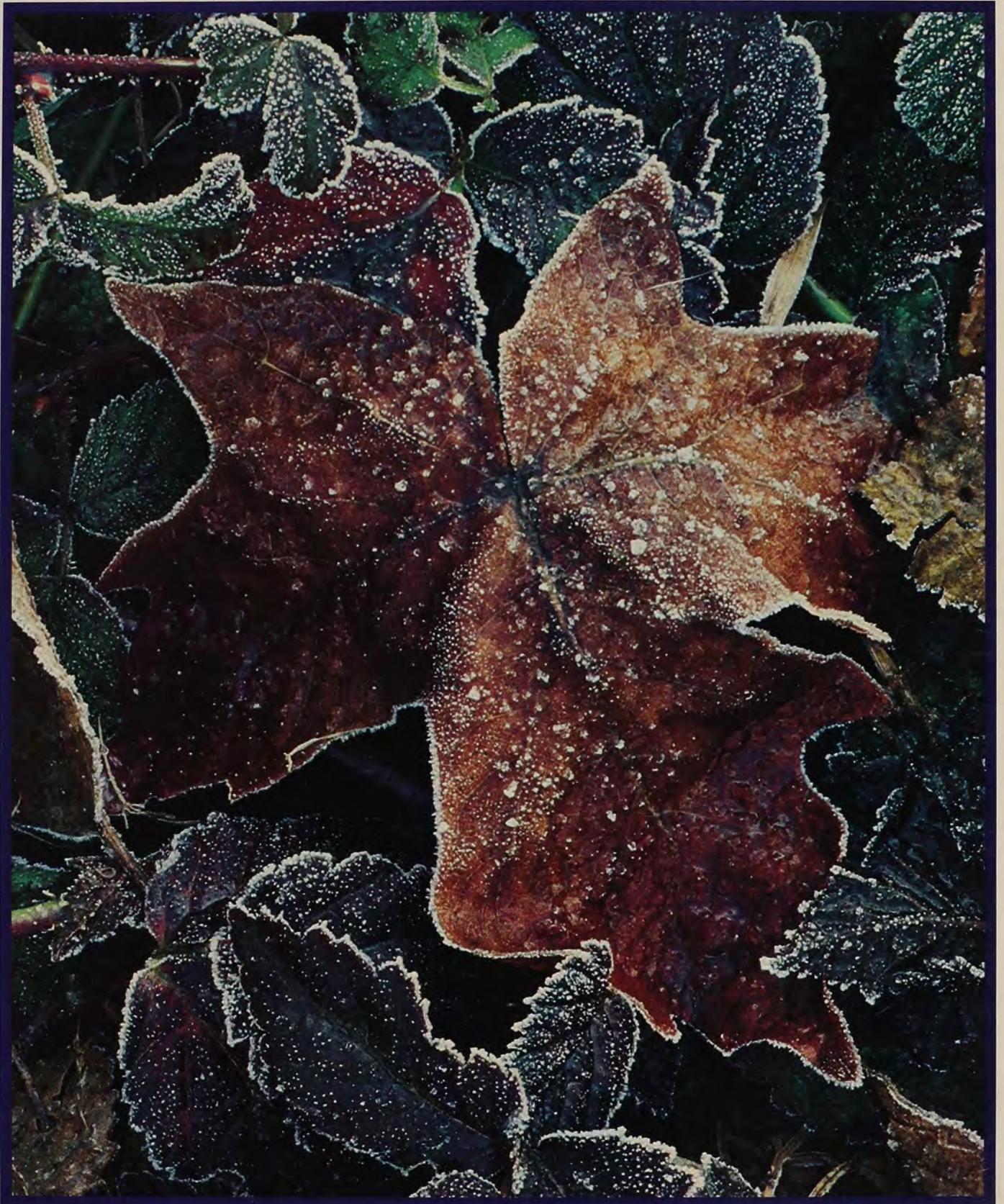


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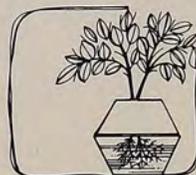
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ON THE COVER: Frost on a maple leaf photographed near Oakville, Washington. Photograph by Pat O'Hara.

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LESSONS WE CAN LEARN FROM CHELSEA

In retrospect, the Chelsea Flower Show emerges as the quintessence of the distinctive qualities of English gardens. The enjoyment of that perfection is not diminished by the lingering envy left in the mind of this American visitor. Perfect flowers, distinguished landscapes, variety of plant forms and nature's biological clocks adjusted to the plantsman's timetable are spectacles to please any garden enthusiast.

To delight the designer's eye were harmonious compositions where texture and tone of small leaved plants were complimented by bold accents of *Gunnera yar-ricata*, *Rheum palmatum* 'Bowles Crimson' or cultivars of *Phormium*. Subtle color ranges of grey and cream foliaged plants, ballotas and glauciums were accented by white and chartreuse flowers and foliage. Most striking of all were the sophisticated monochromatic color schemes where plums and russets from the red spectrum successfully muted the brilliance of azaleas and rhododendrons. Even poinsettias gained new distinction displayed with calceolarias and red and orange crotons.

I was pleased to see the repetition of form and color, the respect for scale, the skillfully arranged plant borders, the contrasts of light and dark foliage at Chelsea. The careful balance of bold accent plants against those of delicate foliage were composed with an artist's eye. Although one becomes accustomed to such landscaping delights in British gardens such as Sissinghurst with its white garden, the lovely Hidcote and Wisley's fine display, the Chelsea Show, with its closely massed exhibits, brings the skill of the British horticulturists and designers into sharp focus.

Many garden components such as these can well be adapted to America. Indeed, now that gardens are smaller, vistas are often viewed from house windows and beauty is desirable at every season, Americans would find new delights in gardens designed for color and plant form. Admittedly, such a plan is easier said than



done, for no matter how suitable these plants are to climatic conditions here, they are not to be found in our nursery catalogs.

Travel America and all too often one sees beautifully landscaped plans marred by commonplace plant material. In this country in spring, nature's lovely variety translates to an endless repetition of such unrelated shrub forms as abelias, forsythia and clashing hues of azaleas and rhododendrons unhappily placed in mulches of bark or gravel. And, to the designer's anguish, often bordered with 'King Alfred' daffodils. Have gardeners been oversold on a spring limited to mass produced container grown products, or summers of market pack petunias, marigolds, impatiens and zinnias, or autumns of pyracanthas, chrysanthemums and ageratums? Flower arrangers are blessed with exotics of all kinds —gorgeous *Protea caffra* and *Strelitzia reginae* from South Africa, aroids of all kinds from Hawaii, lilies and narcissus from Israel. The abundance of house plants is also amazing. Why then are unusual plants for gardens disappearing from the nursery trade? Should there not be a

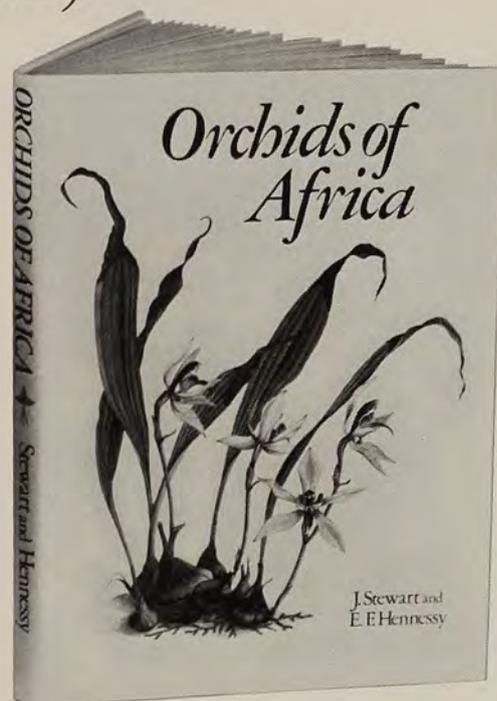
Continued on page 45

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THE OXFORD ENCYCLOPEDIA OF TREES OF THE WORLD.

Bayard Hora (editor). Oxford University Press. Oxford and New York. 1981. 288 pages; hardbound, \$24.95. AHS discount price, \$21.50 including postage and handling

This beautifully produced book is lavishly illustrated with colored drawings and photographs. It is written in a popular style but with scientific precision so that it serves equally well as a textbook or as an introduction to trees for the general reader. One hundred and forty-nine genera of trees (including all genera of conifers) are described. History, economic importance and horticultural value are discussed along with brief botanical descriptions of the more important species. Selection of genera included seems to be based on horticultural importance, as whole families of important timber trees such as the dipterocarps of southeast Asia are almost completely ignored.

THE COLORFUL BROMELIADS—THEIR INFINITE VARIETY.

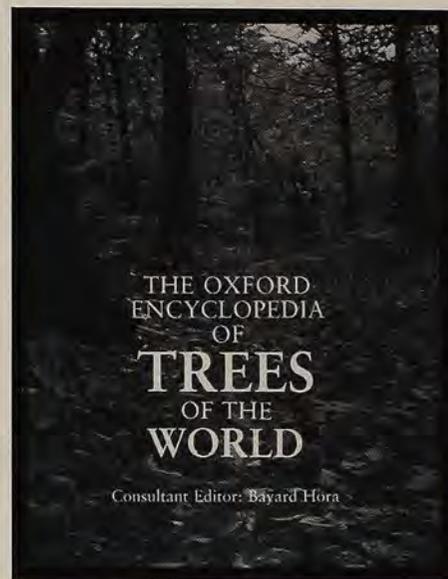
Victoria Padilla. *The Bromeliad Society, Inc.* Los Angeles, California. 1981. 112 pages; hardbound, \$17.50.

Popular works on bromeliads are relatively rare and always welcome. While not really a continuation of the author's earlier book on the same subject, this new work might best be considered an expansion of that earlier volume. When *Bromeliads* was published in 1973, only about 450 species and hybrids were available to the collector. With the continuing popularity of these exotic plants, Miss Padilla estimates that there are now more than 1,600 varieties of bromeliads in cultivation. This book presents some 130 of the lesser known cultivated bromeliads in beautiful colored photographs along with brief descriptions and cultural information. For the advanced collector or the beginner grower, this is a book worth having.

TREE SPECIES SELECTOR AND PLANTING GUIDE FOR THE URBAN DAYTON AREA.

Mary Earl Rogers (editor). *Tree Books.* Dayton, Ohio. 1981. 108 pages; spiral bound, \$10.00 (\$6.00 can be claimed as a tax-deductible contribution).

Although of restricted local interest, this book is being reviewed because it is an



excellent example of the very useful type of planting guide that local gardeners can prepare for their own cities. Fifty pages of lists of trees for special applications and conditions are followed by another 50 pages of descriptions of individual species. The descriptions are structural, not botanical, and both good and bad features are highlighted. Where superior cultivars are available they are also described. Trees to be recommended and trees to be avoided are included with reasons given in each case. If your city has a climate similar to Dayton, Ohio, this could be a very useful book for city planning or planting your own yard. If your climate is different, get a copy of this book and use it for a model in preparing your own local guide.

ON SCHEDULE

THE NEW YORK BOTANICAL GARDEN ILLUSTRATED ENCYCLOPEDIA OF HORTICULTURE.

Thomas H. Everett. *Garland Publishing, Inc.* New York. 1981. 10 volumes; hardbound, \$472.50, the set.

Volume Six of this new, major encyclopedia was received in September. In any major effort such as this, which is originally published serially, it is always a pleasure to announce that the appearance of successive volumes is still on schedule. Volume Six covers *Idria* to *Mandevilla*, pages 1,777 to 2,130.



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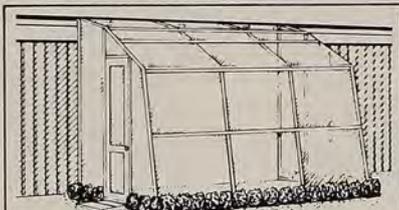
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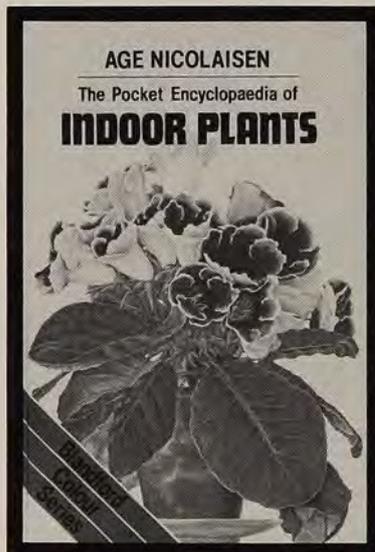
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BOOK REVIEWS CONT'D

EARTHLY PLEASURES—TALES FROM A BIOLOGIST'S GARDEN.
Roger B. Swain. Charles Scribner's Sons. New York. 1981. 198 pages; hardbound, \$10.95. AHS discount price, \$8.90 including postage and handling.
This is a collection of 21 essays that originally appeared in *Horticulture*. Written

by the science editor of that magazine, the subjects are gardening and nature. The often unusual approach to a given subject is delightful reading and each essay is crammed with unusual facts. For pleasant winter reading, when you can't work in your own garden, Roger Swain's way with words makes his book worth looking into.

INDOOR PLANTS



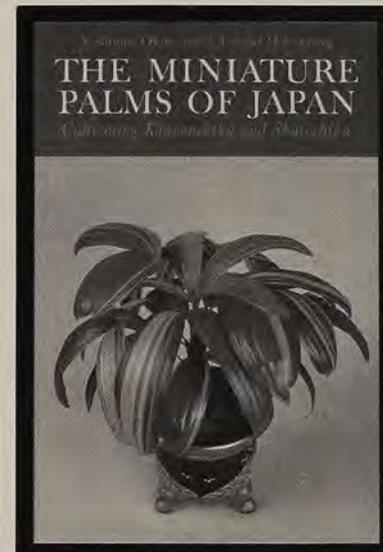
THE POCKET ENCYCLOPAEDIA OF INDOOR PLANTS IN COLOUR.

Age Nicolaisen. Blandford Press. Poole, Dorset, England. 1981. 269 pages; paperbound, \$6.95. AHS discount price, 6.00 including postage and handling.
INDOOR PLANTS—A POPULAR GUIDE.

Brian Proudly and Valerie Proudly. Blandford Press. Poole, Dorset, England. 1981. 176 pages; hardbound, \$14.95. AHS discount price, \$11.75 including postage and handling.

THE MINIATURE PALMS OF JAPAN.
Yoshihiro Okita and J. Leland Hollenberg. Weatherhill. New York. 1981. 140 pages; hardbound, \$19.95. AHS discount price, \$17.50 including postage and handling.

The Pocket Encyclopaedia is a good beginner's book on house plants. Ten pages are devoted to a brief but adequate general culture guide, 129 pages present a series of well drawn colored illustrations of typical nature specimens of the most popular plants, and the remainder of the book is devoted to cultural instructions for



individual species. A good buy for the beginner.

Indoor Plants is illustrated with excellent full-page colored photographs, and each facing page gives descriptions of some of the more popular species and cultivars of each plant, together with specific cultural instructions. This is a good book for the more advanced beginner, both to stimulate interest in a wider variety of house plants and to provide good cultural information on each species.

Miniature Palms is devoted entirely to the varieties and pot culture of dwarf *Rhapis* palms. This is a specialist's book. Only a very few of the many cultivars of *Rhapis* that are recognized by the Japanese are known in this country, and the prices which these rare varieties bring will discourage all but the most avid enthusiast from having even one plant in his collection. Although growing palms is in itself a specialized horticultural activity, the pot culture of *Rhapis* cultivars is a speciality within a speciality. For that ultra-specialist, however, this book gives the complete picture of the Japanese art of growing *kansochiku*.

**THE MUSHROOM HUNTER'S
FIELD GUIDE (3rd Edition).**

Alexander H. Smith and Nancy Smith Weber. *The University of Michigan Press. Ann Arbor, 1980. 316 pages; hardbound, \$14.95. AHS discount price, \$12.80 including postage and handling.*

This latest edition of an already excellent field guide has been further improved by illustrating all of the 282 species that are described with colored photographs. Specifically about the mushrooms of North America, the excellent identification keys are simple and easy to use, and the individual species descriptions and the clear color photographs are further aids that should allow anyone to make reasonably accurate identifications of wild mushrooms. The edibility or lack thereof is also discussed for each species. Whether you are picking mushrooms to eat, or simply want to identify the many strange and beautiful mushrooms you find on walks through the woods, this field guide is highly recommended.

**SUCCULENT FLORA OF
SOUTHERN AFRICA.**

Doreen Court. A.A. Balkema. Rotterdam. 1981. 224 pages; hardbound, \$39.50. AHS discount price, \$32.85 including postage and handling.

For growers and collectors of succulent plants, the southern half of the continent of Africa is an area of major interest. This book reviews the succulent flora of that area and is intended for the professional botanist and the serious amateur. All major genera in nine predominantly succulent plant families are discussed; in many genera, large numbers of species are described with the specific intent of differentiating between similar species. Species descriptions are grouped by morphological similarity and geographic distribution. Of particular value are the discussions of nomenclatural changes. For the ever confused horticulturist, the names are as up to date and correct as is possible. This is not a gardening book, but a basic reference work that brings together the latest information that would otherwise only be available in the many scattered journals that cover the field. ●

—Gilbert S. Daniels

Gilbert S. Daniels is the President of the American Horticultural Society.

OF REGIONAL INTEREST

GARDENS FOR ALASKANS.

Lenore Hedla. Anchorage, Alaska. 1981. 157 pages; paperbound, \$8.95. AHS discount price, \$8.05 including postage and handling.

WINTER TWIGS OF ARKANSAS.

G. Thomas Clark. Rose Publishing Co., Little Rock, Arkansas. 1981. 93 pages; paperbound, \$13.95. AHS discount price, \$13.80 including postage and handling.

MISSISSIPPI WILDFLOWERS.

Lucile Parker. Pelican Publishing Co. Gretna, Louisiana. 1981. 30 pages plus 117 plates; hardbound, \$29.95. AHS discount, \$25.25 including postage and handling.

**TREES AND SHRUBS OF THE
SOUTHWESTERN DESERTS (3rd
Edition).**

Lyman Benson and Robert A. Darrow. University of Arizona Press. Tucson. 1981. 416 pages; hardbound, \$49.50. AHS discount price, \$46.45 including postage and handling.

Gardening in Alaska is as different from gardening in the lower forty-eight states as gardening in the U.S. is from gardening in England. Here is a down-to-earth beginner's guide to all aspects of gardening throughout Alaska. It is also a book about Alaskan gardeners, for the many photographs show Alaskan gardeners at work (or play) in their own varied and individual gardens. Indoor gardening, which is the

only alternative during the Alaskan winter, and vegetable gardening, are two new chapters not in the original edition.

Winter Twigs is a guide for the identification of Arkansas trees and shrubs by their structural details and their dormant buds. Maps show the distribution of each species within the state, but many of the species are common far beyond the borders of Arkansas. Anyone in the north-eastern or northcentral states who is interested in winter identification of native woody plants will find this a helpful and easy to use field guide.

Mississippi Wildflowers is a collection of botanically accurate and attractive watercolors of 117 Mississippi native plants. Although the accompanying descriptions are quite brief, the information on flowering and fruiting time is useful.

Trees and Shrubs of the Southwestern Deserts is a major botanical work covering the woody flora of those states (mostly bordering on Mexico) that are famous for their deserts. The more northerly desert areas such as the Great Basin region are not included. A series of keys for families, genera and species, together with good descriptions and line illustrations, provide a means of positive identification for all woody species in the region. Photographs and distribution maps are also given for many species. If you are interested in the flora of the southwestern deserts, this is an essential reference work.

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PRONUNCIATION GUIDE

Guide to Botanical Names in This Issue

The accent, or emphasis, falls on the syllable which appears in capital letters. The vowels which you see standing alone are pronounced as follows:

i—short sound; sounds like i in “hit”
o—long sound; sounds like o in “snow”
a—long sound; sounds like a in “hay”.

Abies chensiensis

A-beez chin-see-EN-sis

Acer palmatum

A-ser pal-MAY-tam

Aesculus X carnea

ESS-kew-lus CAR-nee-ah

Albizia julibrissis

al-BIZ-ee-ah jew-li-BRIS-en

Anacardium occidentale

an-ah-CAR-dee-um ock-si-den-TAY-lee

Arbutus unedo

ar-BEW-tus you-NAY-doe

Asclepias

ass-KLEE-pee-us

Bergenia cordifolia

BER-gen-ee-ah cor-di-FO-lee-ah

Camellia chrysantha

ka-MEAL-ya cry-SAN-tta

Camellia japonica

ka-MEAL-ya ja-PON-i-ka

Camellia lutchuensis

ka-MEAL-ya loo-chew-EN-sis

Camellia reticulata

ka-MEAL-ya re-tick-yew-LAY-ta

Camellia sinensis

ka-MEAL-ya sy-NEN-sis

Caragana aborescens

kar-a-GAN-ah ar-bo-RESS-ens

Catalpa bignonioides

ka-TAL-pa big-non-ee-o-EYE-deez

Cedrus atlantica

SEE-drus at-LAN-ti-ka

Cedrus deodara

SEE-drus dee-o-DAY-ra

Cercis

SIR-sis

Chaenomeles

kee-NOM-el-eez

Chamaecyparis obtusa

kam-ee-SIP-er-iss ob-TOO-sa

Chamaecyparis pisifera

kam-ee-SIP-er-iss pi-SIFF-er-ah

Cladrastis lutea

kla-DRASS-tiss LOO-tee-ah

Cornus florida

KOR-nus FLOR-i-da

Cornus kousa

KOR-nus KOO-sa

Cornus nuttallii

KOR-nus nah-TAL-ee-eye

Corylopsis sinensis

kor-ee-LOP-sis sy-NEN-sis

Cotinus coggygria

ko-TY-nus ko-JY-gree-ah

Cotinus obovatus

ko-TY-nus ob-o-VAY-tus

Cotoneaster

ko-TOE-nee-ass-ter

Crataegus laevigata

cra-TEE-gus lee-vi-GAY-ta

Cryptomeria

krip-toe-MEER-ee-ah

Cyrilla racemiflora

si-RILL-ah ray-si-mi-FLOR-ah

Daphne genkwa

DAFF-ne JENK-wa

Daphne odora

DAFF-ne o-DOOR-ah

Davidia involucrata

day-VID-ee-ah in-vol-yew-KRAY-ta

Diervilla lonicera

dy-er-VIL-ah lo-NISS-er-ah

Gunnera yarricatio

GUN-er-ah yare-i-KAY-tee-o

Harpephyllum caffrum

har-pi-FY-lum KAFF-rum

Hoya bella

HOY-ah BELL-ah

Hoya carnosa

HOY-ah car-NO-sa

Hoya diversiloba

HOY-ah dy-vers-i-LO-ba

Hoya engleriana

HOY-ah eng-gler-i-AN-ah

Hoya imperialis

HOY-ah im-peer-ee-AYL-iss

Hoya keysii

HOY-ah KEYS-ee-eye

Hoya lacunosa

HOY-ah lac-oo-NO-sa

Hoya linearis

HOY-ah lin-ee-AIR-iss

Hoya macgillivrayi

HOY-ah mack-GILL-i-vray-eye

Hoya macrophylla

HOY-ah mack-ro-FILL-ah

Hoya multiflora

HOY-ah mul-tee-FLOR-ah

Hoya pausiflora

HOY-ah paw-si-FLOR-ah

Hypericum

hy-PEAR-i-kum

Ilex aquifolium

EYE-lex ak-qui-FOL-ee-um

Ilex X meserveae

EYE-lex me-SERV-ee-ee

Ilex opaca

EYE-lex o-PAY-ca

Ilex rugosa

EYE-lex rew-GO-sa

Juniperus chinensis

jew-NIP-er-us chi-NEN-sis

Juniperus conferta

jew-NIP-er-us kon-FER-ta

Juniperus horizontalis

jew-NIP-er-us hor-i-zon-TAY-liss

Juniperus virginiana

jew-NIP-er-us ver-jin-ee-A-na

Koeleruteria paniculata

kol-rew-TERE-ee-ah pan-ick-yew-LAY-ta

Laburnum X watereri

la-BUR-num WA-ter-er-eye

Lagerstroemia indica

la-ger-STROME-ee-ah IN-di-ka

Ligularia dentata

lig-u-LAIR-ee-ah den-TAY-ta

Macleaya cordata

MACK-lee-ah cor-DAY-ah

Magnolia campbellii subsp. *mollicomata*

mag-NOL-ya camp-BELL-ee-eye

Magnolia grandiflora

mag-NOL-ya grand-i-FLOR-ah

Magnolia X loebneri

mag-NOL-ya lobe-NER-eye

Magnolia X soulangiana

mag-NOL-ya sue-lan-gee-A-na

Malus X atrosanquinea

MAL-us at-tro-san-GWIN-ee-ah

Malus floribunda

MAL-us flor-i-BUN-da

Mangifera indica

man-JIFF-er-ah IN-di-ka

Oxydendrum arboreum

ob-ee-DEN-drum ar-BOR-ee-um

Petasites

pet-ah-SY-teez

Phormium

FORM-ee-um

Picea pungens

PY-see-ah PUN-jinz

Pinus wallichiana

PY-nus wa-lick-ee-AY-na

Pistacia chinensis

pis-TACK-ee-ah chi-NEN-sis

Pistacia lentiscus

pis-TACK-ee-ah len-TIS-kus

Pistacia terebinthus

pis-TACK-ee-ah tear-eh-BIN-thuss

Pistacia vera

pis-TACK-ee-ah VER-ah

Protea caffra

PRO-tee-ah KAFF-ra

Prunus cerasifera

PRUNE-us ser-ah-SIFF-er-ah

Prunus serrulata

PRUN-us ser-rew-LAY-ta

Prunus subhirtella

PRUN-us sub-her-TELL-ah

Pyrus calleryana

PY-rus kall-er-ee-A-na

Rheum palmatum

REE-um pal-MAY-tum

Rhus copallina

ROOS ko-pa-LY-na

Rhus diversiloba

ROOS dy-vers-i-LO-ba

Rhus glabra

ROOS GLAY-bra

Rhus integrifolia

ROOS in-teg-ri-FO-lee-ah

Rhus laurina

ROOS law-RY-na

Rhus microphylla

ROOS my-kro-FILL-ah

Rhus ovata

ROOS o-VAY-ta

Rhus radicans

ROOS RAD-i-kanz

Rhus succedanea

ROOS suck-se-DAY-nee -ah

Rhus toxicodendron

ROOS tox-i-co-DEN-dron

Rhus typhina

ROOS ty-FY-na

Rhus verniciflua

ROOS ver-niss-i-FLEW-ah

Rhus vernix

ROOS VER-nix

Rodgersia

ROD-jers-ee-ah

Schinus molle

SHY-nus MO-lay

Schinus terebinthifolius

SHY-nus tere-i-bin-thi-FO-lee-us

Spiraea

spy-REE-ah

Spondias cytherea

SPON-de-as sy-THER-ee-ah

Spondias dulcis

SPON-de-as DULL-sis

Spondias mombin

SPON-de-as MOM-bin

Spondias purpurea

SPON-de-as per-per-E-ah

Stewartia pseudocamellia

stew-ART-ee-ah SUE-do-ka-MEAL-ya

Stewartia reginae

stre-LITZ-ee-ah re-JIN-ee

Styrax japonicus

STY-rax ja-PON-i-kus

Styrax obassia

STY-rax o-BASS-ee-ah

Syringa reticulata

si-RING-ga re-tick-yew-LAY-ta

Thuja occidentalis

THOO-ja ocks-i-den-TAY-liss

Thymus vulgaris

THY-mus/TY-mus vul-GAY-riss

Vaccinium

vack-SIN-ee-um

Verbascum

ver-BASS-kum

Yucca filamentosa

YUCK-ah fil-i-men-TOE-sa

THE CASHEW FAMILY

Out of Kansas toward the end of the 19th century came a prairie youth who was destined to become one of the great modern plant explorers. He traveled far and wide for the U.S. Department of Agriculture to collect plants that might have potential as profitable crops for American farmers. One of his personal interests was introducing tropical fruits and educating American palates to savor the fruits that delighted him. His name was David Fairchild, and his enthusiasm for the "apple of the tropics" established his reputation as a mangophile, for the name of his favorite fruit was mango, *Mangifera indica*. The books he wrote about his life, his travels and his retirement home abound in tales of collecting, growing and eating mangos, "one of the most gorgeous of all the fruits in the world."

This "apple of the tropics" is a member of a plant family that also includes poison ivy. It is the cashew family, Anacardiaceae. Its members are known in both tropical and temperate zones and include species that provide edible fruits and nuts, ornamental landscape qualities, tannin and lacquer and plants that exude painful or toxic irritants. The family even contains a plant used in the making of space rocket lubricants. *Mangifera* is by far the most important genus. The mango makes it so, as it is widely grown and is probably the most popular fruit in the tropics.

In the orient, and in India in particular, man has grown mangos for 4,000 years. Centuries of selection and maintenance of the best types in tropical Asia, especially in India, have yielded many cultivars. In the continental United States, mango growing is confined to the southern third of Florida because of unfavorable winters elsewhere. Fairchild imported collections from India and other tropical countries to get all the kinds he could find. Most of the world's modern commercial mango cultivars originated in South Florida. Many of the numerous cultivars are localized in a particular area and bear the names of individuals or locales significant in their development.

Mangifera indica is a symmetrical evergreen tree of medium size. The pinkish-white flowers, weighing down the branches



Mangifera indica

in dramatic clusters of hundreds of blossoms, are followed by fragrant fruits of variable color and size depending on the cultivar, each suspended from its branch like a pendulum. For more information about mango culture in the United States and the cultivars available to American consumers, see *American Horticulturist*, Vol. 57, no. 3, Spring 1978.

Among the mango's cashew cousins are tropical "plums" of several kinds. In frost-free regions, *Spondias* species are grown for their edible fruit and sometimes as ornamentals to provide living fences. *S. cytherea* (*S. dulcis*), from Java, is widely cultivated as evidenced by its many common names—ambarella, Wi tree, golden apple, otaheite apple. It is a 60-foot tree, the buoyant wood of which was once used to make canoes. Its egg-shaped fruit is pale yellow, firm and juicy and may be eaten fresh or made into preserves or pickles. This plum is amenable to culture in USDA Zone 10b of Florida.

S. mombin, the hog plum or yellow mombin, is common in tropical America where it is sometimes referred to as Jamaican plum. It too is occasionally grown in USDA Zone 10b in Florida. The fruit is soft, yellow, juicy and the seed likewise is edible.



Anacardium occidentale

S. purpurea is the red or purple mombin or Spanish plum; another tropical American, it produces a spicy, nearly acid fruit, which is eaten fresh or boiled or sometimes dried.

Dr. Fairchild's notebooks confirm that he experimented with the Kaffir plum, *Harpephyllum caffrum*. He reported that "the seeds sent to Florida grew well in southern Florida and became attractive trees which resisted hurricanes well, but the plums were disappointing." This one he brought in from South Africa; it is suitable as an evergreen ornamental in small gardens, providing dark-red, olive-like fruit for use in jellies.

The importance of the mango notwithstanding, the family bears the name of the cashew nut, *Anacardium occidentale*. The cashew is an evergreen tree, native to Brazil, which thrives in regions free of frost. It is grown commercially in East Africa and India. It is not well adapted to the climate of the United States and performs poorly where it is grown.

The cashew flowers in late spring and fruits ripen in August. And what an assembly of parts there is. The edible fruit, known as cashew apple, is a fleshy receptacle that is fragrant, juicy and slightly astringent; it can be eaten raw or cooked;

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candies and beverages are made from it. A kidney-shaped, hard-shell nut projects from the larger end of the apple. The nut, containing the edible kernel, the cashew nut, must be roasted before shelling because the shell, as well as all parts of the tree, contains a caustic oil or irritant similar to that found in its relative, poison ivy; even the fumes from roasting the nuts can be irritating.

Ponder that when you are consuming this tasty morsel!

Cashew nut-shell liquid, obtained from a spongy layer of the shell, is an oil extracted from the raw nut during processing; its high polymerizing and friction-reducing properties make it valuable in the paint and varnish industry in the United States. It also has strategic value as a component of space rocket lubricants.

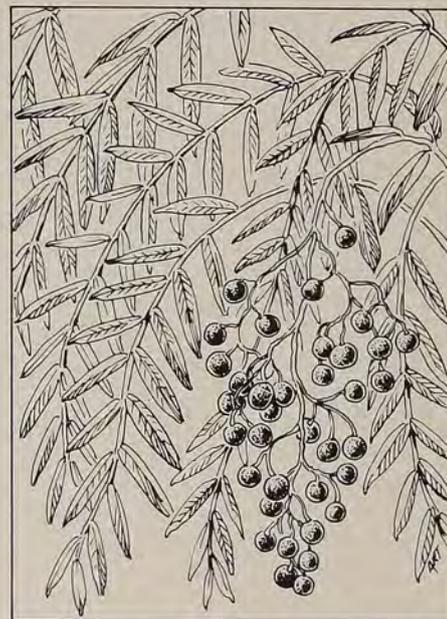
Pistacia is a genus of 10 species of deciduous or evergreen trees and shrubs native to the southwestern United States, Mexico, the Canary Islands and from the Mediterranean region to the Caucasus and Asia. One species, *P. vera*, native to Iran and central Asia, is grown for its edible seed. This is the pistachio nut or green almond. The name pistachio is correctly applied only to *P. vera*.

The Latin *pistacia* is from the Greek name for the nut—*pistake*. This species is much cultivated where it is native. The principal exporters of the nuts are Turkey, Iran, Afghanistan, Greece and Syria.

Pistacia vera thrives in long, hot summers but needs moderately cold winters to satisfy its chilling requirement. Cultivation in the United States is centered in the Sacramento and San Joaquin valleys of California where the climate is suitable. An orchard must include both male and female trees for nut production. The trees are wind pollinated, and male trees are spaced throughout the orchard to take advantage of prevailing winds.

Pistachio fruit is reddish and contains a green or yellow edible seed. While still in the shell the nuts are prepared by salting them in a brine.

Other *Pistacia* species yield wood, resins and oils. *P. chinensis*, though deciduous, is used in Florida as a shade tree. It is also used as an understock on which *P. vera* is grafted. Dr. Fairchild, in *The World Was My Garden*, reports that when he was in Athens he was "offered some three-year-old trees which had been grafted on a related species called the Terebinth. . . they were the first budded pistachio trees to



Schinus molle

reach America, and contributed substantially to the interest which was being aroused in this, one of the most delicate of all table nuts." *P. terebinthus*, the Cyprus turpentine, is a large shrub and the source of tanning material and formerly the source of turpentine.

P. lentiscus, the mastic tree, is cultivated for mastic, one of the oldest known of high grade resins. Mastic, or mastich, is a resin exuded from incisions made in the bark; it hardens into oval tears and is used to make pale varnish for protecting metals and oil and water color paintings. Mastic is also an adhesive used in dental work.

The cashew family also is rich in ornamental plants.

The smoke tree, *Cotinus coggygia*, is a conspicuous shrub in a border planting because of its grayish fruiting panicles from which the name "wig tree" arose. Numerous cultivars of this species afford gradations of the smoky effect from gray to purplish. This native of southern Europe and Eurasian areas has been widely planted in America where it is hardy to USDA Zone 5. The fruiting cluster, which lasts for weeks, consists mostly of lengthened stalks of the numerous sterile flowers that are plumed and silky and form in the mass the attractive feature of this plant.

The American smoke tree, or chittamwood, *C. obovatus*, is rare in gardens because of its large size and because female trees do not have as many fruits as *C. coggygia*. It is native to Tennessee, Arkansas, Missouri and west to Texas. The

wood yields an orange dye; unfortunately, in the past 100 years or so stands have been depleted by cutting of many large trees for this use.

Schinus species are prominent lawn and avenue trees in California and Florida. *S. molle*, the California pepper tree or Peruvian mastic, is a gracefully drooping evergreen tree. It is native to the Andes of Peru and the species name, *molle*, is derived from the Peruvian vernacular, *mulli*. Its greenish flowers are followed by red berry-like drupes. Part of the attraction of this tree is the red fruit that persists through the winter; it is necessary to include both male and female trees in any planting to ensure berry production.

Schinus molle was sacred to the Incas and their predecessors. Native Indians used every part of the plant in one form or another as medicine. A mildly alcoholic drink is made from it in Peru, and ground seeds may be used as a condiment or as an adulterant of pepper.

Unfortunately, *S. molle* harbors the black scale, a pest of citrus fruits, necessitating a preventive spray schedule.

S. terebinthifolius is the Brazilian pepper tree or Christmas-berry tree. It is less graceful than *S. molle* as the branches are not pendent. With its bright red fruit, it is very ornamental, and because the berries persist through winter it is much used for Christmas decorations. It grows better in Florida than *S. molle* and is widely naturalized in Florida and Hawaii.

The genus *Rhus* constitutes a large group of species in the cashew family; these are the sumacs, and the family is often commonly referred to as the sumac rather than cashew family.

Rhus species are trees, shrubs or vines native to temperate and subtropical regions. Some are used in naturalized landscapes or in formal ornamental plantings; along highways and byways others are definitely ornamental in the wild. Still others yield lacquer from the milky sap and tannin from the leaves. And five or six are known for the toxic irritant present in various parts of the plant.

Sumac's small, greenish flowers are borne in pyramidal clusters. The fruits of the cultivated shrubby species are small, reddish and hairy; the tight upright clusters are showy and often remain all winter. Fruits of the poisonous species are white or yellowish berries.

Throughout much of the eastern United States, the staghorn sumac, *Rhus typhina*,



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STRANGE RELATIVES CONT'D



Rhus radicans

and the shining sumac, *R. copallina*, are highly visible, handsome components of roadside vegetation. Their red foliage color and red to reddish-brown clusters in the fall make them outstanding. *R. typhina* is an important source of tannin. Another eastern American native is *R. glabra*, the smooth or scarlet sumac. The staghorn and shining sumacs may become 30 to 50 foot trees; *glabra* is smaller, between 9 and 15 feet. Differences in foliage texture and shades of green and in the number or arrangement of leaflets in the compound leaves distinguish these shrubby species.

Two evergreens in this genus, of ornamental value in their native California, are the lemonade berry, *R. integrifolia*, and the laurel sumac, *R. laurina*.

R. microphylla, the desert sumac, is from the southwestern United States and adjacent Mexico, and the evergreen sugarbush, *R. ovata*, comes from Arizona and southern California.

In Japan, *R. succedanea*, the wax tree, is cultivated for the berries from which a commercial wax is obtained; exudates from the stems yield a natural lacquer. The Japanese lacquer tree or varnish tree is *R. verniciflua*, the source of Japan's famous black lacquer; from it is excreted an irritant still more poisonous than that from species known to us for that property.

The common poisonous species of this genus are poison sumac, *Rhus vernix*, Pacific poison oak, *R. diversiloba*, poison oak of the East, *R. toxicodendron*, and poison ivy, *R. radicans*, also the common form in

the eastern United States. All have whitish or yellowish fruit and brilliant autumn coloring. Poison oak and poison ivy are the only serious contact poisons in our native flora. The poisonous properties are due to allergic reactions to the slightly volatile oil in the juice of the resin ducts in the leaves, flowers, fruits and bark of stems and roots.

To bring the family back together again, here are some characteristics held in common by these strange relatives:

Most are tropical and subtropical, although a few are native in temperate climes.

Leaves are alternate and usually compound, often evergreen. Flowers are small, not ordinarily conspicuous. The fruit is fleshy and one-seeded, a drupe, but it differs widely in size and shape among the genera. For instance, compare the large and fleshy fruit of the mango and *Spondias*, the dry and much smaller fruit of *Rhus* and *Schinus* and the peculiar structure of the cashew.

The resinous properties of these plants give them economic value; for instance, their use in tanning, in lacquer, in wax and as a space rocket lubricant. On the other hand, the resinous substance exuded by some species is poisonous.

Commercially valuable fruits and nuts are produced by some species, and popular ornamental trees are represented in the family also.

Is it any wonder that plant explorers have directed their attention to introducing members of the Anacardiaceae to enrich the horticulture of our country? Dr. Fairchild's enthusiasm for the mango may have been premature; although it is on the market, it is less than universally available or recognized. For example, I was not able to ascertain from the Fresh Fruit and Vegetable Association the name of the mango cultivar on supermarket produce counters in the Washington area this summer. But California pistachios are here, and cashews have been long established as one of our choicest nuts.

Serious study of any family of plants affords a marvellous insight into the wonders and contrasts in the vegetable kingdom and often is an introduction to the origins of plants, foods and other products whose presence in our day-to-day existence we take for granted. ☉

—Jane Steffey

Jane Steffey is the horticultural advisor to the American Horticultural Society.

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THYME



Pam Harper

Thyme makes an excellent groundcover and will even grow through the cracks in a patio where its aroma will scent the air when it is occasionally crushed underfoot.

Thyme is one of the oldest and most widely used herbs. It was cultivated in Sumeria 3,000 years before the Christian era, grew in Aristotle's garden and was later transported to the northern countries during the Roman expansion. Not only was it a favorite seasoning wherever it was taken, but herbalists recommended it to cure whooping cough, respiratory ailments and gastric conditions. It has been important commercially and even today is used in perfumes, deodorants and insecticides.

Horace, Virgil and Pliny mentioned thyme in their writings. The Greeks used it in soups, with game and fish, but they were also aware of the sterilizing properties of the plant and referred to it as a

fumigator. They used it in their baths, as a strewing herb, a preservative to dry fruits and a germ killer to clean wine vessels. As late as World War I, thymol, extracted from the oil of thyme, was used as a food preservative and as a sterilizing agent for bandages. The Romans used thyme to flavor cheese and liquers.

To gardeners, thyme is the border plant with tiny lavender blossoms and a pungent aroma. The bees hover around it and the cabbage moth veers away from it. Garden thyme, also known as common thyme (*Thymus vulgaris*), is the species most gardeners plant. Its leaves are oval, grow in pairs and are about one eighth of an inch long. French and German thyme also belong to this species, but they vary slightly

in appearance. The leaves of French thyme are narrower than common thyme; the German, wider. The plants are hardy perennials, growing to 10 inches or so in height, and they sprawl considerably if not pruned, which makes thyme appropriate for a rock garden.

The essential growing requirements for thyme are sun and well-drained soil. It thrives in sandy, even rocky soil, does well in average garden loam and will even grow in light, poor soil as long as it gets full sun. Because the plants have widely spreading roots I put them on a south-facing slope where I want to prevent erosion.

If thyme is planted in a heavy clay soil, it will not develop the fragrance and flavor for which it is prized. It will also be more

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THE HERB GARDEN CONT'D

vulnerable to winterkill when growing under these conditions. With wet, compact soil, dig in sand and organic matter to increase drainage and porosity. Lime or wood ashes and a little sprinkling of bone meal should also be added.

*After a number of years
thyme begins to get woody
and lose its good flavor. To
ensure a good harvest from
year to year, periodically re-
establish these plants.*

Sow thyme directly in the garden as soon as the ground begins to warm. Sift just enough dirt over the seed to cover them, press down firmly and keep them moist until they have germinated. It is a good idea to lay pieces of burlap or screen over the depressions to keep the tiny seed from being washed away in a hard rain. For an earlier start, sow the seed in pots indoors, then transplant the seedlings to the garden and space them 10 or 12 inches apart. If you miss spring planting, sow the seeds in late fall for an early start the next year.

The leaves of thyme are used both fresh and dried, and sprigs can be cut for use all summer. This is also a good way to prune the plants to keep them shapely. Frequent clipping also helps keep them from becoming woody. As with most perennials, thyme reaches maturity the second year of its growth, so harvesting the first year should be kept to a minimum. Cut second-year plants back two-thirds just before they begin to bloom. That is the period of peak flavor. Harvest any flowers which open before you get to them along with the leaves, for they also have flavor. Make cuttings on a dry, sunny morning as soon as the dew has evaporated. Under hot sun, the flavor dissipates. Work a little bone meal or compost into the soil around the plants to give them a pick-up toward growing another harvest.

Before drying, pick off any imperfect leaves, lightly rinse the branches and shake off any excess moisture. Dry the cuttings in a shady, well-ventilated room or porch out of the sun. Many people like to tie a few branches together and hang them, or they can be spread on several thicknesses of newspaper covered with clean, white tissue to absorb the moisture.

Depending upon the humidity, drying will take from one to two weeks. Properly dried leaves will make a dry, rustling sound. If the weather is sultry, give sprigs a final drying in the oven for an hour or so at a temperature no higher than 100°F. Stripping the stems will then be easier—just roll them between your hands, letting the leaves fall into a bowl.

Make the second pruning no later than the end of August so the plants can recover before winter comes. Another sprinkling of lime and a layer of compost around the plants in the fall replenishes the soil.

After the ground freezes, protect the roots from winter thaw and refreezing with a mulch of leaves or hay. Even during this dormant period, the invigorating aroma of thyme is carried on the cold air. In the spring, loosen the soil around the roots with a spading fork, but be careful not to tear them. At this time I give my plants another feeding of lime and bone meal.

These cultural procedures will keep your plants healthy for several seasons, but after a number of years thyme inevitably begins to get woody and lose its good flavor. To ensure a good harvest from year to year, it is a good idea to periodically re-establish these plants. This can be done by root divisions, preferably in the spring, by layering or by taking cuttings and rooting them in sand. Thyme will also reseed itself.

I had always used thyme in stews and ground meat, but then I began to experiment with other dishes. I have discovered it puts zest into summer salads, especially egg, potato and seafood salads. It is delicious in melted butter poured over cooked vegetables such as potatoes, carrots and beans. Add it to the water for cooking bland vegetables such as summer squash or eggplant to perk up their flavor. Use it in gravies, soups and sauces. Dried leaves are stronger, so when using fresh leaves, double the amount.

Thyme, like thousands of other plants of use to man, has "earned its keep" over the years. Although its medicinal uses have all but disappeared and its commercial uses have diminished, it is still a star in the herb or rock garden and a standout in the kitchen.

● —Betty Ann Laws

Betty Ann Laws is a free lance writer who has published articles on gardening in many magazines; among them, *Flower and Garden*, *The Family Food Garden* and *American Horticulturist*.

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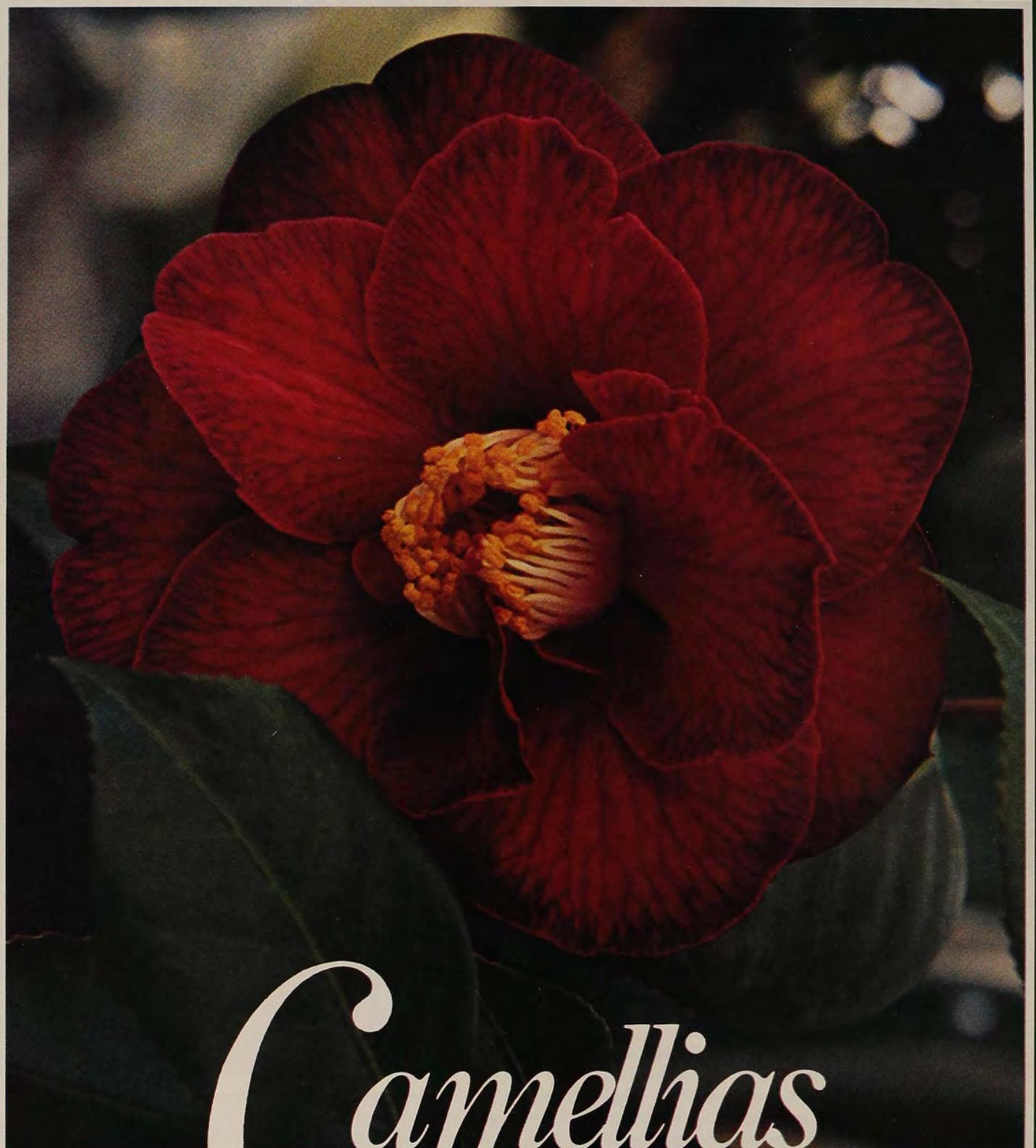
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Camellias *In Containers*

TEXT AND PHOTOGRAPHY BY ANTHONY DeBLASI



Stepping into a greenhouse where the night temperature is allowed to drop to 40°F, the lucky person who sees a collection of *Camellia japonica* blooming in pots and tubs for the first time may feel that he or she is on tour in a wax museum where flowers that resemble roses, carnations, peonies, dahlias, magnolias or anemones seem to have been sculpted and capriciously pinned on varnished bushes clearly too ornate to be true-to-life.

The red or pink “brush splatters” and streaks upon lighter colors, the splotching, the marbling and stripes of the variegated types reinforce the illusion of artificiality. Of course these first impressions soon vanish with the discovery of irregularities and intricacies of detail far too complex to be “made,” particularly among camellias with peony style blossoms. A lifetime of dedicated craft could not match the choreography of swirls, twists, folds, bends and

Anthony DeBlasi wrote about Japanese tree peonies in the February, 1981 issue of *American Horticulturist*.

waves that nature spontaneously generates in the petals and petaloids of ‘Ballet Dancer’.

The classical camellia flower is the formal double type with a round cushion of imbricated petals borne in concentric rings. The petals gather and crowd toward a center that never reveals pollen. This flower form is what most people picture when they think of a camellia.

Much has been said and written about this famous flower from Japan, but what is most striking to my mind about the camellia, aside from its obvious visual appeal, is the capricious way it blooms. Where there is a lack of persistent freezing temperatures that force it to behave like a spring-flowering shrub—such as in a frost-free porch or greenhouse—the buds do not open all at once. Each marble-shaped bud gets a different signal from a mixed-up internal clock that ticks erratically. Nor does a swelling that shows petal color necessarily indicate that a bud is about to open. It could open within a few days or

do nothing further for over a month. This nonchalant blooming pace provides an expanded season of bloom, and since each blossom may last a month before fading and dropping off, a plant may have a good many blossoms open at one time, even though no two of them may be the same age.

There is yet another special fascination about camellias. There may be two flowers on the same bush that are entirely different. One may look like a rose with broad petals gathered around a rosebud center. The other may be formed like a peony with guard petals surrounding a mass of irregularly arranged petals. Or one may be white, the other pink; one solid, the other variegated. Though these are extreme cases, it would be difficult to find two blossoms on a plant that really are exactly alike. Camellias are genetically unstable and mutate readily. It’s almost as though they can’t seem to make up their minds what
LEFT: ‘Adolphe Audusson’; ABOVE: ‘Debutante’.



they want to be. This accounts for the great number of sports, many of which are given new names and introduced as new cultivars.

For example, the cultivar commonly listed as 'Elegans' or 'Chandleri Elegans', a large, anemone-formed, rose-pink flower that is splotched with white, has a bewildering progeny of sports. 'Chandleri Elegans Pink' is solid rose pink. 'C. M. Wilson' is a pale-pink version of the basic form, which years ago in turn produced 'Hawaii'. This sport had the same color but changed form to imitate a carnation, complete with serrated petal edges. 'Elegans Supreme' is a sport of the original with the same form, rose-pink hue and very deep petal serrations. 'Elegans Splendor' is a heavily notched sport of 'C.M. Wilson', retaining the anemone form. 'Elegans Champagne' is a sport of 'Elegans Splendor' in which the color has changed to white with creamy center petals, sometimes showing pink at the base

ABOVE: 'Sawada's Dream'; RIGHT: 'Ville de Nantes'.

of the petals. 'Shiro Chan' is a white sport of 'C. M. Wilson.'

Though there is a faint essence of azalea in the blossoms of some camellias, and fragrance is being bred into the *C. japonica* cultivars from crosses with *C. lutchuensis* and backcrossing of the hybrids to improve floral characteristics, one does not grow camellias for their fragrance, but for their beauty. What future this breeding effort holds with the recent discovery of more fragrant species in China remains to be seen, or should we say smelled?

1980, which the American Camellia Society designated as The Year of the Camellia, was also the year of the introduction from China of the long-awaited and coveted yellow camellia. *Camellia chrysantha* (Hu) Tuyama was found by Chinese botanists in Kwangsi in the 1960's near the border of Vietnam. Its golden- to sulphur-yellow blossoms are single and have hybridists aflutter over the possibilities for producing truly yellow camellias. According to Milton H. Brown, ACS Executive

Secretary, this line of camellia breeding, which will involve *C. japonica* and *C. reticulata* as seed parents, may also bring shades of peach, apricot and orange to the camellia spectrum, in addition to the yellow of *C. chrysantha*. Earlier experiments with such camellias as 'Gwenneth Morey', 'Brushfield's Yellow', 'Jury's Yellow' or 'Witman's #38' have not rewarded breeders with much success in getting yellow blooms. But this floral alchemy is no longer required now that there is pollen with yellow in its genes.

A well grown camellia, disbudded, judiciously trimmed before the spring spurt of growth, in full bloom in a container, is an astonishingly beautiful sight. The highly ornamental, lustrous evergreen plant adorned with its glamorous blossoms — itching to be plucked and made into a corsage or floated in a bowl and coming at a time when nontropical shrubs look bleak and drab—is an urgent invitation to the plant lover to own and grow one or more of them.



The fancied resemblance of the camellia plant to the gardenia plant, owing to the glossy, evergreen leaves of both, must not be carried any further than the luster. The gardenia is tropical. Not so the camellia. The gardenia blooms continuously. The camellia has a blooming season. The gardenia and the camellia are not only unrelated but absolutely different plants in actual habits and requirements.

In China, Japan and the islands of the eastern Asiatic coastline where camellias are native, they grow on rugged hillsides, thin woodlands and rich, well-drained valleys. Their roots, crowded near the surface, enjoy perfect drainage and a slow percolation of nutrients from the decaying forest litter. The tops spread under filtered sunlight and may be covered with snow in the winter. They are watered by 70 to 80 inches of rain a year, and the abundant rainfall keeps the ground moist and the air humid. There are no wide daily fluctuations of temperature.

In this picture of their habitat you have

a thumbnail sketch of the culture of the camellia: woody soil under a mulch of organic debris, ample water, perfect drainage, filtered sunlight, even temperatures, *cool* in the winter. And since most of us have to bring the plants indoors for the winter, let us add, fresh air.

Fortunately camellias adapt well to containers, given a loose, well drained organic medium to grow in. The diameter of the pot or tub should be one-half or one-quarter the height of the plant. A 12- to 18-inch plant therefore should be set in a container 8 or 9 inches wide and moved to larger quarters when it pushes 3 feet in height. After about 5 years in a 12-inch pot, a camellia could spend 10 years in a 16-inch pot. After another 10 years in a 20-inch container, it will be ready for a 24-inch box. The rate of increase in the size of the plant may be slowed by pruning.

Plastic pots are light and inhibit rapid drying of the soil, two advantages in managing camellias. A camellia will grow in just about anything, provided of course

that it is not toxic, but for best results choose a wooden tub.

If you have the time and the patience, you can make a good growing medium by composting equal parts of oak leaf mold, topsoil and well-rotted cow manure, the layers generously sprinkled with cottonseed meal. When thoroughly composted (about six months) mix the soil with an equal amount of peat moss. To three parts of this mixture add one part of fine sand, and to each gallon of the mix, add two level teaspoons of dolomitic lime to adjust the pH and add needed calcium. As an alternative mix one part fine sand, two parts peat moss and one part leaf mold or compost, adding high-magnesium lime as above.

Potting should be done during the flowering or dormant season. Place a one-inch layer of gravel in the bottom of the pot, then spread a one-inch layer of coarse sphagnum moss over the gravel (optional but desirable) to keep the pebbles from

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The Gotelli Dwarf Conifer Collection

TEXT BY STEVE BENDER

PHOTOGRAPHY BY BARBARA W. ELLIS



Fine wine, it is said, improves with age. As the vintage marks the passing of seasons, its original coarseness evanesces away, grace and subtlety come to the fore, and at last true character is born.

So it is too with dwarf conifers. In youth, these unique plants often appear awkward and misshapen, lacking refinement. But as they grow, distinct personalities develop, traits are defined, until at last an underlying beauty emerges. Nowhere is this beauty more ably manifested than at the Gotelli Dwarf Conifer Collection at the United States National Arboretum in Washington, D.C.

The Gotelli Collection occupies roughly five acres in the northeast section of the Arboretum. Approximately 1,500 specimens of numerous cultivars and varieties of fir, cedar, false cypress, spruce, juniper, cryptomeria, pine, hemlock, arborvitae and

yew can be found there. Many of the plants have been in place since 1962, when Edward Gotelli donated his collection to the arboretum.

What exactly constitutes a “dwarf” conifer? A “dwarf” conifer is one that, for one reason or another, never attains the stature which is considered normal for plants of its original species, variety or cultivar. The actual dwarfing may be due to a viral infection, bud mutation, insect irritation or a chance seedling variation. Many dwarf conifers grow only a few inches per year; some grow as little as one-quarter inch per year, which makes annual pruning a distant memory.

A New York building contractor who spent his childhood in Oregon, Edward Gotelli was not a single-minded “plant freak.” “What he was, and remains,” says Sylvester “Skip” March, National Arboretum horticulturist, “is an intense collector of unbridled enthusiasm, whether it’s for collecting matchbooks, photographs of bridges or dwarf conifers.” In designating the point at which Gotelli’s zest for dwarf

conifers germinated, March recalls the fateful meeting between Gotelli and his eventual landscape architect, John Jennings. “It seems that a landscape contractor put a common dogwood in front of Mr. Gotelli’s house,” relates March. “Mr. Gotelli didn’t like it, wanted something more unusual, so he went to see a nursery and there met John Jennings. Jennings suggested a type of hawthorn, it was planted, and from then on they travelled all over the United States, Europe, Asia, Canada and Japan tracking down plants, particularly dwarf conifers.” Gotelli later estimated the cost of assembling his collection at \$500,000.

Prior to 1962 the Gotelli Collection rested on 1½ acres in South Orange, New Jersey, part of the Gotelli estate. Although he was

ABOVE: Grass walks at the entrance to the Gotelli Collection lead past a variety of unusual conifers towards several columnar cedars and a large *Cedrus atlantica* ‘Glauca’ at the top of the hill. RIGHT: *Picea pungens* ‘Hoopsii’, at center, is one of the bluest cultivars of blue spruce available.

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very fond of his collection, several factors contributed to his decision to donate it to the National Arboretum. One was his desire to preserve the integrity of the collection for posterity. Gotelli was aware that other notable assemblages, such as the Jenkins Hemlock Collection in Germantown, Pennsylvania, had been dispersed upon the owner's death. Gotelli wanted his to remain intact, so the essential character would not be destroyed.

A second reason behind his action was the long and amicable relationship he had shared with the National Arboretum. Through the Arboretum, the USDA had assisted him in the introduction of foreign dwarf conifers to the United States by

providing him with quarantine facilities. "I must emphasize," states March, "that the Gotelli donation was not a case of a rich man erecting a monument to himself. It was, rather, a feeling of reciprocity between Mr. Gotelli and the Arboretum. Both parties wished to see the introduction of these plants into cultivation and the subsequent knowledge used to benefit horticulture."

The National Arboretum's location played the final role in Gotelli's decision. Situated in a borderline habitat between northern and southern extremes, the Arboretum usually provides a climate tolerable to most conifers. It is also blessed with easy public access.

In 1962 the Gotelli Collection was dug and transported to Washington, D.C. on Arboretum trucks, the Arboretum underwriting all expenses. The Collection took three months to move and several years to install. Workmen planted the larger spec-

imens immediately, while smaller ones were held in wire baskets. Occasionally, mishaps occurred. At one point workmen using a crane attempted to move the Collection's largest member, an Atlas cedar, *Cedrus atlantica*, with an eight-foot root ball. But instead of the crane lifting the cedar, the cedar lifted the crane. The cavalry soon arrived, however, in the form of a larger crane, and the Atlas cedar was successfully moved to its new home.

Sue Frost is the curator of the Collection, a position she has held since April, 1979. Besides "curating" (a nebulous term if ever there was one), her duties vary widely. They include documentation of plant origins to ensure that new introductions are truly unique, separate cultivars. She maintains records of specimens' growth rates, habits and locations. She undertakes correspondence with nurseries throughout the country in a cooperative exchange program,

Continued on page 36

LEFT: Dwarf conifers can provide endless textures, colors, shapes and sizes in the garden. Here low-growing juniper cultivars grow at the base of a columnar cultivar, *Juniperus communis* 'Pencil Point'. ABOVE: A cone on *Cedrus atlantica* 'Glauca'.



Charles H. Everson

HOYAS

TEXT BY STEVEN HEINTZE

William Wordsworth felt that memories were essential to creativity and that they were most quickly aroused through the sense of smell. Hoyas, with their wide array of fragrances, many of which are nocturnal, are as aromatically enticing as they are exotically beautiful. They have scents as varied as those of lemons, coconut, chocolate, ripe berries or candy.

Visually, the hoya's most exciting feature is its clustered flowers, each with its

Steven Heintze is a professional photographer, free lance writer and an avid plant collector. He teaches at Montgomery College in Germantown, Maryland.

five-starred center, in colors such as russet, white, salmon, beige, yellow, mauve, crimson, black, green, indigo or an exquisite blend of several hues. The petals of these beautiful flowers are usually thick and rounded and occasionally display fine, silken hair. Nestled within is the lustrous, starry corona, fleshy and glistening, from which the hoya derives its common name, the wax plant.

The availability of hoyas has increased tremendously over the past 20 years. Hybrids of *Hoya carnosa*, the "Father of all Hoyas," are now quite commonly found in commercial greenhouses. Of the 267 documented names of Hoya species, most

were applied to plants collected during the late 18th century in Asian and Pacific colonies belonging to England, France, Holland and Germany. Working independently and rarely collaborating, each country's botanists classified their finds into species. Consequently, many of the species were given more than one name, a problem that still encumbers the genus. Professor David Silverman, a leading authority on the genus, has suggested that, due to these multiple namings and misclassifications, as many as one third of the species are incorrectly identified. In an attempt to end the 200-year-old confusion, he is writing a comprehensive revision of the genus.

Fortunately, there is nothing uncertain about growing hoyas. They are sturdy plants and will remain so for owners who follow a few simple guidelines.

There are, of course, several growing techniques recommended, but I have chosen to follow the one used by David Sil-

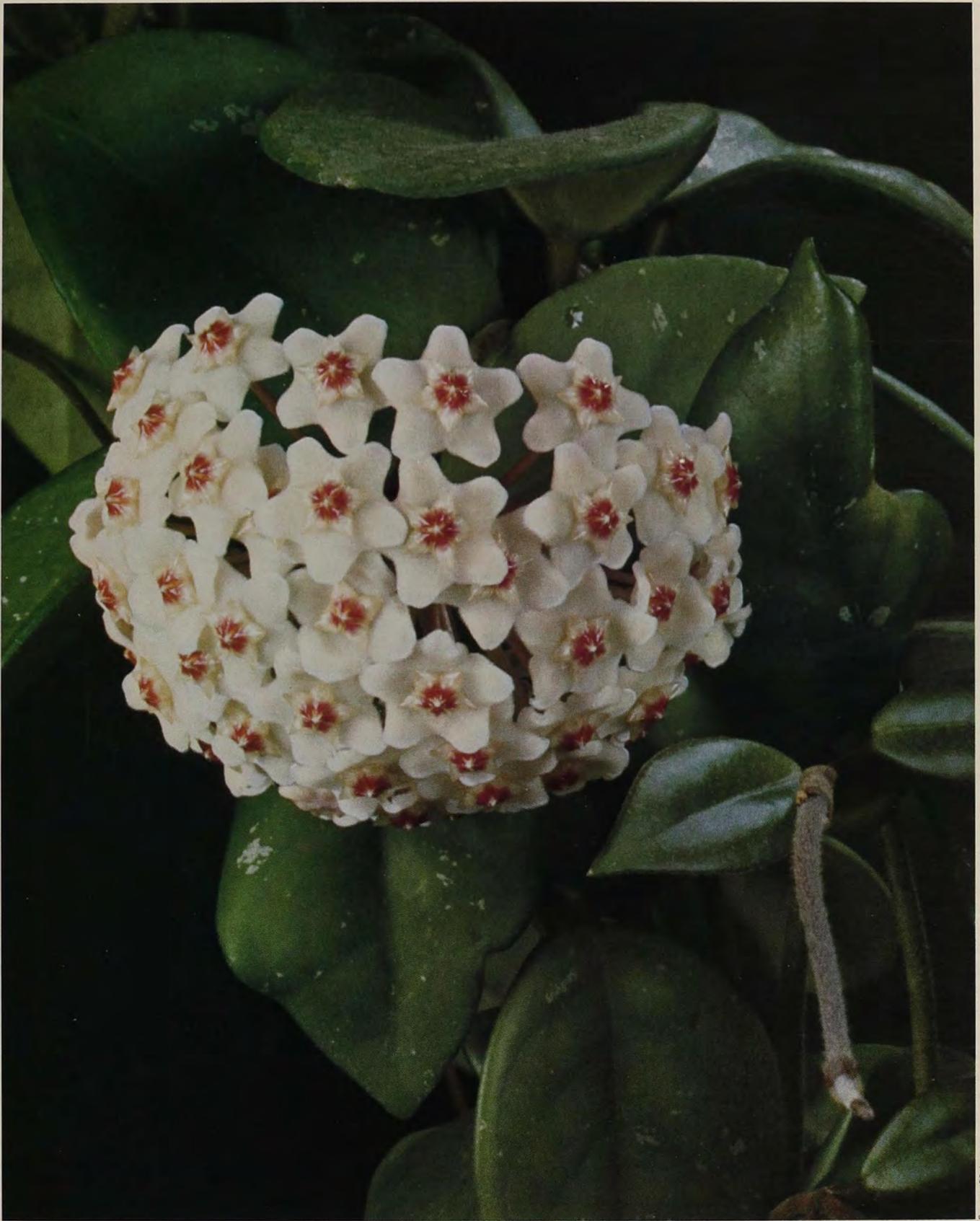


LEFT: *Hoya purpurea-fusca*
ABOVE: *Hoya keysii*.

Steven Heimze



Steven Heimtz



Steven Hintze

LEFT: *Hoya multiflora*.
ABOVE: *Hoya motoskei*.

verman, who, in addition to his work revising the genus, also maintains what may well be the largest collection of hoyas in the world.

One of the first requirements of the hoya is well drained soil. To avoid problems with rotting roots it is important to select a growing medium that will drain quickly. Commercially available soilless mixes, if slightly modified, are suitable. A mix containing pine bark, peat, vermiculite and perlite will make a good starter medium. To this, simply add some pot shards, leaf mold (if available) and an extra portion of pine bark nuggets.

Cornell mix is another commercial medium that can be mixed easily at home by combining 4½ one-pound coffee cans of shredded sphagnum peat moss, 2½ cans of horticultural grade vermiculite and 2½ cans of medium grade perlite. To this mixture add about 2½ tablespoons of dolomite limestone, 1½ teaspoons of 20 percent powdered superphosphate, some 10-10-10 fertilizer, a small amount of potassium or calcium nitrate and a granular wetting agent.

Hoyas grow well in any type of container with bottom drainage as long as watering is adjusted according to the type of pot used, and the plant is kept slightly rootbound. A plastic pot, for example, requires less frequent watering than a porous clay pot.

Some helpful rules to follow are: water the plant only after the top two inches of soil feel dry to the touch. Use water that is tepid and free of chlorination (tap water should stand overnight). Avoid watering on dark, rainy days or during periods of excessive humidity. Water only in the morning because evaporation occurs most rapidly during daylight hours, and the plants will have a chance to dry off before nightfall.

Feed your plants on a weekly basis with a very weak solution of orchid or house plant fertilizer. Also, when misting the plants, occasionally add a small amount of organic fertilizer to the water. Remember that it is always preferable to under-fertilize.

Humidity and temperature, particularly in the winter, are important considerations. Air that is too cold (below 55° F) and too dry (below 50 percent relative humidity) can result in leaves that are weak and thin. To increase humidity immediately around plants, place the plants in a pebble-filled tray of water, making sure the water level never reaches the pots.

Regular misting or using a cool mist vaporizer will work equally well. In the summer, maintain temperatures below 95° F or your plants may slip into dormancy.

Indirect light from a window with a southern exposure, or a plant light, promotes the healthiest indoor plants. Place fluorescent lights about 18 inches from the plants for 12 to 15 hours a day. Watch for signs of a lighting imbalance. Leaves that become light green and yellow, or develop a calloused quality, may be suffering from excessive light. Plants with smaller, darkening leaves, or ones that refuse to bloom, could be signalling a light deficiency. By watching your plants carefully it is easy to spot these conditions and make adjustments before they become serious.

Despite their basically sturdy natures, hoyas do have several natural enemies from which they must be protected. The most common enemy is the aphid, which can be effectively treated with Malathion. If you notice spider mites, quickly dispose of them using Kelthane on contact or Pentac as a residual agent.

Mealybugs pose a more serious threat, attacking the undersides of leaves, stem crotches and roots. Common signs are wilting or dropping leaves, although you also can see the powdery white bugs themselves. If you detect them early enough, a systemic such as Isotox or Orthene will safely rid your plant of the intruders.

There remains one lethal enemy, the hoya's true nemesis, the root knot nematode. This microscopic roundworm, transmitted mainly through watering, infests the roots and lays eggs within them. A semi-monthly spray program using a solution of Vydate-L will keep plants safe from nematode infection and may even eradicate any problems if they are caught soon enough. Wilting leaves or an overall unhealthy appearance are the symptoms of possible infestation. Inspect the roots immediately for irregularly bent sections or ball-like nodules (galls) on their tips. Unfortunately, there is no sure cure for nematodes that would not also kill the plant. The only solution is to take cuttings well above the soil line and throw everything else away—pot, soil and plant remains.

Fortunately, hoyas are easy to propagate from cuttings. Include at least two or three nodes per cutting, and root them in soil or water. Rooting in soil is very easy. Simply plant the lowermost node into loosely packed, sterilized soil. Then thoroughly soak the soil with a dilute fertilizer. That's

all. The cutting should root in a couple of weeks.

An even easier method of propagation is layering. To layer a hoya, place a stem of one plant across the soil in an adjacent container. Then place a small sterilized stone on top of any node touching the soil. Roots will form from this node in a few weeks. After rooting occurs, hold the node in the soil, clip the original vine between the two pots and a new plant is yours.

Traditionally, spring and summer are the hoya's peak growing season. They propagate more easily at this time of year. Mature plants will also flower plentifully at this time. The waxen blooms range in size from *H. imperialis*, with its startling three-inch flower, to the dainty *H. lacunosa*, where an entire umbel is about the size of a nickel.

Hoya flowers are borne on spurs that grow from various nodes, and each peduncle is capable of producing more than 50 dazzling blooms or simply one, as seen on the extremely rare *H. pauciflora*. The spurs are most often permanent and continue to bloom each year. A small ring of pinholes on the end of the spur marks the origin of the flowers for that season. If you want to find out how many times a spur has produced, simply count the number of rings on that peduncle.

After blooming, only pollinated flowers remain attached. These quickly begin to swell, transforming into elongated, horn-shaped seed pods. After two to five weeks the pods burst open and release hundreds of tiny, silk-trailing seeds into the air. Like delicate parachutes, the frail, floating seeds must contact a suitable groundcover within one week. Each day after that, the seed's fertility diminishes almost exponentially, leaving small chance of germination.

This manner of dissemination and its characteristic fruit shape identify the genus *Hoya* as a member of the Asclepiadaceae, or milkweed family. In fact, until 1802 hoyas were classified in the genus *Asclepias*. Then English botanist Robert Brown reclassified *Hoya* as a separate genus and named his "new" plant after a gardener to the Duke of Northumberland, Thomas Hoy.

The hoya's leaves are thick and succulent, enabling them to store water for the arid seasons. While varying greatly in specific features, leaves commonly grow in pairs on opposite sides of a stem. These pairs alternately cross each other and form a balanced flow down each vine.

Continued on page 35

Kathleen Meserve's **BLUE HOLLIES**

TEXT BY STEVE BENDER



Courtesy of Conard-Pyle Company

My ignorance was a great benefit to my career," states Kathleen Meserve, creator of the famous Blue Hollies, "because I didn't know what couldn't be done. If I wanted to do something, I thought about it and then went out and did it."

What Kathleen Meserve did was to take English and rugosa hollies, cross them, and create an entirely new type of holly, *Ilex X meserveae*. In doing so, she not only filled a pressing

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need of gardeners across the land—that for a holly which combined winter hardiness with attractive blue-green foliage—but also demonstrated that, in her words, "horticulture is the only science where amateurs can be on the same level with scientists."

The science of horticulture was not always of interest to Mrs. Meserve. As a girl growing up on Park Avenue in New York City, her awareness of plants was for the most part limited to the swath of green between sidewalk and curb. "I did have a sweet potato plant growing in a milk bottle filled

with water," she notes. "My mother disliked it intensely, because it grew all over the living room."

Even a botany class at school failed to pique an interest in plants. "I was bored to death," she declares. "I remember one time I asked the teacher, if you crossed butter and eggs with milkweed, would you get custard? She kicked me out."

But eventually, things changed for this future hybridizer extraordinaire. She married F. Leighton Meserve, a member of the New York Stock Exchange. With the onset of World War II the Meserves

moved to the Huntington Estate on Long Island. Like many other Americans, Mrs. Meserve became involved in growing vegetables in a backyard Victory Garden. Under the tutelage of a Polish farmer, John Beck, she became so proficient at this that she seldom had to purchase vegetables at the supermarket.

After the war the Meserves moved to a new home a few miles away from the Huntington Estate, but the soil at the new site wasn't good for growing vegetables. Quite let

Holly 'Blue Princess'.

down, Mrs. Meserve began searching for something to replace the void left in her life by the now absent vegetable garden. One day she attended a garden club lecture on native Long Island plants, one of which was holly. Instantly, almost remarkably, the void was filled; a fascination with holly had taken hold. Mrs. Meserve explains her new enthusiasm this way: "Life can be very dull. Everyone should have some interests. The ones that don't take to alcohol. I took to hollies."

In short order she joined the local holly society and began collecting different holly species. When local nurseries couldn't supply the plants she wanted, she wrote to Henry Hohman, a well-known hybridizer, who did. She then learned how to make a Wardian case for her window to propagate cuttings. "The first time I found out that a cutting had rooted, I was so excited I called up all my girlfriends and had a cocktail party," she recalls.

If a rooted cutting is cause for a cocktail party, what manner of gala is suited to her unfathomable luck at creating the Blue Hollies? For no matter if one is professional or amateur, breeding with purpose or breeding for a lark, crossing hollies to achieve a desirable result is not that easy. Never mind the actual mechanics of transferring pollen from one flower to another; the troubles with hybridizing hollies are far more fundamental.

For one thing, hollies are dioecious. Male and female flowers are borne on separate plants. This means that for fertilization to occur both the male and female plant must bloom at the same time. Since they are sometimes reluctant to do this, either the pollen must be stored or quite a bit of plant-juggling between warm and cold rooms becomes necessary. Secondly, when crossing



Kathleen Meserve shown with one of her blue hollies, 'Dragon Lady'.

hollies, many genetic recombinations are possible, and the outcome of any one cross is unpredictable. Finally, different species of holly have different chromosome numbers. English

holly, *Ilex aquifolium*, for example, has 40 somatic chromosomes, while American holly, *Ilex opaca*, has 36. One could therefore expect some trouble in successfully crossing these

two. Similarly, an attempted interspecific cross between plants of undetermined chromosome numbers (such as Mrs. Meserve's) would likely be unfruitful (in more ways than one).

The happy fact is, it wasn't. And therein lies the tale.

Mrs. Meserve grew many species of holly before she tried her hand at hybridizing. "The reason I started crossing them was that there were no good red-berried plants suitable for foundations. They were always too big," she explains. So she contacted Paul Vossberg of the Westbury Rose Company and told him of her concern. Vossberg replied by obtaining for her some seeds of the rugosa holly, *Ilex rugosa*, and suggested that she try some crosses with this plant. He said, "You know, you could create a whole new race of hollies from this." He was right.

For the uninitiated, *Ilex rugosa* is a small, prostrate shrub that grows in the mountains of northern Japan. Although its habit is quite variable, the plant can generally be said to resemble some forms of spreading euonymus. Its lanceolate leaves are about 1½ inches long and one-half inch wide. The fasciculate flowers are produced on growth made the previous season. The beneficial characteristics that it could hope to impart to hybrid progeny — appearance not being one of them — are a low growth habit and winter hardiness.

Working in her kitchen "stud farm," Mrs. Meserve started her crosses in the early 1950's. Because she was unsure of exactly how long or when the holly flowers were receptive, she pollinated each female flower on a plant every four hours. Almost immediately, she could tell if a cross had taken: the flower's base would swell and the petals would fall off.

The resulting seeds she planted in sphagnum moss inside metal flats that were covered with wire to keep the mice out. They took at least 18 months to germinate. After a while, these seedlings, along with others, were lined out on the grounds of her estate. For the first few winters nothing

died because the winters were mild. But along came a bad winter and "when I went out the next spring to check the hollies, all I could see was brown, brown, brown. . . . green." she recalls. The greens were progeny of the rugosa crosses.

Mrs. Meserve knew that she was on to something big. After vegetatively propagating the surviving plants to make sure that their characteristics held true, she named the first of her Blue Hollies 'Blue Boy' (male) and 'Blue Girl' (female). From their male English holly parent, these Blues inherited beautiful glossy, blue-green leaves. From their rugosa mother, they received a lower growth habit and increased winter hardiness.

After the bad winter of 1956, Mrs. Meserve wrote to Jackson and Perkins about the Blue Hollies. Charles Perkins came out to Long Island, liked what he saw and bought the rights to market them. Unfortunately, he soon died, and Jackson and Perkins sold the Blue Hollies to a firm called Harry and David. When Harry and David didn't do anything with them, a plaintive Mrs. Meserve pleaded with the firm to the effect that, as these plants represented her only true success as an amateur breeder, if they weren't going to market them wouldn't they please give her back her patent? Amazingly, they did. The patent soon went to the Conard-Pyle Company and the rest, as they say, is history.

'Blue Girl' and 'Blue Boy' were introduced in 1964. Improved varieties, 'Blue Princess' and 'Blue Prince', soon followed. By taking seedlings from 'Blue Girl' and 'Blue Boy' and crossing them back on their parents, Mrs. Meserve produced probably her most beautiful holly, 'Blue Angel'.

"I liked 'Blue Angel' because it didn't get any of the diseases we get around here and the foliage is like miniature English holly. It would make a wonder-

"My ignorance was a great benefit to my career because I didn't know what couldn't be done."

ful edging for a rose garden instead of boxwood or privet," she declares.

'Blue Angel' is the most compact of the Blue Hollies, growing only six to eight feet in height and breadth if untrimmed. It sports crinkled, glossy leaves, purplish stems, large red berries and is hardy to 20 degrees below zero.

Her great experience with holly leads Mrs. Meserve to some very definite conclusions about how to grow the plant. "All hollies like sandy soils with good drainage, especially the Blue Hollies. Plant them on the north side of the house where the snow lasts the longest. This prevents abrupt changes in temperature," she explains. "And full sun in the summer is great. The plants fruit better and stay stockier, so they don't whip in the wind."

She envisions two superb locations for holly in the home landscape. The first is along a driveway, where the headlights from the car pick up the red fruit in their beams; the second is adjacent to a northeast or northwest window, where the rising or setting sun dramatically illuminates the foliage and berries.

It can safely be said that no latter-day plant hybridizer, amateur or professional, can match the widespread acclaim that has been heaped upon Kathleen Meserve. Her name is known far and wide; a new hybrid of holly, *Ilex X meserveae*, is named after her; and the American Horticultural Society awarded her a citation for outstanding contributions to horticulture. She explains her success by saying, "I supplied something that filled a great need. When you do that, you

get attention." Of her personal reaction to her notoriety, she comments, "I feel like Alice in Wonderland did when she fell down the rabbit hole . . . I feel that the Lord was on my side."

When Mrs. Meserve's husband died more than a decade ago, she decided to give up crossing. "Crossing takes a lot of time, but when you're lonely, you want to have friends. Friends take time too," she notes. Nevertheless, new holly introductions appear periodically from her hands, such as 'Blue Maid', the most cold-hardy of all of the Blue Hollies, and 'Blue Stallion', an improved 'Blue Prince' with snag-free leaves. Mrs. Meserve is currently working towards a weeping Blue Holly and one senses that she won't rest until she gets it.

With all of her success, Kathleen Meserve states that one supreme wish is still but a dream: an honorary Doctor's Degree. "That's the highest accomplishment I could achieve, but I've never written anything and I think you need that," she says.

Why hasn't she written? (She has had offers from publishers.) "Dr. Connors of Rutgers always said, 'Taint what you know; it's what you know you don't know.'" she recalls. "That's very wise. I'm very conscious of what I don't know. I'd love to write a book on holly, but I couldn't make it scientific in any way."

Why all the fuss about an improved holly? Why is it so all-fired important? "Holly is a great winter plant," Mrs. Meserve states flatly, in the pragmatic language of an experienced plant breeder. But perhaps the words of a poet, Robert Southey, state the case most mellifluently: ". . . when all the summer trees are seen So bright and green, The holly leaves a somber hue display Less bright than they; But when the bare and wintry woods we see, What then so cheerful as the holly-tree?" ❁

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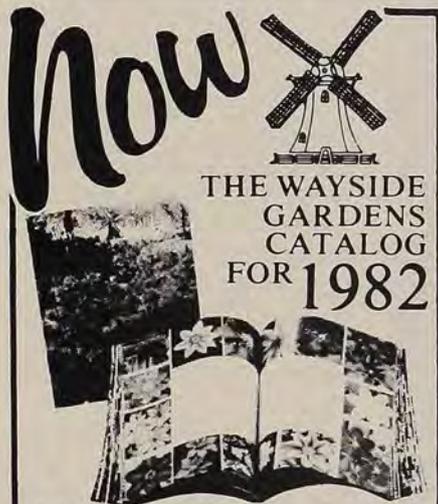


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CAMELLIAS CONT'D

Continued from page 19

clogging. Place the root ball of the plant so that the crown roots remain at the surface, about two inches below the rim of the container. Fill around the root ball as needed. Sprinkle not more than one-quarter inch of soil over the top. Then cover the surface with an inch of coarse material such as fir bark, pine needles or forest litter.

After potting, water the plants heavily, then allow a moderate drying of the soil before watering again. Watering is especially critical in the spring when the plants break dormancy and grow rapidly. Water freely at that time.

During the summer the plants should be kept outside, either in filtered sunlight or where they receive early morning and/or late afternoon sunshine. Keep the hose handy and give the plants frequent baths in the late afternoons or evenings of hot, sunny days.

Camellias are slow-growing by nature and must not be forced. Overfeeding can kill them. Wait a month after potting, then use an organic fertilizer such as cottonseed meal or fish meal. Avoid chemical fertilizers, especially those recommended for acid-loving plants, which camellias are. If you have prepared the potting soil as suggested, it will be naturally acid and will remain acid. If you do use chemical fertilizers, use them sparingly. Of the cottonseed and fish meal fertilizers, apply these every two to three months at the following rate: 4 teaspoons per 6-inch pot, 1 rounded teaspoon per 8-inch pot, 2 rounded teaspoons per 10-inch pot, etc. A liquid feed, such as manure water or fish emulsion diluted as directed, may be applied instead every six to eight weeks. Skip the winter feeding. Always water before and after feeding.

Do not cultivate a camellia. It will damage the roots near the surface. Pull weeds by hand.

In late summer the flower buds will begin to form at or near the tips of the new growth. They may be distinguished from the growth buds by being fatter and more bulbous in shape. Often they will appear in pairs or clusters in one leaf axil. For the largest and finest blooms the plants should be disbudded, leaving one flower bud per axil, as soon as they can clearly be distinguished from the growth buds. Carefully grasp the unwanted bud and gently twist it off with a sidewise motion.

Bring your camellias inside before the

first frost. Fortunately, they do not need a greenhouse to perform. An unheated but frost-free porch is excellent. The east, south or west window of a shut-off room of the house (so common in winter these days) will do. The rule of thumb for light is: plenty but no strong sunlight. On bright, sunny days and in mild weather, ventilate. A south window should be opened an inch or more when the sun shines unless it is bitter cold. A cool plant room where you keep such plants as azaleas, cyclamen and geraniums happy is fine. Camellias will also bloom under fluorescent light if you keep the air circulating, the night temperature below 55°F and the daytime temperature below 65°F. Keep camellias out of the living room, even for a short spell. They are not house plants.

Their spring return to the outdoors will depend upon when the outside night temperatures either match or exceed the night temperatures your plants have grown accustomed to indoors—but certainly not later than the time it is safe in your locality to set out tender plants.

It is a good practice to moderately trim an established plant every year. Pruning to remove weak branches, to shape the plant or reduce its size, is done after the plant has bloomed. To help the trimming process, when cutting a bloom take two or three leaves with it. To force side branching, prune the top flush of growth down to about a half inch above the growth ring. To induce upright growth, cut the side branches right above a growth bud pointing in the desired direction. Remove weak interior branches all the way back to the trunk.

Inevitably, after a number of years, a vigorous camellia may simply become too large to handle unless you are prepared to keep it in a very large tub. Some of the options available to confront such an outcome are, in the order of increasing difficulty:

1. Buy plants that are listed as being slow, compact growers or moderate growers. Avoid the vigorous cultivars (some of them are so desirable, however, that the trouble to keep them in pots will not be the ruling factor).

2. If you can afford it, start with a new plant. As for the one that has outgrown its welcome, if you live where camellias are grown outdoors, plant the veteran in your garden, give it to someone who does live in camellia country or donate it to a college or arboretum.

Continued

Selected Cultivars and Source List



Camellia 'Alba Plena'.

Each of the following dozen varieties is a classic of beauty and performance:

- 'Adolphe Audusson': Deep red, semi-double. Upright compact growth. Midseason.
- 'Alba Plena': White, formal double. Medium bushy growth. Early to midseason.
- 'Betty Sheffield Supreme': White with rose-red picotee edge, semidouble to loose peony form, stylish twists and waves. Medium compact growth. Midseason.
- 'Daikagura': Rose-red splotched white, peony form. Slow compact growth. Early to late.
- 'Debutante': Light pink, full peony, very stylish. Vigorous upright growth. Early to midseason.
- 'Elegans' (Chandler) (Variegated): Rose-pink mottled white, anemone form (large, flat guard petals surrounding a large pompon of petaloids). Medium spreading growth. Early to midseason.
- 'Hawaii': Light pink, full peony form with serrated petal edges, like a giant carnation. Medium spreading growth. Midseason.
- 'Kickoff': Light pink, striped and splattered rose-red, loose to full peony form. Vigorous upright growth. Early to late.
- 'Paeoniaeflora': Creamy white, peony form. Bushy compact growth. Midseason.

- 'Sawada's Dream': White in center, shading to soft, flesh pink in outer petals. Formal double. Medium bushy growth. Early to midseason.
 - 'Tomorrow's Dawn': Light-pink edged white, irregular semidouble to loose peony form. Vigorous upright growth. Early to midseason.
 - 'Ville de Nantes': Brilliant red, blotched and marbled white, saw-tooth edges. Semidouble with lots of twists. Slow bushy growth. Midseason.
- (EARLY—mid-September to November; MIDSEASON—December to February; LATE—March to April.)
- These cultivars and others may be obtained from one or more of the following mail-order sources:

- Belle Fontaine Nursery, Rt. 3, Box 546, Theodore, Alabama 36582
- Mrs. R. C. Welsh (rooted cuttings), Route 3, Box 181, Madison, Florida 32340
- Nuccio's Nurseries, P. O. Box H, 3555 Chaney Trail, Altadena, California 91001
- Orinda Nursery, Bridgeville, Delaware 19933
- Shackelford Nursery, 530 Flint Avenue, Albany, Georgia 31701
- Tammia Nursery, P. O. Box 157, Slidell, Louisiana 70459
- Ray Gentry's Leavell Woods Nursery, P.O. Box 6626, Jackson, MS 39212

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3. Retain the older plant in the same container by removing it from the container, washing away the old soil from the outer root ball, cutting the roots one inch on one or two sides of the root ball, repotting the plant using fresh potting mix and pruning the branches to compensate for the loss of roots. Do this work in February.

4. Start new plants by propagating. Air layering your favorite branch is your best bet. If you are enterprising and patient and have a propagating setup that ensures bottom heat and high humidity at all hours of the day, cuttings may be rooted in a bed of sand or a combination of sand and peat moss, shaded from the direct rays of the sun. Take semi-hard cuttings of current growth when branches have partially turned brown and snap or break when bent between the fingers. Make a slanting cut,

Camellias are slow-growing by nature and must not be forced. Overfeeding can kill them. Avoid chemical fertilizers, especially those recommended for acid-loving plants, which camellias are.

taking four leaves but removing the lower two, one-eighth of an inch from the stem. Apply a rooting hormone to the end of the cutting before inserting it into the rooting medium. Take many more cuttings than you think you will need to hedge against failure. Be prepared to lavish care on these baby plants the first few years while they grow slowly in strength and vigor.

You are not likely to run into problems if you start with a healthy, young plant, pot it properly and maintain it properly. Bud drop sometimes occurs when a plant is allowed to go dry, is over-watered, is not provided with sufficient light and humidity or there is a sudden change of temperature. Most nurseries I have dealt with ship clean, healthy plants. It is wise, however, to inspect each plant carefully upon arrival. In the rare case of a plant with scale on it, scrape every one of them off carefully and watch such plants throughout the first year, until they are perfectly clean.

Do not judge a camellia blossom until it has been open several days. It sometimes takes that long for its petals to assume their typical posture. Avoid nudging or poking the petals. They are fleshy and tend to brown where their surface has been bruised.

More about Camellias

Camellias have been around for thousands of years. *Camellia sinensis* may have been "in use" as early as 2737-2705 B.C. when tea was said to have been first used as a beverage. The genus was not named *Camellia* until May, 1753 when the noted Swedish botanist Carolus Linnaeus named it in posthumous honor of Father George Joseph Kamel, a Moravian priest and botanist who probably had never even seen a camellia himself.

The first known *Camellia japonica* to be brought into America, that is, the species that flowers in the winter and spring and is universally loved as a garden and greenhouse plant, was imported to Hoboken, New Jersey in 1797 or 1798 by nurseryman John Stevens. In 1800 he brought in a double white cultivar named 'Alba Plena'. This lovely, formal white flower is grown extensively in gardens throughout the camellia growing area of our country today.

Camellias survived in the cooler climate of the Northeast because they were grown in "stove houses." Surprisingly, it was some years before they found favor in the South. The late Ralph Peer, a former President of the American Camellia Society, wrote, "It was probably in the 1830's that the wonderful camellia col-

lections of Magnolia Gardens and Middleton Place, in the Charleston area, were first planted. Both of these Gardens have become internationally famous and contain many camellia plants more than 100 years old."

There are now some 190 named camellia species and more than 3,500 named cultivars for growers to choose from. Their flowers range from simple, five-petaled single forms to the very complex and beautiful formal doubles, the form that many people equate with camellias. Other amateur and professional camellia enthusiasts in this country are working toward developing good fragrant camellias, more cold-hardy camellias and even more heat-hardy camellias. The once elusive yellow camellia is now a reality. The future for the camellia looks brighter today than it has for several decades.

Although most of the camellias grown in this country are now grown out of doors, there are many areas of the North where it is possible to grow camellias only in a greenhouse or enclosed structure. Many people have believed that camellias, like other exotics, require high temperatures in a greenhouse. This is not so. They thrive and bloom beautifully in a greenhouse maintained at about 35-38°

F (3-4° C) with daylight temperatures sometimes rising to 70° F (21° C) or more due to the solar energy. The culture of camellias in a greenhouse or other enclosed structure is very similar to that of container-grown camellias, or indeed, those grown in the ground.

In this greenhouse environment many successful growers of camellias also raise bougainvilleas, cymbidium orchids, oranges, lemons, grapefruits, freesias, most of the various bulbs after they have been in cold storage for a few weeks, bird of paradise (*Strelitzia reginae*), night-blooming cereus, geraniums, ardisias, century plants, ferns, azaleas and rhododendrons.

More information about camellias and their cultivation is available from the American Camellia Society. This Society is a worldwide scientific, horticultural and hobby organization of more than 5,000 members in 44 states and 22 foreign countries. Membership brings four issues of the Journal and a Yearbook annually, plus a culture booklet for new members. For information, write the American Camellia Society, P. O. Box 1217, Fort Valley, GA 31030. — Milton H. Brown, Executive Secretary, American Camellia Society ☉

Continued from page 28

As exotic plants living beneath dense tropical cover, hoyas have adapted themselves to seek out the sun's light. With few exceptions, this is done by clinging to and climbing up and around a host tree. Curiously, all hoyas are said to climb in a counter-clockwise direction regardless of their native hemisphere.

Small, aerial roots, which grab and cling to the tree, sprout from the stems. Whenever these adventitious roots contact a limb crotch or natural basket containing loose bark or decayed material, they grow there permanently absorbing whatever moisture the tree provides. Once rooted and on the tree, they are considered semi-epiphytes.

H. macgillivrayi, a species from Australia, is one of the exceptions to this trait. Occasionally suffering the dying off of its terrestrial roots, it continues to live, nourished exclusively by its adventitious roots. In this instance it displays more of the character of a true epiphyte such as a bromeliad or orchid.

Other climbers include *H. diversifolia*, *H. carnosa* and the peculiar Javan *H. macrophylla*. The leaves of this plant are so deeply veined they actually seem quilted, and it is one of the few hoyas whose spurs split into two independent ones. *H. macrophylla* has an umbel that is also atypical because its blooms flower sequentially in a circular pattern rather than in the more common simultaneous fashion.

A few species, such as *H. multiflora*, grow in a more bush-like manner. This delicate yet shrubby plant has one of the most beautiful flowers in the genus. The brilliantly white and yellow flowers recurve, resembling tiny rockets. An umbel

of 50 to 100 blossoms is an imposing and spectacular sight.

Native to Australia, *H. keysii* is covered almost entirely with fine, downy hair. Only its smooth white and pink flowers are without pubescence. When *H. keysii* is moved from its native, arid climate to the humid environment of a greenhouse, a remarkable change takes place and it becomes a vigorous climber.

Pendulous *H. engleriana* exemplifies yet another way in which hoyas grow. Amid its dangling vines, the engleriana's umbels seem to float almost mysteriously. Each flower is a shimmering white, centrally highlighted by an elegant pink corona edged in crimson. *H. engleriana* is further marked by an umbel of exactly four blossoms.

With its white and deep-pink flowers, *H. bella* is as beautiful as its name implies. This species has two unique traits: spurs that drop each season and a distinctive leaf arrangement. The new leaf growths on the ends of each draping vine would ordinarily suffer from a lack of light due to the overhanging upper leaves. To compensate, the leaf stems axially rotate and alternately bend almost 90 degrees. The result is two neatly aligned, parallel rows of leaves.

Indigenous to the Himalayas, the flowers of *H. linearis* are imbued with the sweet scent of lemons. Its crisp, snowflake-white blooms are subtly accented by a faintly pink corona. As with all pendulous varieties, the initial growth is always upwards, but, because of its weight, stems finally pour over the pot, cascading to the ground.

All hoyas, with their charm, mystery and exotic beauty, are a fascinating adventure into rich, tropical jungles, but best of all they are as close as your local greenhouse.

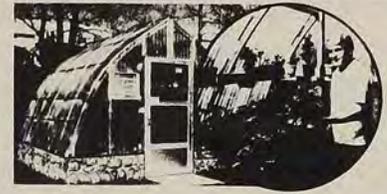
The Hoya Society and Sources

The recently formed Hoya Society International is an excellent source for additional information, offering its members varied articles, correspondence, research reports and quarterly bulletins. Write to Christine M. Burton, #D-9 1445 Monroe Dr., NE, Atlanta, GA 30324 for membership information.

Hoya Sources

Sunnybrook Farms Nursery, 9448 Mayfield Rd., Chesterland, OH 44026
 Silverman's Hoyas, 35 Stuart St., Lynbrook, NY 11563 (list, \$.50)
 Martz Bromeliads, 10782 Citrus Dr., Moor Park, CA 93021
 Loyce's Flowers, Rt. 2, Box 11, Granbury, TX (list, \$.50)
 Logee's Greenhouses, 55 North St., Danielson, CT (color catalog, \$2)
 Green Plant Research, P.O. Box 735, Kaaawa, HI 96730
 The Glass House Works, 10 Church St., Stuart, OH 45778
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Continued from page 23

whereby arboreta and nurseries can pool their resources and distribute unusual specimens. She carries out winter propagation of the conifers, when due to dormancy they are most amenable to this process. Then there is the inevitable grounds maintenance, which curators must now perform due to funding cuts. "I remember that a visitor from Kew was amazed that our curators actually did physical work, rather than just administrate," she says.

The cultural requirements of dwarf conifers are few. Regular fertilization is not necessary, as this encourages rank growth that destroys the dwarfing effect. The most constant demand is for maintenance pruning. "When these plants were donated, no one had any idea how big they would grow," says Frost. "After 17 years, some of the dwarves turned out not to be so dwarf. Some plants reverted to normal size and had to be removed." Foliar revisions are a major headache and must be pruned out promptly, for reverted foliage is much more vigorous than its dwarf counterpart and would soon dominate the specimen.

Insect infestations are rare, but when long periods of hot, dry weather set in, spider mites can be a problem on junipers and spruces. Mites, along with bagworms, are treated with Orthene. Dormant oil in March inhibits scale. Preemergent weed control is handled with Treflan and post-emergent control with Round-Up. The planting is also mulched with crushed blue stone and a layer of black plastic to conserve moisture and retard weed growth.

But enough of culture and insects—let us consider the obvious beauty and wonder of the exhibit. Superbly designed by John Jennings, the Collection successfully blends together, amid simulated rock outcroppings, horticultural specimens of widely disparate appearances. To walk slowly among the plants is to experience the colors, explore the range of shapes and sizes, revel in the differing textures. One feels challenged and calmed at the same time.

Prostrate junipers exemplify this impression. The glaucous ascending spikes of *Juniperus horizontalis* 'Admirabilis', resembling a miniature forest, contrast with the feathery plumes of *Juniperus horizontalis* 'Douglasii'. These two cultivars are very distinct from the fine, rapier-pointed foliage of *Juniperus chinensis* 'Echiniformis'—"the one that hurts to prune"—or the bright-green tones of *Juniperus conferta* 'Emerald Sea', with its



Barbara W. Ellis

RIGHT: The Collection, shown here balled and burlaped, was moved from Gotelli's estate in New Jersey to the National Arboretum in 1962. ABOVE: Sue Frost, curator of the Collection.



Courtesy of National Arboretum

metallic, blue berries as large as those of any *Vaccinium*. One cannot help but imagine other landscape uses for these plants yet still admire the skill by which they are here displayed.

As the size of the junipers attests, the Gotelli Dwarf Conifer Collection contains much more than dwarf conifers. Interspersed among the original plants are specimens of other genera, installed by the Arboretum to add contrast and interest and to extend the textural range. Thus, examples of dwarf *Chaenomeles*, *Spiraea*, *Hypericum*, *Cotoneaster* and *Ilex* are to be found growing with the conifers. In addition, Gottelli donated many large conifers and Japanese maples. One can therefore observe the startling striped needles of *Pinus wallichiana* 'Zebrina'; the sun-dipped branches of *Cedrus deodara* 'Aurea

Pendula'; and the short, stubby growth of *Acer palmatum* 'Shishigashira', which naturally resembles the meticulously trained habit of an ancient bonsai.

The Gotelli Collection provides a sanctuary for some truly rare plants. One of them, *Cedrus deodara*, 'Pygmaea', was willed to Mr. Gotelli from a West Coast donor. Gotelli sent cuttings to Hillier's nursery in England for propagation, and it is fortunate that he did, for the original plant subsequently died in transport. A rooted cutting now survives as part of the Gotelli exhibit. Another singular specimen, *Abies chensiensis*, came to the Arboretum through the auspices of the USDA Experimental Station in Glenn Dale, Maryland. One's first impression of this tree is that it is, in Sue Frost's words, "totally plastic." This is because the tree sports

extremely heavy, stiff needles, the upper surfaces of which are a very glossy dark green, while bright, white stomatic lines span the needles' undersides. As a result, "On a sunny day, the tree reflects so much light it's almost impossible to see," says Frost.

Visitors to the Collection are naturally interested in where they can obtain dwarf evergreens for planting in their home landscapes. Fortunately, the Collection contains many plants—for example, *Juniperus horizontalis* 'Wiltonii' (blue rug juniper) and *Chamaecyparis obtusa* 'Nana Lutea' (golden hinoki false cypress)—that are

widely available in local nurseries. Moreover, the Arboretum recently set aside a special section adjacent to the Collection devoted entirely to locally available dwarf conifers.

To Sue Frost the exhibit remains a constant challenge. A future project is to replace group labeling with individual labels to facilitate easier plant identification. Her immediate concern, however, is the reduction of overcrowding caused by specimens growing beyond expected limits. This, she says, "is a little like painting the Golden Gate Bridge. As soon as you finish on one end, you start again on the other."

Dwarf Conifers in Your Own Garden

Other than prostrate junipers and mugo pines, relatively few dwarf evergreens are found in American home gardens. This is indeed unfortunate, because dwarf evergreens seem to satisfy the basic need of every weekend gardener, namely, "What can I plant that grows to only the height I want and then stops?"

Actually, no dwarf evergreen ever stops growing (unless, of course, it dies). It just grows so slowly that the increase in size is barely noticeable. This attribute frees the gardener from the nasty, arduous task of trimming the plant for two minutes every month and allows him to devote that time to more meaningful endeavors, such as studying astrology or polishing the hot tub.

Because dwarf evergreens come in such a wide assortment of shapes, sizes and colors, they can be used in a variety of landscaping situations: foundation plantings, rock gardens and edging along a bed or walk. But, in my opinion, the best way to use dwarf evergreens is on a raised berm. The very shape of the berm—ascending to rounded peaks, undulating into valleys—lends interest. Moreover, because the berm rises away from the observer, plants situated behind others of equal or slightly greater size can still be completely viewed.

Since the berm is established as a speciality garden for displaying dwarf evergreens, it allows one to incorporate much more diversity into the planting than would otherwise be considered tasteful. One can, for instance, include such colorful specimens as globe blue spruce (*Picea pungens* 'Globosa'), gold threadbranch cypress (*Chamaecyparis pisifera* 'Filifera Aurea'), and the burnt orange Rheingold arborvitae (*Thuja occidentalis* 'Rheingold') and, as long as they are separated by a few more naturally colored shrubs, no one is likely to scream at you too much.

Of course, there is no reason why the berm has to display just dwarf evergreens—for additional interest, you can include shrubs that are either not dwarf or not evergreen. A dwarf crape myrtle (*Lagerstroemia indica* 'Petite') will enrich the garden with its crinkled, lace-like blooms in late summer, a time when such flowers are scarce. The tall, slender skyrocket juniper (*Juniperus virginiana* 'Skyrocket') will add height to the garden and provide an attractive backdrop for lower-growing plants.

Most of the dwarf evergreens and other plants mentioned are available in retail nurseries. Mail-order nurseries also carry these plants, and a brief source list of such firms follows.

Source List

Alpenglow Gardens, 13328 King George Highway, Surrey, British Columbia, Canada V3T 2T6

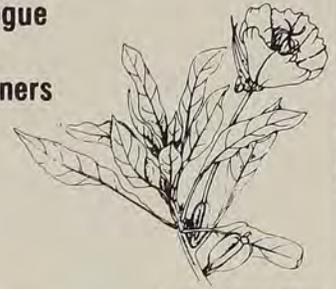
Hortica Gardens, P.O. Box 308, Placerville, California 95667

Oliver Nurseries, 1159 Bronson Road, Fairfield, Connecticut 06430

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FLOWERING TREES

Flowering trees are a major feature of gardens in the Pacific Northwest. In the moderate climate west of the Cascade Mountains, a wide range of ornamentals, including southern plants such as *Magnolia grandiflora*, are grown. East of the Cascades, the winter temperatures regularly drop to 0° F or lower and the rainfall is light, so the range of plants grown is more restricted.

At Oregon State University's North Willamette Experiment Station, a Landscape Tree Evaluation Program has been in progress since 1965. The objective has been to evaluate the performance of landscape trees in the following categories: growth in height and width, time of foliation, flowering, fruiting and fall color. The trees are also evaluated for problems with cold, disease, insects or wind. Performance for up to 10 years is recorded, then most trees are removed to make room for new selections.

When possible, several cultivars and/or varieties of a single genus such as *Cercis*, *Cornus* or *Magnolia* are planted at the same time so that comparisons can be made. As an example, 12 cultivars of *Cornus florida* have been planted, including 'Springtime', which appeared to me to be the best white-flowered cultivar at the U.S. National Arboretum in Washington, D.C. At the experiment station, however, 'Cloud Nine' has grown better and flowered more heavily. Regional evaluation is thus an important means of ensuring that only the best selections are brought to public attention.

Testing at the station also takes into account plant availability, which can be a problem due to a lack of supply of promising trees and an over-supply of unsuitable cultivars. Plants not available in at least some of the garden centers of the Pacific Northwest will not be mentioned in this account of the station's findings. Two plants that are widely available but cannot be recommended because of problems are *Crataegus laevigata* 'Paul's Scarlet' and *Magnolia grandiflora* 'Majestic Beauty'. 'Paul's Scarlet' is defoliated by a leaf spot disease each August unless heavily sprayed. Limb breakage by strong winds limits the usefulness of 'Majestic Beauty'. In wind sheltered areas, this attractive, large-

Average Height and Width in Feet of Flowering Trees After 5 and 10 Years at the North Willamette Experiment Station

Scientific Name	Average Height in Feet			Average Spread in Feet		
	At Planting	At 5 Years	At 10 Years	At Planting	At 5 Years	At 10 Years
<i>Aesculus X carnea</i> 'Brotti'	5.6	8.8	18.0	2.1	6.8	20.0
<i>Albizia julibrissin</i>	5.9	11.8	17.6	0.0	16.2	25.5
<i>Catalpa bignonioides</i>	1.7	8.2	21.7	0.4	6.0	16.7
<i>Cornus florida</i> 'Cherokee Chief'	3.2	7.7	11.8	1.0	4.2	8.6
<i>C. f.</i> 'Cloud Nine'	2.7	8.1	12.5	1.5	5.5	9.7
<i>C. f.</i> 'Rainbow'	4.0	5.9	12.6	1.7	4.5	12.9
<i>C. f.</i> 'Rubra'	3.9	8.6	14.6	2.0	6.7	12.5
<i>C. f.</i> 'Welchii'	2.5	6.0	10.7	2.1	4.5	7.0
<i>C. kousa</i> var. <i>chinensis</i>	5.3	11.0	15.9	2.3	5.4	10.1
<i>C. nuttallii</i> 'Colrigo Giant'	1.1	10.7	17.3	0.1	5.7	8.1
<i>C. n.</i> 'Goldspot'	5.1	10.3	18.1	2.1	6.5	12.3
<i>Davidia involucrata</i>	2.2	9.2	17.3	1.1	6.1	11.6
<i>Koelreuteria paniculata</i>	2.2	8.9	17.3	1.7	9.0	19.8
<i>Laburnum X wateri</i> 'Yossi'	9.3	14.2	20.9	1.8	10.5	14.0
<i>Magnolia X loebnerii</i> 'Merrill'	1.7	8.8	17.6	0.3	5.7	8.5
<i>M. soulangiana</i>	2.3	6.6	12.5	1.3	4.8	10.7
<i>M. stellata</i>	2.8	5.9	12.0	1.5	4.8	8.0
<i>Oxydendrum arboreum</i>	4.0	6.9	10.9	1.8	4.2	7.4
<i>Prunus serrulata</i> 'Amanogawa'	6.9	14.1	20.6	0.4	3.4	6.2
<i>P. s.</i> 'Kwanzan'	3.3	16.5	28.8	0.3	8.2	20.1
<i>Pyrus calleryana</i> 'Bradford'	3.2	19.6	29.7	0.3	8.8	22.1
<i>Stewartia pseudocamellia</i>	3.5	9.8	15.7	1.8	4.9	9.6
<i>Syringa amurensis japonica</i>	3.4	9.2	16.8	0.6	4.6	9.2

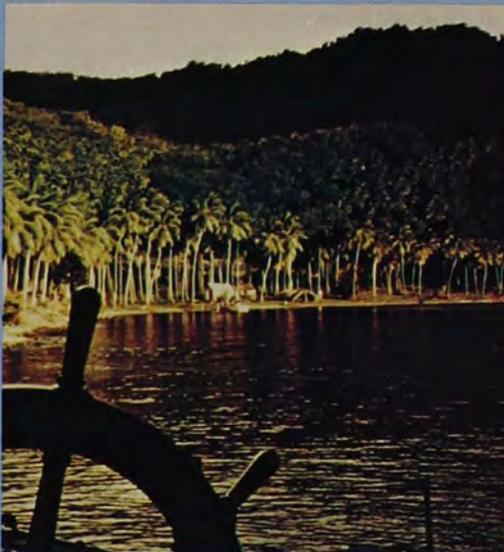
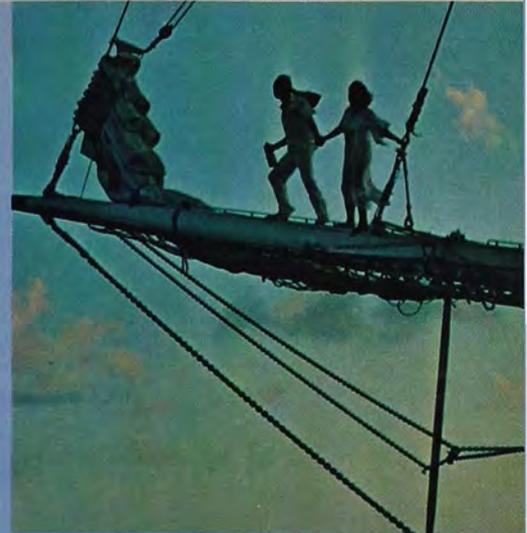
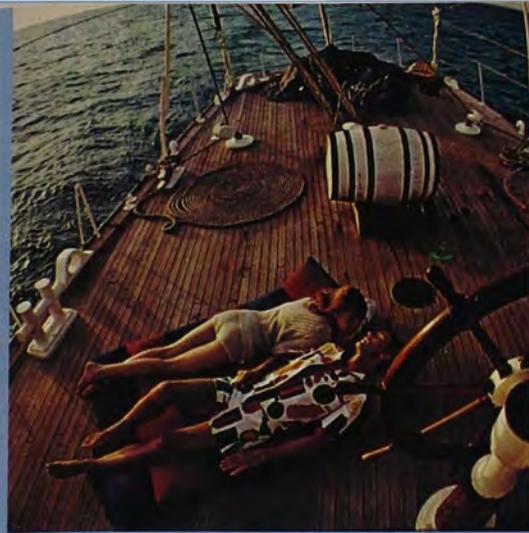
leaved cultivar could be satisfactory.

The average height and width of selected trees in the trial at planting, after five years, and after 10 years, are shown in Table 1. These measurements were made on trees growing in fertile, well drained soil that received summer irrigation. There was no competition from grass or other plants, so the sizes reported may be larger than those growing under less favorable conditions, but the relative growth rate should hold quite well for the area. These trees and some others that grow well in the Pacific Northwest will be discussed individually and should be considered by gardeners in the area. The table will be helpful in choosing a tree of appropriate size for your garden.

Trees blooming before the end of March are favorites since they signal the end of the dull, cloudy winter. Blooms range in size from the 10- to 15-inch pink flowers of *Magnolia campbellii* subsp. *mollicomata* to the tiny, individual yellow flowers

of the Cornelian cherry, *Cornus officinalis*. *M. campbellii* subsp. *mollicomata*, which is available from specialist growers, can grow to 60 feet or taller, but there are other early flowering magnolias of more modest size for small properties. *M. X loebnerii* 'Merrill' has white flowers larger than those of the bushy star magnolia (*M. stellata*) and quickly becomes a small tree. Cultivars with white to dark purplish-red flowers are available in the saucer magnolia, *M. X soulangiana*, which grows to 25 feet with an even wider spread.

Other early blooming trees include the flowering plums and the Bradford pear. The purple-leaved plums, *Prunus cerasifera* 'Blireiana' and 'Thundercloud', are great favorites with their pink and light-pink to white flowers. When the plums are in leaf, the root system is sometimes inadequate to hold the dense round head upright during a strong wind if the soil is soaked. *Pyrus calleryana* 'Bradford' is still relatively rare in the area but is worth



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growing for its early white flowers and rapid growth, even if fall color doesn't usually develop.

From the beginning to the end of the blooming season, dogwoods make an important contribution to the floral beauty of the Pacific Northwest. Before the official end of winter, the Cornelian cherry blooms with its clusters of tiny yellow flowers, followed by three-quarter-inch red fruit that can be made into preserves.

The Pacific Northwest's contribution to the list of flowering trees is the Pacific dogwood, *C. nuttallii*, which is the giant of the clan. It grows to 70 feet with larger leaves and flowers than other dogwoods. Blooming in April, it has more showy bracts (6 vs. 4) than the flowering dogwood, *C. florida*, or the kousa dogwood, *C. kousa*. Available cultivars are 'Colrigo Giant', a very vigorous cultivar with six-inch flowers, and 'Goldspot', whose leaves are flecked with yellow. 'Goldspot' consistently blooms in the spring and fall. Recently, anthracnose has caused defoliation and stem die-back during wet springs in the Puget Sound area.

More adaptable to garden conditions is the eastern U. S. native, *C. florida*, which slowly grows into a 30- to 40-foot tree. Fall color is a feature of most selections in addition to the flowers in late April and May. 'Cherokee Chief' has dark-red flowers but generally *C. florida* 'Rubra' forms are darker in the cool spring temperatures of the Pacific Northwest than in the warmer temperatures of the East. 'Cloud Nine' has profuse white flowers even on young plants. Grown for their variegated foliage rather than their white flowers are 'Rainbow', with yellow and green leaves, and 'Welchii', with white, pink and green leaves. Extending the blooming season into June is the kousa dogwood, whose starlike white flowers are followed by rosy-red fruit with an edible pulp.

April and May are the peak blooming months for flowering trees as well as for flowering shrubs. Of the many genera blooming at that time, flowering cherries are probably the most popular trees. Masses of white or pink flowers cover the small to medium sized plants, and generally there are no fruits to litter the ground. Bright-orange and red fall color is another asset. Some of the better cultivars are *Prunus serrulata* 'Amanogawa' with columnar habit and light-pink flowers, 'Kwanzan' with an inverted cone shape and large, double pink flowers, and 'Shirotae' (Mt.

The Pacific Northwest's contribution to the dogwood clan is the Pacific dogwood, Cornus nuttallii, the giant of the group.

Fuji) with strong horizontal branching and semidouble white flowers. *P. subhirtella* 'Autumnalis' has a rounded form and opens its double white to pinkish flowers in the fall and often again in January and February.

Flowering crab apples haven't been as popular in the Pacific Northwest as they have been in other parts of the United States, possibly because of poor appearance caused by apple scab. While there are many new cultivars grown in wholesale nurseries in the area, those most readily available at retail are older cultivars that have shown some scab resistance. The carmine crab apple, *Malus X atrosanguinea*, has fragrant, rose-pink flowers and yellow fruit on a small to medium sized, broad tree. 'Dolgo', one of its cultivars, becomes a 40-foot tree with profuse white flowers and edible red, 1½-inch fruit. The showy crab apple, *M. floribunda*, is interesting for its contrast of red buds and white flowers and for yellow and red fruit on a small tree.

There are a number of other interesting flowering trees also blooming in April and May that make good additions to the landscape, however, none of these has good fall color. The red horse chestnut, *Aesculus X carnea*, has pink to red upright flower trusses borne on a coarse leaved, coarse branched tree that attains a height of 40 feet with a 30-foot spread. Refined is a good adjective for the 30-foot-tall Japanese snowbell, *Styrax japonicus*, whose faintly fragrant, three-quarter-inch white bells hang below the branches, while the three-inch leaves angle up giving a green and white tiered effect. Also white flowered is the dove tree, *Davidia involucrata*, a 35-foot tree whose large, white bracts look like white doves among the green leaves. Most dove trees are raised from seed and may take 10 years to bloom. Long chains of bright-yellow, pea type flowers hang from the narrow crown of the gold-chain tree, *Laburnum X watereri* 'Vossi'. The colorful flowers are the one reason for growing this 30-foot tree.

Summer blooming trees are few but choice. The Japanese tree lilac, *Syringa reticulata*, tends to develop multiple stems

but can be grown with a single stem forming a 30-foot tree. Large white flower clusters which appear in June smell like privet. Cherry-like bark adds winter interest. Japanese stewartia, *Stewartia pseudocamellia*, is a triple interest tree: three-inch flowers in late June and July, good fall color and exfoliating bark all add to its appeal. *Stewartia* will take many years to reach its listed 60-foot height. Growing quickly into a 30-50 foot tree is the southern catalpa, *Catalpa bignonioides*, whose large, broad leaves are a perfect foil for the upright spikes of two-inch white flowers which appear in July.

Continuing the bloom period into late July and August are three colorful trees. Sourwood, *Oxydendrum arboreum*, has drooping clusters of white flowers followed by light-green seed capsules contrasting with the brilliant red fall color. This slow growing, 30- to 40-foot tree needs the same conditions as a rhododendron. The golden-rain tree, *Koelreuteria paniculata*, is a wide spreading, 30- to 35-foot tree with 14-inch upright clusters of small yellow flowers. The inflated seed capsules are good for flower arranging. Pink powder puff blossoms that open from July to September is a winning characteristic of the silk tree, *Albizia julibrissin*. This fast growing tree reaches 35 feet and spreads its fine foliage even farther. Unfortunately, like other fast growing trees, it is subject to wind breakage and wood rot.

Most of the trees mentioned in this article are available in better garden centers in USDA Zones 5-8 of the Pacific Northwest. An exception is *Magnolia campbellii* subsp. *mollicomata*, which is available from magnolia specialists in Zones 8 and 9. All of the trees mentioned will grow on both sides of the Cascade Mountains except two magnolias (*M. campbellii* subsp. *mollicomata* and *M. grandiflora*), *Cornus nuttallii* and *Albizia julibrissin*.

The following mail-order firms supply most of the cultivars listed:

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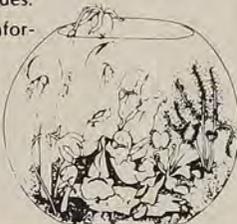
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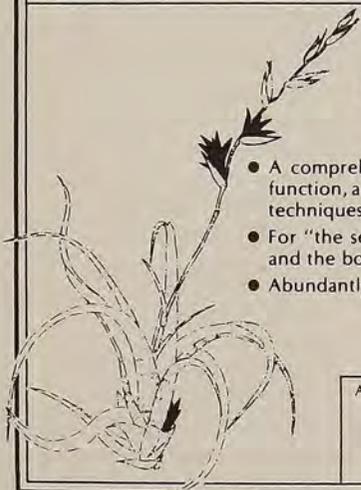
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market for such beauties as *Daphne genkwa* and *D. odora*, *Arbutus unedo*, *Caragana aborescens* and *Corylopsis sinensis*? Or such lovely American natives as *Cyrilla racemiflora*, *Cladrastis lutea*, *Diervilla lonicera*? It is particularly aggravating to have to order my *Rodgersia*, named for Commodore John Rodgers of the United States Navy, from an English nursery.

Perhaps we the gardeners and designers are at fault for not providing a sufficient demand for unusual plant materials. Some time ago I arrived at a well-known Washington, D. C. nursery just as a backhoe started uprooting a field of beautiful eight-foot *Styrax obassia*. The owner sadly told me he could not afford the room for nursery stock no one appreciated. The question then is which comes first? If the plants are not in nurseries to see, who will know their charms and buy? We can, of course, ask for what we see abroad. Many plants from temperate areas of both Occident and Orient are suitable for plant zones here and can be easily checked in *Hortus III*. Another fine source of information are the many American arboreta. Here you will find many of the glories of the plant world and willing advice on where to find them as well as horticultural tips. On the West Coast, where nurseries are filled with exotics from far countries, you have an even greater choice.

An exciting pursuit also is to watch the nurseries and hedgerows for variations in color or form. Perhaps you will find just the form you want for that accent plant or discover just the color you need to compliment your gray garden or the russet tones to mute the colors of spring azaleas.

Meanwhile, try a little experimenting with what can be found—the American *Yucca filamentosa* and the naturalized mullein *Verbascum thapsus* are easy to find and make splendid accents, as do *Bergenia cordifolia*, *Ligularia dentata* and *Macleaya cordata*, now carried by our best nursery gardens. Please do buy those lovely plants or else they, like *Styrax*, might be plowed under. Never forget friends with old gardens who have interesting plants now lost to the trade. It was through just such a Michigan friend that I became the proud owner of a valued *Petasites*. ☉

—A. St. Clair Wright

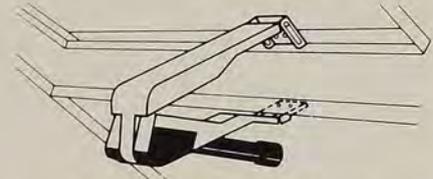
Mrs. Wright, who is a designer, is also Chairman of the Board of Historic Annapolis, Inc. and of the William Paca Garden, which was featured in our October, 1981 issue.

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