers in mid-April, one inch below the soil's surface, allowing them to sink their roots into rich soil. It's essential to keep the bulbs lightly moist while sprouting, and they prefer 55-degree nighttime temperatures while sending up their initial shoots.

Tuberose are not bothered by many insects. But red spider mites can become a tremendous problem, and the pale, grasslike leaves camouflage the telltale yellow mottling that accompanies those tiny critters. Keep an eye out for their fragile webs during the day and your nose on call to catch the intense aroma of the blossoms after dark.

Tovah Martin is staff horticulturist at Logee's Greenhouses. Her recent books, Moments in the Garden and The Essence of Paradise, will be published this fall.

SOURCES

Henrietta's Nursery, 1345 North Browley Street, Fresno, CA 93722, (209) 275-2166. Catalog \$1. *Hylocereus undatus*.

Logee's Greenhouses, 141 North Street, Danielson, CT 06239, (203) 774-8038. Catalog \$3. *Brugmansia suaveolens*, *Cestrum diurnum*, *C. nocturnum*, *Coffea arabica*, *Epiphyllum oxypetalum*.

Wauhsara Gardens, Route 2, Box 570, Plainfield, WI 54966, (715) 335-4462. *Polianthes tuberosa*.

The Fourth Great Gardening Conference

at the
Civic Garden Centre
in Toronto

777 Lawrence Ave E
North York, Ontario
M3C 1P2
(416) 445-1552

October 18,19,20
\$187.25 Canadian

Speakers include:

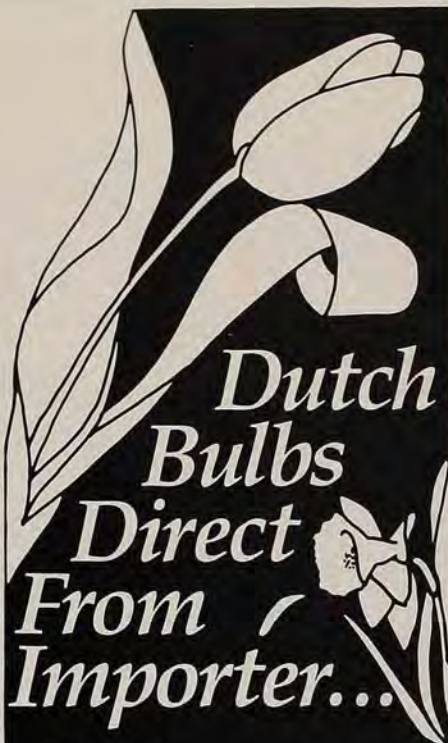
*Jorn Copijn
Edith Eddleman
Michael Laurie
Julie Moir Messervy
Cornelia Oberlander
Allen Paterson
Marco Polo Stufano*

Conference Dinners:
Friday, October 18, at the
Civic Garden Centre

Sam Abell
\$39.50 Canadian

Saturday, October 19, at
the Prince Hotel
David Wheeler
\$40.50 Canadian

Accommodation has
been arranged for
conference delegates at
the Inn on the Park.
Call (416) 446 3326 and
advise Reservations that
you are with the
Civic Garden Centre



Dutch Bulbs Direct From Importer...

Buy where the professionals buy!

Order the highest quality flower bulbs at the lowest prices from Van Engelen's Wholesale Price List for fall planting.

Send for your free catalog featuring:

- | | |
|----------------|---------------|
| * Tulips | * Hyacinths |
| * Daffodils | * Iris |
| * Exotic Bulbs | * Muscari |
| * Crocus | * Paperwhites |
| * Lilies | * Amaryllis |

Special Offer:

100 Mammoth Darwin Hybrid Tulips

Top size, as large as 6" across, multi-colored tulips. Shipped by UPS for fall planting . . . Only \$19.95.

- ☐ Please send me a free catalog.
☐ Please send me 100 Mammoth Darwin Hybrid Tulips for \$19.95.
☐ Payment enclosed: _____
☐ Charge to: ☐ Master Card ☐ VISA

Acct. No.: _____

Exp. Date: _____

Name: _____

Mailing Address: _____

Shipping Address: _____

City: _____

State: _____ Zip: _____

Phone Number: _____

Van Engelen Inc.

Stillbrook Farm

313 Maple Street, Litchfield, CT 06759
(203) 567-8734



CLASSIFIEDS

Classified Ad Rates: \$1 per word; minimum \$20 per insertion. 10 percent discount for three consecutive ads using same copy, provided each insertion meets the \$20 minimum after taking discount. Copy must be received on the 20th day of the month three months prior to publication date. Send orders to: American Horticultural Society Advertising Department, 7931 East Boulevard Drive, Alexandria, VA 22308, or call (703) 768-5700 or (800) 777-7931.

AFRICAN VIOLETS

America's Finest—177 best violets and gesneriads. Color Catalog and Growing "Tips" 50 cents. FISCHER GREENHOUSES, Box H, Linwood, NJ 08221.

THE AVANT GARDENER

DIFFERENT, EXCITING, GREAT FUN TO READ! Subscribe to the unique news service that brings you the most useful information on new plants, products, techniques—with sources. 23rd year. Curious? Sample copy \$1. Serious? \$12 full year (reg. \$18). THE AVANT GARDENER, P.O. Box 489M, New York, NY 10028.

AZALEAS AND RHODODENDRONS

SHIPPED SPRING, SUMMER, FALL!—Northern grown and acclimated Azaleas and Rhododendrons Proven Hardy Here! 'Landscapable sizes.' Two-year catalog subscription: \$2 (deductible). CARLSON'S GARDENS, Box 305-AHC, South Salem, NY 10590. (914) 763-5958.

BOOKS

1985 Edition EXOTICA 4, with 16,300 photos, 405 in color. 2,600 pages in 2 volumes, with Addenda of 1,000 updates by Dr. A.B. Graf, \$187. TROPICA 3, revised 1986, 7,000 color photos, now 1,156 pages, \$125. Exotic House Plants, 1,200 photos, \$8.95. Shipping additional. Circulars gladly sent. ROEHRS COMPANY, Box 125, E. Rutherford, NJ 07073.

CAROL DIDRICK'S LITTLE RED BOOK ON OLD GARDEN ROSES. Where to get them and where to plant them. An introduction to OLD GARDEN ROSES. Each book signed and numbered. Send \$14.95 postpaid. CAROL DIDRICK, 1535 Willard Dr., Orrville, OH 44667. *Please add \$2 for out-of-country mailing.

Books Available Horticulture, Botany, Landscaping, Flowers, Fruits, Herbs, Rural Matters, published 1550-1990. Catalog free. POMONA, Rockton, ON, Canada L0R 1X0.

BROMELIADS

TILLANDSIAS GROW WITHOUT SOIL and they all flower. LARGE SELECTION AVAILABLE. For the finest quality in tillandsias call HOLLADAY JUNGLE, P.O. Box 5727B, Fresno, CA 93755. (209) 229-9858.

BULBS

Dutch bulbs for fall planting. 12CM Tulips, DN1 Daffodils, Hyacinths and Miscellaneous. Catalog Free. Paula Parker DBA, Mary Matrisson van Schaik, IMPORTED DUTCH BULBS, P.O. Box 32AH, Cavendish, VT 05142. (802) 226-7653.

CACTI AND SUCCULENTS

Fast Service—Moderate prices, rare, unusual or "common plants." Lists \$1 (refundable). LOEHMAN'S CACTUS, Box 871, Paramount, CA 90723.

FLOWERING JUNGLE CACTI catalog for 1991 now available. 179 color photos of Orchid Cacti (Epiphyllums), Rattail Cacti, Hoyas, Haworthias, Xmas/Easter Cacti, more! 74-page plant/cactus bookshop catalog, all only \$2. Hurry! RAINBOW GARDENS, 1444(AH) Taylor St., Vista, CA 92084.

CARNIVOROUS PLANTS

Carnivorous (Insectivorous) Plants, seeds, supplies, and books. Color brochure free. PETER PAULS NURSERIES, Canandaigua, NY 14424.

DAYLILIES

AWARD-WINNING DAYLILIES—direct from grower! Beautiful catalog featuring 108 color illustrations: \$3 (\$5 coupon included). DAYLILY DISCOUNTERS, Rt. 2, Box 24AH, Alachua, FL 32615.

DWARF CONIFERS AND LAURELS

Send for our 50-page Catalog No. 8 (\$2, refundable on first order) describing over 200 types of dwarf conifers and hybrid kalmias by size, shape, color, and texture. Available via UPS in 1, 2, and 3 gal. container sizes. WASHINGTON EVERGREEN NURSERY, P.O. Box 388AH, Leicester, NC 28748.

FLOWER ARRANGING

LEARN FLOWER ARRANGING FOR FUN OR PROFIT! Home Study Course shows you how! Write for FREE Booklet. LIFETIME CAREER SCHOOLS, Dept. B805, 101 Harrison St., Archbald, PA 18403.

GARDEN ACCESSORIES

COMPLETE MIST PROPAGATION SYSTEMS. New advanced "MISTOSTAT" gets phenomenal results. Free brochures. AQUAMONITOR, Dept. 5, Box 327, Huntington, NY 11743. (516) 427-5664.

FINE GARDEN ORNAMENTS, sculpture, fountains, urns, terra cotta, teak, iron and aluminum, English lead and stonework. Catalog \$6. ERKINS STUDIOS, 174 Bellevue Ave., Newport, RI 02840. (401) 849-2660.

AHS now carries a full line of unique compost bins, tumblers, and accessories—all on display in our National Compost Demonstration Park—and all significantly discounted (for members only). Call for a free price sheet: American Horticultural Society, (800) 777-7931.

HELP WANTED

We at the American Horticultural Society are often asked to refer individuals for significant horticultural positions around the country. We are not in a position to offer full placement services to candidates or employers. However, as

a service to our members—jobseekers and employers alike—we would be very glad to receive résumés and cover letters of individuals seeking job changes and employers seeking candidates. All responsibility for checking references and determining the appropriateness of both position and candidate rests with the individuals. AHS's participation in this activity is only to serve as a connecting point for members of the Society. Inquiries and informational materials should be sent to: Horticultural Employment, American Horticultural Society, 7931 East Boulevard Dr., Alexandria, VA 22308.

HOUSE PLANTS

ORCHIDS, GESNERIADS, BEGONIAS, CACTI & SUCCULENTS. Visitors welcome. 1990-1991 catalog \$2. LAURAY OF SALISBURY, 432 Undermountain Rd., Salisbury, CT 06068. (203) 435-2263.

MINIATURE ROSES

Award-winning varieties from America's top miniature rose breeder and grower. Over 75 varieties for garden or container growing. Send for FREE color catalog: NOR'EAST MINIA-TURE ROSES, INC., Box 307AC, Rowley, MA 01969. Miniature roses are our only business and we do it right!

ORCHID SUPPLY

User Friendly! Teas orchid and exotic plant supply catalog. Send \$2 to TEAS NURSERY COMPANY, INC., P.O. Box 1603, Bellaire, TX 77402-1603. Or call (800) 446-7723 M - F 9 a.m. to 6 p.m.

PLANTS (UNUSUAL)

OVER 1,000 KINDS OF CHOICE & AFFORD-ABLE PLANTS. Outstanding Ornamentals, American Natives, Perennials, Rare Conifers, Pre-Bonsai, Wildlife Plants, much more. Descriptive catalog \$3. FORESTFARM, 990 Tetherah, Williams, OR 97544.

EXOTIC Ever-changing Earth Stars, Staghorns, Bromeliads, Philodendrons, Rhipsalis, plus. 64-page color catalog—\$5. SOUTHERN EX-POSURE, 35 Minor, Dept. AH, Beaumont, TX 77702.

Rare and unusual succulents. Free plant list. NORTHRIDGE GARDENS, 9821 White Oak Ave., Dept. A, Northridge, CA 91325.

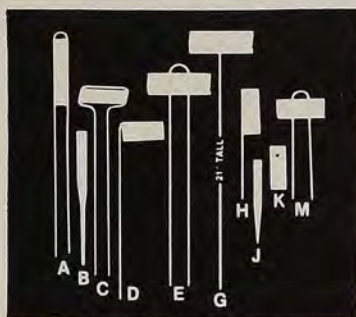
DISTINCTIVE PERENNIALS & OLD ROSES—Specializing in uncommon Japanese and Siberian Irises, Lilioms, New Hostas, Daylilies, and Old Garden Roses. Simply "The Best Cultivars"! FREE Descriptive catalog. YORK HILL FARM, 271 North Haverhill Rd., Kensington, NH 03833.

ROSES

HORTICO ROSES: Over 600 varieties: Antique roses; new Austin English Garden Roses; hardy Canadian Explorer roses; HT's; FL's; climbers; old garden varieties; thornless roses from Har-vey Davidson; Peter Beales English garden roses; show roses from Astor Perry; Bruce Rennie's new miniature varieties; and many others in our excellent stock selection. Catalog \$2. HOR-TICO INC., 723 Robson Rd., Waterdown, ON L0R 2H1. (416) 689-6984 or 689-3002, Fax (416) 689-6566.

SEEDS

ADENIUM OBESUM. Pink flowers. Seeds available \$1 each plus addressed stamped en-velope. SCHIMMEL, 5249 N.E. 18 Ave., Pom-pano, FL 33064.



THE PERMANENT METAL GARDEN LABEL

A—Hairpin Style Markers	30 For \$10.00
B—Plant or Shrub Labels	100 For \$ 7.10
C—Cap Style Markers	30 For \$10.40
D—Swinging Style Markers	30 For \$ 8.60
E—Rose Markers	30 For \$ 9.50
F—Tall Display Markers	30 For \$13.05
G—Tall Single Staff Markers	30 For \$10.30
H—Flag Style Markers	30 For \$ 8.30
J—Small Plant Labels	100 For \$ 6.85
K—Tie-On Labels	100 For \$10.90
M—Miniature Markers	30 For \$ 8.10

**Special Quantity Prices Available
Prices Include Prepaid Postage**

INTRODUCTORY OFFER

1 Each: A, B, C, D, E, H, J and K With
Waterproof Crayon, Only \$ 3.00

PAW PAW EVERLAST LABEL COMPANY

P.O. Box 93-AH
Paw Paw, Michigan, 49079-0093

Owen Farms

TREES • SHRUBS • PERENNIALS

2951 Curve-Nankipoo Road
Route #3, Box #158-A
Ripley, Tennessee 38063-9420

Catalog \$2.00

COMPOSTING?

Now's the time to start!

AHS now carries a full line of unique compost bins, tumblers, and accessories—all demonstrated in our National Compost Demonstration Park—and all sig-nificantly discounted (for members only).

Call or write for a free price sheet:
American Horticultural Society, c/o Compost Ser-vices, 7931 East Boulevard Drive, Alexandria, VA 22308, (800) 777-7931.

Award An AHS Medal At Your Next Plant Show



The American Horticultural Society offers the Bole Memorial Medals, designed by Victor Schreckengost, a nationally known sculptor and industrial designer. These medals are awarded to individuals for horticultural excellence at regional shows put on by plant societies who are members of AHS. The gold medal requires 15 species or cultivars of blue ribbon quality; the silver medal 8 species or cultivars. These need not be all of the same species. The medal measures one and a half inches across with a ring attached so it can be worn on a chain or ribbon. The date and the recipient's name can be engraved on the back.

Requests for applications, which must be made three months in advance of the event, can be obtained from Mrs. Benjamin P. Bole, Jr., Chairman, 1 Bratenahl Place, Cleveland, OH 44108.

PRONUNCIATIONS

Adiantum capillus-veneris uh-dee-AN-tum
kuh-PIL-us-VEN-er-iss
A. caudatum A. kaw-DAY-tum
A. pedatum A. peh-DAY-tum
Ajania uh-JANE-ee-uh
A. pacifica A. puh-SIF-ee-kuh
Argyranthemum are-guy-RAN-thee-mum
A. frutescens A. frew-TES-enz
Artemisia are-teh-MIZ-ee-uh
Asplenium bulbiferum as-PLÉE-nee-um
bulb-IF-er-um
A. kenzoi A. KEN-zoy
A. marianum A. mar-ee-AY-num
A. musifolium A. mew-sih-FOE-lee-um
Brugmansia suaveolens
brewg-MAN-see-uh swav-ee-OH-lenz
Cestrum diurnum SES-trum dye-UR-num
C. nocturnum C. nok-TURN-um
Chrysanthemum krih-SAN-the-mum
C. arcticum C. ARK-tih-kum
C. balsamita var. *tanacetoides* C.
bal-SAM-it-uh var. tan-uh-see-TOY-deez
C. carinatum C. kar-ih-NAY-tum
C. coccineum C. kok-SIN-ee-um
C. coronarium C. kor-oh-NAIR-ee-um
C. frutescens C. frew-TES-enz
C. leucanthemum C. lew-KAN-thee-mum
C. maximum C. MAKs-ih-mum
C. x morifolium C. x more-ih-FOE-lee-um
C. nipponicum C. nih-PON-ih-kum
C. pacificum C. puh-SIF-ee-kuh
C. parthenium C. par-THEE-nee-um
C. x rubellum C. x rew-BEL-um
C. segetum C. SEJ-eh-tum
C. serotinum C. ser-oh-TEE-num
C. x superbum C. x sue-PER-bum
C. uliginosum C. yew-lih-jih-NO-sum
C. weyrichii C. way-RIK-ee-eye
C. yezoense C. yez-oh-EN-see
C. zawadskii C. zuh-WAD-skee-eye
C. zawadskii var. *latilobum* C.
zuh-WAD-skee-eye var. lat-ih-LOBE-um
Coffea arabica KOF-ee-uh uh-RAB-ih-kuh
Ctenitis solanei ten-EYE-tis so-LAN-ee-eye
Cyathea australis sy-ATH-ee-uh
aw-STRAY-lis
Cynoglossum sin-oh-GLOS-um
Cyrtomium sir-TOE-mee-um
Datura duh-TOUR-uh
Davidia involucrata
duh-VID-ee-uh in-vol-yew-KRAY-tuh
Dendranthema den-DRAN-thee-muh
D. arcticum D. ARK-tih-kum
D. x grandiflorum
D. x grand-ih-FLOR-um



DICK KEEN

Chrysanthemum frutescens, now
Argyranthemum frutescens, is also
called the marguerite or Paris daisy.

D. weyrichii D. way-RIK-ee-eye
D. yezoense D. yez-oh-EN-see
Dennstaedtia punctilobula den-STET-ee-uh
punk-tee-LOB-ew-luh
Dryopteris marginalis dry-OP-ter-iss
mar-jih-NAY-lis
D. wallichiana D. wal-ik-ee-AY-nuh
Epiphyllum oxypetalum ep-ih-FIL-um
oks-ee-PET-al-um
Ginkgo biloba GING-ko by-LOW-buh
Gymnocarpium dryopteris
jim-no-KAR-pee-um dry-OP-ter-iss
Hedera helix HEAD-er-uh HE-lik
Hemionitis arifolia hem-ee-oh-NY-tis
are-ih-FOE-lee-uh
Hylocereus undatus hi-low-SEE-ree-us
un-DAH-tus
Hypolepis punctata hi-POL-eh-pis
punk-TAY-tuh
Leucanthemella serotina
lew-kan-the-MEL-luh ser-oh-TEE-nuh
Leucanthemopsis lew-kan-thee-MOP-sis
Leucanthemum x superbum
lew-KAN-thee-mum x sue-PER-bum
L. vulgare L. vul-GAY-ree
Marsilea vestita mar-SIL-ee-uh ves-TYE-tuh
Matricaria mat-rih-KAY-ree-uh
Nephrolepis oblitterafolia
nee-FROL-eh-pis ob-lit-er-uh-FOE-lee-uh
N. pectinata N. pek-tih-NAY-tuh
Nicotiana nih-ko-shee-AY-nuh
Nipponanthemum nip-pon-AN-thee-mum

N. nipponicum N. nih-PON-ih-kum
Oenothera acaulis ee-no-THEE-ruh
uh-KAUL-iss
O. argillicola O. are-jil-lih-KOE-luh
O. biennis O. by-EN-iss
O. caespitosa O. see-spih-TOE-suh
O. deltoides O. del-TOY-deez
O. elata O. ee-LAY-tuh
O. erythrosepala O. ee-rith-ro-SEE-puh-luh
O. fruticosa O. froo-tih-KO-suh
O. fruticosa subsp. *fruticosa*
O. froo-tih-KO-suh subsp. froo-tih-KO-suh
O. fruticosa subsp. *glauca*
O. froo-tih-KO-suh subsp. GLAH-kuh
O. glazioviana O. glaz-ee-oh-vee-AY-nuh
O. hookeri O. HOOK-er-eye
O. lamarckiana O. luh-mar-ke-AY-nuh
O. macrocarpa O. mak-ro-KAR-puh
O. missouriensis O. mis-sur-EN-sis
O. missouriensis O. mis-sur-ee-EN-sis
O. pallida O. PAL-ih-duh
O. speciosa O. spee-see-OH-suh
O. tetragona O. teh-trah-GO-nuh
Osmunda regalis os-MUN-duh ree-GAY-lis
Parthenocissus tricuspidata
par-then-oh-SIS-us try-kus-pih-DAY-tuh
Penstemon smallii PEN-steh-mon
SMALL-ee-eye
Photinopteris speciosa foe-tin-OP-ter-iss
spee-see-OH-suh
Phyllitis scolopendrium fih-LYE-tis
sko-lo-PEND-ree-um
Platynerium bifurcatum plat-ih-SAIR-ee-um
by-fur-KAY-tum
P. veitchii P. VEECH-ee-eye
Platycodon plat-ih-KOE-don
Polianthes tuberosa pol-ee-AN-theez
too-beh-ROE-suh
Polypodium aureum pol-ee-POE-dee-um
ARE-ee-um
Polystichum acrostichoides po-LIS-tih-kum
uh-kros-tih-KOY-deez
Portulaca oleracea por-tew-LAK-uh
oh-leh-RAH-see-uh
Pteris TEE-ris
Pyrethrum py-REE-thrum
P. roseum P. ROSE-ee-um
Salvinia minima sal-VEEN-ee-uh MIN-ih-muh
Sinningia speciosa sih-NIN-jee-uh
spee-see-OH-suh
Tanacetum tan-uh-SEE-tum
T. balsamita var. *tanacetoides*
T. bal-SAM-it-uh var. tan-uh-see-TOY-deez
Trichomanes petersii trih-ko-MAY-nee
PEE-ter-see-eye



PETER'S MOUNTAIN MALLOW
Iliamna corei
Virginia, U.S.A.
Carol S. Happ, Artist

AMERICAN ENDANGERED WILDFLOWERS

PAINTINGS

CAROL S. HAPP

AMERICAN HORTICULTURAL SOCIETY

RIVER FARM • ALEXANDRIA, VIRGINIA

PETER'S MOUNTAIN MALLOW (*Iliamna corei*) exists today as a single population of four plants near the summit of Peter's Mountain in Virginia, now owned and protected by the Nature Conservancy. A perennial twenty to thirty-six inches tall, its hollyhock-shaped rose or light pink flowers are one to two inches across and appear in late July and August. It has been listed as endangered since 1986.

OHIO ARTIST CAROL HAPP became fascinated with American endangered wildflowers after reading Dr. Robert H. Mohlenbroch's book, *Where Have All the Wildflowers Gone?*, and began to specialize in painting them. She prefers to depict them in their natural settings, and uses thin glazing coats of various oil colors mixed in a beeswax medium to achieve her effects of color, light, and shade.

THROUGH AUGUST 24, an exhibit of Happ's works will hang in the main headquarters building of the American Horticultural Society at River Farm outside Alexandria, Virginia. The hours are 8:30 a.m. to 5 p.m. weekdays. There is no admission charge.

A POSTER commemorating the exhibit and honoring Peter's Mountain mallow as a symbol of all of America's endangered native plants is available through the American Horticultural Society. The poster is twenty-one inches high by nineteen inches wide and printed on heavy, glossy stock.

TO ORDER: Send \$15.00 plus \$3.75 for shipping and handling to: Mallow Poster, American Horticultural Society, 7931 East Boulevard Drive, Alexandria, VA 22308.

WILDFLOWER POSTER



Is Something Missing From Your Garden?

Is your garden missing jewel-like flowers floating on a shimmering water surface and the darting brilliance of goldfish? Are you missing the melodic sounds of water spilling from a fountain, vessel or waterfall?

What you need in your garden is a water lily pool. A water lily pool is a garden whose plants like damp to very wet feet. Fish and frogs like to live there and butterflies will like your garden better than ever. A water garden is simply

one of the most satisfying forms of gardening. If you haven't one, you are missing a great deal of satisfaction from your garden.

Let Lilypons and TETRA POND help you to get started today by ordering one of our durable TETRA POND 32 mil, flexible 2 ply PVC pool liners. So easy to install and maintain you will ask yourself why you waited so long to begin this adventure.

Choose from the seven sizes listed (sizes are approximate, for depth 1½' to 2' in your own design.):

- | | | | |
|---|-------|--|-------|
| <input type="checkbox"/> Lilypons water gardening catalogue subscription..... | \$ 5 | <input type="checkbox"/> 8' x 13' liner makes 4' x 8' pool | \$109 |
| <input type="checkbox"/> 10' x 16' liner makes 6' x 12' pool..... | \$159 | <input type="checkbox"/> 13' x 13' liner makes 9' x 9' pool..... | \$179 |
| <input type="checkbox"/> 13' x 20' liner makes 9' x 16' pool..... | \$259 | <input type="checkbox"/> 16' x 23' liner makes 13' x 19' pool..... | \$329 |
| <input type="checkbox"/> 20' x 26' liner makes 16' x 22' pool..... | \$479 | <input type="checkbox"/> 23' x 30' liner makes 19' x 26' pool..... | \$569 |

Use your personal check or circle credit card: AE CB CH DC MC VS.

Card Number: _____ Exp. Date _____

Name _____ Address _____

City _____ State _____ Zip _____ Phone () _____

Catalogue free with liner order. California (6%), Maryland (5%) and Texas (7%) residents please add sales tax.

Lilypons Water Gardens

Dept. 1526
P.O. Box 10
Buckeystown, Maryland 21717-0010
(301) 874-5133 Washington Local 428-0686

Suite 1526
P.O. Box 1130
Thermal, California 92274-1130

Dept. 1526
P.O. Box 188
Brookshire, Texas 77423-0188
(713) 934-8525 Houston Local 391-0076