

American
Horticulturist



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Editorial

Horticultural Horrors

I am sure we have all read the spectacular advertisements that proclaim "*giant climbing strawberries as big as saucers,*" or "*swing your hammock from the 'Miracle Tree'.* It grows 12 feet in just one season." What the ads don't tell, however, is nine times out of ten the strawberry plants arrive dead. If you are fortunate enough to grow a plant, the pea size fruit tastes like moldy lecithin. The "Miracle Tree" is only root hardy in northern climates and dies back to the ground after the first frost.

Fraudulent advertising? You bet it is.

I have worked with the fraud division of the U.S. Post Office concerning several of the major "horticultural promotions" which are advertised nationally in daily newspapers. The problems and roadblocks preventing this type of misleading advertising are difficult to overcome.

Claims: If one reads the ads carefully, all statements may be true under some conditions. The ad usually gives the Latin name to identify the species offered, but it never states the size of the plant or what cultivar (if known) is offered.

Fulfillment: I have test ordered climbing strawberry plants five times and have yet to receive a live one. When I write to complain, "the nursery" does not respond. It is hard to do battle with a post office box number!

Addresses: Since all these nurseries use a mail drop, the real business operation is conducted somewhere else. The steps that the post office must go through to check these box numbers requires weeks of red tape. Usually, by the time legal steps have been taken, the operation has moved on to a new address.

It is our responsibility to do something about this fraudulent misuse of the mails. Since newspapers are the leading source of these gardening misrepresentations, we must let them know that "wonder plant ads" are obscene and should be deleted from the gardening pages.

Nurseries and garden centers can also educate the public. A small table display of advertisements that promote "horticultural horrors" would serve quite nicely. The garden centers could then recommend alternative plants which they carry that are guaranteed to live up to our gardening expectations.

Our country provides vehicles to communicate with all its gardeners. We, as gardeners, must do our part to communicate that what is said is horticulturally valid. One is a right, the other an obligation.

Henry M. Cathey, President
American Horticultural Society

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Let's Save Our Native Orchids



Platanthera psycodes (Butterfly orchid)



Platanthera ciliaris (Yellow Fringed orchid)



Calopogon tuberosus (Grass Pink orchid)

Sue Freeman Miller
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Charlottesville, VA 22903

As I stretched my arms as far apart as possible to hold the strobes at appropriate angles, Jim Carpenter lay belly-flat on the leaves and made his Nikon sing in an attempt to capture the sole pink lady's-slipper we had found at the edge of the fire road. It had been a long day's hike in the Blue Ridge—first up one side of the mountain, back down for lunch, then up the other side. All this in search of native orchids.

It was almost time to go home.
2 Our search had been nearly in vain.

Oh, we had found a few pink lady's-slippers here and there, one fading yellow lady's-slipper, and hundreds of showy orchis, but clouds seemed to roll across the sun just as Jim would start to work. Artificial lighting is better than nothing, but nature poses best in the sun.

"One more, and this'll wrap her up," said Jim.

"EEEEEEEEEE! EUREKA!"

"What in the world is all that noise? It sounds like Dudley." I questioned.

"COME ON, YOU GUYS! GET UP HERE AS FAST AS YOU CAN!"

Jim started scrambling up, grabbing equipment. "If Tim Williams is actually *yelling*, this I've gotta see. It must really be something. I've never

heard Tim speak above a whisper in my life."

And was it something—fantastic! A thousand pink lady's-slippers at their peak, clustered under hundreds of pine trees, putting on the best show of the year. Trios, clumps of twenty, tiny, pale pink ones, tall magenta ones. Not fifty yards from the fire road, they dazzled our eyes and fired our souls with their beauty.

"Oh, brother! Somebody built a campfire right in the center of these flowers. It wiped out at least two hundred of them. What kind of mentality does it take to do something like this?," fumed my husband Dudley.

"And this is a national forest, sup-

posedly a protected area," sneered Joan Riopel. "On the other hand, it's possible the campers didn't know that these are native orchids. They probably considered them just weeds."

"It's amazing how few people know that there are orchids native to the United States," I agreed. "Most people still think you have to go to a South American jungle to see an orchid, when anyone can probably find one within a few miles of home."

"Sue, remember the first pink lady's-slippers we ever saw! They were about two inches from an area being bulldozed to make room for a shopping center in Greenbelt, Maryland. The next day they were in line for annihilation," mused Dudley.

"It makes me sick to know that this same kind of thing happens every day and I don't know any way to stop it."

"Believe it or not, the new cafeteria at the University of Virginia is on land that used to be covered with pink lady's-slippers, too. They left some trees at the edge of the lot in hopes that some of the plants would survive. The first year there were twenty blooms, the second three, and this year they're all gone," stated Tim. "Dr. Kenneth Lawless talked to the Botany Club recently and said that there used to be a huge colony of yellow lady's-slippers where the Buildings and Grounds building is now. He went there every spring to photograph, and one year the bulldozer beat him there."

We all groaned and admonished Jim to get a lot of good pictures. To see a sight that incredibly beautiful, and realize what threats lay in wait for its relatives, exposed ecstasy and agony side by side.

We left the lady's-slippers on the mountain, but the feeling I got from seeing them has never left me. I swore to myself that day that I would learn everything I could about native orchids and find some way of seeing that they receive protection.

The first and, to me, most logical place to look for help was with laws already in force. The Endangered Species Act of 1973 was immediately evident so I began there. Dr. Edward S. Ayensu, chairperson of the study on wild plants made by the Smithsonian Institution by request of Congress as a basis for the plant list covered by ESA, reports that every one of the 211 orchids native to the United States is in danger of extinction in one area of the country or another, although most are plentiful enough in some areas to prevent their total disappearance.

Twenty-one native orchids are being considered for protection under ESA; six are proposed as *endangered* ("in danger of extinction throughout all or a significant portion of their range"), and fifteen as *threatened* ("likely to become endangered within the foreseeable future throughout all or a significant portion of their range"). These orchids, four years after the law's passage, are still under study. The Department of the Interior has recently hired seven more botanists, to add to its former staff of three, to work on this area of legislation. In short, some time within the next year or two these orchids may have legal protection, but even that depends on enforcement policies.

On the list of endangered and threatened orchids are three species so rare that each has been seen by only one person—*Spiranthes parksii*, being considered by many to be a mutation rather than a species. This has led some critics, many of whom are little concerned with any orchids not commercially profitable, to dismiss the entire list as "much ado about nothing," and to insist that native orchids not be considered in danger at all. Most of these same orchidists have seen the abundant colonies of lady's-slippers found frequently in New England, unlike areas further south, and have surmised that native orchids are taking care of themselves and need no further protection.

To these critics, I would ask that

they look further. *Cypripedium arietinum*, the ram's-head lady's-slipper, has been recorded as scarce since early colonial days, yet some specimens were on sale at the Massachusetts Spring Flower Show in Boston as recently as two years ago. They were neatly packaged in plastic bags with their bare roots showing. Any orchid hobbyist knows that it's perfectly acceptable to ship epiphytic orchids bare-root, one of the reasons they can survive when other plants die, but native orchids are terrestrials for the most part. They depend on a fungi in the soil for their survival and are damaged irreparably from even a short period of time without this exposure. These ram's-heads were doomed the minute they left the ground, yet it is perfectly legal to sell them as of this date. Even if they do receive protection from ESA, they can be sold *intrastate* since *interstate* commerce is the area regulated by federal law.

Isotria medeoloides, the small, whorled pogonia, had been sighted in seventeen locations by 1924. Since then, most of these areas have been destroyed, the most recent being near Williamsburg, Virginia, where a housing development now resides; that site had been watched every year for the last half century.

Every day that passes brings further reductions in the remaining species. At constant work are these factors: strip mining, construction of more houses, shopping areas, highways, dams, power plants; overgrazing by cattle; destruction by some types of fertilizers, pesticides, herbicides; flooding and other natural disasters; collection by commercial firms and hobbyists; environmental changes caused by pollution, water drainage, population migration; and foreign plants competing too successfully with indigenous species.

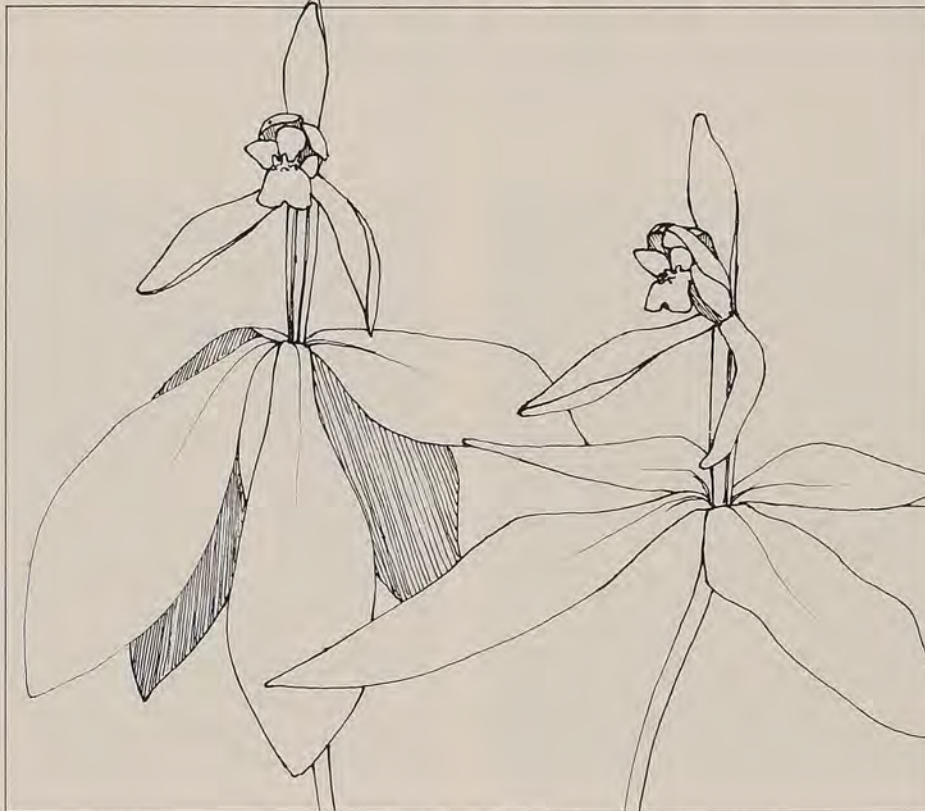
Habitat destruction is the most efficient method of destroying orchids. Most of these plants cannot be successfully transplanted. As mentioned earlier, terrestrials have to stay in contact with the soil and

its fungi to stay alive. Those who think the answer is to grow native orchids in a nursery ignore the fact that most orchids we're talking about are stripped from nature before being mailed out to unsuspecting wildflower enthusiasts. Not enough is known about setting seed in most of these orchids for anyone to grow them commercially, so once the habitat is wiped out, the orchid

foreign demand for them at this time, other governments might tighten up on shipping us their more lucrative specimens. As a member of AOS myself, I know that there are many orchidists concerned about our species, but there is disagreement as to the best course of action to follow. Many truly feel that the fewer people who know there even are orchids native to the U.S.,

civilization has yet to explore this avenue.

Supporting AOS Fund for Research and Education, as well as The National Wildlife Federation, and other responsible groups is one way the individual can do something worthwhile to help our native orchids. Because, that's where my search for protection ended up—right here in the realm of good old



Left, *Isotria medeoloides*
Above, *Platanthera leucophaea*

dies too. A few states now prohibit the sale of native orchids; most experts feel that all should.

Having seen that the law is beginning to see a need for protecting some orchids, but that protection is still a long way down the road, I next turned to the American Orchid Society. The ESA has caused quite a turmoil in AOS, mainly because both commercial growers and hobbyists are highly concerned that foreign sources of orchids may be jeopardized by stringent import-export requirements. Native orchids have been cast aside in the heat of the turmoil as being in little danger, but I sense an unspoken feeling that if the U.S. were to get too picky about trade involving our orchids, in spite of the fact that there is little or no

the better. Having seen the rare cacti appear on sale lists immediately after the announcement of their rarity, I can sympathize with their position.

AOS does have one excellent avenue of caring for native orchids—the Fund for Research and Education. Each year, private contributions provide money for research projects and habitat preservation, so that AOS works with other nature groups and universities to learn more about the orchid. With an estimated 50,000 chemical compounds yet to be discovered in plants, the orchid has barely had its resources tapped. At present, vanilla flavoring is the only product obtained from orchids. The Chinese have used medications derived from orchids for thousands of years, but Western

you and me! We have to be the ones who care and who see that our children have a chance to see an orchid blooming in her/his own state.

Where do we begin? First, we have to familiarize ourselves with the native orchids in our own environment. Dr. Carlyle A. Luer devoted more than twenty years of research and travel to making that easy for us. He has written two volumes on every native orchid known to North America and has photographed each in color. All species are shown on maps of the continent in every known location and all are described in easily understandable language. These books should be in every public library and if they are absent from yours, request that they be ordered promptly from the New York Botanical Garden.

Become a collector of orchid photographs, not of the orchids them-

selves. Nobody expects a birder to come home with an osprey; neither should an orchidist bring home a specimen. In *The Appalachians*, Maurice Brooks describes how three of West Virginia's four colonies of queen lady's-slippers (*Cypripedium reginae*) fell into the hands of well-meaning collectors who took them home "to save them" and killed them instead. (One of Virginia's col-

yet to be done, could be a worthwhile project for interested orchidists.

We as individuals must stay alert to natural areas being threatened with destruction. In that event, we must prevail on officials of local, state and federal government agencies to intervene. We cannot assume that government officials are knowledgeable about endangered wild-

there. He allowed orchidists from our society to remove some plants, and then he changed his mind. "We have enough land to cultivate," he pronounced. "The orchids stay." He then began to learn about other native orchids that are on his property and to look for them with pride.

The U.S. Office of Stamps is now considering a proposal sponsored by the Garden Clubs of America for



Above, *Encyclia boothiana* Var. *erythronioides*
Right, *Cypripedium arietinum*



Illustrations by Lucinda Goodwin

onies of *C. reginae* was recently done in by a ski lodge.)

We need to capture the interest of the young people in our communities. Increasingly aware of environmental problems, they are concerned that their generation not be left a barren wilderness. Youths caught up in conservation efforts now can assure that these projects have a viable future. They have time and enthusiasm to give art competitions, slogan contests, media presentations, and awareness campaigns that can save orchids in our communities should they become endangered.

One of the first suggestions made when ESA became law was that posters showing endangered and threatened wildflowers be displayed in public places, especially at the entrances of national parks. This work,

flowers, in spite of the fact that more than 50 percent of those being studied for coverage under ESA are on state and federal lands. If, on the other hand, the orchids in danger are on private land, we must impress the owner with the seriousness of the act of destruction, and if she/he still insists on proceeding, try to persuade the person to allow responsible botanists to attempt salvage of the threatened plants.

One of the most heartening events of our struggles to save native orchids came last year when we heard of a farmer in our county who planned to clear-cut an area and build a road through it even though a colony of pink lady's-slippers grew

a series of stamps portraying endangered plants. Also under consideration is a series featuring orchids. Decisions are based on whether or not wide-spread interest is shown. Our votes can help here. The Swiss had great success in publicizing the plight of their alpine plants by displaying them on stamps; our orchids could benefit from similar treatment.

Our native orchids: we can support research on them, we can study them, we can photograph them, we can interest others in their plight, we can publicize them, we can save them from destruction, and, if nothing else appeals to us, we can let them alone and allow them to be. □

Recent Trends in Garden Peonies

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This year the American Peony Society reaches the 75th anniversary of its founding. Organized in 1903 around the needs and interests of that period, the Society has continued to be in the forefront of evolving peony history. While this anniversary has not been singled out for special celebration, it does afford a convenient context for reporting upon recent trends.

Seventy-five years ago the Chinese peony (*Paeonia lactiflora*) was already established as the common peony of America, and it remains so to this day. This species has proven to be extraordinarily suited for horticultural use. For example, the Chinese peony is not only well-adapted for garden display and florist use, it is extremely hardy. While its sumptuous flowers are in a class with the showiest flora of less rigorous climates, it grows to perfection in the coldest northern states. The great flower buds often develop into even more luxuriant blossoms indoors than when left in the garden. Cut at the correct stage, the buds may be stored for weeks under proper refrigeration, then allowed to open for display. No other perennial flower is more responsive to cultivation and rich soil. A peony that will produce modest flowers under indifferent treatment may give flowers that are doubled in size when grown under excellent conditions. What greater



'Dawn Pink'

reward can there be for a gardener's skill?

In keeping with most other species in the genus, Chinese peony roots are favorably adapted for shipping, which was an especially important attribute in 19th century commerce. Its propagation requires little special skill. In view of these advantages, it comes as no surprise that growth in the popularity of the Chinese peony paralleled the settlement of America. This is not to say, however, that these were the only ones grown. All of the Old World garden peonies were cherished, including the elite Japanese and Chinese tree peonies (*P. suffruticosa*), the very early flowering fern leaved peony (*P. tenuifolia*) and the peonies of early European gardens (*P. officinalis* and related species).

The popular status of the Chinese peonies is not threatened in the recent developments of peony growing. What has happened is that the specialist growers are diversifying their offerings as suitable cultivars of other peonies have become more available. As the number of distinct peony groups has increased, the traditional narrow adherence of growers to Chinese peonies or tree peonies has tended to decline. These developments have been paralleled by an unprecedented rise in hybridizing activity.

American Peony Society programs have become more diversified in their emphases, in keeping with current grower interests. In addition to the BULLETIN, a quarterly periodical published since 1915, there is a quarterly newsletter, PAEONIA,



Photo: Gilbert H. Wild & Son, Inc.

The Tree Peony, King of Flowers

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In its ancestral home, China, the tree peony called by the Chinese "moutan" (*Paeonia suffruticosa*) has been grown for over a thousand years. To them, it has been the King of Flowers, the Flower of Riches and Honor. Not only has it been cherished so long as a living plant, but it has been featured countless times on porcelain, in painting, and embroidery—prized above all flowers.

In our times, we can extend the crown of royalty to a much younger group: hybrids between cultivars of the moutan and two species of tree peony from eastern Asia that were discovered less than a century ago. These are the yellow-flowered *Paeonia lutea* and *P. delavayi* with maroon flowers.

In reality, tree peonies are shrubs. A plant consists of several rough, woody stems with a few coarse side branches. New stems arise from the roots from time to time, and old stems die. In winter, the ultimate size of this woody framework is about four feet in height and the same or more in width. The doubly compound leaves increase the summer bulk a good deal. Leaves can be over a foot long, but since they are cut into many leaflets, the plant in summer is fine in texture.

In mid-spring, the splendid flowers unfold, silky in texture, with a wide color range. They vary in size from five or six inches across to

nearly a foot. In form, they range from singles to full doubles. Petals may be smooth or fringed, many are crinkled.

First to bloom are the moutans, here near Philadelphia in the first part of May. They include the old Chinese cultivars, the so-called European cultivars, and the ones developed over many centuries in Japan from the Chinese kinds. The Chinese and European sorts, descendants of the first plants taken to Europe from China, are full doubles, often so heavy that the flowers are hidden by the foliage. The names are largely French. They have lost popularity to the Japanese cultivars, flowers often with fewer petals, but as a group showier because they hold up their heads. The color range of the moutans is from white, pink and lilac-rose to rose, red, purple and magenta. Some have blotches of deeper color at the base of the petals, or feathery flares.

As the moutans go out of bloom, they are followed by the hybrids. The oldest of these, crosses with the old heavy-headed kinds, are heavy headed too. A few are near-singles. The newer ones, crosses made in this country with Japanese cultivars, give a fascinating array of flowers with suffusions, blends, edgings, flares and overlays of color: interminglings of yellows, pinks, reds

which is devoted to reports having special interest to hybridists. New references have been published, including a revised and enlarged HANDBOOK OF THE PEONY (1977). There is also a comprehensive checklist of cultivar descriptions, containing more than 5000 entries and covering peonies known to have been in commerce during the last 150 years (1976). These are available for purchase from the Society, along with other references of current interest.

National and regional exhibitions have been held annually for many years. Show schedules have been enlarged by adding classes for hybrid herbaceous and tree peonies. The number of exhibits in these classes has been increasing steadily. Recent introductions often show up in the winner's circle, including cul-

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GARDEN SAINTS

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From time immemorial, horticulturists from every ancient culture have invoked the aid of their holy spirits to insure gardens of celestial help, while they applied their own hard work and indubitable skills. So it is, in the Christian religion too, that at times of spring planting, fall harvesting and throughout the growing season, various saints were called upon to exert their influence in warding off severe droughts, plagues of locusts, inclement weather, and other disastrous conditions. No doubt, too, the kindly saints were asked to assure a wealth of beautiful flowers and the capers of welcome songbirds.

There is a very special group of saints who are related to the wide field of horticulture. Each has his own feast day when a faithful or sentimental gardener will pause for a moment of silent contemplation on the virtues of his friendly advocate. Many a gardener honors a saintly benefactor by placing his statue in a sheltered site among plants as a reminder that he is not alone in the spirit of his gardening. Dedicated horticulturists know the life stories of the garden saints and accept the legends and superstitions that have become related to them through the years as one of the many fascinating facets of the art of gardening.

Blessed Adam, whose feast day is December 22, is sometimes referred to as the gardener's patron, but re-



search contradicts the title. Adam of Loccum actually was not a saint at all and facts of his life reveal no direct connection with gardening. What little knowledge is available on the Blessed Adam comes from the writings of Caesarius, a fellow Cistercian, an Order founded in France in 1098. Adam is assumed to have lived during the 12th century.

St. Fiacre is generally accepted as the patron saint of gardeners. Fiacre was born in Ireland at the end of the 6th century and lived in a hermitage in Kilkenny. There, disciples flocked to him in such numbers, for he was a holy man, that he decided to search for greater solitude. In the year 628, he left his native land and went to France.

In Breuil, the French bishop, St. Faro, offered Fiacre as much land as he could surround in one day

with a furrow. The legend is that the abbot who was to become the gardener's saint used the point of his crozier instead of a plow to turn up the earth. In that manner he miraculously acquired enough land to enclose a very large monastery. He cleared the area of trees and briars and spent the rest of his days attending to the manual labor of his garden and performing supernatural cures for the dreaded diseases that beset his lay contemporaries. The oratory and hospice he built for travelers was where the village of St. Fiacre in Seine-et-Marne now stands. Fiacre died in the year 670. His feast day is celebrated on September 1.

It is St. Isadore who is the patron saint of agriculture.

He has always been the special guardian of farmers, peasants, and day laborers (tillers of the soil). Those who harvest grains and vegetables have confidence in the protection of St. Isadore. He was born in Spain about 1070 and lived all his life in the vicinity of Madrid. As soon as he was old enough to work, he became a farm laborer. It was his custom to start each day by attending church, a situation that resulted in his always being late for work. His fellow-farmers complained to their master, Juan de Vergas.

Deciding to find out for himself, so the legend runs, de Vergas hid in nearby woods one morning and watched his workers appear. Sure enough—Isadore arrived later than all the others. The master was about to reprimand Isadore when, to his great surprise, he saw an angel plowing on either side of the accused man so that his work was really equal to that of three men, an accomplishment that more than made up for his tardiness! Isadore later worked several miracles for the benefit of the de Vergas family. And he was responsible for several wondrous cures that resulted in his canonization by Gregory XV, together with the illustrious saints Ignatius, Francis Xavier and Philip Neri. St. Isadore died in the year 1130. His feast day is celebrated on May 15. Both Madrid and Seville honor him as their patron saint.

St. Francis is well known to gardeners as the special saint of birds and animals. He was born in Assisi in Italy in 1182 of well-to-do parents. During his early youth, he foresook the pleasures of the world to live in poverty and privation and founded what later grew into the Franciscan Order. Many stories are connected with his love for animals and his power over them. He lived in close relationship with all kinds of creatures of the animal world, sharing their lives of danger and hardship, that they might join him in worship, obedience and compassion. The day set aside to honor the kindly St. Francis is October 4.

St. Francis was especially fond of birds and they would flock to him for food, perching upon his shoulder completely unafraid. It is for this reason that the statue of St. Francis is shown holding two birds with another resting upon his shoulder. Gardeners who enjoy the frolics and songs of birds enough to provide bird baths, berried shrubs and winter feeding stations, may wish to

shelter a statue of this genial saint in some pleasant setting with the hope, perhaps, that its presence will protect the garden birds from the perils of malicious, marauding cats.

The favorite bird of St. Francis is said to have been the lark because "Sister Lark hath a cowl like a religious." He was horrified at the killing of any birds and urged the Emperor to pass two laws: one, that no man be allowed to kill or harm a bird and two, that men should feed all birds and animals on Christmas Day.

St. Francis died at Portiuncula where he had a little cell of "wattle and daub" near Assisi in 1226.

Then, there are the weather saints that are of particular interest to gardeners. St. Swithun's feast day, July 15, is watched with keen anticipation for it is a British superstition that should rain fall on that day, it will continue for the following 40 days. A dry July 15, on the other hand, forebodes a spell of pleasant weather ahead. Similar superstitions in France are attributed to St. Protase and St. Medard and, in Wales, to St. Cewydd. St. Swithun was born in Wessex, England, and in the year 852 became the Bishop of Winchester. As such, it is said that he was a treasury of all virtues, especially humility and charity to the poor. St. Swithun died in 862 and, at his own request, was buried in the churchyard where the rain would fall upon his grave.

Curiously, the feast days of the three "frost saints" appear in consecutive order on May 11, 12 and 13. St. Mammertus, St. Pancras, and St. Servatus were accused by the peasants in the wine-growing sections of France as being responsible for the severe cold spells that often occurred on these three days. Great damage was leveled on the vines which, by this date in May, are well developed with new growth. The peasants believed that the cold weather was caused by the anger of one of these sensitive saints whom they must have irritated in some way. Because it is unknown which of the three saints was the offended one in a given year, they are grouped and all become the "chilly saints." In Germany, these three ice saints are also held in questionable esteem by the people whose work is agricultural. In that country, they are called the "three severe lords," and farmers and gardeners feel that plants are not safe until their feast days in May have passed.



Hawaiian Hibiscus

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The Hawaiians recognized their native Hibiscus as ornamentals more than 100 years ago. After the first Hibiscus hybridizations were accomplished in Hawaii in 1872, horticulturists, striving for improved cultivars, introduced Hibiscus species and varieties from other parts of the world for use in hybridization with the native Hawaiian species. By the 1920's the popularity of the Hibiscus stimulated the most casual gardener into cross-pollinating the plants, producing thousands of new selections. Today, many of these hybrids' complex parentages are impossible to trace.

It is known, nevertheless, that several of the native Hawaiian members of the genus were the original parents of these important hybrids; yet one still may forget the beauty that the Hawaiians saw in their native species. Today, the chances of capturing that beauty in gardens dwindle. It is shocking to know that eight of the eleven species native to Hawaii are in danger of extinction.

There are complex problems today which are endangering native Hawaiian plants including the Hibiscus. The native flora lack the ability to compete with man-introduced "weeds," and as a result, the introduced plants in many areas have

overgrown the native flora so thoroughly that the native plants will never be re-established. Along with "weeds," man has introduced herbivores (pigs, goats, and sheep) which have been released on a flora which had evolved under herbivore-free conditions. The plants have no protective mechanisms (thorns, poisons, and scented oils) to ward off such enemies, and thus the herbivores have become exceptionally destructive. Man also directly endangers the flora by intensive agriculture, forestry, housing, and recreational developments. With the combined pressures man directly or indirectly imposes on the flora, there have been more plant species extinguished in the Hawaiian Islands than in all of North America. Now that the rarity of the native Hawaiian plants has been appreciated, attempts have been made to rescue some of the scarce species by cultivation. The Pacific Tropical Botanical Garden, on the island of Kauai (P.O. Box 340, Lawai, Kauai, HI, 96765), is dedicated to the preservation of many endangered Hawaiian plants. Included in their collection of plants are all of the native Hibiscus.

The native Hibiscus certainly should be grown for just the importance of its past history of hybridization, or their present situation of possibly becoming biological history (extinct!). In addition, the native Hibiscus are useful as ornamentals.

Although the flowers are generally smaller than their hybridized relatives, the natives have the typical five petals of crepe-like texture, with the center of the flower occupied by a staminal column supporting the five-branched style. Flower colors are vivid and include shades of white, yellow, lavender, and red. Two of the white-flowered species have the rare characteristic of having flowers with fragrance. The wide variety of growth habits allows one to use the natives in many beautiful situations in the garden. They can be used as group plantings, informal hedges, individual specimens, or pruned to standard shaped trees.

Known to the Hawaiians as kokio keokeo, *Hibiscus waimeae* is a tree attaining a height of 20 to 30 feet. The leaves are velvety to touch. The flowers, of a delicate fragrance, are white when opening in the morning, and become progressively tinged with pink, especially along the veins, before falling towards evening. The tree grows wild between 2000 and 3000 feet in the Waimea Canyon area of Kauai. Seeds from Waimea Canyon were sent to Florida, the Bahamas, Santo Domingo and elsewhere in 1961. The species was cultivated in California for at least a half-century.

Mentioned frequently in old Hawaiian songs and legends, *Hibiscus arnottianus* is one of the most beautiful trees in the Hawaiian Islands.

Continued on page 25 11

The Pruning Of Roses



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There is no great mystery to the pruning of roses, if one remembers that, after all, a rose is a woody shrub. Perhaps, it is not as hardy as some in the coldest climates, but neither are all shrubs. In warmer areas, the wood of even the most tender ones comes through the winter unharmed and puts out new growth the following spring.

Other than the customary cutting back associated with roses at planting time, the ideal time to prune roses in any given area is governed by the climate. For instance, in the more southern states or mild areas along the Pacific Coast, where the question of hardiness does not enter in, roses may be pruned any time during the winter. This can mean
12 December, mid-January or even

February, so long as it is before the buds swell and actual growth commences in earnest. On the other hand, pruning too soon may sometimes cause some dying back of the stems.

However, where severe cold weather and freezing back is a problem, pruning must be delayed until all danger is past. In the fall, the tops may be tied into bundles and shortened to prevent wind whipping, the bases mounded with soil, or the plants covered with plastic cones. Then, in the spring when danger of severe freezing is gone, the plants are uncovered and pruned back at least to live wood.

Modern, large-flowered climbers get their principal going over after the big flush of spring bloom is past. The old rambler-type climbers, for those who are still growing them, are cut back after the blooming is over. Hardy shrub roses may be cut any time during the dormant season or just after blooming.

When bought, roses come either bareroot and dormant (which also includes the packaged roses which do not have any real soil around them) or growing in pots or cans. This latter group are merely removed from their containers with their soil balls intact and placed into the garden. They are almost certain to have been pruned properly prior to planting.

The bare-root plants should be soaked in water overnight, any damaged roots cut off and, after planting, be cut back to balance the loss of root area. Just how much to cut—or leave—is a matter of judgment. Generally, no more than six to eight inches is left above ground—some advocate cutting back to only three inches. In any case, the weakest stems are removed entirely, and of those remaining, the stronger shoots are left proportionately longer than the weaker ones. Likewise, an effort should be made to have each stem end with a bud which points

outward from the center of the plant to produce an open type of growth. This lets in light for better growth and air to help keep down diseases.

Beyond these basic comments, of course, each different type of rose requires somewhat different treatment. Beginning with the hybrid teas, since these are still the most widely-grown group of roses, and include such varieties as the well-known Peace and the newer Oregon Gold, let us now discuss these groups, one by one. Hybrid teas are somewhat more tender than the others and, therefore, are usually cut back the farthest.

The first thing to do is to remove all dead wood, cutting back to good, strong, outward-pointing buds on live wood. Then take out the weak stems, twiggy growth and stems showing canker scabs, making sure to cut at least an inch or an inch-and-a-half below such injured places. (Disinfect shears and hands with alcohol, if the wound is touched.) Next remove any suckers coming up from below the graft. Finally, cut back the remaining stems to shape the plant, cutting back to produce good strong shoots for later blooming.

For many years we were told to prune roses by rather firm rules, cutting to specific heights. Now we do it by judgment based upon the strength of the plant and its stems. Likewise, we followed the rule that the harder we cut back, the stronger would be the resultant stems, but now we know that much food is stored in the stems and by leaving all the wood we can, we can increase the size of the plants, the number and quality of the blooms and the hardiness of the bushes. Where the climate permits, try to cut back the stems to a diameter of one-half or three-eighths inch. This usually means to a height of 18 to 24 inches. Some like to leave them much taller, but it results in plants too tall to see and appreciate the flowers properly.

True teas, where grown, and grandifloras, which are much like hybrid teas but tend to be a little shorter and somewhat more cluster-

flowered, are also pruned much the same.

Floribundas are frequently shorter and somewhat hardier. They are also more cluster-flowered and are more often grown for landscape effect than for flowers for cutting. Consequently, they are generally cut back less severely and allowed to have more branches.

Hybrid perpetuals, the old "monthly roses" such as 'Frau Karl Druschki' and 'General Jacqueminot,' make bigger, hardier bushes. They are less likely to freeze back and are not prolific bloomers after the spring splurge. They are usually cut back less severely than the hybrid teas, mostly to keep them in shape and near the height of the others.

The species and old varieties which are grown primarily for their value as shrubs, as *Rosa hugonis* and 'Harrison's Yellow,' are merely trimmed a little here and there to keep them looking tidy. When they get too twiggy or old and leggy, one-fourth of the canes may be cut to the ground each year for four years to rejuvenate them.

Tree or standard roses, bushes on top of tall, bare stems, are treated somewhat differently in that the tall stems are never cut or the landscape value will be destroyed. However, the grafted part on top of the tall stem should be handled like regular hybrid teas or floribundas, except that it is usually pruned more severely. Weak or damaged canes are removed. Then all strong canes are cut back to five to ten inches from where they come out of the trunk. Also trim a little here and there during the growing season to keep them shapely and remove promptly sprouts along the stem or suckers from the roots.

Miniatures require very little pruning. It is mostly confined to removing a little dead or injured growth, a bit of shaping and, if they get too twiggy, cutting them back severely so that new tops can be grown.

Although they have pretty well dropped out of the catalogs, many

people still grow old-fashioned ramblers like 'Dorothy Perkins' and 'Crimson Rambler,' with their long canes and many smallish flowers in large clusters. Ordinarily, the old canes are cut to the ground immediately after flowering and new ones allowed to take their place for next year's blooming. These new canes, then, may be pinched or headed back during the growing season as the situation demands.

The everblooming climbers, on the other hand, must not be cut back to the ground after the spring bloom, for the canes are needed for the added flowering. Rather, the old flowers are removed, leaving the lateral branches relatively untouched. When the canes become old, twiggy and tired, they are cut to the ground a few at a time and replaced by new, vigorous ones. The same applies to the large-flowered, once-blooming climbers.

Finally, we come to the trailers or ground covers. These rarely need any more than the removal of dead or damaged canes in early-spring. After blooming, a little thinning may be done, if needed, and when they finally become too thick, they are usually cut to the ground completely and new growth allowed to take over.

While not exactly pruning, it might also be well to close with a few words on flower cutting, for many gardeners tend to be either too timid in taking suitable stems with their blooms or take too-long stems and, consequently, weaken the plants. The first year after planting, the fewer flowers cut the better. Thereafter, repeat blooming is best encouraged by cutting the stem back to the first five-leaflet leaf. Likewise, if one has a need for large, individual or specimen blooms and several buds are present in a cluster, the added side buds should be removed at the earliest opportunity. □

Adapted from "The Pruning Manual" by Edwin F. Steffek, Little, Brown & Co., Boston (Paperback, \$2.95).

Desert Garden at His Doorstep in Illinois

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Gradually we became aware of a conservatively dressed man, perhaps in his early forties, walking past our house with some regularity, presumably on his way to and from work at the nearby university. At first, he always walked on the opposite (south) side of the street, because, as we soon discovered, that was where he lived, in a house diagonally across from ours. In due course, if I happened to be mowing the lawn or tending the borders of our front yard and this gentleman passed by, we began to wave to each other and perhaps exchange a brief word of greeting. And eventually, when he saw me, he would often cross the street and initiate conversation with a remark about how well my roses were doing or an expression of interest in some new annual I was trying out. Only occasionally did he begin to make passing comments about his own, largely vegetable, garden located to the rear of his house, where there is excellent sunshine, as opposed to our own backyard which is too heavily shaded to grow either vegetables or any but the most shade-tolerant flowers and ferns.

So it was that my friend would often find me working in our front yard, whereas I never saw him in his garden because it was hidden from view by his house. For these reasons, our conversations were

largely "one-sided." Eventually, however, I learned that our neighbor's name was Larkin Price—his friends, he said, called him "Burl"—and that he was associate professor of French at the University. But our acquaintance didn't really begin to "blossom" (in gardening vernacular) until the following incident occurred. From time to time I had casually noted United Parcel Service trucks delivering cardboard boxes to Mr. Price's address, but the situation came into sharp focus only when he was not at home one day to receive such a delivery, and the truck driver asked me to receive for him an unusually large box containing "live plants." At the earliest opportunity I took the box over to Burl, and he said: "Oh, fine! Thank you so much. I'm delighted to get this shipment. It contains 212 different varieties of cacti and succulents."

Noticeable surprise must have registered on my face, for Price quickly said: "Oh, I guess you didn't know that I'm developing a cactus-succulent collection. I've always liked cacti and have a few big old specimens in sunny spots around the house, but now I'm building a greenhouse and getting ready to stock it when completed. Come in and let me show you what the set-up is." He then led me through his living room into his dining room, where I found that he had converted a south window into a door, which opened directly into a nearly completed 12 by 23 ft. greenhouse that he and some friends were putting together from a "kit." Since the

greenhouse wasn't ready for occupancy, Professor Price's house (main floor and basement) were full of plants, which, however, were soon happily installed in their new home; and I became a more and more frequent visitor, partly because I was fascinated by the almost infinite variation in the size, shape, and coloration of his plants but also by curiosity as to how one managed a greenhouse exclusively for plants of this type. To my surprise, Price operated this place like a regular "warm" greenhouse or "hothouse," maintaining relatively high humidity with suitable ventilation and cooling in the summer. When he watered his plants (whose requirements, both individually and seasonally, vary in this respect), he always used a weak solution of fertilizer; and under this same regime ordinary potted house plants, such as fibrous-rooted begonias, grew and flowered luxuriantly. But this was apparently what the cacti and succulents also needed, for they looked exceptionally healthy; and although it was out of season for most of his plants—it was now Fall and Winter, 1974—some, although still relatively small, came into sporadic bloom.

I couldn't believe my eyes, the blossoms were so varied, exotic, and if not always excessively beautiful, at least interesting; and as Spring 1975 came on—March, April, and May—there was an astonishing profusion of bloom. By this point I was so intrigued by potentialities I had never dreamed of for cacti and succulents as greenhouse subjects that



I started making numerous 35 mm. color slides. The only cacti I had previously seen in our local garden stores and nurseries were tiny ones with pathetic little plastic "flowers" pinned on them, which had never attracted me in the least. Once, late in the summer of 1955, before I had become much interested in gardening (cymbidium orchids, which grew and flowered to perfection on our cool sunporch, were later to become my first "true love"), my wife and I visited the outdoor cactus garden of the Huntington estate near Pasadena; but I wasn't much impressed as I recall. Some years later, on the grounds of the Camarillo State Hospital, I had seen huge cacti and other succulents in absolutely gorgeous bloom—but, after all, that was California and you couldn't expect anything like this back in the mid-west. Outdoors, no; but in a greenhouse there seems to be no limit, except one of space, to what one can do with these "creatures."

Steadily, during 1975 and 1976, Price continued to expand his exotic collection and to eliminate all other types of potted plants (however lovely), which he nonchalantly referred to as "just fillers" or "junk." By this time I was not, of course, the only person who had become aware of and taken an interest in this unusual venture. Visitors increased and our three local newspapers ran stories about it, with black-and-white pictures and interviews with Professor Price. One reporter wrote, in part, as follows:

Since Larkin Price made this decision two years ago [to construct a specialty greenhouse] he has built up a cactus collection numbering over 700 cactus species and more than 200 species of other succulents . . .

Now one-and-a-half years old, the greenhouse is filled with cacti on three layers of shelving, from Arizona barrels one foot in diameter and six-foot tall Euphorbia to Frailea, no larger than a dime in diameter . . .

Price said he has never tried to estimate the total number of plants. "I don't want to know," he said with a smile. "I do know I have many more species than the Botanical Gardens in St. Louis," he said.

"Many people think that because cacti and succulents grow in the desert, they shouldn't be watered or fed. But I find they thrive with more water and nutrients than they get in the desert which, after all, offers minimal conditions."

Another newspaper featured a picture of Price among his prickly friends and quoted him thus:

"It's almost always a pleasure for me to be working in the green-

else in the State, perhaps even in the entire Middle West.

The greenhouse is attached to the house proper. Price made a window into a door to provide access. To fit the greenhouse in under the overhang of the house, he had to dig a foundation several feet deep. Set on a cinder block foundation, the greenhouse has a slanted ceiling and is equipped with two gas furnaces, a vent system and a desert cooler.



Mr. Price's greenhouse

house," said Larkin B. Price, associate professor of French at the University of Illinois. "It's quite relaxing when I come home from the office. You know how you feel when you're doing something you like to do, you really feel good inside."

Price does not belong to a garden club or exhibit his plants in garden shows although he's been asked to do so. . . . "The individual plants interest me," Price said and added that the plants don't require "a terrible amount of attention."

Sometimes Price takes his radio into the greenhouse while he works and plays classical music, but not for the benefit of the plants. Nor does he think plants like to be spoken to.

"What they like is proper care. That's how you show love for cacti."

Once Mr. Price, a modest man, mentioned to me that he had happened to attend a large flower and garden show in Chicago and added, quite unapologetically, that the cacti and succulents exhibited there weren't nearly as nice as his plants. I think it is probably accurate to say that Price has more and better potted cacti and succulents than anyone

"The total cost of the house and its equipment was around \$5,500," Price said. "It is extremely economical to run. The cost of heating and cooling is a lot less than \$200 a year." [Obviously, he wasn't including here the winter of 1976-77!]

While the Price greenhouse was thus receiving considerable local publicity and interest, I kept clicking away with my SLR color camera, feeling that the B&W pictures in the newspapers didn't at all do justice to his plants and that the "Price Story" had potential for a much wider appeal. Over the course of three years I took hundreds of pictures of individual plants, close-ups of blossoms, and various special shots to be mentioned presently. But I had trouble getting an over-all picture of the interior of the greenhouse that pleased me. Finally, one day in the Spring of 1977 there was brightly over-cast sky but no direct sunlight. I felt it in my bones that this was what I had been waiting for: good uniform light and no shadows. By this time, I had a key to Mr. Price's

front door and came and went as I pleased. One look into the door of the greenhouse indicated that exactly the right time had indeed come. Accordingly, I mounted my camera on a tripod (so I could take a time exposure) and inserted a broad-angle lens. With the tripod a couple of feet back in the doorway, I could get virtually everything that the eye could see from this vantage point.

Beneath the main benches is another whole world which one can easily fail to notice. Here on the floor of the greenhouse, except for the flagstone walk-ways, was covered with innumerable boxes of young plants. Price soon learned how to collect seed from his plants and has developed a potting mixture in which he gets excellent germination. Two under-bench shots are shown and two outside pictures of slightly older plants. Price estimates that he now has upwards of 6,000 plants altogether. To hold down this "population explosion" and pick up a little money to help with supplies, he is now wholesaling trays of identical young plants and special collections in handsome redwood boxes.

Finally, I have included a photograph of some of Mr. Price's older, larger "specimen" plants, which winter-over in his basement but come out for the sun and rejuvenation in the summer.

I don't know to what extent it's happening throughout the country, but there has certainly been a decided rise, locally, in "cactus consciousness." Several garden-supply stores and small retail greenhouses (even notion and grocery stores) now carry cacti five to eight inches tall, some of them very handsome and healthy, for sale at eight to ten dollars each. A cut-rate drug store, wanting to get into the act, recently had for sale, along with some much smaller plants, a two-foot cactus, which I thought most unattractive, priced at \$49.95. One shop is doing a brisk business in an excellent make of window greenhouse, where cacti and succulents do nicely. And, this same establishment is featuring four well written and extensively illus-

trated books in this field: Edgar and Brian Lamb's *Pocket Encyclopedia of Cacti* (Macmillan, 1970); Martin, Chapman, & Auger's *Cacti and Their Cultivation* (Scribners, 1971); Anonymous. *Cacti & Succulents for Modern Living* (Merchants Publishing Co., 1976); and a book edited by Philip Edinger, entitled *Succulents and Cactus* (Lane Books, 1970). Most of the illustrations are in black and white and not particularly appealing, but there are also several absolutely stunning ones in full color, with special backgrounds and lighting effects. By contrast, all the photographs accompanying the present article were made absolutely *in situ*, with no attempt to dress them up, because this is the chronicle of a mid-west "desert garden" and not a treatise or picturebook on individual plants. Nevertheless, the making of these pictures was fun, and I hope the reader enjoys them as much as I have.

Another indication of popular interest in this group of plants is the cover story in the March, 1977, issue of *Plants Alive*, entitled "Cactus from Seed to Bloom." There is, of course, much technical literature available in botanical and horticultural libraries. I think the "fancy" must be catching. Recently I've purchased a couple of attractive and novel cacti myself. Professor Price, you may not have started all this, but you've certainly been in the vanguard of what seems to be a growing trend in house and greenhouse plants. Somewhere I recall reading that cacti and succulents also enjoyed a period of considerable popularity in the 1890s and again in the late 1920s.

While listing above the four books on cacti and succulents, I happened to remember—don't know why I hadn't thought of it sooner—an utterly delightful older (1958) publication by Claude Chidamian entitled *The Book of Cacti and other Succulents* (Doubleday & Company), which begins with what may be called the "natural history" of these plants. Originally, about 50 million years ago, what we today call succulents, represented some 30 families of plants growing lushly under humid

tropical conditions. Chidamian says:

"Although the cacti are perhaps the best-known family of succulents, it is important to remember that all succulents are not cacti. There are succulent plants in the Lily and Amaryllis families, the Daisy and Milkweed clan—even the Geranium family. Scores of common plants in our homes and gardens have curious succulent relatives the world over."

What happened? "The year-round warmth and rains of the Eocene jungle gradually disappeared" in many large areas of the world; and, little by little, if erstwhile tropical plants were going to survive, they had to evolve shapes and surfaces that were highly efficient in conserving moisture in desert-like environments. The hundreds of species of succulents, prominently including the cacti, are the result!

Now we perhaps understand why Burl Price's plants do so well in a greenhouse with an atmosphere at least approximating that of an "Eocene jungle." Succulents have become moisture misers, not out of choice, but of necessity; and although one can produce lethal root-rot by over-watering, they take very kindly to a guarded relaxing of the austerity which they have had to adjust to in nature. This prompts one to wonder what would happen if one gradually but steadily restored succulents to fully tropical conditions. From Mr. Wayne Brethorst, a local horticulturist of considerable versatility and experience, I have it that a greenhouse owner in Texas has done just this, and in the course of only 20 years some of his desert dwellers have started to revert to their primeval forms!

On this note I leave you to enjoy Mr. Price's remarkable greenhouse vicariously—and perhaps with a desire to become better acquainted with those astonishingly hardy and heroic plants, the cacti and other succulents. If you should wish to contact Professor Price himself, by mail or otherwise, and directly tap his expertise, I am sure he would be happy to hear from you. His address is: 609 W. Vermont St., Urbana, IL 61801. □ 17

Unusual & New Perennials for the Garden

Andre Viette
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All too often plant breeders promote "new" varieties at the expense of excellent older plants. Mr. Viette presents us with two lists of perennials worth rediscovering and preserving.

RARE, EXOTIC, SCARCE, UNUSUAL, and NEW have been used in horticultural literature over the ages and these words are commonly found in today's nursery catalogues. Many plants described years ago in various journals are only now being rediscovered. Unfortunately a growing list of herbaceous perennials are falling into the categories RARE and SCARCE. Even more regrettably, some perennials have become extinct just as many birds and animals have disappeared forever.

The reasons for this are varied. Weather conditions such as severe winters and drought have taken their toll. Certain plants become fashionable in the same manner as clothes, home styles, etc. At the low cycle of popularity it is possible that a plant will not be propagated because of lack of demand or its unprofitability.

The following most desirable plants are now virtually extinct in the horticultural trade or might possibly be found in only a very few places:

Chrysanthemum coccineum (Pyrethrum) 'Scarlet Glow'—this cultivar is the most spectacular of the red pyrethrums. Most varieties sold in the trade are seed grown and vary greatly. When purchasing pyrethrum be sure they have been vegetatively propagated from true stock.

Dicentra X 'Debutante'—is a beautiful dwarf bleeding heart with pale salmon-pink flowers. *Dicentra* X 'Silver Smith' displays attractive white flowers. Both of these are rare in the general nursery trade.

Gypsophila paniculata 'Dwarf Form'—has been passed down from collector to collector and its origin is unknown. This dwarf baby's-breath makes an excellent showing with its dainty flowers billowing over a rock wall or softly accenting a rock garden.

18 *Heuchera sanguinea* 'Pluie de Feu'—we have made an

extensive effort to relocate the true form of this plant, which is semi-dwarf in habit and displays rich ruby-red flowers. The one currently available in trade, which may have originated from seed or have been misnamed, is taller than the original and has brighter coral-red flowers.

Papaver orientale 'Darling'—is a beautiful ruffled snow white with blooms measuring nine inches across. An unusual one inch border of medium pink edges the flowers.

Papaver orientale 'Prince Charming'—this cultivar boasts a vivid, glistening, deep cherry red flower.

Phlox paniculata 'Katherine'—My father, Martin Viette, hybridized this over 50 years ago and today we still consider it the best of the blue summer phlox. It might still be found in a few old estate gardens on Long Island, New York. 'Katherine's' pale blue flowers are accented with a white eye.

Phlox paniculata 'Painted Lady'—this is one of the finest pure baby pink phlox accented with a red eye.

Phlox paniculata 'Mia Ruys'—this is a dwarf white form growing to a height of only 16-18 inches.

Phlox subulata 'Vivid'—this unusual mountain pink has the clearest pure pink color without any hint of lavender.

Pulmonaria angustifolia 'Johnsons Blue'—this variety of lungwort is the only form exhibiting a clear blue flower. Most other blue forms display lavender-pink florets mixed with the blue.

Sidalcea malviflora 'Rose Queen'—checkerbloom has always been a wonderful companion plant for the perennial garden complementing the delphinium. This tall perennial will bloom twice a year if cut down after the first early summer blooming period. 'Rose Queen' has trusses of the truest pink color.

Viola odorata 'Royal Robe'—The original form of this plant was quite fragrant. Either the fragrance has been lost by "in propagation" over the years or the 'Royal Robe' in the trade is not genuine. We have obtained plants from many different sources but all lack the fragrance of the original 'Royal Robe.'



Many plants, although not found in the average nursery and garden center or nursery catalogue, may be located in collectors' catalogues and in those nurseries in the United States, Canada, British Isles, Europe, and Asia specializing in unusual plants. Reading through a catalogue published 40 years ago by Martin Viette we came across many plants which are not available today. Frequently we think we have relocated a particular plant and are greatly disappointed to find the plant is not the true form or may be incorrectly labeled. The following plants might be considered RARE, UNUSUAL, NEW, or REDISCOVERED and are obtainable from one or more sources. Your enjoyment of your garden will be greatly enhanced by the addition of these newer or more rare plants. The more gardens and nurseries that are growing these horticultural jewels, the less chance there is of losing them forever. You will, in effect, be helping to insure that these fine plants will not become extinct.

Aquilegia flaballata 'Nana'—has delicate violet-blue and cream-white blooms gracing attractive glaucous blue foliage. This dwarf columbine grows well in sun or bright shade.

Astilbe Thunbergii 'Straussenfeder'—this is one of the most delicate of the false spireas. 'Straussenfeder' has deep salmon pink trusses which droop gracefully and add an elegant touch to the flower garden.

Athyrium goeringianum 'Pictum'—the foliage of the Japanese Painted Fern comes in many beautiful shades of iridescent colors. This exotic hardy fern adds multicolored beauty to a shady glen.

Chrysanthemum maximum 'Georgia'—this large pure white single shasta daisy exhibits a vigorous hardiness which is not present in many of the English cultivars. This variety makes a fine cut flower.

Disporum sessile 'Variegatum'—is an enchanting perennial for the shade garden. It grows to a height of 8 to 12 inches with graceful white bell flowers on its miniature Solomon's seal-like foliage.

Epimedium grandiflorum 'Album'—is a large flowering variety with charming white blooms.

Epimedium grandiflorum 'Rose Queen'—has appealing spurred deep rose-pink flowers in spring. Epimediums grace the bright shade garden with their delicate fern-like foliage throughout the season.

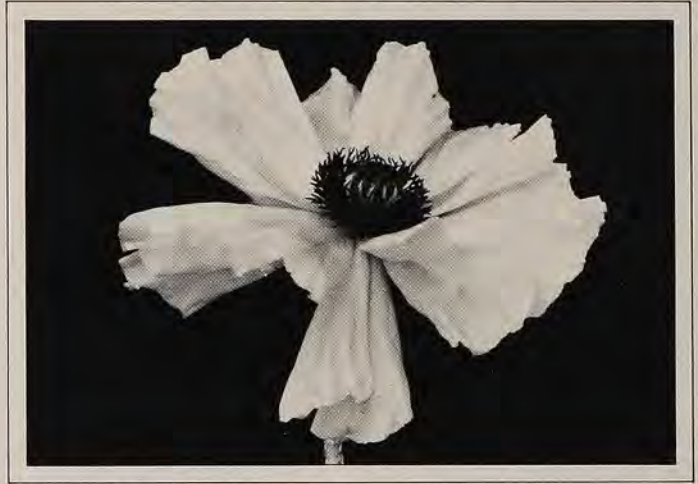
Iberis sempervirens 'Snowflake'—most candytuft found in the nursery trade are seed grown. The true forms must be vegetatively grown from cuttings of original stock. 'Snowflake' is superior in many ways—it is compact in nature, has rich deep green foliage, and flowers later than other cultivars with larger blooms of the purest white.

Iris cristata 'Alba'—is a captivating white native dwarf crested iris. This ground cover adds lustre to a woodland garden in the spring.

Iris pallida 'Variegata'—is grown for its striking white and green variegated foliage which lends a refreshing touch to the garden throughout the year.

Iris tectorum 'Alba'—is a wonderful white Japanese roof iris. It is one of the most durable of iris, thrives in sun or bright shade and is a fine companion plant for hosta.

Kirengeshoma palmata—this very unusual Japanese plant has bold maple-shaped palmate leaves with beautiful yellow bell flowers in the early fall. This 4 ft. shade plant



'Harvest Moon' Peony

lends a strong accent to the garden.

Lamium maculatum 'Album'—This sparkling white plant adds brightness to any shady garden. The fresh white flowers cover the spreading 8 inch ground cover.

Lathyrus vernus (*Orobis vernus*)—purple pea-flowers cover this fine rockery plant in the spring. It prefers light gravel soil and thrives in a bright shade location. The pink and white forms are more rare.

Mertensia virginica 'Alba'—is a handsome white form of our common Virginia Bluebells. *Mertensia* will naturalize in the shady garden.

Phlox paniculata 'Francis George'—this hardy summer phlox grows to a medium height and has clear pink flowers with a red eye. Its great attribute is its resistance to black spot and mildew disease, therefore requiring little spraying.

Polygonatum multiflorum—European Solomon's-seal is one of the finest of all the Solomon's-seals with rich blue-green foliage. It naturalizes well in the shade garden and its foliage furnishes a fine foil for cut flowers of annuals and perennials in flower arrangements. *Polygonatum multiflorum* produces pendant white flowers in the spring.

Polygonatum odoratum 'Variegatum' (*P. japonicum* 'Variegatum')—This distinctively different Solomon's-seal has eye catching variegated foliage.

Rudbeckia fulgida 'Goldsturm'—the true form of *Rudbeckia* 'Goldsturm' is fast becoming replaced by an in-

ferior seeded form. Many nurseries are propagating this imposter by division, thereby perpetuating it. The genuine cultivar is more compact in nature and has a better plant habit. Its golden flowers are displayed on beautifully rounded plants throughout the summer.

Sanguinaria canadensis 'Multiplex'—is a dramatic double white form of our native bloodroot. Its waterlily-like blooms glisten in the wild garden in early spring.

Tiarella wherryi—flowers in late spring with delicate pale



Iris cristata 'Alba'

pink foam-flower blooms. It grows in distinct clumps and does not exhibit the rampant creeping growth habit of *Tiarella cordifolia*.

Vancouveria hexandra—is native to the Pacific Northwest and is rarely found in nursery catalogues. It is a fine ground cover for the shade garden and displays dainty foliage resembling the maidenhair fern throughout the season.

Because of their unusual qualities the following peonies, poppies, and daylilies make outstanding additions to today's perennial gardens.

The peony (*Paeonia*) is one of the most durable of garden plants. Of the thousands available, certain cultivars exhibit flawless qualities of flowering and exotic beauty.

'Gay Paree'—is a Japanese variety with a billowing white anemone center flushed with pastel pink. Its outer guard petals are a rich cerise pink.

'Jan Van Leeuwen' exhibits rich porcelain white petals with a compact yellow chrysanthemum pompom center. This eye catching variety has a wonderful compact plant habit and provides dramatic material for flower arranging.

'Garden Peace'—is a captivating cultivar producing huge single white blooms with gold and crimson shimmering centers. It exhibits the unique quality of large vibrant deep red seed pods which are a flower arrangers delight.

'White Innocence'—Enchanting and indescribable are the only words to characterize this exotic variety. We

might say that 'White Innocence' resembles a group of pure white fluttering butterflies. This extraordinary cultivar will draw attention in any collector's garden.

One of the most spectacular and brilliant perennials is the oriental poppy (*Papaver orientale*), which has brightened gardens here and in Europe for many years with exotic, showy flowers. Poppies bloom in late spring ranging in height from two to three feet and are displayed best in mass plantings. Cultivars which are very rewarding to grow:

'Carousel'—a nine inch snow white ruffled bloom edged with a wide border of fiery red.

'Pinnacle'—a beautiful bi-color with exceptional garden durability, a large ruffled flower edged with orange.

'Springtime'—a large pure white poppy edged in pink.

'Harvest Moon'—this cultivar has nine inch semi-double blooms of clear yellow-orange.

'Lavender Glory'—this is the largest cultivar I have seen; the enormous size and texture of 'Lavender Glory' make it an unbelievable sight. The color is medium lavender with black basal spots in the center.

'Light House'—pure light salmon-pink with large ox-blood basal spots; the flowers are 8 inches wide borne upon a 34 inch stem.

Hemerocallis (Daylily) cultivars now number well over 14,000, with hundreds being added each year. The newest and most expensive varieties are not always the best performers. The following exhibit those qualities such as garden durability, a plentitude of blooms, a long flowering season, and a gracefulness which place them above others:

'Anzac'—a fiery brilliant red.

'Buddha'—a captivating flat mahogany flower of unusual texture.

'Cornwall'—a glistening, clean orange.

'Cherry Cheeks'—a very intense radiating raspberry pink.

'Ed Murray'—very deep red maroon with medium size flowers. One of the best in its color class.

'Heavenly Harp'—a crystalline diamond-dusted yellow and pink blend.

'Jim Cooper'—a vibrant vermillion red.

'Lovers Moon'—a bold, huge, rich golden orange.

'Oriental Ruby'—an opulent deep carmen-red; one of the best.

'Rozavel'—this fabulous deep raspberry-pink with an apricot throat will go down as one of the best in its color class.

'Winning Ways'—an all-time great; extraordinary yellow blooms.

What's New in Camellias



Camellia hybrid 'Fragrant Pink' *C. rusticana* × *C. lutchuensis*

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Most of us think of camellias as the brightly colored blooms of spring-flowering *Camellia japonica* and autumn-flowering *C. sasanqua*. However, the genus *Camellia* consists of more than 82 species, all of which are of oriental origin. Distributed in southeastern Asia, from Japan to the Himalayas, and in Java and Sumatra, they grow in climates ranging from tropical and sub-tropical to temperate. Camellia species are adapted to outdoor culture in the United States, in the East from Florida to the New England states, and in the West from California to Washington. The American Camellia Society membership covers 40 states plus the District of Columbia and Puerto Rico.

Because of their economic importance, Camellias have a long history of cultivation. *Camellia sinensis*, and to a lesser degree *C. irrawadiensis*, are the source of commercial tea. Although the use of tea likely predates historical records, the earliest written record of the tea plant seems to be that of "Ren Tsz' Chun Ts'ui," about 500 BC. Of comparable antiquity are various uses of many camellia species: for the edible oils from the seeds, for dye pigments, pH conditioners, and liquid fermentation from the wood ash; for medicines from plant extracts; and for spear heads from the hardened wood.

Some 36 *Camellia* species have been successfully introduced into the United States, but many of them are rarely grown by camellia growers.

Most of the minor species have small flowers of little commercial interest. They are difficult to hybridize with commercial cultivars, and it takes many years of backcrossing to get hybrids that are worthwhile. However, continued breeding solely within popular species such as *C. japonica* and *C. sasanqua* (intraspecific hybridization) severely narrows the possibilities of genetic variation. Eventually, the law of diminishing returns catches up with this type of breeding, and increasingly greater efforts must be made to achieve new variations in flower and plant characteristics. Interspecific hybridization involving the minor species provides the potential for the development of truly new forms of camellias.

The first interspecific camellia hybrids produced were the *Williamsii* hybrids, crosses between *C. saluenensis* and *C. japonica*, made in the early 1930's by J. C. Williams of Caerhays Castle, England. During the next several decades other interspecific hybrids were bred by S. R. Clarke of England, B. W. Doak of New Zealand, E. G. Waterhouse of Australia, D. L. Feathers, J. H. Asper, and W. E. Lammerts, all of California, and K. Sawada of Alabama. These plant breeders were the pioneers of camellia interspecific hybridization. The *Williamsii* hybrids were extremely successful in their combination of

new flower colors and forms with good plant habit and hardiness. Their popularity is reflected in the large number (over 70) of registered cultivars grown today.

The success of the *Williamsii* hybrids spurred camellia breeders to explore other species combinations. The introduction of *C. reticulata* cultivars from China into the United States in 1948 and the early 1950's, led to its hybridization with *C. japonica*, *C. saluenensis*, and other species. *C. reticulata*, with its large showy flowers but poor, straggly plant habit, was a perfect candidate for hybridization. Any hybrid progeny that improved plant



Camellia hybrid 'Cinnamon Cindy' *C. japonica* × *C. lutchuensis*

characteristics, while retaining the excellent flower quality, was a distinct improvement. Here again, success was achieved, with the added bonus of greater hardiness than that of the parent, *C. reticulata*.

By the early 1960's, substantial numbers of cultivar hybrids were distributed throughout the camellia world. Camellia breeders advanced to backcross and second-generation hybridizing. It was perhaps only natural that backcrosses of *Williamsii* cultivars to *C. japonica* would take the lead. These were closely followed by second-generation combinations involving *C. reticulata*, *C. cuspidata*, *C. pitardii*, and others.

It was also in the early 1960's that hybridization programs on both the Pacific and Atlantic coasts extensively explored species compatibility within the genus. At that time, C. R. Parks of California and the author expanded the numbers of interspecific camellia hybrids from a dozen or so to almost 150 species combinations. This work dramatically increased the knowledge of compati-

bility relationships within the genus. However, with perhaps the exception of hybrids from *C. lutchuensis* and from *C. granthamiana*, few of the F₁ (first generation) hybrids had significant commercial value. Although many interesting and unique floral and plant characteristics were developed among the F₁ generations, few had the direct commercial value of the Williamsii hybrids. It sometimes takes one or more backcross generations or outcrosses with other species before the full potential of many of these hybrids can be properly evaluated.

Two aspects of the interspecific hybridization programs that merit special mention are the search for floral fragrance and the search for cold hardiness. During the past 17 years, floral fragrance from *C. lutchuensis* has been combined with species having large flowers. 'Fragrant Pink' and 'Cinnamon Cindy' were the first of these interspecific hybrids, introduced in 1966 and 1968, respectively. These cultivars and F₁'s of comparable crosses were used to advance the breeding of floral fragrance in subsequent generations. The late R. K. Cutter of Berkeley, California, was a strong advocate of acquiring highly fragrant cultivars. His efforts, and those of Parks and the author have produced many promising, fragrant hybrids.

The search for greater cold hardiness has been equally difficult. Here, Parks and the author, taking different

breeding approaches toward the same objective, have succeeded in developing cold-hardy strains that may well extend the cultural limits of camellia northward. Spring-blooming cultivar, 'Frost Queen,' introduced in 1970, was field-tested at winter temperatures as low as -8°F without appreciable injury. Evaluations from co-operators indicated that some flower bud injury occurred at -3°F, leaf burn at -10°F, and severe plant injury, but survival, at -26°F. The winter season 1976-77 showed that most *C. sasanqua* cultivars were susceptible to prolonged freezing temperatures and drying winter winds and that a close relative, *C. oleifera*, was considerably hardier. Hybrids of *C. oleifera* with *C. sasanqua* and *C. hiemalis* may overcome this weakness. The flowers on these hybrids offer much the same size, color range, and character of *C. sasanqua* on plants with smaller, thicker, leaves of equal ornamental attractiveness.

In contrast, hybrids of *C. hongkongensis*, *C. granthamiana* and others show promise for greater sun- and heat-tolerance, useful in extending the range of camellias southward. Also, camellia hybrids have been developed that extend the blooming season throughout much of the summer; that have willowy pendulous branches suitable for hanging basket culture; and that have new foliage which ranges from pink through red to deep purple for several weeks, before being masked by chlorophyll pigmentation.

The major advances in interspecific hybridization have occurred during the past several decades. This is an exceptionally short time if one considers that it frequently takes a decade or more to develop, propagate, and distribute a new camellia hybrid. Yet, impressive as the accomplishments may be, plant breeders have only begun to use the great reservoir of genetic variation in *Camellia*. If plant breeders, limiting themselves to the 36 camellia species now grown in the United States, were to explore all interspecific crosses, including reciprocals, there would be 1,225 possible interspecific combinations. Experience indicates that not all of these combinations would result in viable hybrids. Some species do not appear to be compatible with certain other species. As an example, the author has explored 243 interspecific combinations and obtained valid hybrids from 124 of them. If we assume that this ratio is typical of the genus, then exploring all 1,225 possible combinations may well provide 625 new hybrid combinations including reciprocals. The use of hormones and other chemicals, in conjunction with pollination and the recent experimentation in somatic hybridization, could greatly increase the number of viable hybrid combinations achieved.

Because the many camellia species available to researchers have such diverse genetic characteristics, the combinations resulting from hybridization offer almost endless possibilities. The author believes that the camellias of the future will be a combination of the best qualities of the various species. □

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THE BIG CART FOR A LITTLE SPACE

Hawaiian Hibiscus

Continued from page 11

It is a small tree or tall shrub, growing 10 to 25 feet high with dense foliage. The flowers, like those of *Hibiscus waimeae*, have a delicate fragrance, and are white with three-to-four-inch petals surrounding a long, red or white, staminal column. These two species are the parents of our choicest, fragrant ornamentals hybridized with the popular *Hibiscus rosa-sinensis* and other species. It is cultivated in Hawaii and has been introduced into southern California.

A native to the island of Molokai, *Hibiscus immaculatus* is a tree growing to about 15 feet. The flowers have pure white petals and staminal column. It is considered an endangered species.

Hibiscus clayi is a shrubby tree reaching nine feet tall with dark green, glossy leaves. It flowers when approximately three feet tall, and the petals are reflexed and red throughout. Some plants, badly ravaged by cattle, were found in 1928 by Mr. Albert Duvel. They were found growing at an elevation of 600 to 700 feet in Haiku, Kauai. Mr. Duvel planted a specimen at the nursery of the Board of Agriculture near Lihue, Kauai, undoubtedly saving this species from extinction. Today, it is still cultivated but is considered endangered.

Hibiscus kokio is a tall shrub, 8 to 14 feet high, dividing from the base into long branches. On Kauai, however, it grows as a tree. The red flowers with red staminal column occur solitarily in the axils of leaves. Resembling *Hibiscus rosa-sinensis*, it differs primarily in growth habit and has smaller flowers with partially erect petals. Although this Hibiscus has been found on nearly all the Islands, it is now endangered.

Hibiscus kahili is similar to *Hibiscus kokio* but is a smaller tree with smaller leaves and longer, narrower petals. The delicate, red flower is approximately three inches across. The native populations have been severely depleted, which is directly or

indirectly the result of human activities.

Hibiscus newhousei is a tree growing to 20 feet, having small red flowers and oval leaves. It is grown ornamentally in Hawaii but is considered endangered.

Hibiscus brakenridgei is an erect, light-wooded shrub four to five feet high. The showy flowers are about five inches wide, pure sulphur-yellow throughout, with a small crimson spot on each petal at the throat. The leaves are unique in that they are on long petioles and are palmately three-to-seven-lobed. Four botanical varieties have been identified. Today, three of them are endangered species and one is extinct.

Hibiscus rockii is a light-wooded shrub to five feet high. It flowers almost constantly. The blooms are yellow with or without a dark, reddish-brown basal eye. The petals are approximately three inches long and two-and-one-half inches wide. It prefers partial shade for best development.

Akiohala or *Hibiscus youngianus* is a two- to three-foot undershrub. Flowers are three inches wide, and occur in the axils of the upper leaves. The petals are lavender with a triangular, crimson eye at the base of the flower and the staminal column is a deep crimson. This Hibiscus is found in marshes and other wet areas on all the Islands. Mrs. Sinclair, a writer of the time, stated in 1885 that it was "once so plentiful the aho (thatching sticks) were made of the stems." Fortunately, today this Hibiscus is not endangered.

Hibiscus saintjohnianus is a shrub growing to 15 feet. Dr. Harold St. John, for whom the flower is named, related in an interview of the finding of this Hibiscus along the Napali Coast—a series of lush valleys and 2000-foot cliffs in Kauai. It seems an appropriate setting, for the orange-red flower is striking in its beauty. This Hibiscus is grown ornamentally in Hawaii but is considered an endangered species.

The Hawaiian Hibiscus require no more care than cultivars. They are

strong and profuse growers in cultivation, and mostly thrive under a variety of conditions. All the species do best with a rich, well-drained soil and plenty of moisture. Full sun and temperatures above 45 degrees F. are also apparently important for growth. However, they need to be tested for possible greater cold tolerance. Unless tall plants are wanted for landscape purposes, they can be pruned back heavily every winter, increasing new wood from which flowers develop.

The Hawaiian Hibiscus are propagated by seed, cuttings, and grafting. Seed germination in peat moss will vary from eight days to three months. The seedlings commonly reach a height of two inches within one month and may be transplanted to three-inch pots, one in each pot. A month later, or when the plants are four to five inches in height, they are again transplanted outside in the places where they are to be grown. Young plants, depending on desired growth habit, can be pinched back on the tips until the first blooming period, which may be from 8 to 12 months from the planting of the seed. Variation among seedlings is very great so it is often desirable to propagate Hibiscus from cuttings or grafts, in order to perpetuate the desired characteristics. Cuttings are best taken from fairly well-matured wood a half-inch in diameter. Cuttings should preferably be made five inches long and planted three inches deep in a suitable propagation media such as peat moss and perlite. Cuttings will normally root in one and one-half months. They then can be transplanted into pots or directly into the garden. Cuttings planted in the garden after rooting will come into flower in about six or seven months. Grafting offers the most rapid method for obtaining flowers. These grafts are more vigorous and will bloom in about three months.

If one is interested, eight species of Hawaiian Hibiscus are propagated and obtainable from Alexander's Nursery, RR1 Box 273, Kapaa, Kauai, HI, 96746. □

Free for the Picking

Martha Prince
9 Winding Way
Locust Valley, NY 11560
and Jordan Prince

In summer and early fall, my kitchen is fragrant with the smell of simmering blueberries, wineberries, blackberries, elderberries, beach plums and crabapples. It is jelly time! It is pie time!

Perhaps there is a thrifty Scot in me (actually, there is); I neither had to grow nor buy this bounty of Nature's wild edibles. Somehow it doubles the pleasure to gather, use and enjoy delights that are free for the taking. The odors and tastes are also full of nostalgic memories for me.

Of all the berries for which to search by merely sniffing the air, the wild strawberries (*Fragaria virginiana*) are easiest by far. Their perfume, in the warm sun of a June day, is finer than any Chanel or Arpege! During my childhood in the South, our most abundant supply of treasures grew in a deserted meadow where a farm must have been, years before. A creek ambled through the grass, and it was a lovely place to spend the day. I never remember having any uneaten berries to bring home; as an adult, I've little more restraint. Here on Long Island, our nearest patch was bulldozed for houses and we must plan a search. In Maine, we know a secret spot by the crashing sea—a grassy spot on a rocky promontory. North Carolina has hillsides so covered you must step on the tiny, sweet red berries,



Persimmons

crushing some. Use them as the edible jewels they are; fresh—plain, with whipped cream, or with a beautiful zabaglione.

Everyone can find blackberries (various *Rubus* species, such as *cuneifolius*). As children, we guarded the secret whereabouts of the best patches. We would check regularly; first on the quantity of white flowers, then again to make sure the green berries turned red, and finally to call, "They're black! Let's go." I wear heavy gloves today for blackberrying, but in those days scratches were a badge of honor. Scratched hands, scratched knees, scratched faces. . . . Use the berries for pie, for jelly, for "Roly-Poly" (an old-fashioned recipe not hard to find. A biscuit "jelly roll" is filled with blackberries, cut into rounds, set swirlsides up in a lemony sugar syrup, and baked in a round layer-cake pan).



Beach Plums

For blueberries, nowadays, we go to Maine for the marvelous low-bush ones (*Vaccinium angustifolium*). The land we own there was bought for its beaver pond, its mountain view, its white birches, and its berries. In early August we bring my special handled basket home to Long Island, full to the brim. Picking the berries is our last "duty" on the morning we head south. My basket holds precisely enough for two pies, two batches of muffins and two coffee cakes. You can easily find the first two recipes, and I'll give you the third later.

"Real" raspberries (*Rubus idaeus* var. *strigosus*) are fairly rare in the wild form, but early August is ripening time for a very pretty raspberry, the Wineberry (*Rubus phoenicolasius*), here on Long Island. It is an "alien escapee," but none the less delicious, and very plentiful along the roadsides. The stems are red,

and the calyx forms a furry “pixie cap” which makes it very easy to spot. Actually, they are prettier than your garden raspberries, for they are shiny and almost translucent. I will admit they aren’t quite as good. However, they make a gorgeous topping for a cream tart, if dipped in melted apple jelly before arranging.

Elderberries (*Sambucus canadensis*) grow along every meadow edge and stream from here to Georgia, along the Turnpikes and the Interstates. In June, they form white hedges with their flat-topped flower clusters. In mid-August I pick mine (if I can beat the birds) in a nearby meadow. I pick the whole heads, and pull the tiny berries off in an “upside-down” position over a bowl when I return to the kitchen. The jelly is wonderful—and so are memories of my Grandmother’s wine.

Beach Plums (*Prunus maritima*) are a treasure New Englanders claim, but on Long Island (and southward along the coast, even to Virginia) shore dwellers may find them. We have them nearby in profusion. Picking is a problem of logistics, for all the trees, bushes really, that I know insist on growing among the prickly wild roses and the poison ivy. The beach (ours is on Long Island Sound) is at its loveliest in the early fall, though, and there is no pleasanter way to spend an early September day than to fill a basket. The air is bright, white caps are on the dark water, and there is a clear view across to Connecticut. The plums are usually equated with jelly, but they make the best jam in the world, and some of the best pie.

Next in the seasonal procession come the grapes. Here in the Northeast we have the fox grape (*Vitis labrusca*). This wildling looks like a miniature Concord, but is much too sour to eat out-of-hand. Almost every roadside tree on the North Shore or the East End of Long Island is festooned with vines. One brown-paper grocery bag full of bunches (leaves, stems, and any other debris included) yields a jelly-batch of grapes. That is my way of measuring when I’ve picked enough. Use for a

jelly that is much too good for the peanut-butter-and-jelly crowd.

If you are a Southerner, or lucky enough to be in the South in September or early October, you have access to my favorite grapes—muscadines and scuppernongs. Both are, botanically, *Vitis rotundifolia*, but gastronomically they aren’t the same at all. A muscadine is a purple grape, large, non-bunching, heavy-skinned and quite delicious. Better still is the scuppernong. Green-and-brown-and-gold, it yields an amber jelly, not a “grape-colored” one. Both make good, if unusual, wine.



Beach plum chiffon pie

My Yankee husband, upon tasting his first home-made scuppernong wine, decided it might admirably take the place of a medium Sherry.

Next—crabapples. Here in the Northeast we have *Malus coronaria*; the Midwest has *Malus ioensis*, and the South has *Malus angustifolia*. My very first income, earned when I was nine years old, was \$9.45, shared with an enterprising cousin. We scrambled barefoot up Grandmother’s old crabapple trees, appropriated glasses and sugar from the kitchen, and went into the jelly business. Now it is difficult to find pure species, as crabapples hybridize so easily. Actually, our native *M. coronaria* does not make the prettiest jelly—dark, red-skinned fruit gives a lovelier color. To test crabapples (even special ones in your garden) just bite the fruit. All the tart, acid ones can make fine jelly.

October means persimmons (*Diospyros virginiana*). Presumably they are wild as far north as Long Island, but the ones pointed out to me as such here cannot be; they form far too neat a ring around an old farm pond, and are all the same age. The South is *real* “persimmon country.” I must issue a warning to city dwellers and other unwary souls; *Beware!* One eats the fallen fruit, or what comes down with a shake, not the pretty orange balls on the tree. Unripe persimmons pucker one’s mouth like alum. I forgot to warn my New York husband soon enough; he is, however, now a devotee. Have you never eaten them? To me, persimmons taste like persimmons, obviously. My husband volunteers a description for those of you who do not know them. “They are a cross between a ripe mango and a stewed apricot.”

Are you hungry? Here are a few special and different ways to use these wild delicacies.

Blueberry Coffee Cake

With a pastry blender, combine three (3) cups of flour, two (2) teaspoons doubleacting baking powder, one and one-half (1½) cups granulated sugar, one (1) teaspoon freshly ground nutmeg and one half (½) cup of butter or margarine. Work until the consistency of coarse crumbs. Reserve one (1) cup of the mixture for use as the topping.

To the remainder of the above mixture add two (2) beaten eggs and one (1) cup of milk. Beat thoroughly. Coat one and one-half (1½) cups of fresh blueberries with a little sugar by shaking together in a bag. Stir the sugared berries carefully into the batter mixture.

Grease two eight inch round layer cake pans (I prefer the ones whose bottoms come out). Divide the batter between the two pans and sprinkle one-half of the reserved crumb mixture on each. Bake in a 375° oven for about thirty minutes, or until a wooden toothpick inserted in the center comes out dry. If you used the false-bottom pans it is easy to lift the cakes out, crumb side up. If you used regular pans, do a “double

Trends in Peonies

Continued from page 7

tivars of all types—Chinese, hybrid herbaceous and tree peonies—attesting to the continued advancement of excellence being attained by breeders. Upon several occasions, hybrid cultivars have won the national grand championship. Some of these are 'Carol,' 'Lovely Rose,' 'Red Charm,' and 'Robert W. Auten.'

With the modern expansion of peony types, it has become easily possible to have lovely peonies in flower for six weeks. In such a planting, the season opens with some of the early hybrids and the Japanese tree peonies. These are followed (with much overlapping of schedule) by the Lutea Hybrids and mid-season herbaceous hybrids, both of which continue to flower during the beginning of the Chinese peony season. The selection of cultivars is adequate to excellent for all parts of this longer, flowering season. There is a substantial extension in the range of color, foliage effect and plant stature.

By way of definition, the Lutea Hybrids include good, clear yellows and yellow-blend flowers, along with reds ranging to darkest maroon. The flowering season commences about one week after the Japanese tree peonies start and, with an appropriate selection of cultivars, may continue for three weeks or more. There may be an occasional flower in summer or autumn, as well. They get their yellow pigment and long season of flowering from the sometimes re-blooming yellow species of Southwest China. A successor group is the semi-herbaceous Itoh Hybrids, also having yellow pigments, made by using the pollen of the Lutea Hybrids on flowers of the Chinese peonies.

Early Hybrids refers to the mixed group of herbaceous that start flowering ahead of the tree peonies and continue for a few days thereafter. They often involve three or more species and afford a rich lode of genetic material for breeding. One can

only guess what may be eventually distilled out of this group through current breeding efforts. We are already seeing glowing "ice cream" pastels and peachy colored blends, some having raspberry toned flares of contrasting color at the base of each petal. Hybridists have recently reported double flower types and clear yellow flowers among the progeny.

Midseason Hybrids, as used here, refers to those which commence flowering about a week ahead of the Chinese peonies and include several fine doubles in gorgeous bright reds and glowing salmon, coral and rose-pinks, as well as many outstanding singles. These are made by crossing selections of the *Peregrina* and *Officinalis* species groups with the Chinese peonies.

Japanese tree peonies and the Chinese peonies are well documented in the gardening literature and should need no further explanation here.

Historically, the interspecific hybridization of peonies is scarcely past infancy. Although selected for domestic use since prehistoric times, both the herbaceous and the tree peonies of China appear to be distinct, each within a single species. Very little record of deliberate hybridization between peony species dates before the late 1800's. The Lemoines of France brought out a small group of early herbaceous hybrids and their first Lutea Hybrid tree peony in the first decade of this century.

The most ambitious hybridizing efforts were undertaken by Professor A. P. Saunders of Clinton, New York. During the early decades of this century, he undertook to collect and interbreed all of the available peony species that could be induced to grow in his area. Many hybrids were produced, while many attempts also failed. The work was continued over a long period, during which careful records were kept. Some of the results are preserved in published references, and copies of certain original records may be obtained for study through the Amer-

ican Peony Society. Although an enormous number of plants were produced in the Saunders gardens, only a fraction of their breeding potential has been exploited.

The Saunders collection was continued until the early 1970's as a nursery by Miss Silvia Saunders who, with all deliberation, dispersed the rare hybrids to potential hybridists. With the cooperation of several individuals, notably E. L. (Roy) Pehrson, Lafayette, Minnesota, and P. C. (Chris) Laning, Kalamazoo, Michigan, Miss Saunders fostered active communication among those interested in peony hybridizing. Cooperative projects have resulted, including the quarterly newsletter of hybridizing and a seed distribution program.

Contemporary with the Saunders project were the activities of several other pioneer hybridists. Working with the garden varieties of *P. officinalis*, some of which have flower-doubling in their genetic makeup, and by crossing them with the Chinese peonies, 'Auten,' 'Bockstoce,' 'Freeborn,' 'Glasscock' and 'Mains' made some of the finest double, red-flowered hybrids yet produced.

Refinement of the Chinese peonies continued during the same period and numerous fine cultivars have been introduced in recent years.

Peony nurseries currently in operation that have been instrumental in bringing the new peonies to the public include the firms of Bigger, Brand, Gilbertson, Goldsmith, Gratwick, Helmling, Interstate, Klehm, Krekler, Lienau, Reath, Smirnow and Wild (G. H. & Son). Specific information on the specialist sources of peony cultivars may be obtained from the Peony Society.

The American Peony Society is a membership organization. It maintains a registry of peony cultivars, sponsors competitive exhibitions, compiles and publishes information, and, by various other means, sponsors excellence in the production and use of peonies. Mrs. Greta

M. Kessenich is Secretary-Editor. The current president is Mr. Joseph Glocka. Inquiries should be addressed to Mrs. Kessenich at 250 Interlachen Road, Hopkins, MN 55343.

Fine peonies may be viewed in flowering season at numerous locations across the northern half of the United States and in Canada. Members of the Society normally make their plantings available to visitors by appointment, and displays are maintained during flowering season by most peony nurseries. A partial list of public gardens where fine peonies are reported to be grown follows:

- Arnold Arboretum, Jamaica Plain, MA—tree peonies.
- Greenwich Garden Center, Montgomery Pinetum, Cos Cob, CT—herbaceous hybrids.
- Kingwood Center, Mansfield, OH.
- National Arboretum, Washington, DC.
- University of Washington Arboretum, Seattle, WA—tree peonies.

onies, herbaceous hybrids, species tree peonies.

- Whitnall Park Botanic Gardens, Hale's Corner, WI.
- Winterthur Gardens, Winterthur, DE—herbaceous and tree peony hybrids.
- Morton Arboretum, Lisle, IL—tree peonies.
- Scott Foundation, Swarthmore, PA—tree peonies.
- John J. Tyler Arboretum, Lima, PA—tree peonies. □

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THE ROYAL FAMILY



P. E. Parvin
University of Hawaii
P.O. Box 187
Kula, Maui, HI 96790



Photos by Design Studio, Manhattan Beach, CA

Have you met the Royal Family? Once, not too many years ago, it would have been necessary to travel half way around the world—to Africa and Australia—in order to enjoy the unique beauty of these exotic flowers. Today, they are at home in the islands of Hawaii. Thriving on the cool slopes of our volcanoes, this fascinating family of plants is creating new excitement among discriminating flower lovers as they are becoming more readily available.

It is a large family of 61 genera and over 1,400 species, occurring mainly

in the Southern Hemisphere—especially in South Africa and Australia. Some are ground covers six inches high, others are shrubs six feet high, while a few tree species may reach 60 feet.

Linnaeus named its most prominent genus *Protea* (pró-te-a) in 1771, an apt classical allusion to the ancient Mediterranean god, Proteus, who had the power to change himself into many shapes. Jussieu, in 1789, gave the name *Proteaceae* to the whole family. In current usage, the term “protea” refers to any of the

ornamental species—not just to the single genus, *Protea*.

The inflorescence of a protea is made up of many small, relatively insignificant flowers in a composite flower head without petals. In some genera, e.g. *Protea*, *Serruria* and *Telopea*, the flowerhead is surrounded by colorful bracts. In others, such as *Grevillea*, *Banksia* and *Leucospermum*, the showy effect comes as the styles, or pins, reflex and the perianth, or ribbon, rolls back to reveal vivid colors.

And now, allow me to present the

FAMILY OF PROTEAS



From left to right: *Protea grandiceps* (The Princess Protea); *Protea cynaroides* (The King Protea); *Leucospermum* hybrid (Hawaii Gold); *Protea longifolia* (Ermine Tail Protea)

Royal Family: The KING PROTEA, (*Protea cynaroides*), is the largest and most regal of the flowers, with its crown-like bracts opening to a diameter of 8 to 12 inches. The species typically bears clear pink bracts surrounding the dove-grey flowers in the center. Although relatively rare, King Proteas are occasionally seen in a color range from near white, through increasingly deep shades of pink to a dark red.

The QUEEN, (*P. magnifica*), is perhaps the showiest of all proteas. Usually five to eight inches in di-

ameter, fur tipped bracts open to reveal a fluffy white interior with a dark center. The effect is an incredible tactile appeal and one has an urge to touch the Queen! Bracts are usually pink with white fur, although variations are occasionally seen.

The PRINCE, (*P. compacta*), enjoys great popularity in England. Clean, aristocratic deep pink bracts, rarely white, open to expose the banker's grey flowers. The flowerhead is approximately four inches deep by four inches wide.

The PRINCESS, (*P. grandiceps*), is of similar size but the peach to coral bracts are tipped with white lashes and curve inward at the tip to provide a more flattened effect.

The DUCHESS, (*P. eximia*), is a shimmering beauty of pink to rose with a center of royal burgundy. The Duchess has an inflorescence approximately five inches deep, opening to four inches across. Its leaves undergo a color change from green to an exotic blue-black after cutting.

The MINKS, (*P. neriifolia*), share with the Queen, an appeal to the sense of touch. Five inches deep and three to four inches in diameter, the Pink Minks are heavily tipped with a dark, lustrous mink-like fur. Variations of color in both the bracts

(white, pink, rose, red) and the fur (black, white) have been observed.

ERMINE TAIL PROTEA, (*P. longifolia*), combines smooth, six-inch bracts of pale chartreuse-to-white, forming a four-inch circle around a mound of furry, white flowers blending into an elongated, central "tail" of softest black.

If these species represent the Royal Family of proteas, then surely the crown jewels are the dazzling Sunburst Proteas in the genus *Leucospermum*. The colors vary with the species. The *cordifoliums* are most popular with shades of yellowish-orange through red. The arrangement of its iridescent styles is reminiscent of a magnificent burst of fireworks high in the sky. Among the exotic sunburst proteas are: *L. tottum*, Pink Star, and a University of Hawaii hybrid, Hawaii Gold (*L. cuneiforme* × *L. conocarpodendron*).

Another African protea is the genus *Leucadendron*, used both for its colorful foliage and, in some species, for the showy inflorescence. The SILVERTREE, (*L. argenteum*), is an exotic cut foliage with each leaf covered with shimmering silver hairs. FLAMETIP, (*L. discolor*) combines a walnut-size cluster of male flowers—bright red just before opening—nestled against a collar of clear yellow, petal-like leaves.

Australian proteas are well represented in the flower shops by the genus *Banksia*, named for Sir Joseph Banks, the royal botanist sailing with Captain Cook when he discovered Australia. The inflorescence is usually a cylindrical spike of densely arranged, individual flowers which open from the base to the tapered dome at top. The flower heads generally range from three to eight inches in length, three to four inches in diameter. Close inspection reveals the orderly, geometric arrangement of the unopened buds.

Among the most popular banksias available as cut flowers are: PINK FROST BANKSIA, (*B. menziesii*). Silver overlays on dark pink flowers in a regal spike; ORANGE BANKSIA, (*B. prionotes*). Open flowers of bril-

liant orange ring the base of a domed cylinder of unopened white buds, giving a two-toned effect; GOLD BANKSIA, (*B. ashbyi*). Deeply-toothed, dark green leaves show off the vivid orange-gold flowers in a six-inch cylinder. Both buds and flowers are the same brilliant color; RED BANKSIA, (*B. occidentalis*), has the appearance of lustrous, deep red wires, woven into an intricately designed spike two inches in diameter by six inches high; RIC-RAC BANKSIA, (*B. speciosa*), gives the overall effect of an exotic bird in flight with narrow, grey-green ric-rac leaves surrounding the plump, six to eight-inch column of a similar color.

Proteas, in spite of their diversity of shapes and colors, share a common advantage of excellent keeping qualities when properly handled. Proteas have a woody stem, and if they have been out of water for a few days, as in the case of direct shipments from Hawaii, you should recut the stem and place in warm preservative solution. Initially, there is a significant amount of water taken up by proteas, so it is wise to check the container daily. All proteas respond positively to the use of a good flower preservative chemical in the water. University of Hawaii tests show the vase life of Sunbursts more than doubles, from 12 to 14 days in plain water, to 28 to 35 days if kept adequately supplied with preservative solution. In a similar test, Duchess lasted 11 days in water and 26 days in preservative solution.

Many proteas also dry beautifully and "appreciate with age"! They may be air dried naturally, or treated with glycerine, available at most drug stores. Naturally dried proteas develop a pale beige color, and the leaves may become brittle to the touch. An interesting variation for species in the genus *Protea* is to pull out the individual flowers from the center of the flowerhead, exposing the intricate design of the basal plate. Depending upon the variety, the bracts, surrounding this disk may be stiff and open to a star (*P. repens*) or a fur-tipped circle (*P.*

nerifolia). The Duchess is frequently used in the dried state as an exotic disk with the hundreds of indentations to which the individual flowers were attached creating a decorative geometric fantasy.

To achieve a more dramatic effect of mahogany brown leaves that remain pliable, try the glycerine method. The Hawaii Protea Cooperative, P.O. Box 68, Kula, Maui, HI 96790, has prepared a sheet of instructions on this method. It involves pounding the stems of the fresh flowers and placing in a solution of one part glycerine to three parts water. After several days, beads of glycerine appear on the edges of the leaves, or the leaves are oily to the touch, signaling that glycerine has permeated the leaves and bracts. The stems should then be removed and placed upright in an empty container to allow the water to evaporate. What remains is a beautiful, dark brown, flexible "permanent" protea. Drying in the sunlight results in a lighter color than drying in a dark closet. You may also wish to experiment with the use of the concentrated cold water dyes used for making batiks. A small quantity of this powder, dissolved in the glycerine/water solution and taken up in the stems produces interesting results.

The Sunburst Proteas, lasting a month in floral preservative solutions, are primarily composed of water-filled styles or pins. Normal drying procedures do not work for these genera, and after a few weeks, we are left with only pleasant memories of their unique beauty. However, for the dedicated dry-flower enthusiast, there is the possibility of using microwaves. A friend took up the challenge recently when told the Sunburst didn't dry, and after several trials, produced a "permanent" Sunburst worthy of any dried arrangement! The fully opened Sunburst was removed from its stem, and placed in a one-inch layer of "kitty litter" in a small cardboard box. The same material was then carefully poured on and around the

flower to completely cover. The box was next placed in a microwave oven which was turned to High, for five minutes. The box was removed and allowed to rest undisturbed for four days. The litter was carefully poured out, revealing a beautiful Sunburst, slightly smaller in size, but retaining a burnt-orange color. The flower was wired and taped for a stem and is a real beauty. Dr. McDonnald had tried Silica Gel, but achieved best results with kitty litter, in spite of the smell while "cooking."

Proteas on the world market come from fields in South Africa, Australia, New Zealand, and a few from Israel, California, and Hawaii. Rycroft reports that it became extremely fashionable at the end of the 18th and beginning of the 19th centuries to grow proteas from seed collected by botanical travelers and collectors and sent back to the U.K. and Europe. Today, they are seldom seen in these countries, perhaps due to a change in greenhouse environments. Based on research at the Maui Agricultural Research Center, and adaptive trials at various locations throughout Hawaii, a few general conditions for successful culture can be postulated:

1. Proteas require almost perfect drainage—both air and soil. Their growth is best where air can move through the plants. High mortality rates occur where the air is still or stagnant. They cannot tolerate wet feet! There must be plenty of aeration around their roots.
2. Proteas do well in slightly acid mediums. Only a few species tolerate alkaline conditions.
3. Proteas require high light intensity for best bloom. Two King Protea bushes were planted on either side of the Research Center entrance. One never received direct sun, and although it did well, vegetatively, it has never bloomed. The plant receiving two to three hours of direct sun in the afternoon blooms annually.
4. Although Proteas can tolerate

high temperatures in the daytime, they must cool down at night. In their native habitat, they can survive several degrees of frost in the winter, but will be killed if the temperature drops rapidly below 26 - 27°F. An ideal temperature regime seems to be nighttime lows in the 50's, and daytime highs in the 80's.

Because of the size of the mature plants, most proteas are not adapted to pot culture. In the short run, Leucospermums can be flowered the first year from rooted cuttings, and by shifting up in pot size, can be managed for two to three years before fresh cuttings should be taken. Seedling Leucospermum grow too large before blooming and are not recommended for pot culture.

One of the most satisfactory proteas for tub culture is the King Protea. It makes an attractive plant, even out of bloom, and will provide several years of decorative display in a 12- to 18-inch pot. Remember to use a loose, slightly-acid soil mix, provide lots of light, don't over water, and avoid humid, stagnant air. Monthly feedings, during its period of vegetative flushes, with a complete, low-phosphate fertilizer, including minor elements, at one half the recommended rate on the label, can be applied.

Sima Eliovson's book, *Proteas For Pleasure*, contains the most detailed instructions on cultivation of proteas in print, while Rousseau's, *The Proteaceae of South Africa*, has an outstanding collection of color prints. Honingklip Nurseries, 13 Lady Anne Avenue, Newlands, Cape, South Africa 7700, publishes an extensive seed list for African proteas and books on the subject. The Peter B. Dow and Company, P.O. Box 696, Gisborne, New Zealand, includes Australian Banksia in their catalog. Plants are available from Southern California, Hawaii and New Zealand nurseries, while fresh and dried, cut flowers are available from your florist and directly from the Hawaii Protea Cooperative. Enjoy! □

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My Beautiful Weeds

*Martha Prince
9 Winding Way
Locust Valley, NY 11560*

Once upon a time there was a gardener who was forbidden to garden. Digging in good, rich soil releases the nasty "snow mold"; harvesting juicy red tomatoes may free fusarium; plucking the prettiest of flowers scatters dangerous pollen from ripe stamens.

Does this read like the beginning of a horror tale? In a way, it seemed so at first. The hated orders were the doctor's, and I knew only too well what happened if I disobeyed. A bowl of fragrant lilacs in a closed room had sent me to the hospital! I had no breath with which to garden, anyway.

Instead of ending something, this proved to be an exciting beginning. Confined to a more or less colorless and flowerless summer garden (we grew self-caring springtime rhododendrons, azaleas and wildflowers), with annuals, perennials and vegetables taboo, I discovered the fantastic world of weeds. No, not to kill, but to enjoy. Instead of a spray gun or a weeder, my weapon was the camera. Equipped with a ground-glass view-finder and a bellows, our faithful old Leica could bring the tiniest weedflower into close and detailed view. Nature expends as much ingenuity of design on the smallest weed, lost in the grass, as on a florist's orchid. Do you know the little creeping "pest" called Gill-over-the-ground, or Ground Ivy? It sneaks into the edges of the best



manicured laws; botanically, it is *Glechoma hederacea*. Close up, the quarter-inch flowers are exotic lavender blossoms, blotched in purple on the lower lip, and worthy of any elfin corsage. And worthy of a centerpiece arrangement, albeit for a three-inch table, are the wee spikes of pink Lady's Thumb (*Polygonum persicaria*) or any of the other Smartweeds.

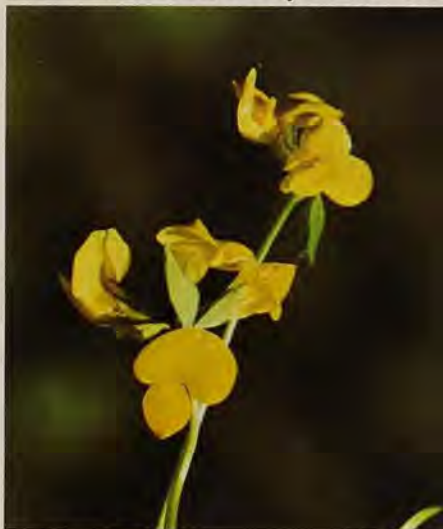
Weed exploring requires little exertion and no traveling. Leave your garden alone for only a few weeks—and presto! Chickweed (*Stellaria media*) is really a dainty, pretty little white thing spotted in your unmowed lawn. If you have no "proper" creeping Thyme between your flagstones, a Wood Sorrel (*Oxalis corniculata*) will be glad to invade. It has a sunny, little five-petalled yellow face, and clover-like leaves. Taste a leaf or bud; the lemony tang makes Oxalis a fine addition to a salad.

Imagine yourself a visitor from Mars. Might you not be delighted to see a sprinkling of golden Dandelions (*Taraxacum officinale*) in a dull expanse of all-green lawn? And the "puffs," poised for wind dispersal of seeds, are so beautiful and delicate in structure that Buckminster Fuller might well envy the precision of design. Only children seem to have the innocence to delight in them.

The ubiquitous Dayflower (*Commelina communis*), with its two blue "ears," is quite enchanting, if you pause to look. As a matter of fact, its cousin, the Spiderwort (*Tradescantia virginiana*), is a prized wildflower. Butter-and-eggs (*Linaria vulgaris*) are bright weeds all children love . . . but did you realize that they are in the Snapdragon family, and really no less lovely? Cow-vetch (*Vicia cracca*) may not be as aristocratic as blue or pink Sweet Peas, but it is in the Pea family, too. Or, if you prefer your "fake" Sweet Peas in yellow, there is Birdfoot Trefoil (*Lotus corniculata*) just waiting to pounce into your garden. You could find no prettier blue flower than the Speedwell (*Veronica officinalis*), al-

most too small to notice before you step on it.

If tomatoes do not climb up the poles placed for them, there are wild members of the Tomato family which will happily take their place. The Nightshade (*Solanum dulcamara*), with backswept purple petals, has the prized shape of the Shooting Stars (*Dodecatheon*). Another tomato is the prickly and maligned weed, the Horse-nettle (*Solanum carolinense*). If you are not



Birdfoot Trefoil

pulling it out (and thus don't scratch your hands), you may even admire this quite handsome invader of the garden's edge. Still another tomato for you, and one without prickles, is the Ground Cherry (*Physalis virginiana*). The flowers are wide yellow bells, blotched inside with brown, and the seeds are borne in papery "lanterns." (The orange Chinese Lantern, favorite of dried-flower arrangers, is a *Physalis* also.) If truth be told, our luscious eating tomato was considered a poisonous weed two hundred years ago. Of course, it had to be coaxed and bred into its present forms—but it certainly *wasn't* poisonous, despite the gossip.

There exist infinitely varying shapes and forms of interest. The Bladder Champion (*Silene vulgaris*) is a green-veined white balloon, bursting at the tip with white petals. It is a tall weed, like the magic Queen Anne's Lace (*Daucus carota*), and stands at the driveway edge. Con-

sider the simplicity of one and the intricacy of the other. And have you ever stopped to notice that the one tiny center flower of Queen Anne's Lace is purple? The orange Jewel Weed (*Impatiens capensis*) also grows in tall masses. With its strange curly "tail" it is laughably funny, at least to me.

I've always thought the Scarlet Pimpernel had to do with detective fiction, but there is a delightful tiny weed (more salmon than scarlet) with the same name. Botanically, it is *Anagallis arvensis*. A companion along the side of the road is the little Deptford Pink (*Dianthus armeria*). If you are unable to edge your garden paths this year with "real" pinks, accept this bright and pretty substitute with gratitude. The petals have scalloped edges and clusters of miniature white polka dots.

I could go on, and on . . . and on. One very handsome fellow is the Willow Weed (*Epilobium hirsutum*). Eight magenta petals are startlingly centered with a four-branched white stigma. Any country-bred child appreciates Pokeberry (*Phytolacca americana*) for the "ink" to be made from the drooping clusters of black berries. . . . But take a *really* close look at an individual flower. There are hundreds, even thousands, more fascinating weeds; exploring them may give you an excuse for a lazy summer's end! If you are not a photographer, venture out with your little hand lens. These are flowers that come to *you*—they insist on it, unless you fight them off.

I am quite able to garden again, but the weeds I've learned to love are my friends, and I feel the pangs of a murderer if I destroy them. So, in Edna St. Vincent Millay's words: "She leaves her clover standing And the Queen Anne's Lace."*

Author's Note: Botanically, the best reference book on weeds is probably *Common Weeds of the United States*, prepared in 1970 by the Research Service of the United States Department of Agriculture, available in a Dover reprint.

*From COLLECTED POEMS, Harper & Row. Copyright 1922, 1950 by Edna St. Vincent Millay.

Cyclamen *hederifolium*



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Hardy cyclamens are native to the Old World, their distribution being focused about the Mediterranean, ranging from the Balearics to the Black Sea. In spite of their great charm and relative ease of culture, few American gardeners are acquainted with these distinctive plants. Sixteen species and many forms have been described, but the northern gardener who would grow these charmers must be content with but three species.

Of all the species, *Cyclamen hederifolium* (*neapolitanum*) is the one most widely grown, both here and overseas. It is a spectacular little

plant, lending itself to a variety of habitats and doing well in some of our coldest states. In central New York, where winter temperatures often fall below -20°F . and snow cover is unpredictable, we have grown this species for many years with negligible losses.

Since cyclamen tubers cannot be divided, and collected plants offered by dealers are often slow to become established, it is best to propagate the plant from seed. As the flower of *hederifolium* is fertilized in late summer or early fall, a small seed pod is formed at the end of the spiralling peduncle, in appearance not unlike a watch spring. As the hard little seed ball matures the following July, the peduncle slowly uncoils, thrusting the now soft ripening pod away from the tuber. It finally splits, to discharge the large light golden or chestnut brown seeds. One must

examine the plants daily at this season, as a sticky gelatinous substance covers the ripe seeds. This mushy coating has an attraction for both ants and wasps, who carry the seeds some distance from the parent, to eventually sprout in some unpredictable corner of the garden.

To insure good germination, it is desirable to plant the seeds soon after dehiscence. Those planted in midsummer will germinate in four to six weeks, while seeds held over for a spring planting may lie dormant for many months before the first tiny leaf appears.

A batch of 1000 fresh seeds was planted in the greenhouse on July 19, 1974. By September 1, a few plants had appeared. By mid-January, most of the tubers were the size of a small pea and were transplanted into flats to stand an inch or two apart. They were set out in the open ground in early August and a dozen of the largest plants produced a few flowers in September, the prelude to a reckless prodigality of bloom in the late summer and fall of 1976. These exquisite gems, sparkling in their various shades of pink, stand well above the marbled ivy-like leaves. Not the least attraction is the variegation in the leaves, no two having the same pattern or shape. Even were it bloomless, this cyclamen would be worthy of a place in the shaded border for its panoply of nearly evergreen foliage that totally obscures the ground in an established planting. The great English gardener, E. A. Bowles, wrote "I do not know any plant that pays a better rent than *C. neapolitanum* during eleven months of the year and only once does it ask for a holiday with pay." Plant it in abundance, for these diminutive cyclamens are never more lovely than when grown *en masse*. They serve admirably as a foil for late-winter and spring-flowering bulbs of crocus and squills. Both the pink and less common white form do well in a variety of soils, where the creeping habit of the leaf and flower stalk spread some distance from the tuber. Since the

roots sprout from the upper part of the tuber, shallow planting is in order. Be sure to plant the tuber right side up. The convex bottom is bare of roots, while the top is slightly hollowed. A top dressing of leaf mold, a dusting of bone meal and some very-well-rotted cow manure, spread above the dormant tuber in early July, will serve its needs. It has often been suggested that lime be added, but some of our best plantings are among ericaceous plants.

While *C. hederifolium* is the most satisfactory species for a cold climate, both *C. purpurascens (europaeum)* and *C. coum* are hardy at Ithaca, New York. The former is a delightfully fragrant species that provides a succession of deep carmine-pink blooms from July through early November. Not as floriferous as *C. hederifolium*, it does well in both dappled shade and bright sun. The circular leaves, of a somber green, sometimes relieved by a paler patterning, persist throughout most of the year. *Cyclamen coum*, a remarkably hardy plant, produces its leathery, dark green, orbicular leaves in September. By early February, the prostrate petioles support reddish buds that open into glowing, if somewhat dumpy, flowers within a month. Pushing through the ice and snow of the waning winter, they will indeed charm the gardener at this dismal season. Best put a plastic cake cover over the plant and enjoy them when an imminent snowfall threatens.

Others we have tried include *Cyclamen cilicium* and *C. repandum*. They may linger a year or two through Ithaca's frigid winters, but northern gardeners had best grow them in pots sunk deep in a cold-frame, or bring them into a cold greenhouse or cool sunporch with the approach of snow.

A few American nurserymen stock the fresh tubers, and several plant societies list cyclamen in their annual seed lists. Better yet, find a gardening friend who grows them and beg a few seeds. You'll never regret it. □

Free for the Picking

Continued from page 27

flip." Delicious warm . . . and they freeze well. Save one for a snowy February morning.

Ra's Beach Plum Pie

Make any good flaky pastry for a two-crust pie. Fit the lower crust into a 9" glass pie pan, and refrigerate. Carefully pit your plums (buy a cherry-pitter; otherwise the plums are often so small the job would be impossible). You want four (4) cups of pitted fruit. Place in a bowl, and add one (1) cup sugar, two (2) tablespoons flour and a pinch of salt. Stir, and let stand for fifteen minutes. Melt one (1) tablespoon butter, and beat two (2) eggs. Add to plum mixture, stirring well. Roll out your top crust (don't forget to cut a decorative "steam hole" or two; I like to do something a little different from the usual round hole of bakery pies. I cut a ring of a few tiny holes—diamonds or clovers or even hearts—with a truffle cutter). Fill the cold pie shell, cover with top crust, crimping the edges, and bake for ten (10) minutes in a preheated 450° oven. Reduce heat to 350° and bake for thirty (30) minutes longer. If you want the pie to be even prettier, before baking brush the top crust with a little slightly beaten egg white. This pie is perfect served just slightly warm, with scoops of vanilla ice cream.

Beach Plum Chiffon Pie

Make one pre-baked pie shell, the nine or ten inch, deep kind, from any good flaky pastry recipe. Cool. Measure two (2) cups of pitted beach plums. Put one (1) cup water and one (1) cup sugar in a saucepan: add fruit, and bring to a boil. Simmer gently for about fifteen minutes. Dissolve two (2) envelopes of plain unflavored gelatine in one-half (1/2) cup cold water, and then stir thoroughly into the hot mixture. Cool until only "warm" (or you will have a volcano with the next step). Put in blender, at medium speed, for about one minute. Place in large bowl in refrigerator. Beat the whites of four eggs until stiff (I use just a pinch of

cream of tartar), gradually adding one-fourth (1/4) cup sugar near the end. Whip one (1) cup heavy cream, adding two (2) tablespoons sugar. Reserve some of the cream for decorating the pie. When the plum mixture is just starting to jell at the edge of the bowl, carefully fold in the beaten egg whites and the whipped cream. Pile into the cold pastry shell, and refrigerate. When cold, decorate with whipped cream, or with a little melted beach plum jelly in a swirl pattern. Any leftover "fluff" goes nicely into little tart shells or sherbet glasses. If you want pie for next winter, freeze batches of the boiled plums-and-sugar, puréed with *no* gelatine.

Fresh Persimmon Chiffon Pie

Pies are usually made with cooked persimmons; they taste so much like pumpkin I see no point. Instead, I purée the fresh persimmons (by hand with a large spoon and a sieve, or in one of the inexpensive hand-turned food mills). You may freeze the purée for later use if you will stir in a few tablespoons of lemon juice and a few of sugar. For a nine inch pie you need two cups of uncooked purée. Make a pre-baked pie shell and cool. Dissolve one (1) envelope of plain gelatine in one quarter (1/4) cup water. Unlike the beach plum pie above, one envelope is all you need, for persimmons stiffen quite a lot on their own when chilled. Heat one (1) cup water with one fourth (1/4) cup lemon juice. Stir in the gelatine until very thoroughly dissolved. Cool until just beginning to set, and stir in the persimmon. *Under no circumstances beat or use a blender.* The consistency of persimmons goes "haywire" with beating. For the remainder of the recipe, follow the instructions for the Beach Plum Chiffon pie, above. Egg whites and cream are used in the same way.

There are so many delicious ways to use wild fruits and berries that I could fill the whole of this magazine; these four, however, you won't find in any cookbook. Enjoy the search, the picking, the cooking . . . and "Bon appetit!" □



"Jewel" garden site before and after



Photos by Author

Flower Power

*Dale Harvey
3243 Jefferson Avenue
Cincinnati, OH 45220*

Flowers! Flowers everywhere! More than enough for delighted citizens to pick thousands from specially-prepared public gardens. The idea behind the gardens was to provide recreation, education, beautification, and floral art for the people of Cincinnati, Ohio.

The projects, collectively called Flower Power, were sponsored by two grants. The CETA-funded, City Artists Program provided funds to produce art in public places. The citizens Committee on Youth provided a materials budget and salary to hire 200 youths during the summer. Suitable land was obtained through local realtors and the Cincinnati Park Board.

Several sites were transformed into "Jewel" gardens, mass splashes of color that glowed and sparkled as would jewels reflecting the sunlight. The Jewel gardens attracted voluntary aid from 155 members of the community, who dug, hoed, raked and seeded the gardens. Others prepared food or entertained with puppet shows and music, which varied from African rhythm to Bagpipes and Blues. Throughout the summer, 149,000 people watched the gardens sparkle. They gathered thousands of flowers to grace their homes and 10,000 seedlings that started 41 new gardens locally and over five states.

Meanwhile, teams of inner city youth were busy transforming six acres of city "waste" land into wildflower sanctuaries. Sites coughed



The author

up piles of brush to 15 feet high and as much as ten tons of concrete and brick. This refuse was reworked into the sites. Concrete and brick became walls and walks; garbage became fill; scrapwood turned into tables, benches and trellises; and brush became mulch. The key was flexibility: everything had a use.

Once the land was reasonably clear and broken, it was sown with seed of native perennials and hardy annuals. The annuals insured quick, bright color while the perennials promised more subtle shades starting the following spring. A light mulch was sprinkled with a prayer for rain and the job was complete.

Soon the summer's labor produced dramatic rewards. Gold and silver cosmos, ruby zinnias and the riches of more than 100,000 flowers burst into bloom almost overnight. One spectacular wildflower sanctu-

ary became a community highlight, playing host to music ensembles, celebrations, picnics, nature walks and the intimate moments of young lovers. An additional two acres produced 2000 pounds of foods that supplied charities and fed 30 families for much of the summer.

Flower Power demonstrated that a variety of wild and domesticated plants can thrive under such diverse conditions as: poor soils, mild drought and severe pollution. The concept lends itself to land reclamation and beautification of waste areas, even under the congested conditions of the inner city. And the cost is low!

Although the gardens were highly exposed, vandalism was not a problem where the neighborhood was involved. In fact, the gardens became symbols of community pride that drew people closer together. Residents had a delightful meeting ground in which to become acquainted and build friendships as they grew gardens. Many found recreational pleasure in picking flowers or gathering seedlings for the home garden, while others were content just to watch.

The power of flowers could capture the hearts of your community, too. The human and financial resources needed to develop a similar program are available in most towns. Careful planning, resourceful enthusiasm and elbow grease are keys to success. Add a little determination and you'll soon find that you are one giant step closer to environmental sanctuary in your own hometown. □

The Tree Peony

Continued from page 7

and maroons. The flowers are well displayed on the plants, which are vigorous, and considered hardier than the moutans. They tend to become larger.

The permanence and bulk of tree peonies give them value as part of the basic frame of a planting. The fine foliage is attractive into the fall, but stays green, not repeating the reds and bronzes of the unfolding spring leaves.

Of course, when the plants are in bloom, they are a splendid feature of the garden. The space they occupy can be given additional interest by planting under them for early spring color. Under some of our tree peonies groups of snowdrops flourish. Under others, there is a golden display of winter aconite (*Eranthis hyemalis*). The prolific *Crocus tomasianus* opens a multitude of pale lilac stars under yet others. *Scilla siberica* and *Chionodoxa luciliae* spread sheets of violet-blue under others. These are not the only small early bulbs that are possibilities. Others are the tiny yellow trumpet daffodil *Narcissus asturiensis* (syn. *N. minimus*) and a variety of crocuses. The little early bulbs sheltered under tree peonies can grow undisturbed by general gardening operations, requiring no upkeep.

Culture

Tree peonies leaf out very early in the spring, so fall planting is highly desirable. Good drainage is a must; any average good soil will suit them. High or partial shade, especially from afternoon sun, will prolong the life of the flowers. Tree peonies thrive in close to neutral or slightly alkaline soil, but in our garden they thrive close to rhododendrons in soil on the acid side.

An ample hole should be prepared for each plant, for deep planting, a no-no for so many plants, is a yes-yes for tree peonies. A moderate amount of a complete fertilizer, preferably slow acting, can be well mixed with the soil, according to the

special needs of the locality. Grafted plants should be placed with the point of the graft four to six inches below ground level for own-root development. Seedlings need not be quite so deep. We mulch our plants with wood chips, only a light layer for those under which there are small bulbs. In spring when we are ambitious, our plants get a swish of whatever fertilizer we happen to have on hand.



The most annoying pest is a small carpenter bee which hollows out the pith in the stems. Affected stems and branches die back. Control is to block the entrance of the bees through cut ends or any spot where the back of a stem has been injured. Thumb tacks or sticky tape can be used to protect these vulnerable places.

The gray mold (*Botrytis*) may be a problem, especially in wet springs. It can affect buds, flowers, and soft new growth, which suddenly wilts. All wilting growth should always be cut off and destroyed. Spray with Benlate at the rate of one tablespoon to two gallons of water in early spring as soon as growth starts. Zineb 75% wettable powder, at the rate of one and a-third tablespoons to a gallon of water, can also be used. A spreader used with the spray increases its efficiency. Repeat the spray several times according to the weather. The spray can be used on other plants, such as tulips and delphiniums, at the same time.

Propagation

Named tree peonies are not cheap. The supply is limited, and the buyer must simply choose from the descriptions in the catalogs of the few nurseries that offer them. They are grafted on herbaceous roots, which are used not only because they are plentiful, but because growth from the roots is easily recognized and can be cut out. It is also possible to graft on seedlings of tree peony, but these grafts must be planted deep, and in two or three years the plants should be dug and the understock cut off.

This scarcity is the result of a short supply of grafting wood, and the nature of the tree peony, which is not amenable to largescale production.

Seedling moutans have the advantage of being on their own roots, and cost less than grafted plants. They can often be bought according to color.

The moutans produce lots of good seed. The hybrids are almost entirely sterile. For the best germination, the seed should be harvested as soon as the pods begin to open. They may be germinated in the refrigerator in a polyethylene bag in a mixture of slightly damp peat moss and vermiculite. In about six weeks, they can be planted out in good soil in a well-drained place about two and a half inches deep and mulched two or three inches. In spring, when leaves appear, protect against slugs and cutworms. Shade lightly.

It takes four or five years or more for a plant to reach flowering size. Some will be lovely, some should go to the dump, or can be used by the ambitious gardener with some grafting experience for understock.

A tree peony plant gives bloom for about a week or ten days, but a heat wave or bad storm may shorten the time. Many spring-flowering plants do not bloom for any longer, but we love them anyway. Those of us who treasure the glorious tree peonies would rather have their flowers for ten days than marigolds for ten weeks. □

Quotables

By Tom Stevenson

Here we go into the future. It could be a pretty rough trip. World population keeps growing. Energy and other resources are limited. Some accommodation for this situation must be found.

We could keep going the way we are. That means we find some miracle that gives us boundless new resources . . . or that we just continue using up our resources in one final orgy of 20th century materialism.

Or we can take another route, according to a report prepared by Joseph J. Marks, science news director, University of Missouri, H. R. Fortmann, regional coordinator, Northeast Association of Agricultural Experiment Station directors, J. B. Kendrick, director, University of California Agricultural Experiment Station, and S. H. Wittwer, director, Michigan State University Agricultural Experiment Station.

We can change life styles, they say, at least long enough to buy time for agricultural scientists to learn how to squeeze more out of every acre.

As agricultural experts, we are optimistic about food production. We think we can feed the world of tomorrow . . . by reshaping plants to make better use of photosynthesis, by harvesting the oceans, by building super plants and animals, by inventing food in ways that haven't even been thought of yet.

That may not be enough, unless we solve some people problems. There is increasing evidence we must have population control. The United Nations has predicted there will be 12.3 billion human beings on this planet before the numbers level off in the next century.

Even if it were possible to feed, clothe and house all these projected billions, we could expect a whale of a lot of other problems with people living under such crowded conditions.

That love . . . that caring for all those who reside on this humble planet . . . is the most important influence on research priorities.

Our research programs must know no borders, geographical or otherwise. We must avoid being locked into old formulas, organizational patterns, and concepts. We must build a broader basic research base.

Our claim on energy needs must come ahead of air-conditioning, personal transportation, and the like.

Population control . . . a broader research base . . . environmental management . . . teamwork. Those are the re-

quirements for the future.

We have only so much talent, skill and money. How do we use them most effectively? We asked this question of the Agricultural Experiment Station directors and land grant universities across the country.

Here are some of their priorities:

Monitor the environment. That means knowing our environment from the inside of molecules to outer space. The information gathering capabilities of electron microscopes and orbiting satellites provide warnings of disease and insect outbreaks and help us manage our environment.

Watch weather and climate. Scientists estimate that 60 to 80 per cent of the variability in crop production, whether boom or bust, can be explained by weather variability. The message: Don't take climate for granted; help plants and animals (including humans) adapt to it.

Advanced weather forecasting and weather modification, plus computerized farm management, will help farmers take full advantage of rainfall, sunshine and temperature changes.

Build gene banks. The idea is to avoid genetic vulnerability. Complete characterization of genetic lines stored in computer banks will give us insurance that new varieties and species can be brought forth to replace those being toppled by existing diseases, pests, or other environmental conditions.

Use the sun. Scientists recognize the sun as an endless energy source that can be used directly (solar heat) or indirectly (photosynthesis).

Engineers have made breakthroughs to exploit solar heat. Other scientists have only begun to tap the photosynthesis miracle which offers tremendous potential for increased food production.

Maximize protein energy. We need a bigger research effort on the two most important energy producing biochemical processes on earth: Photosynthesis and biological nitrogen fixation.

Farm the waters. Since two-thirds of this planet is covered by water, it seems logical to investigate water fully as a food source.

Water, whether ocean or pond, could be a great protein producer, whether you're growing algae, lobsters, oysters, salmon, shrimp, catfish or whatever.

We think that team of agricultural scientists and farmers (and gardeners) have done quite well, thank you. Our people are not only fed, but fed well with the

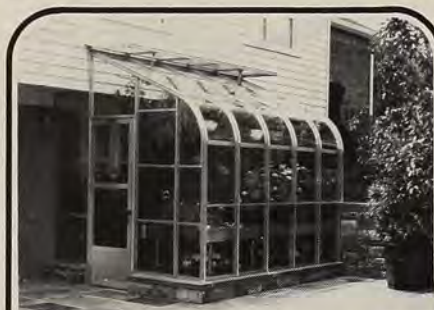
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Book Reviews

By Tom Stevenson

Have you wondered how florists get flowers to bloom at different times of the year? It is done by forcing them, a simple process if you know what to do and when to do it.

For example, the poinsettia you are carrying over from last Christmas can be made to bloom during the coming Christmas season by controlling the light to which the plant is exposed in October and November. In other words, it needs 14 continuous hours of uninterrupted darkness per day, starting about Oct. 1 and continuing until about Dec. 15.

The garden lily, if properly cooled and stored in the fall, can be made to bloom at Easter. If you love cut flowers and would like to have them fresh in the home the year around without having to buy them from a florist, you can grow and force them yourself.

And forcing can be fun, according to John James, former greenhouse operator and nurseryman, in his new book, *Flowers When You Want Them: A Grower's Guide to Out-of-Season Bloom*, published by Hawthorn Books Inc., New York, N.Y., 266 printed pages, illustrated, \$10.95. It provides an additional element of interest and skill to growing plants and flowers. It extends your horizons. It adds to your other green-thumb abilities.

"Forcing is cooperating with nature," says James. In this there are three basic steps involved: getting plants, getting plants to grow, and getting plants to flower. We'll cover each step in detail for most of the popular flowers. And I'll keep my instructions simple and practical.

"It is almost unbelievable the number

of stumbling blocks that nature can throw in our way. Seeds will refuse to sprout, plants will refuse to grow, flowers will refuse to form, until specific conditions are met. We need to know something about these conditions in order to cope with them, in order to cooperate with nature's requirements.

"The first requisite for forcing is knowledge of what makes a flower flower. Most plants have amazing botanical time clocks. This in itself is a fascinating subject. The deeper we delve into it, the more we discover about this aspect of nature's processes, the more astonishing it becomes."

In addition to explaining what makes plants flower and how to regulate the lighting and temperature for each flower variety to get best results, there are instructions for forcing branches of flowering shrubs and trees, seeds, bulbs, corms and tubers. There is also a special chapter on how to cut flowers properly and keep them fresh for as long as possible.

Each plant blooms in its time. Even tropical plants bloom in their season, wet or dry. "Suppose all plants bloomed at one time. How dull the remainder of the year would be," James says. We even resent the lack of bloom just in the wintertime, so we grow our tropical indoor plants and force other plants to bloom out of season.

Nature has endowed plants with a series of checks and counterchecks, reactions and balances, catalysts and regulators, all designed to keep the plant on a life schedule that will ensure its survival. Because of them, it can sometimes be more trouble to get a seed to produce a plant than it is to write a book.

Suppose all seeds germinated immediately upon contact with moisture. Since most seeds ripen in the fall, they would sprout about the time winter was at its worst, and the tender seedlings would be killed. Before long, the species would be extinct.

In devious ways, nature must prevent seeds from sprouting until conditions are right for the subsequent growth of the plant. Within each seed is not only the spark of life but also an intricate mechanism to protect that life.

Scientists call these ingenious safety devices blocks. Some of the more usual blocks are specific requirements of moisture, time, temperature, aeration, or light, or a combination of some of these requirements.

In order to survive, most seeds have

more than one block to germination. For example, some seeds need time as well as moisture; they need a rest period known as after-ripening, which may be several weeks or months in length. The forget-me-not is an example.

Temperature is a rather common block to germination. Most seeds will not germinate when the temperature is low. Some other seeds will not start to germinate at high temperatures. And some seeds, even though they germinate under relatively high temperature conditions, first require exposure to near freezing before germination will begin. Rose and forget-me-not seeds are classical examples.

Aeration is another germination block. Some seeds will germinate under water, but most will not. They need air along with moisture, a damp aerated seeding medium.

Then there is light. Most seeds are not influenced by light blocks as by other blocks. But many, like begonia, columbine, cineraria, feverfew, and kalanchoe, need light to germinate. Such seeds should be planted on top of the soil, with little or no covering.

Research into starting seeds to grow has recently shown that the red portion of the visible spectrum stimulates germination. However, far-red light, on the boundary between red and infrared, is capable of reversing this stimulation of red light, and thereby inhibits germination. This reversal is itself reversed when followed by red light. It is always the color of the final light exposure that is decisive. We know this happens, but the reason remains a mystery.



Who could believe that a thousand kinds of nuts in this world are hunted and eaten by hungry people and that without them many would have starved to death?

But it is true, according to Edwin A. Menninger, D.Sc., in his new book, *Edible Nuts of the World*, published by Horticultural Books, Inc., Stuart, Florida, 175 printed pages, well illustrated, \$16. It is a very interesting and instructive book.

There are hundreds of millions of people, Menninger says, who have no corner grocery store to run to, who have no refrigerator, who have no cow, but who do have a lot of hungry children. They are faced every day with the necessity of getting food into their dwelling to pro-

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vide a family with nourishment, and they have learned by experience that nuts are their major source of fats and protein.

As the World's population explodes, the available supply of natural foods decreases proportionally because nobody plants nut trees except for a handful of commercialized items, like pecans, filberts, English walnuts, Macadamia, coconuts and such.

Commercializing reduces the nut supply. Some nuts like those from the African Oil Palm are edible but they are also a major source of oil used in the manufacture of soap.

As the commercial oil industry grows, the supply of edible nuts from these trees diminishes, and families that had depended on them for food have been forced to turn to other sources. Of course, there are nuts now to turn to, but starvation is somewhere down the road.

Millions of people who are hungry, turn avidly to peanuts and other beans (which are classified as nuts in the book because you shell them) to catch up with their supply of fats and protein.

They can grow some of these in their own gardens when the neighborhood supply of other nuts is getting low and exhaustion threatens. In southwest Africa the common peanut supplies 80 per cent of the fats and protein in the diets of the people there.

They have no meat, except an elephant now and then. There are no cattle because there are no ranges to graze.

Acorns are not ordinarily included in popular lists of nuts, though they are edible morsels in hard shells and have an important place in this book. The fruit of many species and varieties of oaks, acorns have been a food from prehistoric times but never have won a place for themselves in modern nut growing. They are planted in Europe for the dual purpose of animal food and for timber.

The Indians in North America, especially in the Southwest, leach out the bitterness of bitter species from the kernels.

Perhaps one of the best of all the edible acorns comes from the chestnut oak, found native in eastern America as far north as Hudson Bay. The largest of the acorns of this species are an inch and a half long, a starchy nut much like the chestnut, not a rich, oily nut as the hickory or the walnut. They are sometimes roasted like chestnuts.

The commercial use of the acorn in this country is entirely out of the picture. "Our city markets have lost a taste for natural things, preferring food that is sterilized, devitalized and put up in pretty packages with fancy labels," Menninger says.

What will happen when the population doubles and triples, and there is not nearly enough food to go around, remains to be seen.

Filbert, beech, oak and chestnut all grow wild in America, different kinds in different places. Hazel nuts may be eaten with no preparation other than removing the husk and shell, or they may be beaten to a powder and used like flour to make a filbert bread which is said to be delicious.

Chestnuts must be tops among the nuts of the world. The American chestnut was virtually wiped out by a blight in the early years of this century (there is now hope it may be restored). But today the Chinese chestnut is stepping in to become the chief commercial form of this favorite fruit, with great promise for the future.

Chinquapins are small, resembling chestnuts and are relatively hard to shell from the spiny burs. They are sweet, more palatable than chestnuts, and were prized as food by the Indians and early Americans. They are eaten raw, roasted in the shell and used similarly as chestnuts.

Ten kinds of beech nuts are found in the north Temperate Zone. In character of shell and in flavor of kernel, beechnuts greatly resemble the chestnut. Owing to the tediousness of separating the kernel from the shell, these nuts are not so largely harvested as undoubtedly would otherwise be the case.

The 450 kinds of acorns that fall from that many different kinds of oaks, useful, valuable monarchs of forests all over the world, are highly popular with squirrels, and a lot of them are eaten by people. The Indians gathered and stored quantities of them which were ground into meal and baked into an unleavened pasty, nutritious bread. The tannin, which causes the bitter and astringent taste in raw acorns, was removed by soaking in water and filtering, or by boiling and leaching with ashes. Acorns were also eaten roasted. As a rule, acorns of the species in the white oak group are less bitter, and better for food than those in the black oak group which mature in two years instead of one.

The fruit of the ginkgo considerably resembles that of the native persimmon in color, size and character, but differs from it in that the ginkgo flesh is of a disagreeable odor. "The ginkgo is never eaten by Americans because in ripening the hull of the nut stinks to high heaven, but in China when the hulls fall off, the Chinese pick them up, paint them bright red and use them strung in festoons as decorations at weddings. Then they crack the nuts and eat the contents which have no odor. No American gets that far," Menninger says.



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