Volume 55 Number 2 Early Spring, 1976

JAPANESE IRIS

(I. Kaempferi)

LARGE **2** TO **3** EYE DIVISIONS **IMPORTED** FROM **JAPAN**

We proudly make available to American gardeners the world famous HIGO strain, developed to a magnificent state of perfection under the aegis of the Japanese Prefectural Government.

* * *

Now you can glorify your own garden with these monumental, dinner plate size blooms, and at the same time be the pride of your whole community.

* * *

Japanese Iris, with their exotic, gracefully ruffled flat blooms (sometimes larger than this page), are by far the most spectacular, and the latest flowering of Iris species — mid to late July, here.

* * *

They are just as easily grown as the others, but more adaptable, since they can be grown in damp and even wet locations which many other plants will not tolerate.

* * *

WE OFFER THE FOLLOWING:

ROSE QUEEN — (Benibotan) Velvety rich shade of Tyrean Rose — reminiscent of a monarch's imperial attire — Price $9.95 per 3 — Postpaid.

LAUREL CROWN — (Gekeikan) Heavy, snowy white, edged rich rose — like a ceremonial robe. Price $9.75 per 3 — Postpaid.

WHITE QUEEN — (Hakubotan) Simply enormous, ruffled frosty white, refreshing as a cool mountain peak in midsummer — Price $9.75 per 3 — Postpaid.

PHOENIX BROCADE — (Hoho-Nishiki) Shades of deep red, purple, and maroon artistically sprinkled with silver to form a never before seen, exotically colored brocade. Price $10.95 per 3 — Postpaid.

AZURE SKIES — (Murakama) Bright blue, sparkling and refreshing as clear cool blue skies. A rare color that will enhance everything else in your garden. Price $10.95 per 3 — Postpaid.

DAZZLING TAPESTRY — (Tsure-Nishiki) Glory rosy-lavender, artistically splashed silvery white in a dazzling tapestry of color. Price $8.95 per 3 — Postpaid.

GOLD MEDAL JAPANESE IRIS SPECIAL ONLY **$16.00** POSTPAID!
One large division of each of the above gorgeous new varieties, properly labeled. You save OVER $5.00

TRIPLE GOLD MEDAL JAPANESE IRIS SPECIAL ONLY **$44.95** POSTPAID!
Three large divisions each of the above jewels. YOU SAVE OVER $16.00

CONNOISSEURS JAPANESE IRIS SPECIAL For the first time ever, we offer complete, undivided clumps, consisting of 7 to 11 or more eyes each of any of the above varieties for $7.50, per undivided clump. Quantities positively limited and orders will be filled in date rotation.

WE PAY POSTAGE including **AIR MAIL DELIVERY OF ORDERS TO THE WEST COAST**

SPRING SALES FOLDER featuring Lilies, Clematis, Hostas, Wildflowers, Dahlias, Gladioli, as well as rare bulbs and plants to individualize your garden, FREE WITH ORDER, or send 25¢ to cover postage and handling.

Blackthorne Gardens
48A Quincy Street, Holbrook, Mass. 02343

Massachusetts Residents include 5% Sales Tax

American
Horticulturist
Volume 55 Number 2 April, 1976

The American Horticultural Society, Publisher
Mount Vernon, Virginia 22121
703/768-5700

For United Horticulture . . . the particular objects and business of The American Horticultural Society are to promote and encourage national interest in scientific research and education in horticulture in all of its branches.

AMERICAN HORTICULTURIST is the official publication of The American Horticultural Society, 7931 East Boulevard Drive, Alexandria, Virginia 22308, and is issued in February, April, June, August, October and December. Membership in the Society automatically includes a subscription to *American Horticulturist* and $1.50 is designated for each issue of this publication. Membership dues start at $15.00 a year.

Refer editorial matters to:
Murray Keene
American Horticulturist
Mount Vernon, Virginia 22121

Refer advertising matters to:
Publisher Services, Inc.
621 Duke Street
Alexandria, Virginia 22314

Address requests for reprints of articles to The American Horticultural Society,
Mount Vernon, Virginia

AMERICAN HORTICULTURIST is devoted to the dissemination of knowledge in the science and art of growing ornamental plants, fruits, vegetables, and related subjects. Original papers which increase knowledge of plant materials of economic and aesthetic importance are invited. For manuscript specifications please address the Executive Director, Mount Vernon, Virginia 22121.

Replacement issues of *AMERICAN HORTICULTURIST* are available at a cost of $2.50 per copy, but not beyond twelve months prior to date of current issue.

The opinions expressed in the articles which appear in *AMERICAN HORTICULTURIST* are those of the authors and are not necessarily those of the Society. They are presented as contributions to contemporary thought.

Second class postage paid at Alexandria, Virginia and at additional mailing offices.

OUR COVER: Photo by Robert H. Savage; *Geissorrhiza rochensis* at Darling, South Africa

PRINTING: RAY PRINTING, KANSAS CITY, MISSOURI

Plants Across the Seas

Most American gardens contain plant contributions from other cultures of the world. The first settlers brought with them more than their family traditions. They brought their traditional plants as well. With no baggage inspection to complicate matters, many exotic plants immigrated and became part of our landscape. Hundreds of other plants did not survive the ordeal, however. Their only residue is in the notes of settlers and the explorers.

When we walk into our garden, we seldom think that this is a plant from China, England, India, or Peru. The plants have long become a part of our heritage. Through selection and propagation, the plant we grow often looks like its progenitor in its native habitat. Occasionally, it may be so altered in appearance and performance that it could no longer survive in its original surroundings. We continue to look for ways to stretch the area of plant adaptation, acting as a chronicler to our friends by relating the latest exploits of plant acclimatization and survival. Some species seem to get most of our attention, while hundreds of others with less dazzling appeal wait on the sidelines, hoping someone will help them become reigning favorites.

Meanwhile, many native American plants suffer even greater indignities. Each year, more native stands are grubbed out to make way for the 3-million-acre crunch for roads, parking, and housing. When we revegetate the area, we tend to select from the common "top-ten" plants. Our landscape is slowly turning into a homogeneous display of similar plant combinations.

I have lived in a landscape with acid soil, moderate winters, hot, dry summers and adequate rainfall for many years. I have come to expect to see areas planted a particular way. Even without my glasses, I can identify plants just from their blurred forms and common arrangements.

We must commend our nursery-oriented groups for trying to change this boring national trend. The American Association of Nurserymen has urged our nation to bring excellence to our landscape planning. AAN's annual Landscape Awards honor planting designers and installers. We need to let every community know they can plant their living spaces with highly varied materials, placed in aesthetic, environmentally sound settings.

When one leaves familiar surroundings and travels to other areas, the landscape takes on new perspectives. Plants normally treated as small, single-trunk trees often appear as multi-stemmed plants. Camellias which are usually displayed as individual plants become a surging mass of foliage, clipped to create a ground cover of dancing waves. Conifers which have always been permitted to develop their ascending form become sentinels with a strong vertical axis and short, but uniform, lateral branches.

These experiences can be best appreciated by travelling to other gardening areas of the world. I recently discovered this when my wife and I travelled with twenty-two AHS members on a 26-day autumn tour of Japan, Okinawa, Taiwan, and Hong Kong. We enjoyed the fellowship of gardeners with differing horticultural experiences in Florida, Tennessee, Georgia, North Carolina, Virginia, Maryland, New York, Oregon, and Washington.

Travel becomes more of a privilege each year—the expense and time required make us use our resources wisely. AHS intends to provide these opportunities to our members. Travelling in the company of enthusiastic fellow gardeners is truly a rewarding, educational experience. The *American Horticulturist* regularly carries announcements of these worthwhile trips.

Recently, we received more than 1200 responses to a questionnaire from members, advising us of their horticultural tour preferences. We are putting this valuable information to good use in planning future tours.

Our future plantings will take on new perspectives as we experience "plants across the seas". We will bring back new information and use it to create better and more imaginative plantings for tomorrow's landscape.

Henry M. Cathey
President, AHS

Special Book Offer to AHS Members

Want Healthy, Vigorous Trees and Shrubs?
At a savings of $10.00, here is the book for you:
Discount offer expires April 15, 1976

Insects That Feed on Trees and Shrubs

Published by: Cornell University Press, 124 Roberts Place, Ithaca, New York 14850

An Illustrated Practical Guide, by Warren T. Johnson and Howard H. Lyon

This new, comprehensive book gives essential information about nearly 700 species of insects that can injure woody ornamental plants in North America. It deals in a practical way with the science of entomology so that the reader can diagnose plant disorders caused by pests and identify the insect or mite responsible.

Illustrated with 212 magnificent full-color composite picture plates

Each photograph, scrupulously exact in color and scale, is a composite showing both pest and injury symptoms. The photographs are all new and have never been published before. Inside this brochure you can see for yourself the remarkable color authenticity. The actual page size is (9 x 12).

Legends describe the individual pictures, and the facing text points out the characteristics of plant damage, the geographical distribution of the pest, and the organism's basic biology.

Interprets scientific material in non-technical language—

An extensive index of key words assists readers in identifying pests by empirical means. Accepted common names are used, where available, for both plants and animals, and technical Latin names for all pests are also included.

Provides complete coverage of North America—

Three other specialists who work in widely separate areas collaborated with the author and photographer. Ten years in preparation, the book includes life cycle information to aid in proper timing for chemical control applications, should they become necessary. A separate section tells where to get information on the ever-changing methods of modern pest control.

Only until April 15, 1976, you can order this book at a special pre-publication price of $24.95—a saving of more than 28% from the regular price of $35.00.

ORDER FORM

American Horticultural Society
Book Department
Mount Vernon, Va. 22121

Gentlemen:

Yes, I want to save $10.00 by ordering at a pre-publication price of $24.95—a saving of more than 28% from the regular price of $35.00:

INSECTS THAT FEED ON TREES AND SHRUBS. An Illustrated Practical Guide by Warren T. Johnson and Howard H. Lyon.

$24.95
.50 postage & handling
$25.45 total

☐ Check enclosed

Name _____

Street _____

City _____

State _____ Zip _____

Mixing Food Plants with Ornamentals

Kate Rogers Gessert
2310 NW Grant Ave.
Corvallis, Oregon 97330

During the past few years large numbers of people in the United States have begun growing vegetables. Vegetable growing has great appeal because it satisfies a number of our current needs. We can save money. We can take care of ourselves, at least partially, by working on our own land. We can grow food that is tastier, more various, and nutritionally better than that available in stores. We experience healthy exercise. We feel closer to the land and sense our dependence on its resources.

There is one need that vegetable gardens do not yet fulfill, at least not intentionally. This is the need for attractive plantings around our houses. We think of our gardens as recreational and decorative: outdoor living rooms with grass rugs and hedge walls. Vegetables are not considered a part of this ornamental scene. Where there is enough room, vegetables are grown in separate areas: in rectangular plots in the middle of lawns, or in backyards, possibly separated from the ornamental plantings by a fence.

This separation of food plants and ornamental plants has a history almost as long as gardening itself. The wealthy and elite have long observed the distinction between "kitchen gardens," where food plants are grown, and "pleasure gardens," where rare imported flowers, sweeping lawns, and shade trees flourish. Most poor and middle-income people have grown the plants they could use, and grown them all together: fruit trees and vines, vegetables, potted herbs and medicinal herbs.

In the United States, early settlers grew plant necessities only. Later on, the well-to-do adopted the custom of planting ornamental "parlor gardens" at the front and sides of their houses. The vegetables were at the back of the dwelling, near the kitchen and out of sight. It wasn't polite to relax or entertain guests among the food plants. That would be as bad as entertaining them in the kitchen!

Today we consider ourselves more enlightened and informal. We are not afraid that our friends will think us ill-mannered or poverty-stricken if we invite them into our kitchens or admit that we grow vegetables. Few of us own vast expanses of land, so that combining functions by growing the same plants for both food and decoration would seem sensible. Yet our modern gardens are descendants of the "parlor gardens," and we continue to grow plants in the same old categories: food plants and ornamentals. Some fruit trees and herbs have made it into an uncertain middle territory, but most vegetables remain solidly in the food plant category. This is a waste of both space and design possibilities.

We should liberate our vegetables from our backyard. We should rejoice that many of their textures, shapes, and colors are attractive, and use them in ways that show off their beauty to best advantage. We can grow vegetables in front, in back, around, up and down our houses, and live surrounded by plants that are beautiful not only in terms of pure aesthetics but in the oldest, deepest way known to us: because we need them.

As a teacher at the Brooklyn Botanic Garden, I planted experimental gardens there for two years, on the edge of a large field. Most of the field is a Children's Garden where 300 city youth come each spring and summer to plant vegetables. Each fall the field is plowed thus the plants we grow are mostly annuals.

In 1973 I took care of a long annual flower border and experimented with companion planting in a flower, vegetable, and herb garden. I was unfamiliar with the invasive habits of some herbs in close quarters, and it became difficult to tell which companion combinations were most effective. However, the green shades and the textures of the vegetable and herb leaves and the bright colors of vegetable-fruits and companion plant flowers were so beautiful together that they suggested new ideas for 1974: a vegetable invasion of the annual flower border.

I planted flowers and vegetables together in a [60′ × 10′] section of the border. Few rows were used and vegetables were massed in beds like flowers.

Around the edges of the flower and vegetable area I planted a border of "Banquet" parsley and dwarf mixed phlox. The clear green of the parsley set off the strong red shades of the phlox flowers.

Continued on page 34

Photo by Guy Burgess

Prelude to Spring

Camellia japonica

Martha Prince
Photography by
Jordan and Martha Prince
All Pictures Taken at
Planting Fields Arboretum
Oyster Bay, Long Island
New York, 11771

On bitter grey days in February and March, flower lovers in the New York area can escape the sleet and chill of northern winter. Planting Fields Arboretum, on Long Island, has a very beautiful indoor collection of *Camellia japonica.* To enter the Camellia House is to enter not only a different season, but a different time. Few flowers, by name alone, so evoke the aura of another century! Perhaps it is the time of Marguerite and Armand in Dumas' bitter-sweet *La Dame aux Camélias,* or Violetta and Alfredo in *La Traviata,* or our ante-bellum South, with its lovely, lost gardens. The visitor to the greenhouse steps from snowy reality into a world of exotic color.

Camellia japonica is but one species of the genus *Camellia,* in the tea family (Theaceae). It is an oriental shrub (or small tree), native to Korea and Japan, and has been cultivated for centuries. The first written accounts of camellias known in the West are those of a Moravian Jesuit priest, Georg Kamel, and their name is a Latinized version of his. Although Kamel travelled extensively, it is doubtful that he introduced any camellias to Europe. He died in 1706, and there is no record of any such flowers then being in European gardens.

The first known western blooming was at an English estate in Essex, belonging to Lord Petre. The year was 1739. English gardeners of the period must mistakenly have thought the exotic-looking blossoms, and the lush, rich foliage, needed a tropical climate. The poor camellias were grown in warm, not cool, greenhouses; the plants disappeared, presumably "boiled to death." A re-introduction to England was made in 1792, via the East India Company. These early plants were of two colors, a striped double and a white. Enthusiastic plantsmen soon had differing colors and forms growing in English gardens.

'Adolph Audusson', popular Semi-Double

The first *C. japonica* plants known in America were also of two colors—one red, one white—sent from who-knows-where to a nurseryman in New Jersey. The date was 1798 for the red, and 1800 for the white. Within twenty-five years Southern gardens were abloom. Many lovely varieties are thought to have disappeared in the holocaust of the Civil War.

In the wild, *C. japonica* blossoms are usually red and single. The astonishing diversity now found is a result of longtime selection and development *within* the species. There are many hundreds of named *C. japonica,* in colors from white through pink and rose to red, and from solid color to striped and blotched. In form they may mimic roses, peonies, anemones or carnations, and be single, semi-double, or fully double. Although usually called varieties, the more correct term, in contemporary botany, is "cultivar".

In 1916, when Long Islander William R. Coe decided to fill a greenhouse at his estate, "Planting Fields", with camellias, he had a whole range of colors and forms from which to choose. Mr. Coe ordered his many plants from John Waterer, Sons and Crisp Nursery, in Surrey, England, shipment being made from the Isle of Guernsey. Of these original plants, many remain today in his greenhouse, now the Camellia House of Planting Fields Arboretum. Mr. Coe left his beautiful home and gardens to the State of New York in 1955.

The usual outdoor growing area for *C. japonica* in America is from coastal Virginia, through the Carolinas and Georgia to northern Florida, then west along the northern Gulf Coast. Lovely gardens are open to the public in Virginia (Norfolk Botanical Gardens), near Charleston (Middleton Place and

Magnolia Gardens), in Savannah, at Bellingrath Gardens in Alabama, and at several places in Louisiana. In fairly recent years, *C. japonica* has also become a garden favorite along the Pacific Coast up to Vancouver. Unhappily, most Americans in other places know camellias, if they know them at all, only as corsage flowers. A greenhouse such as Planting Fields' has brought a new and special appreciation of these treasures to many people.

Indoor Cultivation

Meeting the *Camellia japonica* at the Arboretum inevitably leads to wanting plants for oneself. However, it is a rare and very wealthy gardener who can afford a greenhouse comparable to the one at Planting Fields! Fortunately, smaller greenhouses and slow-growing camellias are compatible. If *any* greenhouse is beyond possibility, camellias do quite well as window plants. On Long Island, not too far from Planting Fields, there is a good collection in a long, high window having full southern exposure. The temperature is moderated by air conditioning, and the soil is two feet deep, in tubs within a built-in box. Bloom is good, and has been for more than ten years.

'Tricolor (Siebold)', a beautifully striped Semi-Double

'Purity', a fine white

The cultural information on the Camellia House, at the end of the article, is applicable to any greenhouse.

Outdoor Cultivation

C. japonica is a native of moist, wooded hillsides; knowing this is the key to successfully growing plants outdoors. The site, therefore, should be one with high summer shade, dappled winter shade and wind protection (this can be afforded by surrounding plants). The worst site would be a south-facing, exposed position, open to full winter sun. Beginning gardeners sometimes mistake full winter sunshine for "protection", because it is warm; instead, it is devastating. Plants such as rhododendrons and camellias cannot endure rapid ups-and-downs of temperature, and suffer from sun scald and winter burn.

Holes for planting, made much wider and deeper than the root balls, are refilled with rich, loose-textured soil. A good mixture is one-third loam, one-third sand, and one-third sphagnum peat, with the pH value in the range of 5 to 6.5. It is important that the plants are set at a level as high as, or preferably a little higher than, that at which they previously grew. As is true of most woodland plants, the shallow roots are surface feeders; *C. japonica* originally grew in places where it was necessary to avoid competition with the lower roots of surrounding trees. An undisturbed mulch of oak leaves, pine needles, or bark chips provides a good cover. (Peat is *never* used as a mulch. It compacts into an impenetrable crust once it dries).

Outdoor camellias, with a good organic mulch, do not require much fertilizer; that used should be sprinkled on, and not worked in. Fertilizers designed especially for camellias are available, but those for rhododendrons and azaleas are equally satisfactory. Timing of application is critical, to avoid late season growth. As this varies from area to area, it is best to study cultural material offered by a local horticultural society or a nearby chapter of The American Camellia Society.

'Etoile', a red Rose Form Double

Choice Plants

For outdoor use in colder areas, the choice of plants is restricted, and it would be wise to follow the advice of others. Only in recent years have serious efforts been made to find camellias hardy enough to withstand the climate of New York City and Long Island. For this area, and others of similar temperatures, Gordon Jones, Director of Planting

Continued on page 35

Tomatoes-Andes Mountains

The tomato, a wild growing mountain plant, long thought to be poisonous, is today's most popular vegetable. A recent Gallup poll indicates that 92% of all home gardeners in the U.S. plant them. Fresh tomatoes are a tasteful, attractive, nutritious, and versatile food. They grow under a variety of conditions with a minimum of effort and require relatively little space for large production.

The cultivated tomato, *Lycopersicon esculentum* Mill., originated as "wild" forms in the Peru-Ecuador-Bolivia area of the Andes mountains. From South America the tomato was carried into Central America and Mexico by prehistoric Indians. It was introduced to other areas of the world by European travelers. The first known record of the tomato reports its introduction to Italy in 1544. Over the next 200 years many European writers reported seeing tomatoes in Europe and northern Africa. Although eaten by some, it apparently was grown primarily as an ornamental or curiosity plant. The first report of the presence of the tomato in North America was in the Carolinas in 1710. The next mention of the "tomatis" in North America was in a 1766 reference by a John Bartram which stated:

"ye 2 nights frost, with some ice, of ye 4 & 5 of december, ye Governour tould me was harder a Augustine than any they had before crismas last year. it killed ye pumpkin vines & many of ye leaves of ye carolina peas but did not hurt ye tomatis."

In 1779, tomatoes were reportedly used in New Orleans, in catsup, but were planted in the English colonies only as an ornament, under the name of "Love Apples". Thomas Jefferson grew tomatoes on his plantation in 1781. Much of the early literature reports most people considered tomato fruits and leaves to be poisonous. However, an American, who we do not read about in history books, emerged in 1820. An article by Harold Helfer on the "Love Apple" explains:

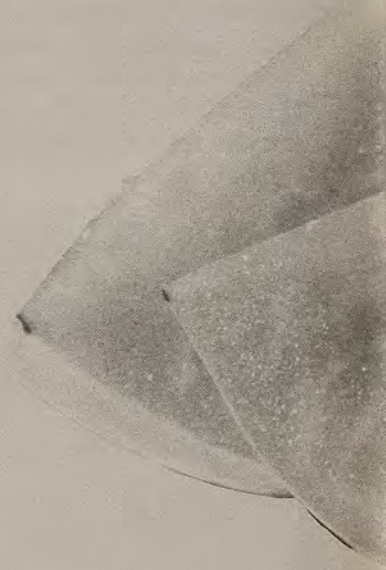
"One of the unsung heroes of our country was Robert Gibbon Johnson, a great man who made a lasting and profound contribution to our society, and was then forgotten. Hardly any one ever heard of this man, much less of his brave act on the courthouse steps at Salem, N.J., on a hot August day in 1820 . . . . . his claim to fame rests on neither his wealth nor the honors that were thrust upon him. "Robert Gibbon Johnson deserves immortality because he ate a tomato."

Tomatoes began gaining wide acceptance as a food plant in the U.S. between 1820 and 1850. The feelings of one man are captured in a quote from an 1845 article:

"Mr. Beecher of the Indiana Farmer speaks with the enthusiasm of an epicure on the subject of tomatoes. He says that whoever does not love them, 'is an object of pity.' There's no accounting for taste."

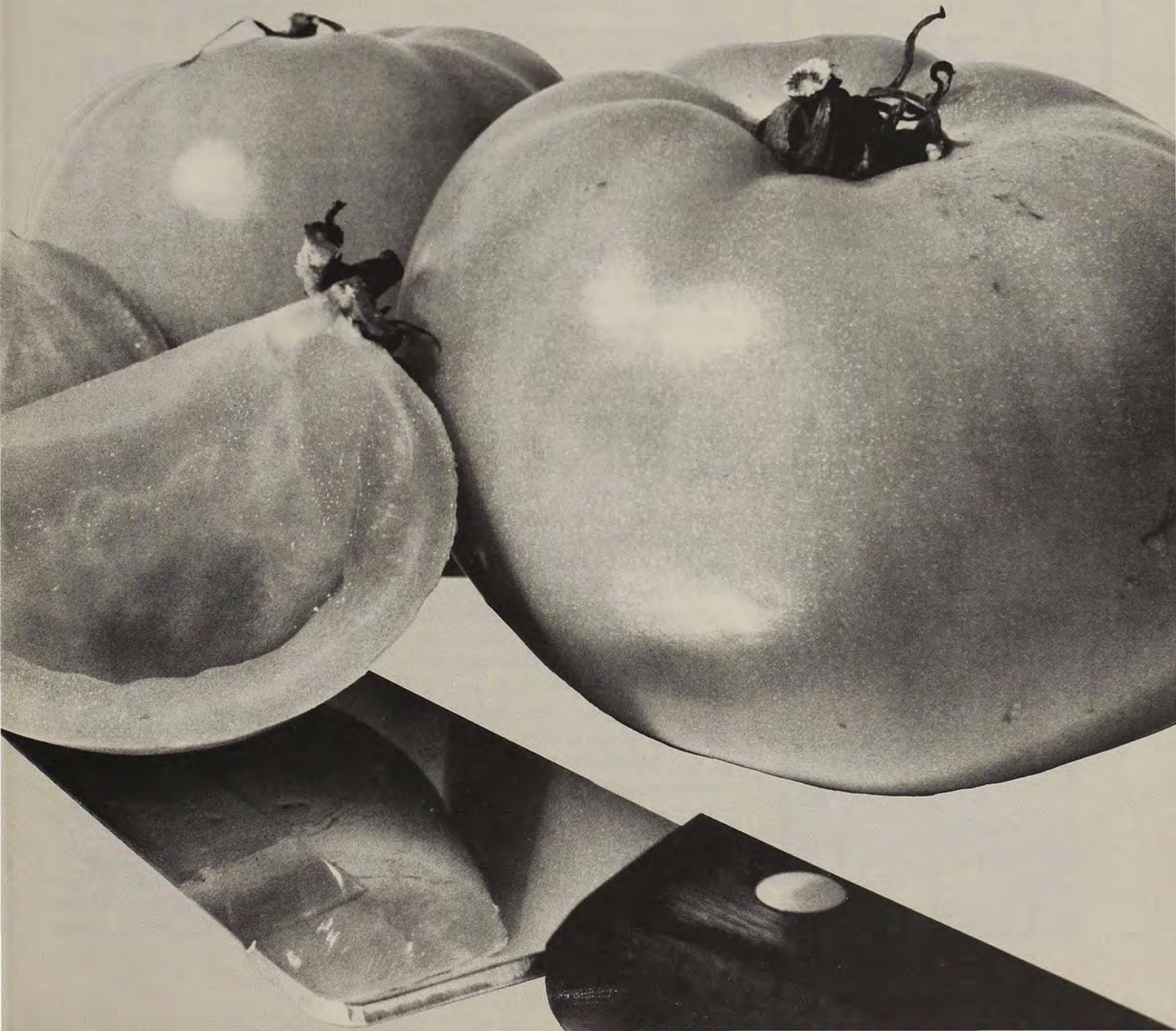
However, another statement in the article quotes the editor of the *Boston Courier* as comparing the taste of tomatoes to "rotten potatoe-balls."

The tomato has had a varied history even to the point of being the subject of a U.S. Supreme Court ruling. After an importer had insisted that tomatoes were fruits and, therefore, at that time not subject to a duty, the Court in 1893 ruled that the tomato is a vegetable. However, by a strictly botanical definition which says that a fruit is a matured ovary, the tomato is a fruit just as are green peppers, snap or green beans, eggplants, summer squash and many other



to American Tables

Allan K. Stoner,
Research Horticulturist
USDA, Beltsville, Maryland



garden crops.

Wild tomatoes perpetuate themselves under conditions of chance pollination and natural selection. These include plants of the cultivated forms of the seven wild species that will hybridize with *L. esculentum*. These are *L. pimpinellifolium* (Jusl.) Mill., *L. hirsutum* Humb. & Bonpl., *L. peruvianum* (L.) Mill., *L. glandulosum* C. H. Mull., *L. cheesmanii* Riley, *L. chilense* Dun., and *Solanum pennellii* Correll. Growing a "wild" form under modern methods of cultivation will not change it from a "wild" form. Man is responsible for "taming" wild

plants to make them more desirable for his use. He does this by taking advantage of the tremendous diversity that exists in Nature. Beginning with prehistoric man, there have been centuries of natural selection for the most desirable plants or plant types. In the process, undesirable types were continuously discarded and seed from the most desirable were planted for the next year's crop.

Plant geneticists can bring together desirable combinations of hereditary factors that might never be found in the wild. The geneticist does not create new genes, but merely rearranges what nature has provided.

Prior to 1860 there were no new tomato cultivars developed in the U.S. Those available were brought here from England or France. These cultivars had fruits that were rough, ugly, heavily ribbed, variable in size and of indifferent quality. The plants themselves were highly susceptible to most of the diseases that attack the crop.

Early efforts to improve tomatoes consisted of selecting for higher yields. Large, smooth-fruited types were adapted for growth under local environmental conditions. Prior to 1910, practically all of the introductions of new tomato cultivars were made by private citizens. Since 1910 many public agencies and private companies have been involved in tomato cultivar development with particular emphasis being placed on resistance to disease. Over 1,100 tomato cultivars have been developed in the U.S. and Canada since 1900.

Probably the first U.S. contribution to tomato improvement was the introduction of the "Tilden" cultivar by Henry Tilden, of Davenport, Iowa, in 1865. Tilden found and saved seed of a single "off-type" plant in a field of an unknown cultivar. It subsequently bred true and resulted in a new cultivar.

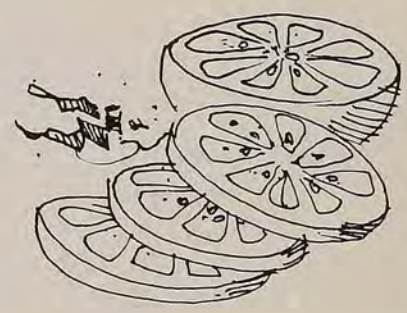
A. W. Livingston of Columbus, Ohio, and his associates in the Livingston Seed Company, released several tomato cultivars beginning in 1870. The cultivars "Stone" and "Globe" were the most important. Other seed companies such as the D. M. Ferry and Co., and the W. Atlee Burpee Co., began introducing new tomatoes in the 1880's. Tomato cultivars introduced near the turn of the century included, "Ponderosa" in 1891 by Peter Henderson, "Earliana" in 1900 by George Sparks, "Greater Baltimore" in 1905 by John Baer and "Bonny Best" in 1908 by Johnson and Stokes Company.

After the State Agricultural Experiment Stations and the United States Department of Agriculture began research on tomato improvement, they broadened the objectives to include selection for resistance or tolerance to specific diseases, heat and cold and adaptability to shipping long distances or to processing or preservation by new techniques. These early research efforts involved specifically, resistance to fusarium wilt, nailhead rust, leaf spots, leaf mold, mosaic and curly top viruses. Starting in 1912, a series of new cultivars were released that possessed some resistance or tolerance to fusarium wilt.

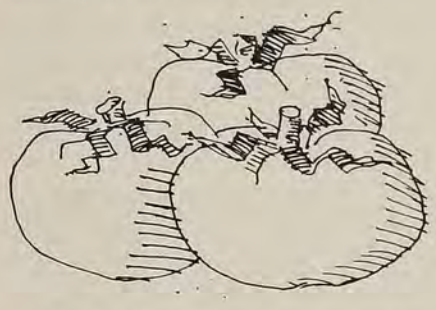
The cultivar "Marglobe" was introduced by F. J. Pritchard and W. S. Porte of the USDA in 1925. This cultivar showed adaptability to a wide range of cultural conditions, a high level of resistance to fusarium wilt, and for the first time in a cultivar, resistance to nailhead rust. Other important early introductions included the cultivars "Break o' Day" in 1931 and "Pritchard" in 1932.

As commercial processing of tomatoes gained in importance, many cultivars were selected and introduced for this purpose. Even though they were developed primarily for processing, many became popular for home garden use as well. Most traits of a good processing tomato are the same as those of a good fresh tomato. In addition to those cultivars mentioned above, other examples of cultivars used for both purposes include "Santa Clara", which was the principal cultivar grown for canning in California during the 1930's, and "Rutgers", released by the New Jersey Agricultural Experiment Station in 1934 primarily for that state's processing industry.

During the 1930's serious efforts were made to use the wild species as sources of disease resistance. This resulted in a major breakthrough when G. W. Bohn and



C. M. Tucker found immunity to fusarium wilt in *L. pimpinellifolium* and transferred it to the cultivated species in 1940. W. S. Porte and H. B. Walker then released to the public the first cultivar with this resistance, "Pan American", in 1941. Most tomato cultivars released during the last 10 years have carried this same resistance, which is inherited as a single dominant gene. A second example of the successful use of a related species involved the transfer of resistance to root knot nematodes from *L. peruvianum* to the cultivated species by A. L. Harrison in 1960.



As the processing tomato industry shifted to mechanized production during the early 1960's, plant breeders began developing tomatoes with characteristics that made them suited for specific types of products, i.e. sauces, catsup, whole canned, etc.

Processed cultivars for machine harvest are bred so that the fruits are firm fleshed and so they all ripen at one time. The home gardener wants to have tomatoes ripening gradually over a long period of time and may prefer to have tomatoes with flesh that is somewhat softer than processing cultivars.

The Ideal Tomato

During the last few years many plant breeders have concerned themselves with developing cultivars especially for home garden use. This has resulted in many excellent open pollinated and F^1 hybrid cultivars available for most every area of the country. A good home garden tomato cultivar should possess resistance to as many of the commonly occuring diseases as possible and resistance to growth cracks and bursting caused by alternating dry and wet weather. It should also possess "adaptability" or consistency of performance from year to year, regardless of weather changes or different cultural practices. The cultivar should produce attractive fruit with good flavor and high nutritional value.

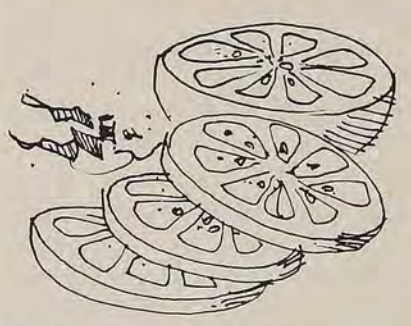
Information about adapted cultivars is readily available from many sources including seed catalogues, local nurserymen, county agricultural agents, newspaper and magazine garden articles and successful neighborhood gardeners. When choosing cultivars, resistance to verticillium wilt, fusarium wilt and nematodes is often, but not always, indicated by including a V, F, N with the name. Nematode resistance is normally only required in Southern and some Western areas of the country while V and F resistance is likely to be important in most all areas of the country.

The tomato picture is continually changing as seed companies and state and federal experiment stations release new cultivars each year. The gardener buying plants or seeds can choose from the small "cherry" types to the large "beefsteak" types. There are also various shapes represented including pear, plum and round. Plant breeders have even developed some that are shaped like hot dogs or sausages, although the latter were developed specifically for commercial processing and are not commonly available to home gardeners. The ripe fruit color of cultivars ranges from yellow to orange to pink and bright red.

Eating Quality

To many people tomatoes are a major source of vitamins C and A. One medium size tomato (2 x 2½ inches) provides approximately half of the recommended daily dietary allowance of vitamin C for

an adult and more than a fourth of the vitamin A, but only a few calories. At least 2 cultivars, "High-C" and "Doublerich" that have up to twice the vitamin C content of standard cultivars were released during the 1950's. Unfortunately these cultivars lacked many of the other desirable tomato traits and seed is now difficult to obtain.



For home gardeners who are interested in high vitamin A tomatoes, there have been several orange fruited cultivars released. One of these, "Carorich", was released by Purdue University in 1972 and has 8 or 9 times the amount of beta carotene or provitamin A found in the average red fruited cultivar.

The "acid" taste or tartness of tomatoes is another quality attribute that varies with cultivars. Simply put, the taste of a raw tomato is due in large part to the ratio of the amount of sugar to the amount of acid present. Therefore, by selecting tomatoes for higher or lower amounts of sugars and acids, a plant breeder can alter their taste.

A common misconception is that yellow fruited cultivars are naturally "low acid". Measurement of the total acid content of these cultivars proves that this is not necessarily so. A tomato with high acid content may taste sweet if it also possesses high sugar content which offsets the acid.

Cultural Tips

Planting the best cultivar does not alone assure a successful crop. The one big factor is the weather. However, there are many other things that gardeners may control which have a marked effect on the success of the tomato crop.

The selection of a suitable site is extremely important. In suburban situations gardeners do not always have much choice where they will plant. When possible, they should be aware of the importance of soil and light.

Tomatoes grow best in fertile, well-drained soil, but they will grow in almost any kind of soil. A. W. Livingston, developer of many early tomato cultivars, wrote in 1893:

"Tomatoes can be grown wherever corn could be planted . . . . To get the best fruits, land that is rich enough to fetch fifty to seventy-five bushels of corn to the acre should be chosen . . . . In a word, whatever will thoroughly prepare a rich field in good shape for any common crop, will be all right for tomatoes."

The fertility and drainage of the garden soil can be improved by replacing the soil or by incorporating organic matter from a compost pile or other source. If tomatoes are planted in an area that receives less than full sunlight they will be adversely affected and there is nothing the gardener can do about it unless he is prepared to chop down a tree or two.

Inadequate or improper application of nutrients to tomatoes is another source of problems. Ample but not excessive amounts of fertilizer applied during soil preparation will help tomato plants grow rapidly and produce well. Generally, a 5-10-5 fertilizer gives good results. Sometimes just a source of nitrogen is needed. Fertilizers that contain small amounts of iron, zinc, manganese, and other minor soil elements are necessary only when the soil is deficient in these elements.

Tomato plants benefit from fertilization while growing. When the first fruit is about the size of a half dollar, it is beneficial to scatter a heaping teaspoon of 5-10-5 fertilizer uniformly around the plant 8 to 10 inches from the stem. Mix the fertilizer into the top ½ inch of soil

and water thoroughly. It is desirable to repeat this 2 or 3 times at approximately 3 week intervals. Poor foliage color and stunted growth indicate a need for additional fertilizer.

Another important factor in having a successful tomato crop is the quality of the plants themselves. If the purchased or home grown seedlings are not healthy and sturdy when planted outdoors, they cannot develop and produce the number of fruits expected of the cultivar.

Tomato seedlings should not be planted outside until the soil has warmed and there is little threat of frost. If there is danger of frost after the plants are put outside, they may be protected with paper or plastic coverings, newspapers, or boxes.

After planting, the soil should be firmly pressed around the plant so that a slight depression is formed to hold water. Then pour approximately 1 pint of water (fertilizer may be added) around each plant to wash the soil down around the roots.

If compact cultivars are grown or if the plants will be staked, spacings of 18 inches apart in rows 3 feet apart will be sufficient. Rank growing cultivars or unstaked plants require distances of 3 feet apart in rows 4 to 5 feet apart.

Staking makes it easier to cultivate and harvest tomatoes, and helps prevent fruit rots. However, staked plants are more subject to losses from blossom-end rot than plants allowed to grow naturally. If staking is to be practiced, it is a good idea to insert the stakes soon after transplanting to prevent root damage.

If the plants are staked and pruning is desired to prevent excessive foliage, remove the small shoots that appear at the point where the leaf stem joins the main stem. Do not disturb the fruit buds. It is best to prune by hand. Grasp the shoot with your thumb and forefinger.

Continued on page 37

TWO SPRING TREKS IN NEPAL

C. D. Sayers
University of Durham
Department of Botany
Durham, DH1 3LE, England

I made three expeditions in the 1960's to the Himalayas to study and photograph plants. In 1974 I was invited to lead a Cook's Adventure Club trek to the Langtang Valley—and again in 1975 to Annapurna Sanctuary. Twelve members came to Langtang and twenty to Annapurna, aged between 26 and 71. They were interested in wildlife, photography, painting, or simply being amongst the mountains. We had five sherpas to superintend cooking and trekking arrangements and ample porters to carry our equipment.

By the second day on these treks the party quickly falls into a regular routine. Bowls of hot water for washing are brought to the tents at about 5:45 a.m. A breakfast of porridge, biscuits and jam (with tea, coffee, or cocoa to drink) is consumed as the tents are packed and the porters allocated their loads. By 6:30 everyone is ready to begin the day's walk. An easy routine is followed with a stop around 11 a.m. for a lunch of fruit juice, tinned meat, fried or boiled eggs, with new potatoes or chips. The walk after lunch is shorter, aiming to get into camp between 3 and 4 p.m. This allows plenty of time for the bird watchers, botanists, and those who like to amble and take photographs or catch up; yet the walk is still sufficiently demanding to satisfy those more interested in trekking or mountains. Tea is always biscuits with sardines, jam, or peanut butter; and dinner (usually around 6 p.m.) is often a magnificent affair of homemade soup followed by roasted goat or sheep, dessert and plenty of coffee, with a ration beforehand of Nepali rum.

Grazing Yaks below Langsisa

The Langtang Valley lies approximately east-west some 30 miles north of Kathmandu and leads to the Nepal-Tibet border. We travelled by Russian jeep to the large trading town of Trisuli, only 1,900 feet above sea-level; and then we walked for six days to Langtang, first travelling north along the Trisuli Khola. After the third day, we turned east along the Langtang Khola. These rivers follow deeply cut courses often 2,000 feet below the trail which follows the valley side (mostly around the 6—8,000 feet contour lines). Only on the last day's walk does one ascend to 12,000 feet. The stone-built houses of the villages are surrounded by terraced fields, and the hillsides are so steep that the terraces in places are only three feet wide. Along the Trisuli Valley, farmers were ploughing in the wheat stubble while the women worked in advance of them, carrying and spreading manure on the terraces. Plants of interest were scarce because of the heavy grazing of sheep and goats. Only a few trees of poorly flowering *Rhododendron arboreum* and yellow *Berberis* were conspicuous. Amongst the dust of the trail, myriads of tiny blue flowers of *Gentiana pedicellata* shone brilliantly and accompanied us for several days.

I had visited Langtang nine years previously in July during the monsoon. Then the grassy slopes between the terraces were gay with bulbs, iris, and gingers; but the misery of walking constantly in rain or mist and the too abundant leeches made camp sites almost impossible. Thus April is a much happier time for holiday treks, in spite of the heat and dust and the relatively few flowers. In steep gullies only rarely grazed, we occasionally found real gems such as *Pieris formosa* (10 feet tall and across, covered with large panicles of creamy white flowers) with *Clematis montana* clambering

through it and competing for attention.

The trail on the sixth day gently led upwards along the south-facing hillside about 1,000 feet above the Langtang Khola. Everything was very dry and numerous lizards basked on the stones, scuttling away at our approach. From time to time an overpowering sweetness pervaded the air, which after some diligence could be traced to a distant shrub of *Elaeagnus umbellata*. By the afternoon we had reached the point where the valley becomes very narrow and a reasonable forest cover has survived. This is dominated by oak, *Quercus semecarpifolia*, and at the forest edge by the river we were pleased to find *Rhododendron campanulatum* in flower. Cobra plants, *Arisaema* spp., were abundant, but the ground orchids and gesneriads that are such a delight in the monsoon were either not flowering or dormant.

Above the forest the valley widens into a typically glaciated 'U' shape, and the trail passes through the large village of Langtang at 11,000 feet. The village has a very picturesque common grazing ground in its center, crossed by several streams running along man-made courses. The villagers were weeding the young plants of barley and potato while the yaks in calf grazed quietly near the houses. In the meadow, sheets of blue *Iris kumaonensis* by the thousands made us stop and pay silent homage to their beauty. Careful searching was rewarded by a few plants of less common species; for example, *Primula deuteronama* and *P. aureata*, which we found behind a waterfall. Close by is the dairy of Kyangiin Ghyang, reputedly the highest in the world, where yak milk is made into cheese for export to India.

We proceeded on up the valley, gently ascending through shrubs of *Rosa, Philadelphus, Berberis, Spiraea, Lonicera*, and other genera well-known to gardeners. All were just emerging from their winter dormancy. We camped for three days at 13,000 feet amongst *Primula denticulata* and dwarf rhododendron—white with heavy morning frost—in the shadow of Langtang Lirung, an unclimbed 21,000 foot snow peak. During the monsoon, this valley is filled with so many flowers; then, the sheets of dwarf red *Rhododendron setosum* shelter many fine bulbs—such as *Fritillaria* and *Notholirion*, several *Primula* spp. in large numbers, and many other delights. However, during the monsoon one gets only brief glimpses of the mountains just after dawn, before the rain clouds descend. In April, we were able to walk in bright sunshine and admire an ever changing panorama of snowcapped mountains, instead of flowers. We climbed to 17,000 feet and saw snow peaks of over 23,000 feet, and lesser ranges between 18,000 to 21,000 feet.

The 1975 trek to Annapurna lasted 17 days. The rainfall and vegetation south of Annapurna is quite unlike the dry inner Langtang Valley, because the mountains to the south do not exceed 5,000 feet; so the full effect of the monsoon is felt on the big peaks. Snowfall is further increased by pre-monsoon storms, and as a result vegetation is much more luxuriant.

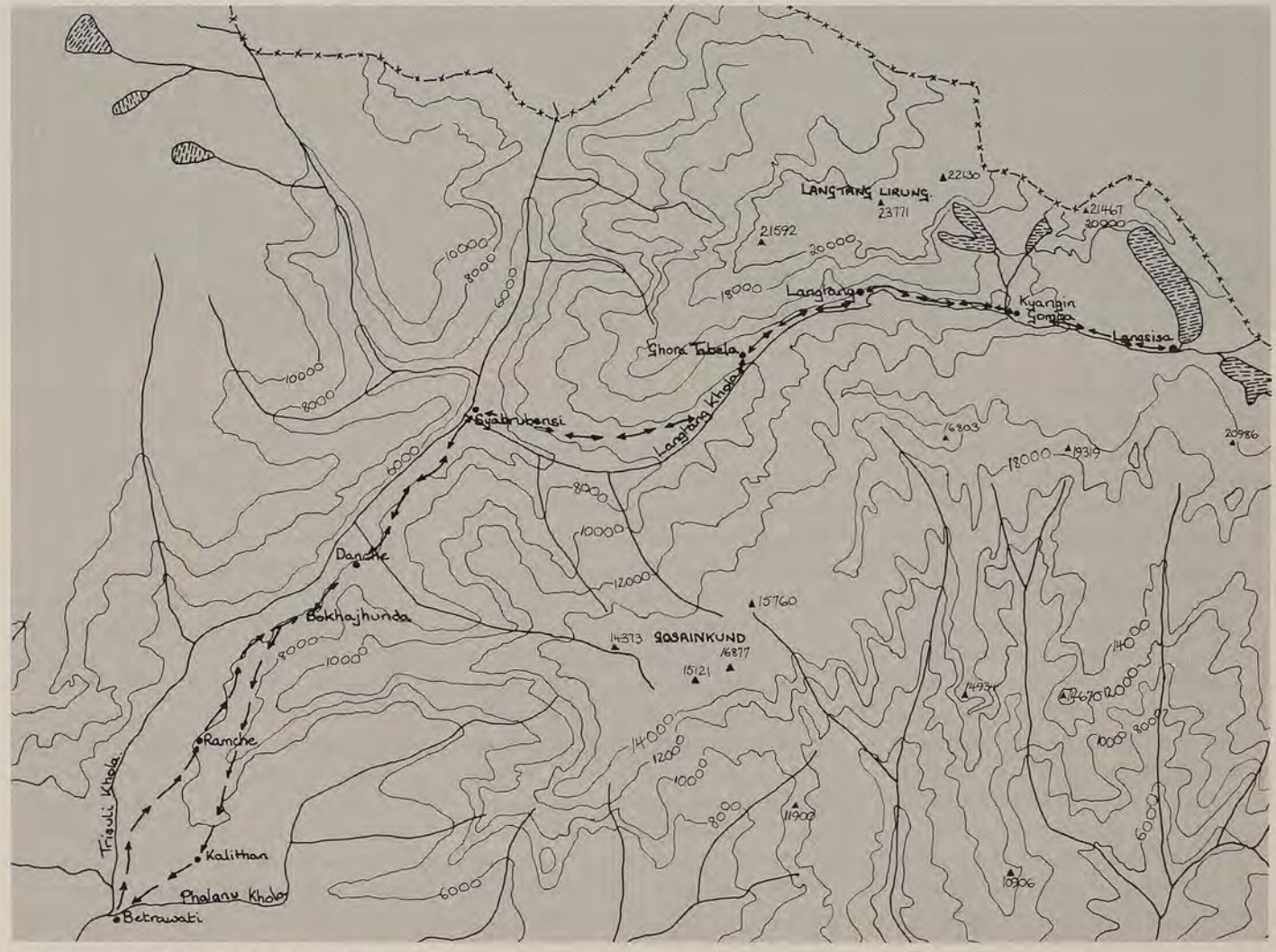
The Annapurnas are reached from Pokhara, a delightful township about six hours drive west of Katmandu. Starting out at 3,600 feet, the first four days were spent walking through delightful countryside of steep, terraced hill-

Primula edgeworthii

Daphne bholus

sides and mixed oak forests rich with plant life. The lower valleys support an intensive agriculture, including rice terraces which are planted during the monsoon. In the forests, loamy banks were densely covered with ferns, mainly *Pteris* and *Nephrolepis*, and numerous plants of *Begonia picta*. Here the relative coolness often heightened one's enjoyment of the contrasting forest and hot, open hillsides of the day's march. Some of the rivers we crossed were crystal clear, and it was often possible to find, away from the fast main current, deep pools ideal for swimming (for those who could take the very cold water). Often the forest changed from oak to schima and laurel trees. We were just too early for the schima, *Schima wallichii*, to be in flower. The numerous camellia-like buds were almost—but not quite—ready to open and display their creamy white petals and centers of yellow stamens. On hot, south-facing hillsides many of the trees and rock outcrops were festooned with orchids, mostly white flowering *Coelogyne cristata*.

On the fourth day, the trail took us up to 9,000 feet. As we gained height during the morning, we experienced an ever increasing view of whole hillsides densely covered with flowering rhododendron forest—relieved at frequent intervals by long white drifts of *Magnolia campbellii*. But if the morning was good, the afternoon's walk was superb as we slowly gained height to Ghorapani, an attractive, attenuated village at the head of a small valley below the Deorali Pass. The trail followed a modest stream through good forest of laurel and schima which later, at the higher altitude, became laurel and rhododendron. We walked the entire afternoon beneath superb trees of *R. arboreum*—20 feet and taller, in full flower with colors ranging from almost white to dark red. Monkeys had been pulling the flowers apart for nectar and the trail was often littered with torn petals. At a little over 8,000 feet, we found one of our best *M. campbellii:* on a steep slope 60 feet below us was a grey barked tree with a large, open, leafless crown absolutely plastered with heavy white flowers. To enjoy and fully appreciate this species it is necessary to view it from above, and we were able to do this. We sat for 20 minutes or so in silent admiration.



16 Trek route from Betrawati to Langsisa.

Just below Ghorapani the forest undershrubs comprised almost entirely *Sarcococca hookerana* and *Daphne bholus*, and although the *sarcococca* was flowering, its lovely scent was overpowered by the perfume of *Daphne*. The perfume was so strong it reminded one of a closed greenhouse filled with forced hyacinths. With bare stems up to six feet tall, and small clusters of pink to white tubular flowers, this *Daphne* created a kind of starlike quality through the forest. So abundant were they that at times the flowers appeared as a pink and white haze receding into the distance. By way of contrast, if one searched carefully, plants of *Pleione humilis* could be found growing in the epiphytic mosses on rhododendron trees. The diminutive white flowers stood proud of the moss in which lay hidden their fleshy pseudobulbs, well concealed amongst their chosen compost. The moss was dust-dry and the orchids seemed to prefer the vertical trunks and sides of branches. There appeared to be no readily observable variation in the population; the petals were a translucent white with attractive foxy-brown lines marking the throat. We camped a little beyond the village in a large clearing, in the middle of a pure stand of *R. arboreum*. Before us was Dhaulagiri, 26,795 feet—sometimes standing in snow-covered relief against a clear blue sky, at other times merging with the clouds and barely distinguishable from them. It was an eminently successful camp site. It provided us with day-long views of the snow peaks, and it was ideally situated for half-day excursions into the surrounding forest for bird and flower studies. We spent one of our rest days here, and in the morning some of the party left camp at 4:30. In darkness, they climbed 1,000 feet to the top of a nearby hill to watch the sunrise over Dhaulagiri, when the great snow peak becomes suffused with pink.

From Ghorapani we crossed the Deorali Pass, a narrow ridge at 10,000 feet, alternatively covered with open, brown, tufted grassland, *Abies spectabilis*, oak and bamboo forest. The grassland was sprinkled with pale blue heads of *Primula denticulata*. In the darkness of the forest *R. barbatum* was a mass of tangled, reddish, polished stems which we had to either climb or duck beneath. The deep red flowers fairly glowed and often they framed distant views of Dhaulagiri. In wettish places *P. edgeworthii* drifted in large colonies, the lovely lavender flowers enjoying an enhanced brightness in the shade of the forest. In forest clearings *Viburnum grandiflorum* grew in great abundance, together with a yellow flowered *Berberis*. In one place grew a large and pure stand of *R. campanulatum*, about two weeks from flowering. At the end of the pass we had an interesting climb down a very steep waterfall—a pitch of some 60 feet, and a descent much aided by the fixed ropes positioned by the ever attentive sherpas. By careful balancing it was possible to photograph two interesting plants growing close to the spray of the waterfall—*P. listeri*, with a small head of nodding carmine flowers, and a rather neat violet with pale blue and white flowers, *Viola pilosa*. We camped in a deep rocky gorge, again surrounded by *R. arboreum*, but what remained of the forest was dreadfully bashed about from early spring avalanches.

Following our descent from the Deorali Pass, we walked two days, more or less northeast between the 5—8,000 feet contours and then began the walk towards the upper reaches of the Modi Khola. This valley is very narrow and steep, and on the eastern side the slopes are dominated by thick rhododendron and magnolia forest with oak and laurel. The trail wound its way along the western side, through thick mixed forest and bamboo

Continued on page 39

'Mrs. W. R. Coe' One of the outstanding pink cultivars now available.

The Dexter Rhododendron Story

Heman A. Howard
Heritage Plantation
Sandwich, Massachusetts

During the past few years there has been a marked increase in the interest shown in the works of Charles O. Dexter. The many fine Dexter rhododendron cultivars he created during the last twenty-two years of his life, 1921-1943, while in retirement, are now much in demand.

This renewed interest results from one or several reasons:

(1) The efforts since 1970 of the Heritage Plantation of Sandwich, Massachusetts to locate and obtain all the Dexter cultivars known to be in cultivation;

(2) The articles pertaining to Dexter rhododendrons that have been written and published in the American Rhododendron Society's Quarterly Bulletin;

(3) The display of Dexters at the various A.R.S. Chapter plant and truss shows, especially by chapters along the eastern seaboard;

(4) The severe winter losses suffered by the rhododendron growers of the Pacific Northwest during the winter of 1972-73. Several Dexter cultivars withstood that "freeze" where other plants long believed to be hardy, suffered badly or were killed outright. Since then several nurseries in that area have become interested in the Dexter group.

During the years 1921-1943, Charles O. Dexter, a retired New Bedford, Massachusetts textile manufacturer was active in a rhododendron hybridization program at his recently acquired "retirement" home.

Having purchased a run-down farm of over 75 acres along the shore of Shawme Lake in the town of Sandwich, Massachusetts, he had an ideal location to participate in his new hobby. He had the encouragement and assistance of several well-known horticulturists of that time, including Paul Frost, a Boston landscape architect; Prof. Charles S. Sargent, Director of the Arnold Arboretum; and Ernest

'Josephine Everitt' One of the best delicate pink Dexter's with frilled petals.

"Chinese" Wilson, the world-renowned "Plant Hunter", also a member of the Arnold Arboretum staff. With the backing of these men, other horticulturists and nurserymen were most willing to assist Mr. Dexter in fulfilling this much needed program.

During the years that followed between five and ten thousand rhododendron hybrid seedlings were raised annually. Many of these were distributed to private gardens, botanical gardens and nurseries throughout the United States wherever growing conditions were favorable.

Fortunately for the horticultural world, Mr. Dexter was an expert hybridizer. Yet, unfortunately he was a poor record keeper and most of his plants were distributed without records. Thus, present growers do not know the parentage of many of these beautiful plants.

Mr. Dexter was a kind and generous man, always willing to share his hobby with others. Unfortunately, he distributed many of his rhododendron seedlings before he had a chance to see them in blossom. Needless to say, thousands of plants turned out to be of inferior quality and should not have been distributed. Several present day hybridizers have learned a lesson from this experience. One was asked what he did with all his surplus plants and quickly answered he would not be "Dexterized" and burned all plants not needed in his program. In this way, only the best are saved.

A few years after Mr. Dexter's death on April 14, 1943, a voluntary and strictly unofficial committee of the American Rhododendron Society members was formed by Dr. Clement Bowers. The original members of this committee selected by Dr. Bowers included Henry T. Skinner, Paul Vossberg, John C. Wister and Donald Wyman. Later they were joined by Edmond Amateis and David G. Leach, and occasionally by a few others.

For over 10 years this committee

worked either as a group or individually, observing as many of these plants as possible, noting and tagging those worthy of future study. Later cuttings were taken from the selected plants and propagated by Paul Vossberg at the Westbury Rose Co., Westbury, Long Island. Under the direction of Dr. John C. Wister, Director of the Scott Horticultural Foundation, Swarthmore College, Swarthmore, Pa., the young plants were to be set out for observation. Gradually, as surplus plants became available they were given to the Arnold Arboretum, Planting Fields Arboretum and the U.S. National Arboretum. As agreed, these plants were to be observed and evaluated growing under the climatic conditions of Boston, Massachusetts; Long Island, New York; and Washington, D.C. Many of these plants were named and distributed by the committee. They are now available in nurseries along the East Coast and the Pacific Northwest.

In 1967 the former Charles O. Dexter estate was purchased by Josiah K. Lilly, III, for the purpose of creating a museum of early Americana to be dedicated to the memory of his father, Josiah Kirby Lilly, Jr.

This beautiful 76 acre estate on the shores of Shawme Lake is now known as The Heritage Plantation of Sandwich, an educational nonprofit museum.

During the fall of 1970 an initial study was made of the known Dexter rhododendron varieties now in cultivation, using Dr. Wister's report of March 15, 1963 titled "Rhododendrons: The Dexter Strain Hybrids", as a guide. A list of eighty-four cultivars was developed. Only eighteen were represented in the collections at Heritage Plantation, the garden of their origin.

The next two years were exciting ones and with the cooperation of Dr. Wister and Roger Coggeshall, President of the Cherry Hill Nurseries, West Newbury, Massachusetts, a search for the missing Dexter cultivars was made. The willingness to help in this search displayed by rhododendron growers, both professional and amateur, was most heartwarming. During that period plants were purchased when possible, otherwise cuttings were collected of all except five cultivars which are felt to be non-existent at this time.

Maytime bowers of some of the 35,000 Dexter Rhododendrons at the Heritage Plantation in Sandwich.

During 1972 a well-qualified group of rhododendron enthusiasts became interested in creating a much needed book to include the works of several Eastern United States rhododendron hybridizers, with Dexter's work to be one of the features. With this in mind, Dr. Wister, with the necessary assistance was persuaded to name the best of the Dexters he had been growing under number for many years. This included the collections at Swarthmore College and the John J. Tyler Arboretum at Lima, Pa. This combined collection is probably the most complete collection of Dexters to be growing anywhere at the present time. These plus others have brought the list up to 141. Presently 112 are represented in the living collection at Heritage Plantation. A special effort is underway to complete this collection.

It is agreed even by the most ardent lover of the Dexter hybrids that this list is far too long. An effort should be made to select the very best 20-25 of this group. The

remaining must be placed in a secondary list even though most of them are still highly rated. In my opinion the following thirty cultivars qualify for final judgment.

RED:
Acclaim (Swarthmore 12507-12)
Accomac (Swarthmore 12507-1)
Dexter's Brick Red (Dexter Estate #427)
Dexter's Giant Red (Dexter Estate #431)
Gigi (Ross GG)
Glenda Farrell (Ross RR)
Red Velvet (Swarthmore 12507-2)
Todmorden (Scott #1)

PINK:
Ben Moseley (B.P.P. Moseley #51-6 & 52-8)
Josephine Everitt (Everitt #5)
Madison Hill (Swarthmore #12500-2)
Mrs. W. R. Coe (Parker #3)
Newburyport Belle (Fowle #19)
Parker's Pink (Parker #1 PP)
Sagamore Bayside (Dexter #16)
Sagamore Bridge (Dexter #180)
Scintillation (N.Y. #1, New York Botanical Garden #67)
Skerryvore Monarch (Beinecke—Goury #59-49)
Skyglow (Dexter #9)
Westbury (H. Phipps #3)
Willard (Willard #2)

PURPLE—LAVENDER:
Amethyst (H. Phipps #8)
Dexter's Orchid (Everitt #1A)
Lavender Princess (Bosley #1021)

APRICOT:
Champagne (N.Y. #2, New York Botanical Garden #A)
Honeydew (Everitt #21)

CREAM:
Dexter's Brandy—Green (Dexter Estate #491)
Dexter's Vanilla (Dexter Estate #997)

WHITE:
Dexter's Spice (Dexter Estate #968)
Helen Everitt (Everitt—Fuller Sel.)

Many of the cultivars noted on the list have qualities that were unknown in the hardy "Ironclads" of long standing. The flower colors range from the pastels to the brilliant, with flower trusses from loose to tight pyramidal. Individual flowers will reach five inches in diameter with outstanding fragrance not to be found in the "Ironclads".

Because of their habit of growth Dexter rhododendrons are not advised for foundation planting around the modern home. Many will reach fifteen feet in height with a spread of the same dimension or more. In this group there are also several with beautiful lush green foliage. They hold your interest throughout the year, a feature not to be found with many shrubs.

The Dexter cultivars are like rare stamps and coins. One has to search for them, but in most cases you are rewarded for your efforts. One large Massachusetts nursery lists ten Dexter cultivars in their 1975 catalog with sizes up to 3 feet. There are also several specialized rhododendron growers with up to thirty Dexters listed who will ship smaller plants by mail. A list of these nurseries will be sent upon request. Address your request to me at Heritage Plantation, Sandwich, Massachusetts 02563. Please enclose a self-addressed stamped envelope.

RHODODENDRON CULTURE

Rhododendrons are not difficult to grow if you reside within an area where the following conditions already exist or can be created.

Location—Select a site where plants will not be exposed to strong winds and bright sun. Filtered sunlight through tall oaks and pines with high overhanging branches furnish ideal conditions and tend to protect plants from the drying winds and bright sun. It is inadvisable to plant rhododendrons too close to the house foundation for several reasons, one being the bright reflected winter sun's rays often are the cause of severe winter burning. This reason alone is enough to discourage one from selecting such a planting site.

Soil—For best results your soil conditions should have a pH rating within the range of 4.5 to 6.0. These conditions are usually found where oaks, pines, mountain laurels and blueberries are growing naturally. The soil should be loose and airy, consisting of a high humus content. Mixing into the existing soil, leaves and needles from oaks and pines, plus a generous amount of peat moss will help create these conditions.

Planting—Special attention should be given *not* to plant rhododendrons too deep. This very common mistake has killed many an otherwise healthy young plant. Set plant no deeper than the existing soil grade. Dig the hole at least twice the size of the root ball, mix soil with peat moss and compost. A few handfuls of cottonseed meal (depending on the plant's size) can be placed at the bottom of the hole then covered with an inch or two of soil. Tamp the bottom soil firmly so plant will not settle below the desired level. Burlap may be left around root ball but it must be untied and folded back so edges will be covered with soil. After planting, water thoroughly then mulch, using oak leaves, pine needles or ground pine bark.

Pruning—Dexter rhododendrons are generally classed as vigorous growing shrubs with many cultivars reaching heights of fifteen feet. Given sufficient space little pruning will be necessary. No definite rule can be followed in the pruning of Dexter cultivars, as some will stand a heavy pruning back to old and heavy trunks, while others will not. If heavy pruning is necessary to an old plant with many trunks, it would be advisable to cut one or two of these trunks back to one to two feet *very early* in the spring. If new growth appears that year, you can feel safe in removing others the following spring. If none appears it would be best to allow plant to remain as it is. The shaping of these plants should be done while plant is young by breaking off or pruning some of the new growth, thereby allowing the latent buds to develop, forming a more rounded plant. Dead-heading or the removal of dead or wilted flowers is also advisable, being careful not to damage the new growth buds at the base of the old flower truss.

Fertilizing—At Heritage Plantation we use cottonseed meal on our young plants for two or three years; then they are left alone unless they show signs of needing an additional feeding. A broad-leaf evergreen fertilizer can also be used in place of the cottonseed. We also use 5-10-5 if an occasional older plant needs attention. No fertilizing is done after mid-July. This might encourage new growth that would not have time to harden off before winter.

Conspicuous by Their Absence

Pamela J. Harper 219 Robanna Drive Seaford, VA. 23696

Since coming to the United States in 1967 my garden horizons have stretched to include many plants I could not grow well in England. It is bliss to be surrounded by sasanqua camellias in flower, after growing one for ten years in my English garden without the reward of a single flower. The reverse side of the coin is absence from the scene of some of my favorite plants.

Take *Pyrus salicifolia.* I finally ran this to earth at the National Arboretum but have searched in vain for a commercial source. Known as the Willowleaf Pear, it is usually grown in pendulous form and could easily be mistaken for a small, grey-leaved weeping willow. English landscapers rate it highly, both for garden use and for highway verges. It closely resembles Russian Olive, *Elaeagnus angustifolius,* which I note is described in Wyman's Garden Encyclopaedia as bordering on being a "dirty tree" but with grey-green foliage "unique among woody plants grown in the north." Assuming Willowleaf Pear (which comes from the Caucasus) is adapted to the northern climate, it might well take the place of Russian Olive. Has anyone tried it?

The Paper Bark Maple, *Acer griseum,* has become available in recent years and demand invariably exceeds supply; so, clearly, gardeners are interested in trees grown for the year round beauty of their bark. *Prunus serrula* (not to be confused with the popular oriental cherries, *P. serrulata)* is just as handsome but only at arboreta is it likely to be seen on the east coast, though it is available from at least one west coast nursery. Admittedly the flowers have little to offer, being small, white, and almost hidden by the leaves, but flowers are fleeting anyway. One English nursery, however, top grafts this tree with the best of the flowering Japanese cherries—this best-of-both-worlds combination is called the Sheraton cherry for the color and polish of its bark.

The Strawberry trees *(Arbutus)* get their name from the round red fruits which follow the small white flower urns borne late in the year. These small evergreen trees are not very hardy, Zone 8 probably, but they are wind tolerant and do well in coastal areas. *A. unedo* thrives at Norfolk Botanic Garden but nowhere have I seen its hybrid offspring, *A. x andrachnoides,* with cinnamon colored multiple twisting trunks. Said by some American books to need an acid soil, English experience refutes this, both these Strawberry trees having proved to be lime-tolerant.

There are restrictions on the import of willows, despite which dozens of foreign kinds are here, so why is one of the loveliest missing? *Salix lanata* is well-named "Woolly Willow". Rock gardeners would appreciate this one. It grows slowly to about three feet and has rounded, silvery felted leaves and catkins large in proportion. *S.l.* 'Stuartii' has smaller leaves, bigger catkins, and a gnarled, aged look which would surely endear it to bonsai enthusiasts.

I photographed *Dipelta floribunda* at the White Flower Farm of plantsman William Harris, but he does not offer it for sale; nor, so far as I know, does anyone else. Easy to grow and hardy, the flowers of this weigela-like shrub are a bit on the small side but are followed by flower-like papery bracts of green, buff and pink. These last a long time and are highly esteemed by England's flower arranging fraternity.

With *Mahonia* there is a muddle. I have yet to see *M. japonica* in the United States, though I *have* seen many shrubs labelled as such, all of them the less attractive (to my mind anyway) *M. bealei. M. japonica* has cascading racemes of little yellow flowers, as opposed to the shorter, stubbier ones of *M. bealei,* and is a first rate large, evergreen shrub for shady places wherever it is hardy (Zone 7?). Shady, I repeat. All too often in the south, *M. bealei* can be seen languishing in too hot a place, stems bare and leggy,

Prunus serrula

Left—*Arbutus x andrachnoides*
Below—*Embothrium coccineum*
Bottom—*Potentilla* 'Abbotswood'

Salix lanata

foliage scorched and yellow.

Hypericum 'Hidcote' puzzles me too. Unquestionably a topnotch shrub in English gardens, I find it hardly worth growing here. In England it is somewhat arching but reasonably compact and upright, to about five feet. Here it straggles along the ground in messy fashion, none of the branches developing into a permanent woody framework and not much more than eighteen inches high. The difference seems to me too great to be explained by climatic differences alone, and I am wondering if all the plants grown here have come from a single introduction which perhaps began life as a cutting from an atypical growth.

Raspberries are vining in the main, but *Rubus x tridel* 'Benenden' is a shrub, about six feet in height with flowers like two-inch single white roses. Is anyone growing this? And what of *Rubus tricolor*. In "Plants for Ground Cover", Graham Stuart Thomas describes this as "the most vigorous evergreen prostrate cover that I know, even exceeding the rapid colonizing habit of Irish ivy." "Prostrate" misleads a bit because the fuzzy brown trailing stems, capable of putting on six feet of growth in a season, mound densely to about three feet. The heartshaped leaves are four inches long and if grown in sun the smallish white flowers are followed by edible fruit. Main value of this plant is its willingness to grow in shade and in competition with surface rooting trees. I see that it was introduced by E. H. Wilson in 1908, at which time he was in the employ of the Arnold Arboretum, so it must have been grown here at that time. Was it tried and found wanting . . . does anyone know?

Among the hardiest and most adaptable of all plants are the shrubby potentillas, *Potentilla fruticosa, P. arbuscula,* and their hybrid progeny. Though these are well-known in the U.S.A., few nurseries offer more than a couple of kinds, and many of the best are excluded, like the white 'Abbotswood' and the dwarf, silvery leaved 'Beesii'. The fairly new, orange-flowered 'Tangerine' was rather quick to cross the Atlantic . . . this needs more shade than white and yellow kinds if the flowers are not to get bleached out. Now the first red is about to be patented in England . . . watch out for this one, named 'Red Ace'.

ers are less patient than their English counterparts, yet what may well be the fastest growing of all conifers is seeping oh-so-slowly into the nursery trade. The bigeneric hybrid known as *x Cupressocyparis leylandii* is a veritable Jack's beanstalk of a tree, capable of adding several feet of height each year. It is densely columnar, invaluable for hedging and shelter belts and in recent years millions have been sold for this purpose in England. Several cultivars are grown, differing in foliage color from grey green through bright green to gold. The parents of this hybrid were *Cupressus macrocarpa* and *Chamaecyparis nootkatensis,* both American natives. It is time their child was given a wider trial.

So far as I know *Rosa omeiensis pteracantha* is unique among roses in having only four petals to the small white flowers. This is not a quality likely to earn it garden space in competition with hundreds of its more spectacular kin, but it has another attraction less fleeting than flowers in its enormous flattened thorns of ruby red. Planted where the sun can shine through from behind, it will not be overlooked, and I would bet on this to carry off first prize among flower arrangements if placed in a niche and backlit. Finding it is the challenge.

As nearly as comparisons can be made—England has a Zone 8 climate—so many of the plants which flourish there are not hardy enough in the colder parts of the U.S.A. That still leaves a great many areas where they COULD be grown, yet even in the south *Itea ilicifolia* is not to be found. I have one started now, compliments of a friend who brought cuttings back from England, so perhaps in a few years time I shall have more to say about its adaptability to the Virginia climate. The leaves of this somewhat sprawling nine foot shrub are glossily evergreen and holly-like. It is always attractive but of infinite charm in summer when thickly hung with streamers of greenish white flowers. It was badly damaged in England's last bad winter, 1962/3, so is probably not worth the risk further north than this.

Cytisus battandieri comes from Morocco and was not introduced to England until 1922. Since then honors have been heaped on it by the Royal Horticultural Society, with an Award of Merit in 1931, a First Class Certificate in 1934 and an Award of Garden Merit in 1938. It is proving much hardier than had been anticipated and is certainly worthy of trial in Zone 7. So far mine (from imported seed) has

been with me only through one mild winter. It is evergreen and the clover-like leaves, three inches or so across, have a silvery sheen. Rather a leggy shrub if left to its own devices, it needs regular pinching of new growth to keep it bushy. Espaliering on a wall is another possibility. In June come large, pyramidal clusters of lemon yellow flowers which smell of tropical fruits.

Chilean shrubs are connoisseur plants, not very hardy and apt to show prima donna choosiness about where they will and will not perform well. Just the same I wish I could find such beauties as the shrubby *Desfontainea*, the tree-like scarlet *Embothrium* and the vining *Mutisia spinosa* and *Tropaeolum speciosum*. Perhaps I could not succeed with them, even in Zone 8, but I'd like the chance to try.

With *Zenobia pulverulenta* there is no such explanation for its absence from the garden scene. This American native is hardy in Zone 5 and keeps company happily with azaleas. A variable shrub in the wild, the most garden worthy form has leaves with a greyish bloom. Pendulous clusters of heath-type flowers are borne in May and June. I finally ran it to earth at just one mail order nursery, but alas, it proved to be a green leaved form.

"What's that?" I was challenged when garden visiting in England this year. "Cutleaf Japanese Maple" said I with confidence, after half a glance. Wrong, though it's almost an identical twin. I hadn't met *Sambucus racemosa* 'Tenuifolia' before and have no experience in growing it, but for anyone unable to meet the needs of *Acer palmatum* 'Dissectum' this look-alike would be well worth a try.

Trees and shrubs this far, so I'll end with an herbaceous plant. Several of the *Euphorbia* clan can be found (though none too readily) but the most spectacular seems not to be available. This is *E. griffithii*, perhaps at its best in the form 'Fireglow'. About eighteen inches high, the flowers are a vivid orange-red and the foliage too is handsome. It thrives in sun or partial shade, spreading fairly fast.

I can think of many more but this is enough to start. If anyone is growing these—better still, selling them—I hope they will let me know. And if any reader is interested in importing them from England I would be happy to name sources if they send me a stamped envelope.

Among other gardening pursuits writer-lecturer Pamela Harper operates a Horticultural Slide Library, with some 10,000 35mm slides available. Note her advertisement in the classified section.

Pursuing a Second Spring

Robert H. Savage
33 Ona Lane
Newburgh, NY 12550

Gazania at Caledon, South Africa

THERE IS a pot of gold at the end of the rainbow, and I found it. It is South Africa. Besides being the world's largest producer of that sought after yellow metal, the country itself is as precious as gold. It is studded with some of the most magnificent jewels found anywhere, its spectacular flora.

So many of our favorite flowers are native there, but it was the rarer more unique plants that lured me to this superb land. Further, I always get a bit melancholy as our Autumn announces the end of another growing season here in the Northeast. These two factors resulted in my decision to make the 18,000 mile round trip by air, and the nearly 3000 mile journey within the Republic itself. Follow along as I whet your appetite for a super trip.

Our big South African 747 arrived in Johannesburg the morning of September 11th. We were immediately impressed by the efficient arrangements for baggage handling and transportation to our luxury hotel. This modern metropolis hardly looks like a mining town. It is modern and sophisticated, offering literally everything one could want in a major city. After an excellent lunch, we toured the city and visited "The Wilds", a wild flower reserve within the city limits, and got our first glimpse of the marvelous bloom we would see throughout the trip. Bright yellow and orange *Gazania*, sky blue *Felicia* and pristine white *Osteospermum* with deep blue eyes glistened along the paths. Color was everywhere in trees, shrubs and nestled in every rock crevice. It was a fine introduction to the South African Flora, but only a sample of the array we would encounter later on.

A fine dinner and a good night's sleep had us all ready for our early morning flight to Skukuza in Kruger National Park. It was a short flight and gave us an excellent view of the terrain of the eastern Transvaal. Being early Spring, the trees had not yet started into foliage and I thought it brown and dry looking. Later, I realized that it was the perfect time to go to Kruger, since viewing the great variety of wild game would have been very difficult had we not been able to look through the trees. We were met in Skukuza and headed into the bush with very friendly and knowledgeable drivers who would be our guides for the next two days.

Arriving at Mala Mala, we were immediately impressed by the luxury so far from any sizeable town. After lunch and tea, we drove out into the reserve and saw many giraffe and zebra, wildebeest and warthog, water buck and impala, all as curious about us as we were about them. We were able to get very close and take excellent pictures. The birds were as magnificent as the mammals and we drove along side a huge secretary bird as he gained the necessary ground speed for his soaring take off. The lilac breasted rollers, masked weavers and Cape starlings added greatly to the color of the camp. A delightful dinner around a camp fire of Leadwood logs in the Boma (enclosure), fea-

tured roasted Impala and put the finishing touch on a most memorable day. During the next morning of game viewing, we also saw the magnificent Impala Lily (*Adenium obesum* var. *multiflorum*) growing on the barren hillside. Not a lily at all, but truly magnificent. That afternoon we returned to Johannesburg.

The next day we motored to Pretoria for a look at this beautiful Capital city. The formal gardens at the government buildings were spectacular and manicured. The National Botanical Garden was magnificent with its wrought iron gates depicting South African aloes.

A broad spectrum of hardier native plant material including the interesting native Cycads in the genus *Encephalartos,* were beautifully displayed here. After lunch, we visited the private garden of a lady landscape architect. It was a masterpiece of engineering and beautiful design literally carved out of a barren hillside. The use of water and carefully selected plants made an idyllic setting.

The next morning another adventure was embarked upon as we boarded the supurb Blue Train for the 1000 mile, 24 hour trip to Capetown. Private compartments, elegant food and courteous service made this a most memorable and comfortable way to view the spectacular scenery of the interior. Upon arrival in Capetown, you are immediately intrigued by Table Mountain which dominates any glance to the East. We quickly took a cab to the cable car and were rewarded with spectacular views of Table Bay, this jewel of a city, and the majesty of the adjacent mountains. Dinner and a show at the modern Nico Malan Theatre Centre completed another great day.

The next day had to be one of the high points for anyone with a botanical bent or just an eye for beauty. Kirstenbosch Botanical Garden nestles on the lower slope of Table Mountain and provides breathtaking vistas of sheer beauty and grandeur, no matter where you stand. Here, we saw the magnificent Proteas so properly identified with South Africa. The King Protea *(Protea cynaroides)* looking indeed like some enormous pink artichoke, the Silver Tree *(Leucadendron argenteum)* glistened like soft pewter, and the tiny Blushing Bride *(Serruria florida)* rustled daintily in the soft breeze. *Leucospermum* and *Mimetes* added to what seemed endless variety, and nearly ran the gamut of the Proteaceae here. I was particularly keen on the succulent collection and was totally fascinated to see the parallel development of South African euphorbias and our Cactaceae.

The succulent wild grape *(Cyphostemma)* was a fat, peeling small tree, while the odd Elephant's Foot is a succulent yam *(Dioscorea eliphantipes)*. They made me want to come back and explore the Karoo and see more of these treasures. Great drifts of *Lampranthus, Carpobrotus,* and *Conicosia* cascaded over the rocks in riotous display.

An afternoon trip down the Cape Peninsula to the Cape of Good Hope (Cape Point) found us winding our way through the beach resorts of False Bay and on to the tip itself. Spectacular surf, flocks of sea birds and wind blown Proteas all combined to insure us that we were truly at the end of the African continent.

The Cape Province is so beautiful that the entire time could well have been spent there. The next day, I was torn between a visit to Stellenbosch with its fine university and the very beautiful 150 year old Cape Dutch Homestead, Lanzerac, or a return visit to Kirstenbosch. I chose the latter but promise to make Stellenbosch on my next visit.

On September 19th, we drove north from Capetown to the heart of the dairy industry in the Cape. The tiny town of Darling greeted us warmly and even put on a mini flower show for us. This area is so rich in wild flowers that mere words will never describe the profusion of treasures so literally underfoot. It was impossible to walk in the moist meadows without trampling some dainty beauty. There were wild *Gladiolus, Moraea, Ixia, Sparaxis* and *Zantedeschia* which we would have expected to see, but the new gems which I had never seen before, included *Spiloxene, Romulea, Monsonia, Babiana* and the unexpectedly beautiful *Drosera,* the Sundew. The one which really became my favorite, was a tiny member of the *Iridaceae* which they call "Wine Cups". A perfect common name, for this flower slightly larger than one inch, stands on a three inch stem like a fancy enameled goblet.

It is rich, royal robe purple and is a third filled with glowing claret. The "wine" is separated from the purple petal color by a thin white line. This rare gem *(Geissorrhiza rochensis)* owes its survival to the dedicated people of the Darling area who well know that they are blessed with some of the world's rarest plants.

Leaving Capetown for our journey along the beautiful coastline of the Indian Ocean, we stopped in Betty's Bay, where some of the nearly extinct Proteaceae grow, and on to a commercial Protea farm where cut flowers are dried and shipped throughout the world. We continued through Hermanus and Caledon, stopping briefly to view more exciting wild gardens on our way to Oudtshoorn. A fun day was had at the ostrich farm where we fed on ostrich omelet and roast ostrich (delicious!), watched the races and stroked the fluffy plumes of the big birds.

We continued along the "Garden Route" as it is called, stopping frequently and enjoying the rapid changes in flora. The Tsitsikama Forest was a complete change from

Continued on page 42

Signs of Spring

More and more signs and labels are becoming an integral part of public and private gardens. These lettered messages can be invaluable in directing and instructing visitors, and aid the gardener in preserving the identification of plant material. For these reasons and the essential aesthetics of a garden, the design of signs deserves the attention of sensitive gardeners.

Cost and durability are important considerations, and more recently wide-spread vandalism is a growing concern. It is generally agreed that garden signs should present their messages clearly without being brash or conspicuous. In most instances wood construction is most harmonious and the least expensive. For the labelling of plant varieties, engraved plastic, painted metal, and stamped aluminum are most widely used. In addition to educating the visitors, signs tend to engender a greater degree of respect, both for the garden and the gardener, than an unlabeled plot.

Signs can and do offer both inspiration and admonition. Callaway Gardens in Georgia have used the following legend:

"Remove nothing from the Gardens except:
—Nourishment for the soul
—Consolation for the heart
—Inspiration for the mind."

On a more matter-of-fact level other signs advise—"No Dogs", "No high heels", or "No ball playing".

When getting to the actual construction of a sign, consider these recommendations from the experts. For stained or painted wood surfaces, use a shade or two lighter than the surrounding garden scene. The legend is best when lettered in a dark tone. Routing of the letters gives greater permanency and makes the words legible in any angle of light. Routed lettering is also easier to maintain. The top surface can be freshened with a paint roller. (Use softwood boards which respond easily to the router.)

When preparing large wooden signs, several boards can be joined together with outdoor, waterproof glue—a product sold by plywood

"Let it be" sign speaks to the 'now' generation better than earlier scolding messages such as NO TRESSPASSING and KEEP OFF THE ROCKS. Colorado Springs Horticultural Garden waterfall-rock garden.

Photos and data:
Lorraine Marshall Burgess
202 Old Broadmoor Rd
Colorado Springs,
Colorado 80906

manufacturers.

The positioning of signs is equally important. "Inconspicuous visibility" is the goal. Where lawns are involved, signs should be placed within the border of the planting bed to avoid mowing problems. Signposts should be of cedar, redwood, or treated pine.

Lettering should be attractive and readable, and of a size suitable to its distance from its readers. Upper and lower case lettering is said to be more legible than all caps.

Vandal-proof signs are becoming a growing necessity. T-iron stakes, set in cement, seem the best answer to this ongoing threat. A quick, sure way to install small signs is to set their attached stakes in a 9" post hole cavity while adding a mix of one part cement and 3 parts sand to the hole around the stake. Add water slowly to moisten all of the mix and tamp in place. When the mixture is set, add soil to bring the cavity up to surface level.

In more acute vandalous situations, mount the signs on concrete platforms. (The US Forest Service has resorted to the use of salvaged boiler plate for trail markers. The message is designed with stenciled lettering cut through the metal with a welding torch.)

Even Braille signs in fragrance gardens for the blind are victims of the despoiler. Sturdy design is essential.

Some believe that persuasion is the better approach when dealing with trespassers and pilferers. The "LET IT BE" sign shown in an accompanying photo was designed to protect a new waterfall-rock garden from the rock-tossing invasion of playful youngsters. For three months not a stone was turned, or a new plant trampled. The garden's designers thought they had finally reached the pranksters who frequented this small city park. The sign was effective for all but one. He or she took such a fancy to the sign that he (or she) dug it up and took it away, either as an objet d'art or a memento of his (or her) daring. Sobeit.

Braille and engraved plastic labels are used in Norfolk, Virginia's garden for the blind.

In the shimmer of Spring blossoms the dignified looking sign discourages the invasion of careless visitors.

Alfred J. Fordham
Arnold Arboretum
Jamaica Plain, MA 02130

Cornus Kousa and its many variations

Figure A—Assemblage of *Cornus kousa* flowers—each from an individual tree.

Figure B—Bird's-eye view of *Cornus kousa* from sixty feet.

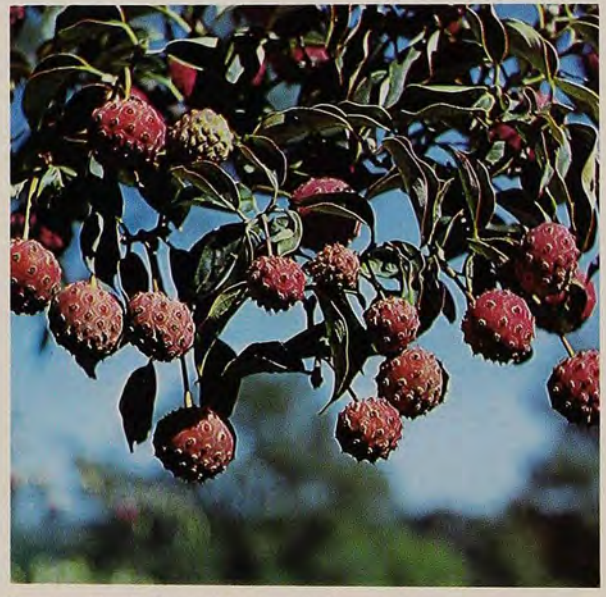


Figure C—Colorful fruits of *Cornus kousa*.

Figure D—Rich reddish-brown autumn color of a *Cornus kousa*.

When asked if I would prepare an article concerning my favorite tree, I pointed out that I was fond of many trees but had no specific favorite. I do have some pet trees, however, and among these is *Cornus kousa*, the Japanese Dogwood.

When plants are raised from seeds, seedling populations often duplicate one another with monotonous uniformity. Seedlings of other plants, however, may exhibit characteristics that differ greatly from other members of the same lot. Such variation has led to new selections that a more knowledgeable horticultural public has found increasingly interesting in recent years. Japanese Dogwood provides a striking example of the variation that can arise when plants are raised from seeds.

In the early 1950's, Mrs. G. Kennard Wakefield of Milton, Massachusetts, started a number of *Cornus kousa* plants from seeds. These were lined out orchard fashion in a field so they could be observed. From time to time, more trees were added, and the planting now contains over one hundred and fifty specimens. Much of the information presented here is based on observational notes made in this collection.

Both *Cornus kousa* and *C. florida* have small globose clusters of insignificant greenish-yellow flowers, that are usually accompanied by four showy bracts. The combination comprises an inflorescence, that is often loosely termed a flower. So, for the sake of simplicity, we will use the term flower. Although the flowers of *C. kousa* and *C. florida* are somewhat similar in structure, they can be easily identified. The bracts of *C. florida* are notched at the apex, while those of *C. kousa* are pointed.

Variation in Characteristics of the Flowers

Figure A shows an assemblage of *Cornus kousa* flowers. Each was collected from an individual tree, and was chosen as being typical of the flowers produced on that tree. It is interesting to note that no two flowers are precisely alike. They differ in size, symmetry, bract shape, shade of color, and pedicel length. The ornamental characteristics of the flowers on some trees obviously are far superior to those of others. Some bracts are tinted pink, and these had accompanied flowers which, for some reason or other, had aborted. It is not unusual for spent bracts to be flushed with pink before they fall. The presence of reddish pigment in *Cornus kousa* leads one to wonder if plants with pink or red flowers may exist, as is the case with *Cornus florida*. If so, might a search in its native habitat result in their discovery?

In addition to widely varying floral characteristics, growth habits are also diverse. Some trees are tall and narrow in shape while others are broad and rounded.

Cornus kousa flowers are generally borne on the upper side of the branches.

Cornus kousa tree as seen from a height of sixty feet above is illustrated in Figure B. From this aspect, the tree appears so covered with blossoms that it would seem difficult to find space for one more.

Several of the Wakefield trees bear flowers with additional bracts; some have six, others have seven to nine. One tree of special interest has flowers with additional bracts of varying number—some were joined together. Others on the same tree have a normal complement of bracts fused in the manner whereby they form a square.

Variation in Fruits

Figure C illustrates the fruits of *Cornus kousa*. The skin is rich red and prominently dotted with the remains of calyxes. They are compound fruits, and each contains several stony seeds.

Fruit samples of *Cornus kousa* were collected from individual trees in the Wakefield planting. An effort was made to select a specimen typical of each particular tree. In size the fruits ranged from that of a marble to a diameter of one and five-eighths inches. The heaviest weighed 32 grams (one ounce equals 28.35 grams). *C. kousa* fruits are edible and have a flavor which appeals to many people. Large size would be important to those wishing to eat the fruits. The fruit stalks also varied, and ranged in length from under two to over four inches. There is no relationship between fruit size and stalk length.

An interesting sidelight is that Japanese dogwood fruits are ignored by birds at the Arnold Arboretum. Chipmunks, however, remove the seeds from the fruits and leave the plants with their cheek pouches bulging. This defeats natural dispersal, for chipmunks store the seeds in their larders, where reproduction would be impossible. Japanese dogwood in its native habitat must have some other carrier, possibly a large animal such as a deer, bear, boar or such, that would eat the fruits and carry the hard-coated seeds in its digestive system until they were eliminated in droppings—and thus scattered about the countryside.

Autumn Color

Autumn color of *Cornus kousa* varies from plant to plant. The leaves tend to remain on the trees, and thus to display fall color, for a prolonged period. Figure D illustrates a specimen that exhibits rich reddish-brown coloration.

In summation, we conclude that persons interested in *Cornus kousa* should purchase only vegetatively propagated clones. An ideal plant would exhibit the floral characteristics that can be best viewed at eye level. Ideal fruit size and color shown in Figure C, and excellent autumn coloration is displayed in Figure D.

Robert Sheppard
5220 W. 102nd St., Apt. 316
Bloomington, Minnesota 55437

Know Your Microclimate For Better Gardening Or ... Why Can George Greenthumbe Grow Better Roses

Why can George Greenthumbe grow better roses than you? This question (names changed to fit your neighbor, brother, boss, or whoever) is asked at one time or another by most gardeners. Maybe it isn't roses. Perhaps you are having trouble with iris, azaleas, or some other beautiful plant. You ask George. He gives you some vague answer about sheep manure and the full moon. Definitely, his knowledge and experience is far superior to yours!

Maybe not. There may be a simpler answer to those great roses that has nothing to do with George's skill. It might have to do with microclimate, a rather imposing word. A microclimate's affect on the growth of plants can be tremendous.

A microclimate is simply the "climate" or environment in a restricted area. All factors important to the overall climate of an area also affect microclimates: temperature, sunlight, rainfall, humidity, soil type and so forth. A microclimate can be large or small. Any area, whether underneath a small evergreen or a large, open backyard, can be considered a microclimate. All that is required is an environmental factor (temperature, wind, sun, etc.) be different in the small area you are examining.

In the hot summer, a wooded area is often cool and inviting while a near-by open field is hot and oppressive—two different microclimates. Feel the north and south sides of your house any time the sun is out. The temperature difference indicates two microclimates. Maybe you have had a garden that would get frost at one end but not the other—again, a difference in microclimates.

All plants are affected by microclimate. Some plants will tolerate a variety of different microclimates with little change in growth. Others are so sensitive that they make good indicators of specific microclimates. They won't grow in any others.

Red-osier dogwood (*Cornus stolonifera*) grows naturally in wet, swampy areas. Yet, it is also at home planted in a sunny foundation planting or in a shaded

backyard. Paper birch (*Betula papyrifera*), on the other hand, tolerates little heat if it is to grow at its best. I once worked on an old estate that had paper birch 20 inches in diameter and forty feet tall. In comparison, birch planted in a nearby housing development were dying before they reached a quarter that size.

The birch on the estate grew by a lake, surrounded by other trees that shaded the ground on a north facing slope. This combination gave a microclimate with high humidity, low soil temperatures, and good moisture near the roots. Birch thrive under such conditions. In the nearby development, most birch were planted in open front yards in hard packed soil. The sun beat on the ground and dried the packed soil. Hardly an ideal microclimate.

People I talked to in the development pointed to birch borers or some mysterious disease. This is common to plants growing in a microclimate they can't tolerate. The harsh microclimate doesn't always kill the ill-suited plant, but almost always weakens it so its defenses against insects and disease are less effective. A plant suited to the microclimate is generally a strong and healthy plant.

Microclimates can vary a great deal even within a short distance. I measured the soil and air temperatures under a group of trees (birch and elm) and in a garden bed on a very hot August day a year ago. In the morning the soil and air temperatures were about 75° F in both places. By mid-afternoon, the air temperature had risen 18°. The soil temperature under the trees had risen one degree, yet the temperature of the bare soil of the garden, exposed to the sun, had risen 15°!

Curious, I decided to compare some different but physically close microclimates in a nearby park the next day. I took all measurements in the afternoon when the air temperature was 93° F. The lowest soil temperature I found was in a marshy area—only 71° F. The soil was shaded by tall cattails. Because the soil was wet, evaporation also helped keep the temperature down in this microclimate. The second lowest soil temperature was 74° under a small stand of Scotch pine. They were thick enough that little light reached the ground.

I found the highest soil temperature in an open, mowed area—90°, just three degrees from the peak air temperature. This yard-like area sloped to the south and got the sun's rays full force. Nearby, a large maple shaded the ground and dropped the soil temperature to 77°, still on the southerly slope. An open area that sloped slightly north, thereby getting less direct sun, also had lower temperatures than the south slope—83°. All of these measurements were within a quarter mile of each other.

A hot summer day does produce extremes in a microclimate, but even cooler days can produce an effect. Soil temperature is only one factor affected in a microclimate. Scientists have found that a forest in summer often gets less than four per cent of the sunlight an adjacent field gets. That forest is also likely to be 5-10° cooler during the day, slightly warmer at night, have higher humidity, and greatly reduced wind speed. Of course, these factors do interact. Less wind often means higher humidity. Less sun usually means lower temperatures which in turn mean less drying conditions.

The observant gardener can use his/her knowledge of microclimates to great advantage. You don't have to be a scientist to find different microclimates in your yard. A thermometer can help, but an observant eye can tell you a lot. Where does the dew leave last (indicates high humidity, low wind)? Does the soil dry faster in some areas than others even though the soil type is the same (low humidity, wind, strong light, or high soil temperatures)? Are some areas more comfortable for lounging in the summer (lower temperature, light wind, shade)? Watch the conditions of your yard and you will learn a lot.

Watching your plants can tell you much also. If one species of plant has consistently more insect pests or disease than its neighbors, you might suspect an unfavorable microclimate. A tall, leggy plant with few blooms probably isn't getting enough light. Do some plants mildew more in some parts of your yard than in others? Suspect a microclimate with poor air circulation, high humidity, too little sun, or a combination.

Once you have an idea of the different microclimates in your yard you can do two things: choose plants fitted to the microclimates or alter the microclimates. The first is easier. Although information on how specific plants react to specific conditions is often hard to find, it helps to consult a couple of good gardening books or talk to an experienced gardener or nurseryman. Even general information like "likes light shade and cool roots" is useful and should be followed. It is best to grow only plants suited to the microclimates of your yard. If you must compete with George Greenthumbe, grow a plant that thrives in your yard but can't tolerate George's microclimates.

You can modify a microclimate slightly, but it may be hard. First, you need to know exactly what needs changing. Soil too hot and dry? Try a light colored mulch and water more often. Too much wind? plant a hedge. Too little wind? Rebuild your fence (tearing down your house may be a bit drastic!). You need to be creative. Trial and error is often the best way to deal with a problem microclimate. It may be hard, but changing a microclimate can give spectacular results.

Next time you see old George Greenthumbe, tell him you think roses are too easy. Your Siberian iris are spectacular in your yard. Too bad he can't grow them so well. All he needs is a light sprinkling of mouse dung gathered in the fourth quarter of the moon. We won't tell him about microclimate.

Continued from page 4

Mixing Food Plants

Along the back of this area were gloriosa daisies and soybeans, with blending hairy grey-green foliage. Zucchini squash with its large two-shaded green leaves and school-bus-yellow flowers grew in a hill with "Royal Purple" zinnias in the center and around the edges of the hill. The vines hid the scruffy foliage of the zinnias, and the zinnias grew through the squash vines and emerged covered with bright flowers.

In front of the squash and zinnia patch were several long rows: of "Tina" dwarf marigolds, Nierembergia, "Ruby" and "Salad Bowl" lettuce plants alternated with Lobelia.

There were disasters. "Royalty Purple Pod" snap beans, a compact bush form we had used in the Children's Garden in 1973, were planted with nasturtiums in between so they could crawl around on the ground among the sturdy bean bushes. But the beans did not grow in bushes in 1974; they trailed along the ground. The nasturtiums got tangled with them and everything fell over. I ripped all the plants out, sowed again, and pinched the bean seedlings repeatedly. Unfortunately the same thing happened.

"Rhubarb" Swiss chard got more over-the-fence questions than any other flower or vegetable in the annual border. Its rippled, red-veined leaves stand up large and straight. It's eye-catching, not only in mid-summer but on into October.

Blue salvia grew with chives at its base. There were also various kinds of salad greens, those that hold up well in our hot Brooklyn summers. They were planted in an oval shape of three rings: lime-green ruffles of "Salad Bowl" lettuce, dark crumpled leaves of "Ruby" lettuce, and sharply notched clusters of endive. On both sides of the oval there were ferny carrots: "Ultra Pak" with short strong bushy tops.

In all I was delighted with my garden: well-fed, aesthetically pleased, and full of ideas for 1975. I had also discovered several complications.

It is often hard to determine the growth habit and other ornamental characteristics of vegetables by reading seed catalogs. If the part of the plant that is commonly eaten is the part that will be visible in your garden, you're likely to get good information. In other cases, you must be a good detective, using suggestions intended for commercial growers for your own purposes.

Growing vegetables in clumps or irregular bedded sections requires some adjustments in cultural practices. I estimated the area a plant would occupy at maturity. For example, a parsley plant will be about nine inches in diameter, so as I planted I left nine inches around each parsley seedling. Where I was worried about possible crowding, I left a few extra inches.

There were plenty of paths so that every part of the garden could be easily reached with a hoe. I cultivated and weeded around plants rather than in between rows.

Plants grown next to each other were chosen because they grow at similar rates and attain similar heights at maturity, thus one plant would not overshadow and stunt the growth of another.

Choices between preserving ornamental patterns and harvesting a crop were not necessary, since vegetables left past the time they're ready to be eaten won't usually be edible or attractive for very long.

In this year's garden I have decided to go further. Everything in the 60' section is edible, (except marigolds which will be used as companion plants).

For example, in one area there are sunflowers, soybeans, a bush pumpkin, lovage, carrots, "Rhubarb" chard, scarlet runner beans trained on purple-husked corn stalks, and three kinds of basil. This area is bordered along the front by plain-leafed parsley and summer savory, and divided in three by paths outlined in dwarf marigolds.

This year I will continue my experiments to include fruits, perennial herbs, and obviously-edible vegetables like tomatoes. I want to incorporate companion-planting principles more thoroughly into my designs, and to integrate plantings with houses. Surely some of you are already working on such experiments. If we are ingenious and patient the old dichotomy of utilitarian versus "pleasure" plantings may blend to a close, and we will be able to use our land more thoroughly and comfortably, as a source of both life and beauty.

Continued from page 7

Prelude to Spring

Fields, lists the following, in descending order of reliability:

'Lady Marion' (also called 'Kumasaka')
'Berenice Boddy'
'Blood of China'
'Triphosa'
'Valtevareda'

Other growers have had variable success with 'Glen 40', 'Grandiflora Rosea', 'Sweetheart', and a few others. As it is nice to have "good luck" with the first plant one grows, 'Lady Marion' ('Kumasaka') is recommended. It is a rose-color, rose-form double, and quite beautiful.

For outdoor use in areas intermediate in climate between New York and the Deep South, the number of possibilities increases. Washington area gardeners may consult a list prepared by the Camellia Society of the Potomac Valley; the list includes 'Finlandia', 'White Queen', 'Magnoliaeflora', 'Lady Clare', 'Pink Perfection', 'Lady Vansittart', 'Tricolor (Siebold)', 'Donckelari', and 'Governor Mouton'.

For indoor or greenhouse use, and for use outdoors in "camellia country," the gardener has an enormous, even overwhelming, choice. To list "Best" is pointless,—no two people could possibly choose the same flowers as favorites. A good camellia nursery may offer two hundred named cultivars of *C. japonica!* One of the pleasures of growing is choosing, and a catalogue is a delightful marketplace. With a lavish list from which to select, it is personal preference, not someone else's taste, which matters. Who is to say that the same soft pink is "better" in the prim, meticulously arranged, small petals of 'Pink Perfection' than in the fluffy, ruffled "petticoats" of 'Sara Hastie'?

Camellia japonica is a captivating species. The gardener is cautioned that exposure to the flowers is quite likely to be followed by a new, incurable horticultural "disease"!

THE CAMELLIA HOUSE PLANTING FIELDS

Cultural information on *C. japonica* given by Gordon Jones, Director, Planting Fields Arboretum

Number of Cultivars	122	
Soil Depth	36 inches prepared soil over drainage tiles	
Soil Composition	Sandy loam with generous incorporation of organic material	
Temperature	**November through Flowering**	**After Flowering**
	Day: 45°F	Day: Rises with outdoor temperature
	Night: 40°F-42°F (as nearly unfluctuating as possible)	Night: 55°-60°F (to stimulate growth)
Ventilation	Both summer and winter	
Fertilizer	Granular 10-6-4 (50/ urea form nitrogen) Super phosphate (for bud set) Frequency of application: once Time of application: after flowering	
Watering	Frequent and thorough watering	
Humidity	50% plus Plants are syringed and walks hosed down often, to increase humidity	

My Favorite Camellia Cultivar

Milton H. Brown
Executive Secretary, The American Camellia Society
P.O. Box 212,
Fort Valley, GA. 31030

Betty Sheffield Supreme

To answer the question, "What is your favorite camellia?" is like trying to answer which is the favorite child. In any case, there *is* always a favorite, even if we wish not to admit it. My favorite camellia is a "family" rather than one particular cultivar. It is 'Betty Sheffield' along with its many mutants or sports.

It was in June 1949 that Mrs. A. B. Sheffield of Quitman, Georgia registered a lovely new *camellia japonica* seedling which she called 'Betty Sheffield'. The flower can best be described as being about 4 to 4½ inches in diameter, an incomplete double to peony form with wavy petals and with upstanding large petaloids interspersed with stamens. It is white with a few red and pink blotches and stripes. The flower blooms on a plant of medium and compact growth from late November through March.

It was not long before this lovely camellia began to "sport its huge family" of show winners. Within a few years about ten mutants were registered with the official registry of camellias, The American Camellia Society. Many others were given names and also put into the trade. There are eleven separate cultivars of the 'Betty Sheffield' family growing out-of-doors at the National Arboretum in Washington. For many years now various of these varieties have found their way to the Honor Court, Court of Honor and Head Table of camellia shows ranging from our Nation's Capital down through Florida, along the Gulf Coast to New Orleans and along the West Coast from San Diego to the state of Washington.

The names given to the many mutants of 'Betty Sheffield' range from such mundane ones as 'Betty Sheffield Blush', 'Betty Sheffield Pink' to such descriptive ones as 'Charming Betty' and 'Betty Sheffield Supreme'. There is also a bit of a humorous one that is registered as 'Funny Face Betty'.

It was the entrance into the camellia world in 1959 of 'Betty Sheffield Supreme' that really put this family of camellias in the foreground. This has always been a consistent show winner from the very beginning. During the 1974-75 season, it was the second highest winner in *camellia japonicas* grown out-of-doors. As you can see from the photograph, this flower has that something that just shouts, "Look at me!" when a team of judges approaches the display tables. The flower has the wonderful characteristic also of falling off the bush in one piece when it falls; it does not shatter as do many camellias. The flower is also versatile in flower arrangements and will last quite a few days after being cut.

The studios of the late Edward Marshall Boehm honored the camellia 'Betty Sheffield Supreme' by making it the first in a series of fine porcelain camellias. Mrs. Boehm personally honored the grand old lady of camellias, Mrs. A. B. Sheffield, by graciously donating to her one of these coveted Boehm camellias.

There is only one minor drawback to this wonderful family of camellias. Occasionally a plant of one of the newer varieties will either sport a new mutant or will revert back on one of its limbs to the earlier "mother variety". Since *all* of the 'Betty Sheffields' are wonderful, this is just not a drawback to me.

Continued from page 11

Tomatoes—Andes Mountains to American Tables

Bend the shoot sharply to one side until it snaps; then pull it off in the opposite direction.

Tomatoes need about 1 inch of water per week. If rainfall is deficient, plants should be thoroughly watered once or twice a week. Heavy soakings at infrequent intervals are better than many light sprinklings.

Weed control is essential since they compete with tomato plants for water, nutrients, and sunlight. Weeds also harbor insects and diseases and may be hosts for nematodes. When hoeing or cultivating it is important to not cut deep so that the tomato roots are not cut or disturbed. Mulches can also be used to help keep weeds down. They also reduce water loss from the soil and stabilize soil temperature. Rolls of black polyethylene, paper, and aluminum mulch are available in most garden stores or naturally occurring materials such as straw, leaves or grass clippings may also be used as mulch.

When using plastic, paper, or aluminum mulch, the soil should be treated with a broadcast application of fertilizer before applying the mulch. If organic mulch is used it should be at least two inches deep on the soil to provide insulation, hold water and control weeds.

For tomatoes to be most flavorful and have the best color they should be harvested after they are fully ripe. If tomatoes are picked at a mature green stage they can be ripened at temperatures between 55° and 72°F. Light will increase the color of tomatoes somewhat, but it is not essential to ripening. When tomatoes are placed in direct sunlight, the added heat often results in a deterioration of quality.

GARDENER'S MARKETPLACE

African Violets

African Violets, the world's most loved house plant! To learn more about them write to African Violet Society of America. P.O. Box 1326, Dept AHS, Knoxville, Tenn. 37901, for a free brochure. Better still, sned $6 for membership in the 18,000 member Society and receive 5 issues of the beautifully illustrated African Violet Magazine.

Amaryllis

AMARYLLIS, largest sizes, ideal gift. Carefully selected varieties: Send for colored illustrated list. LOUIS SMIRNOW, 85 Linden Lane, Glen Head P.O., Brookville, New York 11545.

Azaleas

NATIVE AZALEAS—13 of the hard to find species featured in the February 1976 issue of American Horticulturist—just part of the largest mailorder selection of hardy azaleas and rhododendrons grown in the Northeast. 1976 Catalog—$1.00— refundable with first order. CARLSON's GARDENS, Box 305-AH-2, South Salem, N.Y. 10590.

Bonsai

For membership information write: American Bonsai Society AH, 228 Rosemont Avenue, Erie, Pennsylvania 16505.

Cactus & Succulents

Lithops - Fascinating African succulents resembling colorful pebbles. Other rare succulents. Write for catalog. ED STORMS. 4223 Pershing Ft. Worth, Texas 76107

Chrysanthemums

National Chrysanthemum Society, Inc. USA. Annual dues $7.50, includes 5 issues of The Chrysanthemum, Beginner 's Handbook. MRS. WALTER CHRISTOFFERS, Sec., 394 Central Avenue, Mountainside, New Jersey 07092.

Daffodil Bulbs

Naturalizing Mixtures: River's Edge (8+ varieties) $44. Bushel, $13. Peck; Novelty (10+ unusual varieties) $50. Bushel, $15. Peck. Postpaid East of Mississippi, 10% extra West. 10% discount before June 15. Free Folder. River's Edge Farm, Rt. 3, Box 228A, Gloucester, Va. 23061.

Daphne Odora

The delightful 'February Daphne' offered by Little Lake Nursery growers of rare plants. $5.75 prepaid. California residents add 6% sales tax. Box 782, Willits, California 95490.

Dwarf Conifers

Dwarf conifers and bonsai materials. Color catalog which also contains Rhododendrons and Maples 50¢. GREER GARDENS. (HT), 1280 Goodpasture Is. Rd., Eugene, OR 97401

Ferns

LEARN ABOUT FERNS—join the Los Angeles International Fern Society for only $4.50 yearly. Receive 16-page educational Bulletin and two-page Lesson monthly. Address LAIFS, Box 448-H, Hawthorne, CA 90250.

Fuchsias

FUCHSIAS—75 varieties tested in the S.E. for heat resistance. Propagated from acclimatized stock. Send 10¢ for list. HIDDEN SPRINGS NURSERY, Route 3, Rockmart, Georgia 30153

Gardening Equipment

PEERLESS POTMAN offers 100 high quality plastic pots for only $10.00 postpaid. (30/2"; 50/4"; 20/6½") Worlds largest pot catalog 25¢ GOLDEN EARTH ENTERPRISES BOX 336A BREA, CALIF 92621

Greenhouses

GREENHOUSE 8' x 12' Build yourself for $50 or less. Eight different plans $2.97. Includes hotbed. Guaranteed. Werth's, Box 1902AH, Cedar Rapids, Iowa 52406.

America's Finest—100 Best Violets and Gesneriads—Write for Color Catalogue 15¢—Illustrated Growing Aids Catalogue 25¢—FISCHER GREENHOUSES. Dept. AH. Linwood, New Jersey 08221

Greenhouses and Indoor Gardening

GREENHOUSE GROWING ACCESSORIES! Complete automatic heating, cooling, ventilation systems and other accessories for all greenhouse makes, models. Write ENVIRONMENTAL DYNAMICS, 3010 DDA VINE.

Ground Cover Plants

PACHYSANDRA—Ideal Permanent Evergreen Ground Cover Plants. Thrive in most soils, sun or shade. Grow to an even height of 8". Plant 6" apart. Sturdy, heavily rooted plants, postpaid; 50-$8.50; 100-$15.95; 500-$56.95; 1000-$100.00 Guaranteed to live or we'll replace up to 1 yr. *Folder on request.* PEEKSKILL NURSERIES, SHRUB OAK 17, NEW YORK 10588

Herbs

Herbal Tea Sampler $4.00 Herb Seeds, Spices, Medicinal Herbs, Over 400 different items. For catalog send 50¢ HERB SHOP BOX 362 Fairfield, Connecticut 06430.

GROW OUR HERB PLANTS INDOORS OR OUTDOORS. Send 50¢ for informative catalog listing over 125+ varieties—culinary, medicinal, insect repelling, bee. FOX HILL FARM, Box 7AM, Parma, Mi. 49269

Insecticides

WHITEFLY SPRAY with Resmethrin (SB103)—very effective. 12 ounce aerosol. $3.00 plus .35 handling. N.Y.S. residents add tax. PRACTICAL PRODUCTS, P.O. Box 246-A, South Salem, N.Y. 10590

Japanese Maples

Over 100 named Japanese Maples plus a large selection of other species and named cultivars. Most not available elsewhere. Color Maple and Rhododendron catalog 50¢ GREER GARDENS, (HT), 1280 Goodpasture Is. Rd., Eugene, OR. 97401

Miscellaneous

Indoor-Outdoor Mister—Automated solid state system. Heavy rooting and sturdy growth—Valve, sensor, power supply, cables—$79.50. Fully Guaranteed—AQUAMONITOR, Box 327-Z, Huntington, New York 11743.

Nursery Stock

MILLIONS OF SEEDLINGS. High quality at reasonable prices. Over 150 selections for Christmas trees, ornamentals, Windbreaks, conservation, wildlife food and cover, etc. Free catalog. Carino Nurseries, Box 538W, Indiana, Pa. 15701

Plant Supports Tiltproof

NEW Plant Supports from ORDEV keep your large growing potted indoor or patio plants straight, tiltproof and securely portable. STAKE KIT expands through add-on sections up to 6 feet tall. TRELLIS KIT adaptable to various shapes and heights. Detailed information. ORDEV MFG. CO., INC., 6781 Ward Road, Niagara Falls, New York 14304

Primroses

BARNHAVEN PRIMROSE seed and plants for spectacular Spring color. Also rare Flower seed from many lands, Unique new catalog 35 cents. FAR NORTH GARDENS, 15621 Auburndale Way, Livonia, MI. 48154.

Continued from page 17

Two Spring Treks

thickets. It took three days to reach the head of the valley, at around 11,000 feet, by which time the rich forest had changed to grassland and shrubberies of roses and berberis. Where the snow had already melted, enormous rosettes of *Meconopsis paniculata* were scattered amongst the grass, beneath large groups of pale pink flowering *Viburnum grandiflorum*. On the opposite east bank, made quite inaccessible by the Modi River, the lower slopes supported a wonderful association of *Betula utilis* and *R. barbatum*. The red flowers of the rhododendron glowed out of the sunless hillside. Set as they were amongst the peeling, leafless birch stems above a ground cover of snow, they formed a truly memorable plant experience.

Climbing the last 500 feet through deep snow between scrubby stems of *R. lepidotum*, *Rosa* and *Viburnum*, we entered the Sanctuary and reached the high lateral moraine of the South Annapurna glacier and the 1957 Machapuchare Base Camp. The 'Sanctuary' was so named by the first British climbers to visit the area when attempting the ascent of Machapuchare in 1956. We pitched our own camp a little way up the snow-covered slope which runs along the foot of the moraine. Walking further up the Sanctuary, we saw Chris Bonnington's Base Camp for his successful Annapurna South Face ascent in 1970.

That night was stupendous—crystal clear sky and light enough on the snow to read a newspaper, with stars above but only a limited view because of the high peaks so close around us. It was not, however, silent for even at night there was an almost constant clatter of falling rock and sounds of avalanches high up on Machapuchare. Above were Hiunchuli, 21,133 feet; Annapurna South, 23,683 feet; Annapurna I, 26,545 feet; Gangapurna, 24,457 feet; Annapurna II, 24,781 feet; and the glorious twin peaks of Machapuchare, 22,942 feet, known as the "Fish Tail". This mountain has a clearly defined summit and the earlier British climbing expedition stopped one hundred feet from its summit, because the Nepal Government has decided this mountain shall never be climbed. As they rightly feel, one great peak at least should remain sacrosanct.

The fine weather we had been enjoying began to break up. We retreated the next day back down the Modi Valley and returned to Pokhara after another four, happy days through more rhododendron forest and cultivated terraces of the lower valleys. We spent our final rest day one day's walk from Pokhara, sleeping upon a gentian spangled turf amongst the last of the rhododendrons.

BOOKS

Reviews by Tom Stevenson

POISONOUS PLANTS OF THE UNITED STATES

by
Walter Conrad Muenscher
Collier Books
New York–1975
277 pages, paperback, well illustrated, $3.95

Dr. Muenscher had a long and distinguished career as a professor of botany in the College of Agriculture at Cornell University. His book is a complete guide to nearly 400 species of plants that can cause skin irritations, rashes, blisters, illness, even death. The explicit line drawings simplify plant identification for the hiker, house plant fancier, or house owner with pets and children.

The original issue of this book was published in 1939. It organized and brought together the results of some 25 years of research and testing. In 1951 a new edition, revised and expanded, was published.

The purpose of this reissue of the 1951 edition, says the editor in his Foreword, is to provide in an inexpensive paperback volume what might be life-saving information about plants and some animals' reaction to plants. There are several small pamphlets that contain some of the same information, but the material in this book is by far the most authoritative and most complete available anywhere.

The title, "Poisonous Plants of the United States" is not as inclusive as it might be: Most of the plants of the continental United States are also found in Canada, Alaska, and Mexico. However, although Hawaii is now one of our states, this book is not really valid there, for the plant life of the Pacific Islands is quite different.

This is a two-part book. Part 1 explains what is meant by poisonous and tells how the plants are classified. Several lists of plants are provided as an overview of the types and families that might be dangerous. Part II deals with about 400 species of plants representative of about 70 plant families.

Distribution and habitat are given. Poisonous principle explains why the plant is harmful, and describes the section of the plant that may be most dangerous. Conditions of poisoning lists how and when the plant is usually used, and gives information about how it might have, in the past, been used as a medicine. Symptoms is a section that enables the reader to help diagnose the effects of contact with the plant. Case histories are sometimes included. Treatment is often, though not always, included.

PLANT A TREE

A working Guide to regreening America
by
Michael A. Weiner
Macmillan Publishing Co.
New York—1975
227 pages, wonderfully illustrated,
Hardcover $15.95
Soft cover $6.95

Every day the forests of America are destroyed to make room for highways and houses, shopping centers and parking lots. This is a tragedy we don't have to accept, the author says. Plant a tree! Not tiny ornamental trees, but the great trees—oak, maple, willow, tupelo—that will grow with people through several generations. He tells how, when, where and why.

"By disseminating this book," Weiner says, "I hope to restore respect for great trees. Trees that will grow with people, through several human generations, carrying a continuity that is unavailable from modified little hybrids.

"The peculiar modern trees may have characteristics that make them initially desirable, such as rapid growth, uniformity, and controlability, but through time they fail to attain the grandeur available to us only from tall growing species.

"It should also be remembered that if trees do in fact purify the air (they do), provide us with oxygen (they do), add moisture (yes), and baffle noise (certainly), then the larger the tree the greater its contribution to these desirable qualities in our lives (the parentheses in the paragraph above are by the author).

"To compose this guidebook several older books about tree-planting were utilized. Here were found sound, basic principles developed in ages when men did things by themselves, keeping to a minimum their reliance on man-made resources.

"One result of this research into the antique is the inclusion here of many natural, or organic, fertilizers that are easily available but at present in little use. Scant space is given to the overly prescribed commercial fertilizers. The modern fertilizers may act more quickly, yielding quicker initial growth, but the manures and other old fashioned fertilizers give longer-lasting benefits to the tree while they add humus to the soil."

THE DICTIONARY OF USEFUL PLANTS

by
Nelson Coon
Rodale Press, Inc.
Emmaus, Pa.—1975
290 pages, well illustrated, $10.95

An incredible number of plants cover the earth, and few there are that have not been put to some use by man, says the author. Until now, information on these plants and their use could be found only in scattered and specialized books.

Though not a scientific book per se, it is a useful reference for scientists and historians. And though primarily a reference book, it is not dry reading.

The book is a compendium of information on hundreds of plants from throughout the United States. Each plant is featured in an entry, arranged alphabetically within botanical families. Each entry briefly describes the plant and its habitat.

Beyond this, each entry fully explains the fact and folklore behind current and historic uses of the plant, with many providing sufficient details to enable the reader to put the plant to use.

It is a worthwhile addition to the book shelf of gardeners, wild plant foragers, horticulturists and plant lovers.

Modern Weed Control

by
Alden S. Crafts
University of California Press
Berkeley, Calif.–1975
440 pages, illustrated, $15.75

Dr. Crafts is professor of Botany Emeritus at the University of California, and a former president of the Weed Society of America. He has long been prominent in weed-control research. The first forerunner of this book, Weed Control, was published a generation ago, when few herbicides were in general use; the present book includes a table listing more than 200 of them.

His latest book deals exhaustively with the botany, chemistry, plant physiology, and ecology involved in the modern technology of weed control. In addition to the topics treated in his earlier books, he gives particular consideration to the place of weeds in the human environment—on farms and highways, for example, and in parks and industrial areas.

Because of the range and depth of the information it presents, Modern Weed Control should prove useful both as a text for

classroom use and as a reference book for agricultural technologists. Not only does it contain lists and classifications of herbicides that will be of value in the laboratory as in the field, but it also offers an abundance of illustrative material that will help the reader to visualize the varied aspects and forms of weed control.

"Given our present population of over three billion, one third to one half of whom are always hungry," says Dr. Crafts, "food production must have top priority among the needs of people. And food production, despite a 36 per cent rise in the current decade, has barely kept up with the population increase. While population control must become effective if the human race is to survive the twenty first century, time is required to educate the people the world around to the practices required. Meanwhile food production and distribution must be increased to stave off starvation and violence.

"I hope this book will continue, as have the three previous editions, to meet the needs of all who are interested in the basic principles of the botany of weeds, as well as the techniques used in their control."

MAKING VEGETABLES GROW

by

Thalassa Cruso

Albert A. Knopf, publisher

New York–1975

229 pages, illustrated, $8.95

The author writes a regular column for the Boston Sunday Globe, the Boston Globe Calendar, and McCalls magazine and is a contributor to Country Journal. She has lived and gardened in Boston since 1935 and has grown vegetables in varying-size plots in the Northeast for over 30 years.

In 1969 she received the Horticultural Society of New York's citation for distinguished horticultural service and the Garden Club of America's Distinguished Service Medal.

This is a good book for beginners and those who want to get better results with growing your own food. The author tells how to plan the size and content of the garden, from pocket-handkerchief size to one that will feed a family of four with sufficient surplus to put up vegetables for winter use; also when and where to get your seeds and plants, when and where to plant, how to have beans ready for harvesting two weeks earlier than usual, how to cope with leggy tomato plants, when and how to weed, how to raise plants for fall harvesting; also what to do after a crop has been harvested, and much more.

Specific instructions on soil preparation, planting, fertilizing, care, harvesting and ailments are given for the various kinds of vegetables grown in home gardens.

"With vegetable gardening," says the author, "virtually the entire crop must succeed if the gardener's efforts are not to have been in vain. What's more, in a small plot several successive crops must come to a lavish harvest, almost all of them grown from seed, something very few people ever attempt these days with their flowers.

"With vegetables you also need more specific knowledge than with flowers. You have to take better care of the soil, discover how to keep its fertility high, and learn how to live with the spoilers, the pests and predators that may descend upon you. With vegetables, you cannot be a casual gardener, you must be on hand much of the time, not only to work the land and to keep the crops coming, but also to harvest them before they spoil.

"All this is much more demanding than setting out a few annual plants bought from the gardening center, but to me it is also enormously more rewarding. The most obvious reason, of course, is the taste of home-grown vegetables. There's absolutely no comparison between them and those that are store-bought, and that is why I would like to encourage people who feel that they have no space for vegetables to make space, if only by growing certain amenable crops, like tomatoes and cucumbers and many herbs in containers in any sunny spot anywhere."

THE PERSONAL GARDEN—ITS ARCHITECTURE AND DESIGN

By

Bernard Wolgensinger and José Daidone

Van Nostrand Reinhold Co.

New York—1975

164 pages, wonderfully illustrated, $30

Daidone and Wolgensinger are French architects, partners, based in Paris, and at present are involved in the architectural aspect of low-rent housing, clinics, renovation of city centers, private houses, social and sports facilities, etc.

The book contains 94 color illustrations, 94 black and white gravure reproductions and 23 plans for small gardens. It details the important facts that must be taken into account to prepare a small garden, and presents the different possibilities: the terrace-garden, fountains, loggia, staircases, and others.

"The object of the present work," they say, "is to offer the gardener the widest possible selection of typical examples of built-in gardens. It seeks to give some idea of the variety of national, thematic, and climatic approaches to small-garden architecture, to stimulate the imagination, spark off ideas, and open up fresh possibilities for the garden enthusiast.

"Plants offer infinite variety, and by a careful choice, the imagination can produce delightful results.

"Important factors to consider when choosing plants include size when full-grown (particularly for trees and shrubs but also for flowers), shape and color according to season, ability to strike root and speed of growth."

The garden layout, to be successful, they say, must harmonize completely with the building with which it is associated.

"The ideal situation is, of course, when both the house and garden are designed together, since they can then be integrated much more easily.

"The most perfect example of such integration is what we in the West regard as the Japanese garden, since in this case the house is designed to fit the garden, the poetry of which permeates the subtly modulated architectural space in which it is set."

Books Received in AHS Library

CITRUS GROWING IN FLORIDA

Ziegler; Louis W. and Herbert S. Wolfe

University of Florida Press, Gainesville

1975

246 pp. illustr. b/w

$10.00

CACTI AND OTHER SUCCULENTS

Ginns, R.

David & Charles, North Pomfret, VT. 05053

June 1975

129 pp. illustr. b/w

$9.95

Continued on page 42

GARDENING FOR PEOPLE
(who think they don't know how)
Moon, Douglas
John Muir Publications, Santa Fe
1975
266 pp. illustr. by Judy Daniel
$6.00

A QUEST OF FLOWERS
Fletcher; Harold R.
Edinburgh University Press,
George Square,
Edinburgh EH8 9LF
Oct. 1975
386 pp. w/notes,
botanical & general index;
illustr. b/w & color
endpaper maps
£10.

COLOR IN THE SKY—
Flowering Trees in our Landscape
Menninger, Edwin A.
Horticultural Books, Inc. Sturat FL
1975
260 pp. illustr. b/w & color
$14.95

HYDROPONICS—The Bengal System
(5th edition)
Douglas, Sholto
Oxford University Press,
Madison Ave., NYC
10/16/75
185 pp. with list of research
stations and bibliography
$4.25

A GARDEN BOOK FOR HOUSTON
and the Gulf Coast
(new edition)
River Oaks Garden Club
Gulf Publishing Co., Houston
Nov. 1975
183 pp. illustr. b/w & color
$7.95

BEGONIAS—Chevalier
Chevalier, Charles.
Translation by Alva G. Graham privately printed.
Copies avaiable from American
Begonia Society
1975
185 pp. large format paperback;
illustr. b/w & color
$10.50

A MANUAL FOR FLOWER JUDGING
4th edition
Prepared by Pi Alpha Xi, National
Honorary Fraternity in Floriculture
& Ornamental Horticulture
August 1975
69 pp. multilith (or mimeo) large format
$2.00

Continued from page 27

Pursuing a Second Spring

the sparsely treed area we had driven through, and semi-tropical hardwoods towered above a cool forest floor.

An evening flight from Port Elizabeth to Durban brought us back to the hustle of civilization. Here, rimmed with groomed beaches, a more tropical climate provides a vast array of familiar tropical plants, but here at the Botanical Garden, we were again amazed at the variety and rarity of the collection. The entire city is neatly planted and the Durbanites obviously take advantage of their climate to keep their city beautiful.

The next day, we headed north into the Drackensberg. The "Berg", as the locals call this spectacular mountain range, looms with all the majesty of the Swiss Alps, and a trip here is a must.

At Cathedral Peak, the tiny early flowers were just poking up into the misty Spring at 8000 feet. Thatched Zulu huts dotted the landscape on the lower slopes and friendly children waved vigorously as we passed them and the cattle they were herding. The Martial Eagle soared majestically and the Hadeda Ibis echoed his distinctive call as he flew back and forth over the mountain stream below our hotel. As we left this story book setting, we promised to return.

Leaving Durban, we headed north in Natal to Zululand and the Hluhluwe Game Reserve. Superb accomodations in keeping with the wildness of the area, made another memorable experience in game viewing. Here, we saw groups of white rhinoceros which were nearly extinct a few years ago, Cape buffalo, nyala, giraffe and the always delightful impala. Now Spring was progressing rapidly and trees and grass were much greener than two weeks prior in Kruger, but the animals were most accomodating and strolled and leaped into full view. More fine pictures were taken and we left Zululand feeling very satisfied as we started the last leg of our journey home.

We returned to Johannesburg and visited just one more garden before the last minute shopping and packing for our flight. The garden of Mr. and Mrs. Harry Oppenheimer is really a private park of indescribable beauty and peaceful grandeur. Unique use of a hillside provides meandering paths and unimpaired vistas of the lower garden. Sculpture accents throughout the garden provide focal points and identify areas of this vast estate. It was a privilege to be able to spend so much time with the estate managers there.

The afternoon gave us the opportunity to pick up last minute gifts and to ship home some of the great books on South African Flora and birds so that we won't forget this most wonderful trip. I came to South Africa for the climate and the flowers, but now I have many more reasons to do it all again. The incredible beauty, the food, the cleanliness and the genuine warmth and friendliness of the South African people, all make me wish I had learned earlier about the wonders of this gem of a country.

I found my second Spring and saw beautiful rainbows that beckoned and seemed to say, "Come back and see our Golden country again soon." I'm planning on it!

Editor's Note: Mr. Robert H. Savage was one of 20 AHS members who took the Society tour "An Exploration of South Africa" this past September. The unanimous concensus was that the trip was carefully planned, well executed and gave the group an excellent opportunity to see this exceptionally beautiful country at its best. Want to go in 1976? Write AHS for a brochure.

Janco Greenhouses

Designed by a working gardener, then precision-engineered with newest manufacturing techniques for the best in design and quality at money-saving prices . . . Write for our full-color 48-pg. catalog, then compare prices, design, and growing space, and you'll see why there are thousands of satisfied Janco owners. There is a Janco greenhouse for everyone from the enthusiastic beginner to the dedicated professional — over 100 models that fit any site, every budget. Jancos are all-aluminum for minimum maintenance; have easy-to-follow instructions and complete accessory line. In addition to Jancos which range from the economical Scot to the magnificent Chesapeake, Janco also makes the pre-packaged Belair (requires no foundation, saves you money without sacrificing quality) and the Window Garden, which adapts to almost any window without expensive alterations.

Start thinking Janco today — fill in this coupon and mail it now!

JANCO GREENHOUSES

10788 Tucker St., Dept. PA 2
Beltsville, Md. 20705
301 - 937-3300.

Yes, I want to know all about Janco Greenhouses and how they save me money. Please send Janco's FREE 48-pg. FULL COLOR catalog.

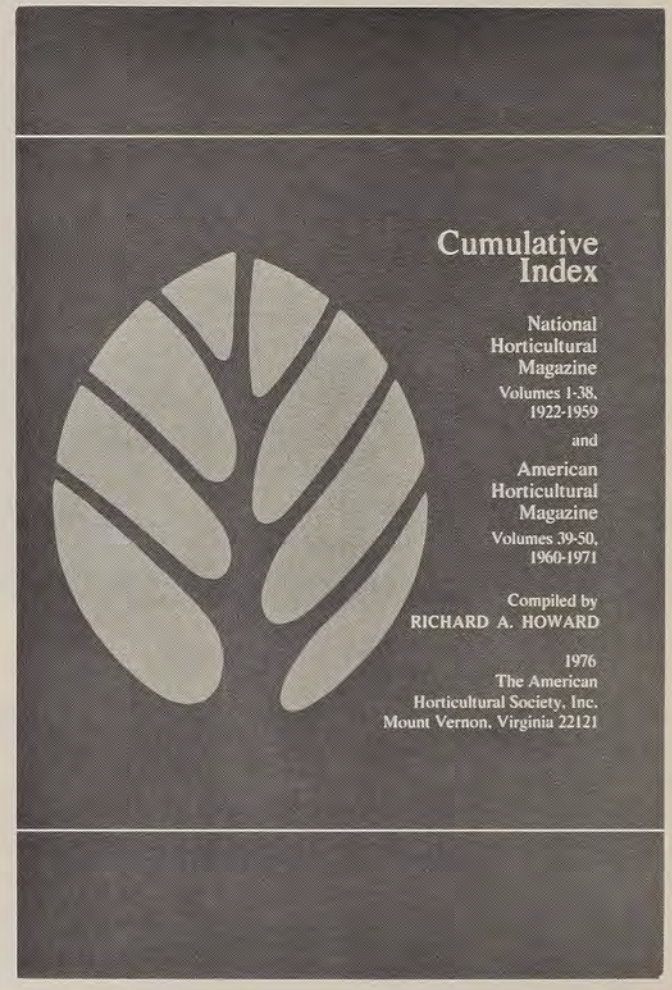
Name _____

Street _____

City _____ State _____ Zip _____

AGENT OPENINGS available in a few select territories. Write Janco Sales Manager.

NATIONAL HORTICULTURAL AMERICAN HORTICULTURAL MAGAZINE INDEX AVAILABLE



Thanks to the tireless efforts of Dr. Richard A. Howard, and the AHS Cumulative Index Committee, a comprehensive Index of 50 years (1922-1971) of the Official Magazines of the American Horticultural Society is finally available.

The 109-page meticulously-researched volume clearly shows the development of American horticulture and the willingness of the members of this Society to share their knowledge. At the close of the fiftieth year of publication, the title of the Magazine changed again—to the *American Horticulturist*—so the preparation of a cumulative fifty year index is most appropriate.

The Index documents articles by such eminent horticulturists as B. Y. Morrison, Frederick G. Meyer, Tom Stevenson, Frederic W. Heutte, Donald Wyman, John Baumgardt, John L. Creech, Frederic P. Lee, William F. Kosar, Russell J. Seibert, Liberty H. Bailey, Henry M. Cathey, Ernesta D. Ballard, Frederick W. Coe, Wilbur H. Youngman, F. C. Galle, Neil Stuart, Lorraine Burgess, Clarence Lewis, Henry T. Skinner and many others.

THIS INDEX IS A MUST FOR LIBRARIES, SERIOUS HORTICULTURISTS, GARDEN WRITERS AND RESEARCHERS. It is a useful tool even for gardeners who do not have a complete collection of past magazine issues as most botanical libraries and many other horticultural-academic libraries have them.

The Index is available for $10.00 per copy. Write the Cumulative Index Committee, c/o The American Horticultural Society, Mount Vernon, Virginia 22121. Please use the convenient order form below.

THE AMERICAN HORTICULTURAL SOCIETY
MOUNT VERNON, VIRGINIA 22121

Please send me ____ copies of the Cumulative Index of the *National Horticultural Magazine*, Volumes 1-38, 1922-1959, and *American Horticultural Magazine*, Volumes 39-50, 1960-1971.

☐ I enclose $10.00 per copy.

Name _____
Address _____
City _____
State _____
Zip _____

Julia Child Benefit

Julia Child will hold two cooking demonstrations to benefit the American Horticultural Society at the Shoreham Americana Hotel, Washington, D.C., April 28 and 29, 1976. The benefit titled, "The Art of French Cooking", will feature recipes from Mrs. Child's recent trip to France. The April 28th demonstration will be at 8:00 p.m., while the April 29th demonstration will be at 2:00 p.m. Admission costs are $15.00 per session or $25.00 for both—tax deductible.

The benefit cooking performances will include door prizes, a kitchen boutique, a raffle of cooking equipment and food, a plant and herb sale, and sale of autographed copies of Mrs. Child's cookbooks. All recipes demonstrated by Mrs. Child will be included in the benefit program book.

If you wish tickets or more information write A.H.S. headquarters, Mount Vernon, Virginia 22121, or call (703) 768-5700.