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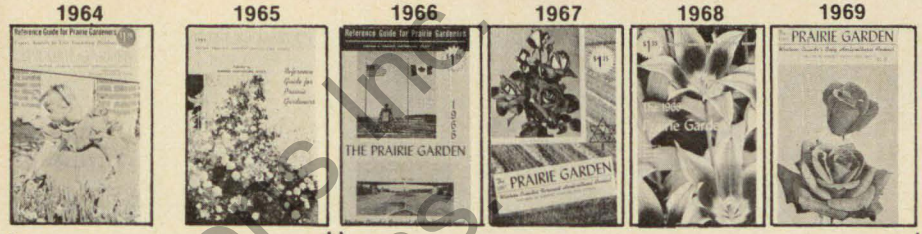

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Lois Wilson, garden editor of Chatelaine Magazine and author of several garden books makes the following statement:

"Your superb horticultural yearbook, The Prairie Garden, has the most up-to-date yearly information of any publication on the continent. Its focus on the home gardeners problems in the midwest makes it especially valuable and the I-was-there quality of its reporting makes it practical and personally interesting to all prairie gardeners. My own research constantly takes me into not only your lately published issues, but well back into your early years and I find it all pertinent, accurate and thoroughly understanding of the problems of gardening on the prairies.

"Lucky prairie gardeners, to have not only this year's issue in hand but future ones to look forward to and back numbers to round out their files."

Now let's follow this up with these homey comments from our readers:

I have the 1969 Prairie Garden. Please send me the five back copies still available. I didn't know there was such a good publication for our western area. Mrs. G. J. F., Grand Centre, Alta.

I have all five copies of The Prairie Garden 1964-1968 and may I be so lucky as to get a 1969 edition. M.B.A., Williston, North Dakota

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These indexes list all subjects handled in the Prairie Garden for the years as shown, under eleven general headings and twenty-one specific classifications. The year and page number of each article is also shown. This should be a *MUST* for ready reference to your gardening problems.

No. 1 — 1946-1962 (inclusive) 613 articles.
No. 2 — 1963-1965 (inclusive) 212 articles.
No. 3 — 1966-1968 (inclusive) 238 articles.

The Prairie Garden

WESTERN CANADA'S ONLY GARDENING ANNUAL
Published by
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Winnipeg, Manitoba 27th Annual Edition February, 1970

The Prairie Garden, 1970

Each year February brings another issue of the Prairie Garden, each different, each complimentary. We strive to bring to you up-to-date factual and interesting information having direct practical application to gardening in our Northern Great Plains area. We also try to cover as many phases of horticulture as possible. We, however, do suggest that you treat each book as a part of a whole, and build up a Prairie Garden Reference Library. You will then be able to turn to your Prairie Garden's for much of the information you require for your gardening pursuits.

As a special feature this year we wish to commemorate Manitoba's Centennial Year, for in 1870 Manitoba was created as the fifth province of Canada. To do this we have extended our publication to one hundred and twenty-eight pages and have devoted sixteen pages to honor this province's one hundredth birthday. Eight pages are in full color covering photographs of plants which together with our front cover made up the eleven Manitoba Centennial Plantings.

We also wish to express our sincere thanks to the many western horticulturists — both professional and amateur — who, as part of their service to horticulture, supplied us with the topical information which makes this book the valuable contribution it is to western gardeners.

The support of our advertisers is also gratefully acknowledged. We further believe that their messages also enhance the value of our book.

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Cover Picture — 'Kelsey' — A new double flowering Rosybloom Crabapple to honor Manitoba's Centennial. This outstanding ornamental is the only rosybloom cultivar on the prairies with beautiful semi-double flowers of a lovely bright pinky-rose hue. The flowers are about two inches across with ten to sixteen broad petals each, profusely covering the whole tree, followed by bright, dark red fruit of about three-quarters of an inch in diameter. The tree is upright, reaching a mature height of about twenty feet.

'Kelsey' crabapple was developed by the C.D.A. Research Station at Morden, Manitoba in 1969, and will be available from Canadian Nurseries in 1970.

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Seldom Grown Ornamentals Hardy In Calgary

Al Golden

Calgary where the prairies meet the foothills at an elevation of 3500 feet above sea level, has perhaps the shortest growing season and more varied weather than any other major Canadian city. The close proximity of the mountains limits the frost free period to an average of 90 days. The relatively high elevation results in very cool nights during the growing season consequently slowing growth. The warm chinook wind common in this area rapidly removes snow cover, fluctuates daily temperatures, causes winter growth and sap rise, results in untold damage to introduced species of ornamentals. In addition, Calgary also suffers from periodic early fall and late spring frosts, where it is not uncommon to have near zero temperatures in late September and early May. Experiments over a twenty year period in these adverse conditions, have found a reasonable number of ornamental trees and shrubs that can be grown here. The species listed below may be common and easily grown in other parts of the Prairie Provinces, but are not grown in quantity or used to the best advantage in the Calgary area. Most varieties are available through local nurseries or found growing wild in the surrounding countryside. When making a collection of these species it should be borne in mind to obtain specimens closest to the Calgary area. Some winter damage may occur in the following species, but with some care, and a little luck, they will be worthy of any effort made in growing them.

Conifers:

Most plants in this category are evergreen, make excellent foundation planting and superb for winter effects. Because these species retain their leaves during winter, transpiration takes place throughout all seasons, adequate water supply to the root system must be available always. Protection from dog degradations is a must.

Yews:

Japanese Yew *Taxus cuspidata nana*. Only this dwarf species is hardy in Calgary and then only in a sheltered, well watered, protected area. The dark squarish needles and blocky appearance of this evergreen is worthy of trial.

Firs:

These species are not used in the Calgary area at all, although both are natives, and can be grown quite successfully.

Balsam fir *Abies balsamea*. The soft needles and pyramidal shape make for a lovely ornamental, specially when young. The aromatic odour and dark blisters add to its beauty.

Rocky Mountain Fir *Abies lasiocarpa*. Similar to above but with a paler bark.

Douglas Fir *Pseudotsuga menziesii*. These beautiful trees are almost native to the Calgary area, and can be grown with little effort. Very ornamental as single specimen grown in the open.

Larches:

These conifers are deciduous, losing their leaves every fall. They color a pale yellow and are very effective, not only in fall but in summer with their soft pale bluish needles, pyramidal growth, lacy effect and in addition when mature, have pale purple flowers. The introduced European species

have larger, softer leaves and appear much fuller. These species although difficult to transplant, are very easy to grow when established and should be used in more landscapes.

European Larch *Larix decidua*, pryamidal, dark grey bark, purple flowers.

Siberian Larch *Larix sibirica*. Straight stem and short branches, flowers not as attractive as above species.

Tamarack *Larix laricina*. Although growing native in swampy areas, can be grown equally well on dry land. Not as ornamental as the European species.

Pines:

These long needled evergreens should be grown more intensively in larger areas. Although slow growing they are long lived and effective.

Five-needled or bundled pines

Swiss Stone Pine *Pinus cembra*. This species grows well in European Siberia and is adaptable to our conditions. Very slow growing but makes a large tree in time. Probably the most dense narrow pyramidal pine of all, and excellent for small properties.

Bristle-cone Pine *Pinus aristata*. A rare, bushy, small native of the high Colorado Rockies. Very resinous and perfectly hardy. Reported to be the oldest living tree in the world at over 4,000 years.

Two-needled pines.

Scots Pine *Pinus sylvestris*. A large rapid growing pyramidal tree. Care must be taken to obtain trees from Northern sources, as this tree has a wide geographical adaptation and produces many races some of which are not hardy here.

Austrian Pine *Pinus nigra*. Somewhat tender, dense, long leaved, pyramidal pine that with a sheltered and well watered site will do well.

Western Yellow or Ponderosa Pine *Pinus ponderosa scopulorum*. Only the species of this tree which is native to eastern British Columbia and North Dakota should be planted. A large, very long leaved, aromatic ornamental. The red bark is striking.

Spruce:

A number of species and varieties of this genus is commonly and extensively growing in Calgary and are very ornamental, brightening the dull days of winter. The following variety is scarce, relatively hardy and outstanding as a foundation shrub.

Dwarf Alberta Spruce *Pica glauca albertiana conica*. A very dwarf, slow growing compact pyramid of short bristle deep green needles. Very striking and beautiful. Unfortunately often other varieties of spruce are sold under this name.

Arbor-Vitae or Cedar *Thuja occidentalis*. This species and its many varieties are worthy of trial in Calgary. Many large specimens are to be found in older sections of the city but not grown enough. A sheltered and well watered site is a prerequisite for this species.

Juniper:

A large variety of this genus are perfectly hardy in Calgary. Colors, sizes and shapes are variable in this group. The berry like blue cones are very attractive.

Common Juniper *Juniperus communis*. A low spreading native, dark green but bronzy in winter. Very adaptable and pleasing on hillsides and rock gardens.

Western Red Cedar *Juniperus scopularum*. A small tree native to the Rockies ranging in color from green to pale blue, pyramidal and spreading. Hardy.

Savin Juniper *Juniperus sabina*. Small mostly fan shaped shrubs, indispensable to foundation planting.

Deciduous Angiosperms

Willows:

Although not considered a good tree for city planting, and although grown extensively, but not highly recommended in landscaping, the following two species are of merit where space permits.

White Siberian Willow *Salix alba sericea*. Fast growing medium sized tree, grown only for its silvery leaves which are effective in the proper site.

Pussy Willow *Salix discolor*. Large shrub or tree with large silvery catkins in very early spring. Good for cuttings. Other varieties may be sold under the name of Pussy Willow.

Poplar:

Another undesirable group of trees, but one that does not spread or sucker and is very effective, follows.

White Poplar *Populus alba*. Round headed tree with maple like felty leaves, white on underside. The snowlike color in a breeze is spectacular. Difficult to start from cuttings.

Walnuts:

Large leaved, tropical looking half hardy, aromatic trees that although they do damage considerably in winter, recover rapidly and may be grown as an experiment. It is doubtful, because of the cool nights and short season that these species will ever set seed. In favorable autumns beautiful golden yellow shaded leaves occur.

Black Walnut *Juglans nigra*. Large leaved, striking tree which may act shrubby in Calgary conditions. Seems hardier than Butternut here.

Butternut *Juglans cinerea*. Coarser and not as attractive as above. More tender.

Manchurian Walnut *Juglans mandshurica*. Intermediate between the above species, more hardy, and makes a pretty, relatively fast growing tree in Calgary. Most satisfactory of the three species.

Birches:

Many varieties of these light barked trees are grown in Calgary. A species obtainable from western nurseries should be grown more.

Paper Bark China Birch *Betula albo-sinensis septentrionalis*. Pale orange bark is effective.

Alder:

Speckled Alder *Alnus incana*. This native of wet places, should be grown for its speckled bark, cleanliness and glossy dark leaves alone. Rare in city plantings.

Hornbeam:

The American Hornbeam *Carpinus caroliniana*. This shade loving eastern understory tree is very ornamental but rarely grown. It has a deep grey fluted trunk and turns scarlet in autumn.

Hazel:

Two varieties are grown as shrubs and the latter periodically sets small edible seeds.

American Hazel *Corylus americana*. Distinctive leaves that color orange, slow growing.

Beaked Hazel *Corylus cornuta*. Native to Alberta, similar to above, except for covering over nut.

Oaks:

These majestic trees which are long lived and hardy here, should be used extensively on boulevards, and park planting. They are altogether too

sparse in Calgary. They are faster growing than first believed.

Bur Oak *Quercus macrocarpa*. Large, wide spreading, deeply indented leaves, with corky branches. Sets seed in Calgary in favorable years.

White Oak *Quercus alba*. Clean, spreading tree, little known as yet in Calgary. A noble and majestic tree at maturity. May color red in the fall.

Mongolian Oak *Quercus mongolica*. A rare tree only in its infancy in Calgary. Appears hardy. The large, rosette set leaves color a gorgeous red in fall.

The above species belong to the white oak family, which develop acorns in one year.

The black oak group with its many varieties, that take two years to set acorns, as yet has not proven hardy here.

Hackberry *Celtis occidentalis*. May be grown as a substitute to elms to which it has a striking resemblance. Not as vase like in form, with berry like red seeds. One mature specimen is hardy here to date.

Mulberry:

Russian Mulberry *Morus alba tatarica*. A small fast growing shrub, not completely hardy. The rough three distinctive type leaves are an oddity, but this plant makes a fine ornamental. Has not set seed to date.

Barberry:

Care must be taken on acquiring these highly attractive shrubs, as some species are hosts to wheat stem rust.

Berberis vernae. A very beautiful hardy barberry, attractive in leaf, flower and especially in its showy fruits, which vary from a bright red to a pale blue.

Korean Barberry *Berberis koreana*. Very attractive, with yellow flowers, scarlet berries and a brilliant red fall coloring.

Golden Ninebark *Physocarpus opulifolius luteus*. When this shrub with its small maple like leaves is grown in the sun the golden color is very effective. It is less coarse and hardier than the much used golden elder.

Hawthorns *Crataegus*. This is a large group of small trees and shrubs many of which are hardy in Calgary. It is a group where a lot of cross breeding and experimenting should be carried out. The leaves, fall colors, flowers and fruits are distinctive and varied. Although mostly white flowered, pink and red colors have been introduced. Some have fruit that is edible, and certainly should be grown for bird food alone. Unfortunately unless kept sprayed, the pear slug plays havoc with the leaves. The following are

hardy and make small ornamental trees in Calgary.

Crataegus mollis — Pyramidal, soft leaved, large red fruits.
Crataegus chrysocarpa — Small spring, native, red fruits.
Crataegus succulenta — Small tree, red pulpy fruit.
Crataegus chlorosaroa — Pyramidal tree, black fruit.
Crataegus sanquinea — Small tree, bright red fruit.
Crataegus mordenensis 'toba' — Small tree, pink flowered, and many others.

Mountainash:

Another large group that in future will lend itself to hybridization. Different flowering habits, colored fruits, and varied leaves will certainly be developed. The following two species, not too well known are perfectly hardy in Calgary.

Showy Mountainash *Sorbus decora*. Usually a shrub but can be grown as a round headed tree. Shiny leaves and large flowers and fruit.

Sorbus pohuashanensis — Small tree, red berries, distinctive.

Apple:

Many ornamental apples for flowers and fruit are available, for the Calgary area. The numbers are too large to list in this article. However, the following species is outstanding.

Japanese Crab *Malus floribunda*. Very floriferous, seashell pink flowers, every year with small attractive bright red fruit. A lovely ornamental.

Plums and Cherries:

As above a much too large list available to record here, but the following are hardy and should be present in most gardens.

Sloe *Prunus spinosa*. Small spiny shrubs with outstanding small blue fruits.

Manchurian Plum *Prunus salicina*. Beautiful white odoriferous flowers before leaves and sets edible fruit. One of the few that does so in this area.

Apricots *Prunus mandshurica and P. sibirica*. Both species similar, delicate pink flowers, spreading tree with reddish bark and pale orange colors in fall. Has not set fruit here.

Amur Chokecherry *Prunus maackii*. A fine fast growing white flowered, yellow fall leaved tree, with bronze peeling bark. Effective in all seasons. Far superior to the Mayday tree. Has a tendency to crack in cold weather but does not seem to affect the tree.

Lead Plant:

A suitable, fairly rare compound leaved species of the pea family. Suited to dry sandy locations, with a pleasantly scented purple flower. The following species are hardy.

Amorpha canescans — Large shrubs up to 5 feet.
Amorpha nana — Dwarf, grey leaved.
Amorpha fruticosa — Largest of all, purple blue flowers.

Salt Bush *Halimodendron halodendron*. Beautiful pale lilac, pea-like flowers; grey green, compound foliage. Bladder like fruit. Makes a very good small tree when grafted on *Caragana arborescens*.

Caragana:

A well known genus, perhaps the largest contribution to wind breaks for prairie farms. Introduced from western Asia. Many species of this genus exist, some of which are scarcely known. Two of these, however, are very good ornamentals.

Caragana frutex. Shrubs with bright yellow flowers, which can be used as a substitute for the non-hardy laburnums.

Tidy. A small compact truly spectacular, round ball-like shrub introduced by Morden Research Station.

Box:

Korean Box *Buxus microphylla koreana*. A dwarf small leaved shrub

that with snow cover remains evergreen all year. Needs a protected location.

Sumacs:

Coarse shrubs very fast growers that even though winter killed, grow large stems from the root. The leaves are very large, compound and color reddish in fall.

Staghorn Sumac *Rhus typhina*. Large shrubs, with velvet stag horned shaped branches. In a sheltered location, sets a pyramidal red fruit, which remains all winter.

Smooth Sumac *Rhus glabra*. Shrubs with smooth compound leaves and yellow colored fruit.

Ill-scented Sumac *Rhus trilobata*. Small shrub native to dry hills of South Alberta. Attractive in fruit.

Spindle trees:

A varied group of shrubs and trees which are not grown near enough throughout the prairies. Most species are highly colored in fall. The fruit in some is unique, colorful and attractive.

Burning Bush *Euonymous nana turkestana*. Small narrow leaved semi-evergreen to dark crimson colored fall leaves. Japanese lanterned, bright red fruits.

Winged Spindle Bush *Euonymous alata*. Winged branches, single leaved, scarlet berry-like fruit, scarlet fall foliage.

European Spindle Tree *Euonymous europaeus*. Small tree, leaves remaining green late in fall. Compact small ornamental.

Winterberry Euonymus *Euonymous bungeanus*. An Asian introduction, making a small tree, pale yellow coloring in fall. Attractive in fruit.

Maple:

Worthy of merit, although not completely hardy, is the Norway maple, and its varieties. Some of these varieties are making small trees in Calgary and they do have a large true maple leaf.

Acer platanoides — Green, large leaved, needs shelter.
Acer rubrum — Deep red leaves.

Horsechestnut

Ohio Buckeye *Aesculus glabra*. Hardy, sets fruit, large palmate leaves, yellow flowers and orange fall coloring.

Buckthorn:

A genus scarcely known here, care must be taken on obtaining these,

because they, like barberry, are hosts to wheat stem rust.

Dyers Buckthorn *Rhamnus tinctoria*. Shrubs to 3 feet, from Europe.

Rhamnus pallasi. Spreading, spiny shrub from W. Asia.

Alder Buckthorn *Rhamnus alnifolia*. Low spreading native shrub.

Dahaurian Buckthorn *Rhamnus davurica*. Semi-hardy, glossy leaved Manchurian introduction.

Linden:

Small leaved Linden *Tilia cordata* a clean, flowering, glossy leaved tree, proving hardy here.

Mongolian Linden *Tilia mongolica*. Large leaved, fast growing clean tree not as hardy as above.

Tamarisk *Tamarix pentandra*. Lacy fern-like shrubs excellent for effect in very dry situation, pale pink flowers. Can be cut to ground each year.

Seabuckthorn *Hippophae rhamnoides*. A narrow leaved, silvery leaved, perfectly hardy, yellow fruited small tree. For fruit, both sexes should be planted. Substitute for Russianolive which is not completely hardy here.

Ash:

American ash *Fraxinus americana*. A large, fast growing tree, holding its leaves longer than green ash. Purple colored leaves in favorable falls.

Manchurian Ash *Fraxinus mandshurica*. A large, distinctive tree, with no color in autumn. Black buds.

European Ash *Fraxinus excelsior*. Some seedlings of this beautiful ash are proving hardy here. No autumn color, nevertheless an attractive ornamental.

Black Ash *Fraxinus nigra*. Large rounded ash, native to swampy areas of southern Manitoba but perfectly hardy here. Looks like a walnut tree, very attractive. Sold under different names.

Lilac:

A large genus of which many grow in Calgary. The Japanese tree lilac *Syringa amurensis japonica* is of medium size, very attractive tree with large white, late flowers, cherry like bark and slight purple fall coloring.

Viburnums:

A large genus of beautiful ornamentals which should be grown more extensively specially for their fruit, flowers and fall coloring.

Wayfaring Tree *Viburnum lantana*. Large woolly leaved shrub, deep colored red leaves, remaining late in autumn. Fruit changing from red to black.

Nannyberry *Viburnum lentago*. Small tree with smooth leaves, white flowers, blue-black fruits, brilliant fall coloring.

American Cranberrybush *Viburnum trilobum*. Shrubs with maple like leaves, white flowers, red fruits and deep crimson fall covering.

Viburnum sargenti. Similar to above, hard red fruits, perhaps most ornamental of all viburnums.

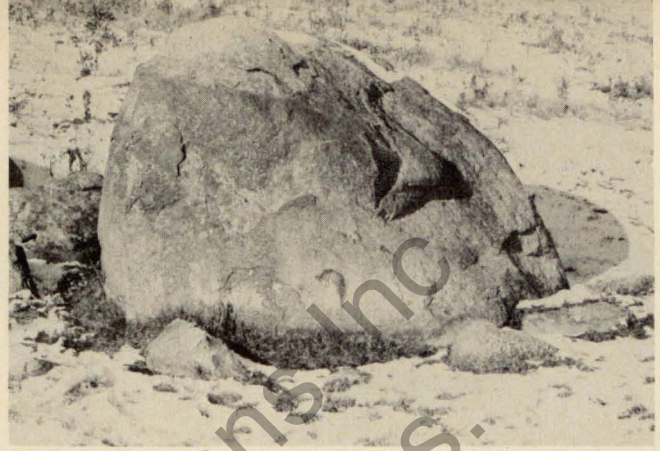
Snowberry *Symphoricarpos albus*. Large pearly white berries on a low shrub in early fall. Very effective.

Honeysuckle:

Another large genus of shrubs well known and grown in the Calgary area. The following two species should be grown as an addition to this lovely group.

Lonicera maackia podocarpa. A spreading, yellow white, flowered shrub with deep red fruits and leaves remaining green very late into the fall.

Dropmore Scarlet Trumpet honeysuckle. A hybrid climber, perfectly hardy, with orange trumpet-like flowers blooming over a long period. Introduced by Dr. F. L. Skinner.



Buffalo Rubbing Stones

H. H. Marshall

Buffalo rubbing stones are a part of Prairie pre-history that has been largely lost. When people are asked about them we find many reactions. The most common is "never heard of them". Some feel that they were huge isolated boulders where buffalo conducted some sort of mysterious rite.

Buffalo rubbing stones were scattered over much of the Prairies when the first white men arrived. These earliest pioneers undoubtedly knew what they were. Settlers who arrived after the buffalo had departed saw no significance in these boulders. Some were split for building material or just to remove them from the land. Today they are found only in neglected areas. They are easily moved by modern equipment and are rapidly disappearing.

There is nothing mysterious about buffalo rubbing stones. Anyone will agree that a buffalo robe must have been a marvelous thing for a large animal to wear in January. However, when the first hot days of spring arrived it was much less comfortable, particularly when the buffalo was sharing it with assorted lice and ticks. It became a matter of some urgency to remove offending patches of hair and wool.

Since much of the Prairie was treeless, suitable rubbing places were relatively few and very well attended. This may still be verified in that a large stone with near vertical sides that could be used for rubbing is often surrounded by a saucer shaped depression. The soil was trampled to dust and blown away in dry weather and carried as mud on feet and bodies in wet weather. These depressions are often two feet deep today after 100 years without their main client.

Further eividence of their long-time use is the fact that certain faces and corners are polished even on hard granite. Often only one face was vertical enough to contact well with an itchy body and the depression and polish is on one side only. The white man's cows also find these are good places to rub, and keep touching up the polish left by their departed cousins. Some surprisingly small stones were used, if they were of the right shape. Stones two feet high show evidence of use while large boulders with sloping sides do not.

Buffalo rubbing stones are fast disappearing from the land. If this link with the untamed Prairie past is to be preserved action should be taken immediately. A few might be marked by signs where they are suitably located. Others could be moved carefully to locations in parks where they could be kept as exhibits. Does your park have a place for a conversation piece?

The Blooming Desert

Lawrence A. Stuckey

Scorched hills blasted by winds carrying sand which drifts in dunes and ridges, and when the wind abates a hot dry stillness, almost silent, settles over the land. So it has been for many centuries, useless for cultivation, unprofitable as pasture, the settlers passed it by, this worthless land, this desert.

By a strange irony of nature we are speaking of a very small desert in the midst of a vast oasis, in the heart of the most productive and densely settled southern quarter of Manitoba, a land so bountiful that over production of the essential foods of life creates a problem. Until recently most Manitobans knew nothing of this strange area which had been isolated because there had been no reason to build roads into it. Only on foot or on horseback could one explore it.

My first visit to the Baldhead Hills in 1936 required three days, by bicycle and on foot from Carberry. It is easier now, you get glimpses of it from the new Carberry to Glenboro highway and many have been enticed to park their cars and go exploring. This created the interest and popular demand that persuaded our government to designate a large area as Sprucewoods Provincial Park. Across the river J. C. Campbell of Glenboro opened his section of land to the public and made trails so it can be enjoyed. Your taxes pay for Sprucewoods Park while J.C. pays taxes on "Chickadeeland", from which he derives no revenue — voluntary contributions help. Unfortunately, the barren hills just west of Sprucewoods could not be included in the park as they are under lease to the military, but military matters being temporary and sandhills more permanent, we can hope the park will eventually be extended.

At any season the park is well worth a visit, it is particularly attractive to me in early spring as the southerly slopes of the hills are first to react to the warming sun and masses of prairie anemone break forth, to be followed by white musineon and yellow sand bladder-pod, while decaying remains of snowdrifts still linger in the deep ravines.

These are followed by a profusion of yellow buttercups, red avens, silver-leafed cinquefoils and the rarer but exotically beautiful Townsendia with its large daisy-like flowers, white above and pink on the underside. By midsummer there is little colour on the dryest hilltops except for our two cactii, the pincushion with its ring of pinkish purple flowers, and *Opuntia fragilis* with large yellow-orange blooms. Also there is the new growth of the ground cedar spreading over the sand in all directions like the tentacles of an octopus, rooting as they grow and without which these hills would literally blow away.

At this season we appreciate the miracle of the area, the profusion of great springs which burst forth from the foot of the hills, a deluge of water of such superb quality we city-slickers bottle it to take home. Don't overlook the beds of English watercress along the spring brooks, all descended from seeds sprinkled in springs further west by an early homesteader. It really adds to a summer salad and harvesting a few leaves won't harm the plants.

Most of our native trees will be seen along these ravines, small oaks high up, and we go down to the water through aspen, white birch, elm, maple and spruce and sometimes find tamaracks towering from the marshy bottoms, all contributing to the shading canopy required by a beautiful profusion of forest plants, columbines, lily of the valley, sarsaparilla, honeysuckles and dense groves of waist high ostrich ferns. A walk through grassy hollows is made colourful by prairie lilies, gaillardias, wallflowers, three different coloured species of penstemons, and several of loco-weeds.

Throughout the summer we have a variety of wild fruit, of which some are edible and very palatable, but all add interest and colour to the landscape. Common to the area are saskatoons, strawberries, pincherries, chokecherries, nannyberries, cranberries, sandcherries, ground cherries and a few wild plums.

There are a number of easily accessible high hills which provide views over wide expanses of country with diverse topography and ecology. The slopes dropping sharply toward the flood plains of the Assiniboine are scarred by long deep ravines, many of which carry the flow from springs all summer long, and you will note that some of these have been dammed by beavers, making deep pools in the edge of the forest and marshes out toward the river. Sitting quietly on a hilltop, especially toward sunset of a still summer day, you are sure to be aware of the abundant wildlife around you. Rabbits, squirrels and probably woodchucks, will be active around you, almost certainly deer will come out of the woods close by from which you will hear grouse beating out their mating calls, sounding like old gas engines that are reluctant to start. Out on the marsh beaver may be seen swimming off to their night's work, and as darkness falls you will be startled by the sudden barking and howling of the coyotes. There are two rare animals that should be watched for during the heat of the day. The western hog-nose snake, which looks much like a rattler, it is quite harmless, but bluffs so fiercely most people will leave it alone; and the prairie skink, our only true lizard, so long isolated from other communities it has evolved into a true sub-species, and may be seen around springs or sandy banks near them.

To appreciate this land you will have to explore it and to fully appreciate it you will have to walk at least a little way. The sound and even the odour of your car will diminish your opportunities to observe its wildlife. Remember also that this is a fragile land and its ecology is vulnerable to many hazards. Your garden will provide flowers in abundance for your living room table but out here only one seed in millions falls into the critical combination of soil, moisture and warmth to prosper. Down in the hollows the insects swarm,

so carry insect repellent in the large economy size container, but do not petition the custodians to spray the whole country, you can wash this poisonous material off your skin in a moment. To those beautiful nighthawks whirling gracefully overhead, healthy mosquitoes are the staff of life. The very thought of fire here makes one shudder. An area a few miles away will not recover in our lifetime from a fire a few years ago. The fire could have been started as well by a cast away pickle bottle lensing the sun as by a cigarette butt.

As Manitobans we should appreciate and enjoy this beautiful natural area, and while doing so, take care of it for those who will follow us; they will have even fewer opportunities to see nature undisturbed than we have.

Plants for Dry Areas

G. S. Reycraft*

Annuals for planting in very dry areas include Alyssum, California poppy, coreopsis, marigolds, zinnias and portulaca. All of these may be grown from seed sown outside in early May

When they are large enough, thin them out to three to six inches apart.

There are many perennials that will tolerate dry sandy soils. Most of them have thick roots or rhizomes that serve as reservoirs from which to draw moisture during dry periods.

Most typical plants are the bearded irises, in their countless numbers of varieties and color combinations, daylilies, which will withstand a great deal of shade and are obtainable in various tones of red, yellow, pink and buff; gaillardias — the blanket flowers of the dry prairies — and the Oriental poppy, a plant that actually grows best in a well-drained sandy soil.

Other outstanding perennials for dry soil and drought conditions are the ever popular sedums and sempervivums (the hens and chickens of common phraseology). You might also try yuccas, they are rather spectacular and are remindful of the Arizona and Mexican deserts. The small soapwood yucca *Yucca glauca* should grow well in most of Canada.

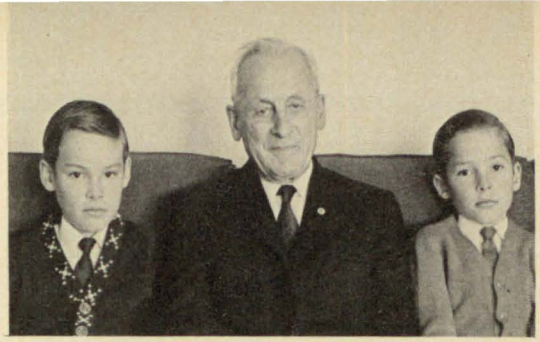
Good ground covers for dry sandy areas are the junipers. Two outstanding new cultivars of *Juniper hortizontalis* are 'Dunvegan Blue' and 'Prince of Wales'. Other older varieties of the same species with considerable merit are Waukeyan, Andorra and 'Douglasii', (See the 1969 Prairie Garden for more detailed information). We might also suggest the yellow sedum *Sedum acre*. They will cover an extensive area of dry slope in a very short time at a fraction of the cost of junipers.

Many cotoneasters sold by Canadian nurserymen will grow well in poor dry soils. One of the best is the Pekin cotoneaster *(Cotoneaster acutifolia)*.

The caraganas will also grow well in dry soils. The Common Caragana, *Caragana arborescens* although it will grow over ten feet makes an excellent hedge and one of the best shelterbelts while *Caragana microphylla* 'Tidy', a Morden introduction, with its fine leaf has an appearance all its own. And then there is Globe Caragana *Caragana frutex* 'Globosa' a beautiful little compact shrub of less than three feet.

The Siberian elm *Ulmus pumila* is a good tree for dry soils. It will grow fast enough to produce a fine specimen twenty to thirty feet high in ten years. The Scots pine *Pinus sylvestris* is also a good tree for very dry areas. It grows fast and has very few faults.

*Credit must go to A. R. Buckley, the Plant Research Institute, Ottawa for much of this information.



Mr. Pow with two grandsons.

G. L. Pow – Awarded The Certificate of Merit, 1969

D. R. Robinson

At the 1969 convention of the Saskatchewan Horticultural Societies' Association, the Certificate of Merit was awarded to G. L. Pow of Saskatoon. This Certificate is awarded to non-professional gardeners who have made an outstanding contribution to prairie horticulture.

Mr. Pow was born at Vittoria, Norfold County, Ontario in the 1880's. Hearing the call, "Go west, young man", he arrived in Saskatoon in April 1911, where he has remained until this time. He worked for a few years with the Royal Bank of Canada and later with the International Harvester Company. Then in 1918 he joined the Lands Department of the C.P.R. and eventually became an Inspector with this department.

In 1918 and again in 1919, Mr. Pow assisted in setting up a small display of locally grown apples and crabapples in the office window in Saskatoon. These fruits (probably among the earliest grown in the city) were from the garden of Professor T. N. Willing, University of Saskatchewan. They were the varieties Blushed Calville and Florence. As a result of his contact with Professor Willing, and having come from Ontario, the land of apples, Mr. Pow became interested in the possibilities of fruit growing on the prairies. In 1926 he planted a number of fruit trees in his home garden. These included Blushed Calville, Hibernal, Haralson and Pine Grove Red apples; also Florence, Transcendent and Tony crabapples. (Two or three trees of the original planting are still growing today.) A few years later Mammoth, Ojibwa and Pembina plums were obtained, also hybrid cherries and red and black raspberries. It is of interest to note that these fruit trees were obtained, for the most part, from the Boughen nursery and Pine Grove nursery in Manitoba. Eventually, Manchurian and Scout apricots were planted, also the large fruited Whitesmith gooseberry. All of these plants have fruited with a fair degree of regularity in this urban orchard high up on the bank of the Saskatchewan river.

While serving with the C.P.R. for 37 years, mainly as land Inspector, Mr. Pow travelled widely throughout the province. It was during this period that he probably made his greatest contribution to prairie horticulture. His quiet enthusiasm was contagious and without doubt many farmers and others decided to plant some fruit trees after talking to George Pow.

Other items about Mr. Pow could be mentioned. He has just completed 40 years as a director of the Saskatoon Horticultural Society. He has been a consistent supporter of the Provincial Fruit Show since it was started in 1944. Needless to say, he has won numerous prizes at both the local and provincial shows.

In addition to being a pioneer fruit grower, Mr. Pow is a community minded citizen. He is still an active church worker. He was awarded a Certificate of Merit by the Masonic brethren for faithfully visiting at the local hospitals for many years and he has been recognized for his support of the Shriners' Hospital for Crippled Children.

Fragrance In The Garden

Dr. W. R. Leslie

"A man who makes a garden should have a heart for plants that have the gift of sweetness as well as beauty of form and color," is the observation of William Robinson. Most people will rate fragrance as one of the distinctive attributes of ornamental plants, both outdoors, and indoors in pots and planters. Not all kinds of plants possess that virtue, nor do all varieties within a species dispense perfumed volatile oils into the atmosphere. There may be wide differences in both quality and quantity of aroma between sister plants. A notable example in hybrid tea roses is the almost scentless but magnificent Peace in contrast with many kindred varieties with deeply enjoyable scent. Tropicana, Crimson Glory, and Mrs. Sam McGredy are representative of those with rich fragrance.

The rose is a good subject on which to make some further observations. Some varieties are impressively fragrant only at some parts of the day and, to be fairly rated, tests should be made throughout the day. Traces of perfume should have some score while rich fragrance should be credited highly. Furthermore the nature of the fragrance differs from the rich old time garden rose of Mrs. John Laing, a hybrid perpetual, and Rosa Centifolia, through the cherished Sweetbrier or Eglantine with scented leaves as well as flowers, and our own prairie Wild Roses, to the diverse odors found in garden hybrid roses, — tea, musk, fruity, violet, lemon, bergamot, honey, pine, and others.

In nature the purpose of fragrance is to attract insects so that the flowers will be pollinated. Moths are important in this process and many of them are active at night. Thus a large list of plants are scented in the evening after being odorless during warm sunny hours of the day. As further aid to attracting night-flying insects the flowers are mostly luminous light colored, including white. In this group of night-scented flowers are Nicotiana, Evening Primrose, Bouncing Bet, Dames Rocket, Moonflower, Night-scented Stock, and Yucca.

Fragrance depends upon a number of factors, — humidity, heat, light, air currents, height of plant, and season of the year. It is most general in springtime when so many woody plants are flowering.

The nature of scents varies greatly. Among the classes that have been suggested are — sweet, spicy, honey, aromatic, heavy, sprightly, dainty, pungent, disagreeable.

Degrees of scent likewise vary widely. Tuberose, Paperwhite Narcissus, Hyacinth, Heliotrope are heavily scented, while many kinds are of medium power, and a great many are sweetly but faintly scented. In this last class come Blazing Star, Ageratum, Sweet Sultan, Sweet William, Scabious, Candytuft, Sweet Alyssum, Ground Clematis.

Disagreeable or ill-scented plants are Skunk Cabbage *Symplocarpus foetidus*, Carrionflower *Stapelia*, Codonopsis, when the flower is crushed; and Giantarum *Amorphophallus*. Among the weeds, Stinkweed deserves its common name. Other plants give off odors that are pungent and unpleasant to the senses of some people. In this category are Marigolds, some Chrysanthemums, Tansy, and Artemisias.

All-time favorites include Sweet Peas, Carnations, Wallflowers, English Violet, Roses, Mignonette, Stocks, Pinks, Evening Primrose, Nicotiana, Heliotrope, Nasturtium, Woodruff, Common Lilac, Roses, and Rose Daphne.

Fragrance may come from the flowers; leaves particularly when brushed against or bruised; buds as Balsam Poplar and Balsam Fir; seeds and

seed pods as of the Gasplant, and of Coriander *Coriandrum* the fragrance of which increases with age, and Lavender. Mention must be made of aromatic gum resins which played such a big role in early commerce because of their use for burning as incense. The two groups, of several species, are Frankincense *Boswellia;* and Myrrh *Commiphora,* stunted shrubs of Arabia. The resins were important in making of perfumes.

American Indians appreciated scenty fragrances. They revered Arborvitae with its aromatic leaves. Sweet Grass *Savastana odorata* was used as perfume and burned as incense at rituals. Seeds of Aquilegia were used as a perfume, particularly by the bachelors. Seeds needed crushing to expose the oils. They were chewed into a paste which was spread among the clothes. The scent was most potent when dampened, as by evening dew or rain.

Plants esteemed for FRAGRANT FOLIAGE:

Lemon Geranium *Pelargonium limoneum*
Rose Geranium *P. graveolens*
Nutmeg Geranium *P. odoratissimum*
Pepermint Geranium *P. tomentosum*
Sweetbrier or Eglantine
Many members of the Mint Family including Lavender, Rosemary, Thyme, Sweet Marjoram, Mint, Peppermint, Catnip *Nepeta Cataria,* Russian Sage *Perovskia atriplicifolia,* Beebalm Monarda, Balm *Melissa,* and Basil *Ocimum.*
Gasplant *Dictamnus.*
Artemisia, or Wormwood, in variety.
Fragrant Sumac *Rhus aromatic a.*
Sweetgale *Myrica* in acid soils.

FRAGRANT FLOWERS in the BORDER: Perennials:

Acidanthera *A. bicolor* a tender plant treated as the gladiolus.
Auricula Primrose *Primula auricula.*
Babysbreath *Gypsophila.*
Beach Wormwood *Artemisia stelleriana*
Beebalm *Monarda*
Bouncing-bet *Saponaria*
Carnation *Dianthus caryphyllus*
Catnip *Nepeta mussini*
Cinnamon Fern *Osmunda cinnamomea*
Columbine *Aquilegia*
Costmary *Chrysanthemum balsamita*
Daylily *Hemerocallis* — some varieties.
Evening Primrose *Oenothera*
Gaillardia — a long blooming native.
Garden Heliotrope *Valeriana officinalis*
Gasplant *Dictamnus*
Golden Marguerite *Anthemis tinctoria*
Iceland Poppy *Papaver nudicaule*
Iris — various
Lavender *Lavandula* — somewhat woody.
Lemon Balm *Melissa*
Lilies *Lilium* — various
Lily of the Valley *Convallaria*
Lupine *Lupinus*
Mint *Mentha*
Musk Mallow *Malva moschata*
Peony *Paeonia* — various
Pink *Dianthus*
Plantainlily *Hosta*
Polyanthus Primrose *Primula polyantha*
Rockcress
Rosemary *Rosmarinus* — tender, shrubby evergreen
Southernwood *Artemisia abrotanum* — shrubby base
Sweet Marjoram *M. hortensis*
Sweet Woodruff *Asperula odorata*
Tansy *Tanacetum vulgaris*
Violets *Viola*
Yarrow *Archillea millefolium*

AQUATICS

Sweet Fern *Acorus calamus*
Waterlily *Nymphaea*

BIENNIALS

Sweet William *Dianthus barbatus*
Tufted Pansy *Viola cornuta*

BULBS and BULBOUS

Acidanthera
Basket-flower *Hymenocallis calathina,* or *Ismene* a pot plant
Freesia
Fritillary
Iris — in variety
Jonquil and some other Narcissus
Lilies — various
Lily of the Valley *Convallaria*
Tulips — some varieties
Grape Hyacinth
Hardy Amaryllis
Tuberose, with exotic penetrating fragrance

ANNUALS and Perennials treated as Annuals.

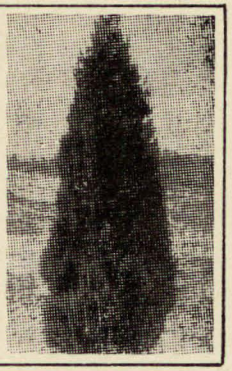
Blue Woodruff *Asperula*
Candytuft *Iberis*
Dames Rocket *Hesperis*
Datura — member of the Nightshade Family, somewhat poisonous
Flossflower *Ageratum*
Four-o'clock *Mirabilis jalapa* — tender herbaceous perennial
Geranium *Pelargonium zonale*
Marigold *Tagetes*
Mignonette *Reseda*
Moonflower *Colonyction* — tender vine
Nasturtium *Tropaeoleum*

TREES, SHRUBS, WOODY VINES

American Elder *Sambucus canadensis*
Arborvitae *Thuja*
Balsam Poplar *Populus tacamahaca*
Basswoods and Lindens *Tilia*
Clove Currant *Ribes odoratum*
Daphnes
English Hawthorn *Crataegus oxyacantha*
Fragrant Sumac *Rhus aromatica*
Honeysuckle *Lonicera* — many species
Junipers *Juniperus*
Lavender-cotton *Santolina* — used as an aromatic bedding plant
Lilac *Syringa* — many
Mockorange *Philadelphus* — many
Mountainash *Sorbus*
Nannyberry and Burkwood Viburnums
Pear *Pyrus*
Prairie Crabapple *Malus ioensis*
Riverbank Grape *Vitis riparia*
Roses *Rosa* — most species and many hybrid varieties
Russianolive *Elaeagnus angustifolia*
Russiansage *Perowskia*
Sagebrush *Artemisia*
Salttree *Halimodendron*
Saskatoon *Amelanchier*
Silverberry *Elaeagnus commutata*
Sweetautumn Clematic *C. paniculata*
Sweetgale *Myrica gale*
Trailing Arbutus *Epigaea repens*
Yellowstem Willow *Salix alba vitellina*

Fragrance is a quantity which appears to arouse a primal urge in animals other than man. It is deeply impressive to watch a house cat go into a state of complete ecstasy as it goes to a bed of Catnip or a patch of Mint and rolls, stretches, and squirms to express the misty aromatic oils from the plants into its fur, drenching it with exciting scent.

Fragrance was much valued in ancient gardens. It has played a role in romance and been featured in song and story. Prairie gardeners adopt pleasantly scented plants to impart a finishing touch to their home grounds.



Peony Notes

S. Sheard

Peonies are among the showiest of all perennial flowers and one of the easiest of all to grow. They will often thrive undisturbed in one location for fifteen years or more if they have a reasonably sunny exposure and aren't competing with tree and shrub roots for moisture.

Planting

Peonies are best planted in the fall, about the middle of September. Whether you are buying new plants or breaking up and dividing some of your own, try to obtain root divisions containing from three to five buds or eyes.

Dig holes large enough to hold the new root divisions without crowding and set them so that the buds or eyes which are present on the upper end of root are covered with not more than two inches of soil. Deep planting is a frequent cause of peonies failing to bloom properly.

Pack the soil firmly around the newly-planted roots and water thoroughly, also make sure that the plants do not become dry between planting time and freeze-up.

While peonies will grow on a wide range of soils the addition of peat moss or rotted manure to the soil before planting will prove beneficial. Sand can also be used to improve heavy clay soils. While it is often suggested that rotted barnyard manure is harmful to newly-planted peony roots, there appears to be no evidence to support this claim. However, the manure should be thoroughly mixed with the soil before the peonies are planted.

Where peonies are planted in groups, space them about four feet apart.

Culture

No special cultural requirements are necessary for peonies. Occasional watering may be needed to keep the soil from drying out but excessive watering can be harmful to the roots, particularly on heavy soils. The plants will benefit each year from an application of three tablespoonfuls per plant of 11-48-0 or 16-20-0 fertilizer mixed shallowly into the soil around the plants in early spring. Removal of all top growth to ground level and thorough watering should be practiced each year just before freeze-up.

Why Peonies Don't Bloom

The most common cause of failure to bloom is deep planting. Set newly planted roots so that the buds or eyes are not more than two inches below ground level.

Peony roots do best in a well drained soil and where good drainage is lacking, such as on heavy clay soils, extreme care should be exercised in watering. Excess water will damage the roots and result in poor development of buds and flowers.

While shade from the afternoon sun will prolong the life of peony blooms, planting in a location which is shaded for a large part of the day usually results in poor performance. If the shade comes from trees or shrubs growing nearby, competition from the roots of these plants will also prove detrimental.

Late spring frosts sometimes cause the peony buds to turn brown or black, but often this same condition is caused by disease.

If young stems die or buds turn brown and fail to develop, peony blight is the most likely cause. Diseased plants should be sprayed at weekly intervals in the spring with Captan, and affected parts of the plant removed and burned during the growing season. As a precautionary measure against disease, the leaves and stems of peonies must be removed completely and burned in late fall.

Bugs

Peonies invariably become infested with ants, flies and a multitude of other insects each spring about the time the buds begin to swell and show the first signs of color. Contrary to popular belief these insects are not harmful to the plant even though they sometimes appear in large numbers on the unopened buds. They are merely attracted by a sweet, sugary substance which exudes from the buds but rarely, if ever, do they cause any damage. On the other hand, the contention that the presence of ants is necessary for the proper development of peony buds is likewise untrue.

Occasionally ants become a bit of a nuisance by making hills and tunnels around peony roots, in which case they may be controlled by treating the infested areas with chlordane or sevin.

If aphids or plant lice infest leaves and stems, control them by spraying with malathion.

Varieties

While any number of varieties are available, some of the better ones for prairie planting are:

White: Festiva Maxima, Le Cygne, Alesea, Kelway's Glorious.
Pink: Sarah Bernhardt, Mons. Jules, Elie, Therese, Edulis Superba.
Red: Karl Rosenfield, Felix Crousse, Longfellow, Grover Cleveland, Phillipe Rivoire.

Most of the above varieties are readily available from prairie nurserymen.

Special Notes

Larger blooms can be produced on most peony varieties by disbudding. This is the removal, as soon as possible after they appear, of all 'lateral' or side buds on each stem, leaving only the 'terminal' bud or the main bud produced at the end of each stalk.

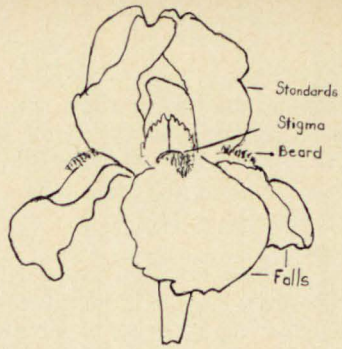
Peonies require support if they are to remain upright during the flowering period, particularly if strong winds and heavy rains occur. This may be provided by staking and tieing or, better still, by encircling the plant early in the growing season with special wire hoops or sections of ornamental garden fence.

Peonies make excellent cut flowers but for best results cut them in the early morning and before the blooms are fully open.

Like most other plants, peonies are likely to perform less satisfactorily if planted close to the house foundation.

If dividing some of your own plants, separate the old root into sections with a sharp knife, making sure that each section contains a good healthy portion of the thick fleshy root and at least three to five eyes. Remember again that the best time to divide and replant peonies is mid-September.

Growing The Bearded Iris



Dr. T. Johnson

Almost everyone grows a clump or two of the bearded iris. Few know about the vast improvement in this flower which has converted it into one of the aristocrats of garden flowers comparable in its fascination with the rose and the gladiolus — an improvement wrought by iris enthusiasts in Europe and North America who succeeded in the difficult task of crossing the ordinary bearded iris with exotic species from Asiatic countries. The result was a taller, larger-flowered bearded iris with a vastly improved range of color. This newer iris may almost be considered a new species because it has double the chromosome number of the older iris (48 instead 24 chromosomes in each plant cell) and is therefore not readily crossable with it.

The new iris fascinates the grower by the great size of flower and the extensive range of color which includes all the colors of the rainbow, including green. It should be noted, however, that in the so-called red varieties there is no true scarlet or crimson, all the reds having either a trace of orange or purple. The medley of color includes an endless variety of blends and of bicolors such as white-blue (white standards, blue falls), white-purple, white-yellow, white-pink and yellow-brown; but perhaps the most beautiful are the 'selfs' (standards and falls in the same color) which can be obtained in any nameable color.

From what has been said one might think that the older iris has no longer a useful place in the garden. That, however, is not so, especially from the Canadian point of view — for some things were lost in the development of the new iris. It is less hardy than the old; and it is less floriferous — that is, it has fewer stalks and hence less bloom per clump. However, given proper care, the more hardy of the newer varieties can be grown successfully in Western Canada.

We now come to the problem of growing these newer irises in the Prairie Provinces: where to get them and how to grow them.

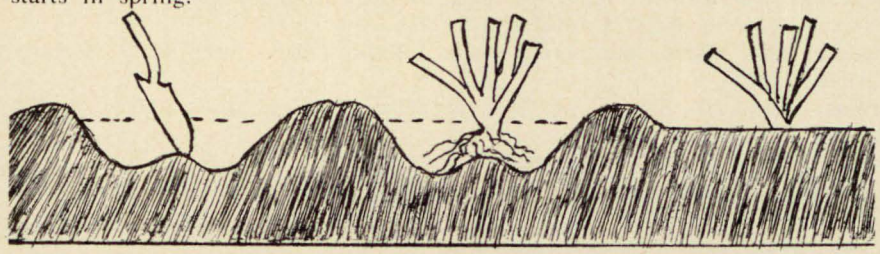
First, how to obtain the varieties. They are mostly sold by firms who specialize in iris. I know of no supplier in the Prairie Provinces, but Ferncliff Gardens, Hatzic, British Columbia handle a large number of varieties and sell only those that have proved hardy under Fraser Valley conditions. Sheridan's Nursery, 100 Sherway Drive, Etobicoke, Ontario, have quite a good list of iris. Among American suppliers of iris two may be mentioned: Shreiner's Gardens, 3265 Quinaby Rd., N.E. (R. 2), Salem, Oregon 97303, and Cooley's Gardens, Silverton, Oregon. Both produce catalogs with gorgeous illustrations in color. (It should be noted that if stock is to be imported from the United States the importer should apply to the Division of Plant Protection, Department of Agriculture, Ottawa for the necessary form to permit the importation of nursery stock). Because hardiness is such an important quality it may be best to order from Canadian dealers who are more likely than others to have eliminated tender varieties.

Since prices may range from twenty-five dollars down to about one dollar, the buyer should be warned that the price has nothing to do with the quality of the iris. When a variety first comes on the market it will sell at the high price. If it doesn't turn out to be a dud, it will a few years later sell at a reasonable price.

Having obtained the irises, the next problem is how to grow them. Location is important. Since they are sun-loving plants they should be grown where they have at least half a day of sun. They are not very particular about soil but prefer a well-drained, sweet (non-acid) soil. For a new planting, the soil should be dug, preferably some weeks before planting, and balanced chemical fertilizer added at the rate of about one ounce per square foot. As they dislike wet feet, they should be planted in a location with good drainage. Slightly raised beds are advisable.

Proper planting is important. The iris plant, as it comes from the dealer, is composed of a fan of leaves and the fleshy rhizome from which the roots spread out on both sides. The rhizome should be covered with not more than half an inch of soil but the roots should go deeper. The usual practice is to dig two slanting holes with a trowel, leaving a ridge between them. Lay the rhizome on the ridge and spread the roots downward on both sides and then cover with soil so that the rhizome is just under the soil but the roots have a covering of three or four inches. The soil should be well firmed and watered, and kept watered periodically if the weather should be dry. If two or more rhizomes are set to form a clump they should be planted from one to two feet apart.

Iris may be planted at any time from early July to September. In the Prairie Provinces it is probably best to plant in late July or early August to give the plants time to root properly before freeze-up. The greatest difficulty is perhaps to get a variety to come safely through the first winter. Losses are most often caused by heaving resulting from alternate freezing and thawing which may break the rhizome away from the roots and force it out of the soil. The iris firm of Schreiner's recommends mounding the rhizomes over with dirt before mulching with straw or weed-free hay. The mulch and the dirt mound must, of course, be removed when growth starts in spring.



In four or five years a clump of iris becomes so crowded that division is necessary. There are several ways of doing this. One is to dig up the whole clump, throw away all dead rhizomes and re-set healthy ones as described above after the leaves have been cut back to about six inches. If this is done, the soil should be re-dug and enriched with fertilizer if the irises are planted in the same spot. This is a satisfactory way of renewing a clump but there may be little bloom next year.

To avoid a year's loss of bloom some growers prefer to dig out the centre of the old clump where most of the dead rhizomes are and replace this area with fresh soil in which new rhizomes from the edge of the clump can be set. It should be noted that as the iris clump always spreads outward the most vigorous growth is at the edge. The new growth at the edge of

the clump can be dug out with a shovel with a minimum disturbance of the roots and re-set elsewhere. When I do this I avoid shaking any soil from the roots but remove any dead rhizomes before resetting. The purpose, of course, is to re-set without loss of bloom next year.

Anyone in the Prairie Provinces wanting to grow the newer tall bearded iris will wish information on the relative hardiness of the varieties now obtainable. Information from my own experience is not of great value because so many of the fine varieties I have found hardy under Winnipeg conditions are no longer listed by dealers who tend to concentrate on recently produced varieties. Anyone wishing to grow iris would do well to join the Canadian Iris Society. The membership fee is two dollars a year and should be sent to Mrs. Frank Garrity, 152 West 18th St., Hamilton, Ontario who is the membership chairman. The Society issues four newsletters a year and has a library from which members may borrow books and bulletins. Another source of information is the Plant Research Institute, Central Experimental Farm, Ottawa which periodically tests new varieties in their iris garden. A list of varieties rated highly in recent tests is given below. It should be noted, however, that these varieties, which have performed well at Ottawa, may not all be hardy in the Prairie Provinces.

The above has dealt only with the tall bearded iris. Of other iris suitable to our climate, mention should be made of the dwarf bearded iris, the Siberian iris, and the Spuria iris. The dwarfs come in various colors and range in height from seven to twelve inches. Most are reasonably hardy and extend the blooming season because of their earliness. The Siberians, mostly in shades of white, blue and purple, are very hardy and need little attention. They may be planted in either spring or fall. The Spurias, four to five feet high with blue or yellow flowers in early July, have a wide climatic tolerance, and some varieties are hardy in the prairie region. Like the Siberians they need little attention once they are established. None of these, however, fascinates the grower like the newer tall bearded iris does by virtue of the size and beauty of the flowers and their great range of color.

Footnote: Some varieties rated highly in recent tests at the Plant Research Institute, Ottawa.

Bicolors and bitones: (Falls and standards of different color) Carmel Sundae, Emma Cook, Pinnacle, Wabash, Whole Cloth.

Black, blue blacks and purple blacks: Black Taffeta, Deep Black, Edenite, Sable Night.

Blue: Allegiance, Blue Baron, Blue Sapphire, Catalina, Music Maker, Pacific, Panorama, Rippling Waters.

Copper, bronze and brown tones: Argus Pheasant, Copper, Halo, Native Chief.

Orange: Celestial Glory, Chinese Coral, Glittering Amber.

Pink: Esther Fay, Fleeta, Mary Randall, June Meredith, May Hall.

Near Red: Captain Gallant, Tomeco.

Rose or wine colored: Elmohr, Port Wine, Raspberry Ribbon.

Violet: After Dark, Amethyst Flame, First Violet, Violet Harmony.

Spotted plicata: Chinquapin, Dotted Swiss, Radiant Apogee, Ribbon Round, Rococo, Stepping Out.

White: Brilliant Star, Celestial Snow, Dancing Bride, Frost and Flame, Henry Shaw, Swan Ballet.

Yellow: Butterscotch Kiss, Golden Filigree, Golden Garland, Rainbow Gold, Techny Chimes, Temple Bells, Truly Yours, Ultrapoise.

Useful books on irises:

Garden Irises, American Iris Society, St. Louis, Missouri, 1959.
Irises, by Harry Randall, Copp Clark Publishing Co., Toronto, 1969.

POTENTILLA FRUTICOSA
LEFT: 'Coronation Triumph'
CENTER: 'Forrest'
RIGHT: 'Katherine Dykes'

Color out of Season

Donald G. Hoag

It is fall and one night there is a killing frost — the kind that leaves the zinnias and the marigolds blackened, the squash vines a tracery of withered stems scribbled across the garden, and the petunias, the gladiolus and the geraniums looking not blackened but stunned and unable to flower again. After the first shock and during the labor of cleanup, there are always pleasant surprises in the form of flowers yet fresh (or at least acceptable) when the autumn sun has warmed them. With growing enthusiasm these are the flowers I treasure for their ability to extend the season a few weeks.

Most flamboyant of the 'leftovers' are the hardy mums. One hesitates to name varieties since of the many, many types available, few if any, are adapted to a truly wide geographical range. Of those adapted to a given area one might note the dirty appearance of the whites, yellows and other light colors due to frost-darkened portions of the bloom, while the reds and purples by their very color mask the damage. But here and there a white — or a yellow — stands out almost as clear as yesterday; a few such varieties are frost resistant and well worth looking for to add a week or two of color to the scene. Some with hardy little buds in reserve willingly produce a fresh cover of bloom given a couple weeks of sun without severe night freezes.

The perennial asters are seldom at their best until after frost. In the prairies where several species may be growing wild there has been all too little selection of them for the garden. Usually we are dependent on the introductions from the mild west coast area or the equally mild climate of Britain. Two of the latter that enjoy my special esteem are "Plenty" in blue and "Janet McMullen", more nearly pink. No longer new and taller than I prefer, they are still worth a bit of coddling to see them contrast their colors.

Not far away the late pansies and violas *Viola cornuta* look fresher and brighter than I had remembered them all summer. In pansies the "Majestic Giants" from Sakata (Yokohama) have replaced all others for me and the "Clear Crystals" (introduced as pansies but just extra large violas to me) have replaced the older "Chantreyland", "Lutea Splendens" and related types. Use lots of clear yellow in these to help warm the chilly October days. A few will persist in blooming in the warmest spots into November.

The late Monkshood *Aconitum fischeri* with tight, fist-sized clusters of light purple bloom continues through September. It seems to like its well drained site with shade from mid-afternoon on. It has always insisted on being divided regularly or it weakens quickly. In another well-drained spot but in full sun is a tight cluster of clear orchid blooms of the autumn crocus *Colchicum autumnale*. Only this morning with a sharp frost, the blooms were as brittle as glass and now in the mid-day sun they appear unusually fresh. A few of the latest blossoms will last well into October.

Most reliable of all is the Forrest potentilla *Potentilla fruticosa 'Forresti*. In a sunny, sandy spot but well supplied with moisture it never fails to bloom through most of October. Where many good varieties finish blooming in the heat of August — or at the latest, September —, Forrest potentilla is caught by late October snows with a good showing of bloom, and this after blooming continuously since June. It is a must for fall color.

Meanwhile, the trees and shrubs have taken on their autumn colors, turned dull and finally dropped their leaves. Yellows are not hard to come by among the poplars, aspens, birches and many native trees, but in the prairies the reds are rare. The sparkling red-oranges of the maples and the reddest oaks seldom develop on the prairie soils even if the species can be grown. The Amur maples *Acer ginnala* — some orange, some red and some near magenta — are at their best in autumn helped along by the highbush cranberry or pembina *Viburnum trilobum* and the nannyberry *V. lentago* where soil and sun are to their liking and the color develops rich in reds.

The reddish and bronze tones of the common cotoneaster, the native meadow rose where it volunteered along the fence and its wandering cousin *Rosa nitida* are not at all unwelcome. Late in October the gooseberry 'Dakota Dwarf' and the European mountain ash are the last to carry their red-bronze foliage.

Berries and fruits that hang on after the last vestiges of foliage are gone are certainly to be valued the most. High on the list must go the Rosybloom crabs that hold the brightest fruit and certainly 'Almey' 'Red Splendor' and 'Radiant' are among the best. A host of newcomers promises to lengthen the list when testing has been sufficient. Certainly, they can be considered among the showiest woody plants during late October and early November or until severly cold temperature dulls their color.

The birds must be well fed this year because late November sees the mountain ashes with heavy clusters of deepening red fruits, native hawthorns brilliant along the roadside and highbush cranberries with their pendent clusters, now deepened to blood red and only beginning to shrivel. On the lighter soils where buffalo berries *Shepherdia argentea* grow well with their

red berries tight to the stem one should try the similar Russian sandthorn *Hippophae rhamnoides* with its brilliant gold berries. Both are more than footloose, wandering vigorously about and are best used in large parks.

The prairies have long valued trees and shrubs with colorful or unusual bark. The birches (not really very contrasty against snow), the redstem willow and the redtwig dogwoods *Cornus alba siberica* and "Coral Beauty" doubtless the brightest have long been popular. On the dull days of winter I appreciate the brighter yellows and golds even more. Yellowtwig dogwood shows well on even the cloudiest days and prairie towns and farms with golden willows seem to have stored a bit of summer sun. At 30° below in January the spruce look black, the elm and ash look dark gray but golden willows are still bright gold. The deeper toned Amur chokecherry *Prunus maacki*, not so bright at a distance, is even more fascinating at close range with its coppery sheen.

Finally winter is over — late March or early April brings a distinct thaw. First to bloom is the lovely groundcover, *Veronica armeria*, with its many little fingernail sized blue blooms (late March has often brought a few blooms) reaching a peak in April and May to overlap and compliment the neighboring arctic phlox *Phlox borealis* in lively rose. Often as early will be the August-sown pansies and violas that as two inch seedlings winter so well wherever snow cover can be counted upon. In sunny spots they are good for nearly a month of bloom before native violets consider waking up.

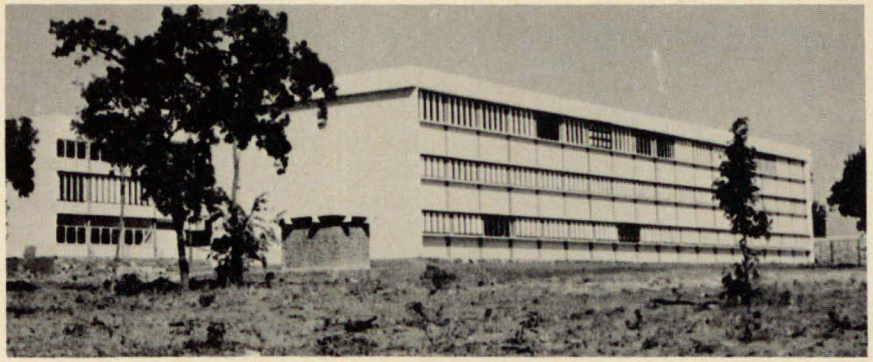
The European pasqueflower *Anemone pulsatilla* with its stems longer than our native *Anemone patens* deserves far wider use. Although I prefer its deep blue-violet color, some will prefer the variety *rubra* with its wine-red cups. Near sunset or just after sunrise the light shining through the petals ignites them to brilliant ruby. The variety 'White Swan' is subtly tinted flesh for me and 'white selections' I have gleaned from among the natives in the prairie are slightly yellow-tinted but either serve as excellent foils for the deep-hued varieties first mentioned.

April color would be a little less without the spring flowering bulbs. The Siberian squills are as reliable as the crocus are unreliable for me. The deep blue of the squills is better appreciated when you seek out the white variety and mix in about ten percent. In the absence of white squills use the *Puschkinia*, each tiny petal with a blue stripe. Not nearly so long lived, the glory-of-the-snow *Chionodoxa* are replanted quite regularly for their sparkling, up-facing lavender to pink florets.

Botanical tulips are April's best lift. The lady tulip *Tulipa clusiana* is among the earliest (sometimes coming up through the last of winter's snow) but the showier *Tulipa tarda* blooms are like yellow stars floating just above the soil surface. A bit later the hybrids of *T. kauffmaniana* in cream-yellow to cream-white remind me of slightly smaller and more single waterlily blooms.

While the early tulips are blooming, the February daphne *Daphne mezereum* in a warm sheltered spot has finished with its raspberry-rose flowers.

It is then but a little while until the plums, the flowering almonds, the flowering crabs and the largest of the tulips are followed by the wealth of perennials — iris, peonies, aquilegia, daisies and delphinium — that carry us with the many flowering shrubs into the riot of color that can be June. But, with planning, let June be a "second act" after four to six weeks of earlier color in the manner that September-October supplied a flowering finale up to the time of snow. There can be lots of color out of season.



Agriculture Building KKU South Wing for Laboratories.

Horticulture In Thailand

Dr. J. D. Campbell

July 31, 1967 was an important day for the Campbell family of 183 Brock Street, Winnipeg. That day we left Winnipeg for a momentous two-year mission to the exotic, tropical happy land of Thailand which means "Land of the Free". This incredible country, formerly known as Siam, is well named since it was never colonized.

Most of Thailand's 32 million souls live in rural areas where life has changed little for many hundreds of years; suddenly, they have become anxious to modernize. To move rapidly they need financial and technical assistance which many developed countries such as our own are supplying.

Canada's Department of External Aid requested that the University of Manitoba provide agriculturists and engineers to teach at Thailand's new Khonkaen University. Manitoba University has been providing professors since 1965; we are also training young Thai instructors here to obtain advanced degrees. My assignment was to teach horticulture and to get some research in agriculture established.

Thailand is about half way around the globe from Winnipeg; its sense of values, culture, and way of life is dramatically different from ours. However, it was reassuring to find that horticulturists here as well as other parts of the world over have much in common. To one who likes plants, it is hard to imagine a spot anywhere more pleasant than Thailand. Here one finds a vastly greater variety of vegetation both wild and cultivated growing in great profusion. Instead of our four seasons they have only two, the dry one and the wet. The dry lasts from about October until June; the wet season is only about four months long. The temperature remains from about 50 degrees to 110 degrees. Unless they can irrigate, only one crop a year can be produced.

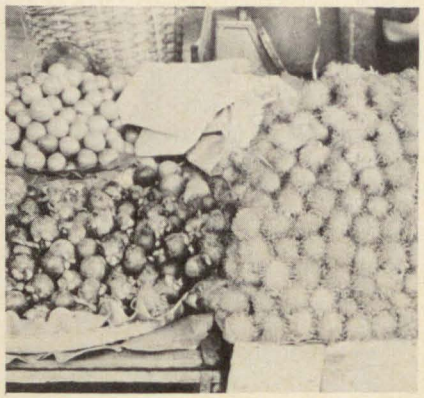
The major crop grown in Thailand is rice which the farmer must grow to feed his family. Any surplus may be sold to the city people or to export. Thailand, like Canada, has a world-wide reputation for its high quality cereal grain. Other exported products are rubber, tapioca, corn and teak. Although they grow a vast array of horticultural products they have few modern marketing facilities. Some of their beautiful orchids are being shipped by air to European markets. Processing of crops such as pineapples are now underway; in a few years they will doubtless develop many such industries. Rice, like wheat is becoming a surplus item; Thailand — like the prairies —

must for economic reasons diversify. Whenever a country becomes prosperous, more fruit and vegetables are consumed; greater interest is shown in the beautification of one's environment.

If Canada can help Thailand improve its agriculture, many advantages should occur. Because production of fruit and vegetables in Thailand is so inefficient many Thais cannot afford to buy them. To sell any produce on the world market, a country must be competitive. If Thailand could sell more of their goods they would be able to buy more Canadian items such as wheat and industrial products. Increased trade helps bring more prosperity to both the developed as well as the undeveloped country.

A typical meal for the Thais usually includes boiled or steamed rice. On this is placed such protein foods as finely cut fried fish, pork or chicken. Gently fried vegetables such as Chinese cabbage are nearly always added. Often they will have a small side dish of spices or very hot peppers which they call "chillies". The Thais consume very little sweets such as pie, cake or cookies. They, however, do make dishes such as glutinous rice with coconut milk to which they may add some delicious sliced mango fruit. Almost everywhere in Thailand, bananas are grown. The kind they prefer are small and short; they are usually fried and eaten as dessert.

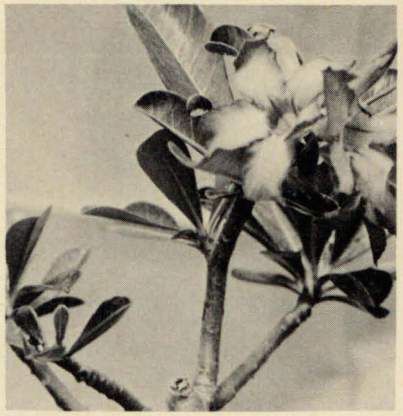
Very little of the delicious and exotic fruit grown in Thailand is used by the average Thai worker. The prices are so high that only the merchant class and government workers can afford them routinely. Certain parts of the kingdom have conditions highly suitable for the production of many different fruits. With better highways, fruit is now shipped by truck from the areas of production to other parts. Some fruit such as oranges are available most of the year. However, most of the fruit such as the mango are available only when in season. There are so many kinds that the markets always seem to be well stocked. Most of the fresh fruit and vegetables are sold from small family run stalls in the hundreds of markets throughout the nation. There is little refrigeration; this would only add to the costs which are already too high for many of the people of Thailand whose average income is about $60 per year. Some of the fruit we especially enjoyed were tangerine oranges, mangosteens, papaya, pineapple, custard apple, star fruit, rose apple, rambutan, pomelo, jackfruit, dragon's eyes, mango sapodilla, cocoanut, litchi, melon, pomegranate, durian, lemon and limes.



Back, Oranges; front left, Mangosteen; front right, Rambotan.

Cooked sweet corn.

Native orchids.



Flowering Shrub *Adenium obesum.*

With certain exceptions, vegetable crops are similar to our own. The Thais concentrate on green vegetables such as the many members of the cabbage family which are high in vitamins and minerals. These are cooked slightly in oil and often added to the rice and fish. These green vegetables are also added to noodle dishes and soups. Thais like their food flavored with plants such as coriander. Small green onions and garlic are greatly favoured. Green beans, some of which have pods two or more feet long are popular. However, they are a little tough by our standards. Cucumber and vine crops such as squash are commonly eaten. Egg plants of all sizes and shapes are enjoyed in Thailand. Tomatoes and sweet corn are relatively new and becoming very much liked. The corn is cooked in its husk and eaten cold without salt or butter.

The Thais eat a great variety of plants such as mushrooms and bamboo shoots which they gather from the countryside. They have difficulty growing root crops such as carrots because the climate is too hot. They do grow sweet potato but not many white potatoes.

The Thai people have a deep love of the beauty of nature. The poorest person in the slums may well be growing exquisite orchids. Orchids grow naturally on the trees; they can be produced very easily. The average Thai doesn't have a front yard such as ours, but in behind his house he is likely to be growing his favorite fruit. Foliage plants grow in great abundance, color, texture and shapes to beautify their surroundings. Lawns are now becoming popular; they are planted by means of slips or sprigs. It may be hard to keep the plants alive during the long dry season. Irrigation would be a very wonderful help to many people in making a better living and to improve their surroundings. This should be possible since the average rainfall is about 45 inches per year. When and if the Mekong irrigation development for this region is complete, Southeast Asia, including Thailand should become a horticulturist's paradise. The area could become quite prosperous as a result of the many developments now taking place. As a Canadian I am pleased to have had a small share in assisting Thailand.

Centifolium hybrid.

Lilies for the Seventies

Mrs. E. J. Stansfield

Not so long ago, the only lilies growing in prairie gardens were tiger lilies and the upward facing orange type, both so tough and hardy that they came through our harsh winters year after year, regardless of what kind of soil they were planted in. They brought brilliant color to our gardens and still are worth planting.

But in the last few years, a large variety of colors and forms have been made available to gardeners on the plains. For many of these gorgeous flowers we are deeply indebted to those far-sighted horticulturalists Dr. F. L. Skinner and Dr. C. F. Patterson, who spent years in developing lilies capable of enduring our rugged climate. Their work has been followed by other originators such as Mr. A. J. Porter of Parkside, Sask., Mr. Percy Wright of Saskatoon, Mr. Stuart Criddle of Treesbank, Mr. Ed. Robinson of Wawanesa, and growers such as A. E. Delahey in Saskatoon and Mrs. MacPhedran in Prince Albert, and others.

Where can these beautiful lilies be obtained? From plantsmen right here on the prairies. Send for their catalogs, study their offerings, heed their instructions and you can have a gorgeous display of bloom.

If you want lilies that come up season after season, do not be carried away by what you see in catalogs from milder regions of the continent. True, many of these types may flourish for a year or two, but as an investment they cannot compare with bulbs developed and grown on the prairie.

Before deciding what varieties to plant, visit the nearest parks or experiment stations to find out which types and colors do well in your region. Note the way they are grouped and how they are combined with other plants. Call on gardeners who grow lilies and ask their advice. They will be happy to discuss their hobby and to share surplus bulbs at digging time. Read everything you can find dealing with lily culture. Then make a plan.

Decide on the varieties and colors that appeal to you, order the bulbs early and prepare the ground for September planting. If the grower advises spring planting in certain cases, follow his directions. Do not make the mistake of buying bargain lots displayed on store counters. They are likely to be dried out and may be infected with disease.

Look over your garden and choose a location where there is plenty of sun and sufficient circulation of air to discourage spider webs, insects and fungus growth. Protection from wind is an advantage, but do not put lilies where they will have to compete for food, moisture and sunlight with the roots of hedges, shrubs and trees. Hedges have a way of expanding in all directions, above and below ground as the years go by, so do not plant lilies near them.

Make sure that the area is well drained, because lilies will not tolerate wet feet, or water lying on the surface. If necessary bring in extra soil to build up the level of the bed so that surplus water will run off.

If the soil is heavy, sticky clay, work in plenty of peat moss and coarse sand, dig deeply to at least 18 inches. Turn the mixture over and over until it is thoroughly blended. Lilies like spongy soil into which their roots can penetrate as they forage for food and moisture. If your soil is sandy, peat moss will help to hold moisture. By doing this work in advance, the soil will have a chance to settle before planting time. Avoid standing on a lily bed, as this will compact the soil.

The minute lilies arrive from the grower, get them in to the ground. Never leave them exposed to the air as they dry out rapidly and lose vigor. Remember, lilies never go to sleep so must be "put to bed" immediately. If you are prevented from planting them at once, put them in plastic bags surrounded by damp peat moss to prevent them from drying out.

When you are ready to plant, scoop out a hole large enough to accommodate a group of three or five bulbs of the same variety (a group is always more effective than a single bulb). Small bulbs should be 12 inches apart if possible, to allow for expansion, large bulbs do best 18 inches apart.

Depth of planting is important too. In heavy clay, cover the tips of the bulbs with five or six inches of soil if they root from the bottom. If they are stem rooting types cover with 8 to 10 inches of soil. In the bottom of the hole, place a layer of coarse gravel, then some soil and damp peat moss on which to set the bulbs. Gently spread out the roots at the base of each bulb, work in prepared soil so that no air spaces are left. Fill in the area and let the hose trickle to exclude any remaining air pockets.

To finish the job, mark out the boundary of the group with stakes and attach a label so that you can tell at once next spring where your beauties will be poking up. As you work in the border, after the snow has gone take great care not to damage the tips of the shoots with your rake or hoe. If they are broken or sliced off, there will be no bloom until the next year.

I have never found it necessary to cover hardy prairie lilies in the winter, but if you live in a wind-swept area, branches of trees laid on the surface of the bed will help to catch snow. If you are liable to get heavy frosts in the spring after the shoots have appeared, it would be wise to cover them with bushel baskets or cartons until danger is past.

In your general plan, arrange to place at the back of the border tall varieties such as Apricot Glow, Rose Queen, Lemon Queen or Primrose Lady and the white centifoliums. In the middle, put those of medium height. Shorter lilies can go at the front. A good catalog gives the approximate height of each lily.

Lilies look their best when interplanted with perennials and annuals that enhance their coloring. Avoid perennial types that are gross feeders with invasive root systems that will over-run the bed and deprive the lilies of food and moisture.

In my border I find that self-grown bachelor's buttons pop up all over the place and mingle with lilies effectively. Of course they have to be rigidly

controlled or they will take over the whole area. Shirley poppies too, seed themselves and fill in gaps. Other things that enhance the beauty of lilies are lacy ferns, coral bells, blue irises, mauve dwarf veronica, blue bellflowers, penstamons, gypsophila, phlox, pinks of all kinds, and annuals such as alyssum, ageratum, petunias and marigolds that are not harsh in tone. Clumps of monarda and peonies interplanted with tiger lilies or white trumpets make a fine picture.

Once the blooms of lilies have faded, cut off the tops so that seeds will not form. Leave as much foliage as possible, to manufacture food for next year's crop. In the fall cut off the stalks at soil level and burn them. Do not disturb the clumps until they seem crowded. Then in the fall carefully dig them up and share the increase with other gardeners.

Some varieties increase more rapidly than others. Apricot Glow is very prolific. Crimson Queen, a lovely deep red has multiplied very little over the years. Many of the hardy varieties produce new bulbs below ground and small ones attached to the stems. Cherish these tiny bulbs and plant them where they can develop into flowering size.

Once you start growing lilies you will aim to have a succession of bloom. The middle of July is the peak of the season, but there are varieties that flower in June and August. Consult the catalogs for information about flowering times and heights of plants. Keep a record each year in a book, of the varieties planted, the dates of coming into flower, the source of supply and other details of interest that are so easily forgotten unless written down.

Straw is good mulch against winter heaving.

Winter Protection of Perennials

A. R. Buckley

Herbaceous perennials are often called hardy perennials. Such a term, however, promotes the belief that all herbaceous perennials are rugged enough to survive the severest of winters under all conditions. This may be true of these plants in the mildest parts of British Columbia, but for most of Canada some consideration must be given to proper care and cultivation as

a means of bringing them through the winter.

The first step to ensure winter survival is to select a hardy species or variety. This is not very difficult with woody plants, but herbaceous perennials are a different matter. The ability of non-woody perennials to live through the winter seems to depend more on the particular kind of winter weather than it does upon the hardiness of the species.

A serious deterrent to survival is heaving by frost. When alternate freezing and thawing takes place, some plants may have their entire root systems pushed out of the ground, especially if the plants are growing in heavy soil. Where there is plenty of snow heaving is less of a problem, for snow keeps the ground temperature constant.

If you have a hedge to serve as a snow fence and collect snow on your border, little extra protection is necessary. If you do not have a hedge you should trap the snow in some other way. This may be done by leaving the stems on some medium-sized perennials, or cutting tall-growing kinds like asters and helianthus to half their height. This means more work in spring but it may save your plants from being killed in winter.

If you have a friend on a farm who can spare a few evergreen boughs, these can be scattered on the border to help collect snow. Your Christmas tree might also provide these boughs.

Some kind of protection is always necessary for a few tender plants, such as Canterbury bells, foxgloves and tender lilies, which go into the winter with green leaves. Do not use any covering that will mat down and form a compact, wet mass. The best way to protect these plants is to wait until the ground has frozen an inch or two, then put a layer of partly decayed leaves or peat moss under the lowest leaves of the plants. Next, place evergreen boughs or boxes over them. Or you can put a loose covering of straw, excelsior or pine needles over the plants. Whatever you do, do not put on any winter covering until the ground has frozen, and do not cover the crowns of peonies and delphiniums.

Perennials newly planted in the fall need special protection against heaving during winter thaws. This is best done by a light mulch as mentioned above, or by the use of evergreen or deciduous boughs and prunings from woody plants.

Irises' planted in August and September are usually well enough established to escape winter injury, but the safety of new and precious cultivars can be ensured by hilling about an inch of soil over the rhizomes. This earth must, of course, be scraped off in early spring to allow the sun and air to penetrate the rhizome, a necessary precaution for the prevention of the soft-rot diseases.

In general, unless you are attempting to grow the more tender biennials and perennials or have an exposed situation, the border needs no special winter attention and should thrive for years. In Western Canada the position of a perennial border is very important. It is best facing north. If a border faces south, exposed to the direct rays of the sun in summer and the alternate freezing and thawing in winters of light snowfall, it is difficult to grow any but the most drought-enduring perennials. A location where snowdrifts collect is desirable and boughs strewn about the border will help hold the snow and prevent too rapid thawing in spring.

Straw makes an effective mulch, but it should not be applied until the ground has frozen and the snow has fallen in November or December. In November there are frequent warm spells of quite long duration and a straw mulch is not always sufficient to prevent the soil about the roots of the plants from thawing. Mulching is then better left until winter has definitely set in.

Japanese Style Flower Arrangements

Keith Chorneyko

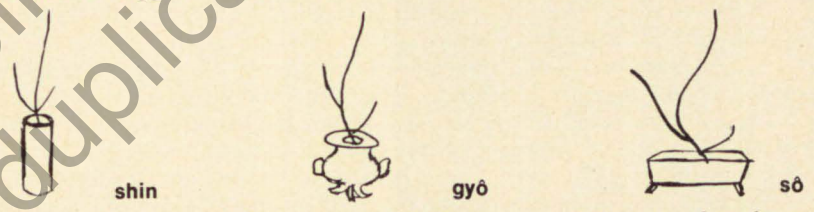
In order to arrange flowers in the Japanese style, it is necessary to know something about the history of "Ikebana" — Japanese flower arrangement.

Ikebana was introduced to Japan in the Sixth Century and has been enriching and beautifying the lives of the Japanese ever since.

Classical Japanese flower arrangements follow a strict set of rules governing plant materials and the containers that may be used as well as the occasion for which they should be used.

These arrangements whether "rikka"; the most ancient systematized style of arrangement or "shoka"; the three-branch, asymetrical form may be made in any of three styles known as shin, gyô and sô. These have sometimes been called formal, semiformal and informal respectively.

As applied to flower arrangements, the word shin carries the idea of straightness or perpendicularity; the word gyô means moderate linear movement and sô suggests forceful linear movement. These are illustrated below.



Three types of containers used with these three styles are also shown.

In order to hold the plant material in a tall container the Japanese use a bundle of straw, funnel shaped holders, pipes or forked twigs or crossbars. In low containers, sand is used but today a "kenzan" i.e. a needle point holder may be used if it is hidden.

All forms of Japanese flower arrangement are developed from three main branches of unequal length as follows —

Shin — heaven — one and one-half to three times the height or width of the container.

Soe — man — two-thirds height of shin.

Tai — earth — one-third height of shin.

During the Twentieth Century the trend to break away from the traditional arrangements began. Modern Japanese arrangements are not as restrictive as the classical arrangements were. However, more than three kinds of flower material is rarely used and non-flowering tree material is seldom used alone.

Two styles of modern Japanese arrangements are the Moribana and the Nagiere. The Moribana (meaning heaped up flowers) is an arrangement made in a low container. The Nagiere (meaning to fling into) is an arrangement in a tall container. A needle point holder may be used in making a Moribana arrangement but not for a Nagiere.

The lengths of the principal branches in a modern arrangement differ from those in a classical one. The shin is one or two times the length plus the width of the container. The soe is three-quarters of the shin and the hikae (tai) is three-quarters of the soe.

I have given you but a fleeting glimpse into Ikebana but I hope it has been enough to encourage you to read more about this most fascinating art and then to try it for yourself.

Corsage Making And Garden Flowers

Mrs. B. Peturson

Today a corsage is not an extra decoration, except on a very special occasion. It is rather a floral accessory that becomes a definite part of a costume. It can easily become a conversational piece especially if you made it yourself and perhaps used unusual flowers or put in extra frills which suit the person, place and occasion.

I think any gardener would be very happy to have his teenage daughter form a hobby of making her own party corsages, or for the son to have his problems solved for a Saturday night date by having his dad's blooms made up into a corsage, a hairband, or a bracelet.

Small flowers can be attached to a necklace (pearls are good) and made to look like a miniature corsage in an unusual setting.

Color proportion and balance are important in a corsage. The following colors in full strength have been given the following analyses:

Red — creates excitement, activity, stimulation; Orange — joyous activity; Yellow — cheerful impersonality; Green — restfulness and refreshing relaxation; Blue — remote calm; Violet — mysterious enchantment.

Balance and proportion are considered in relationship with color being used. Dark colors are visually heavier than lighter ones. Brilliant colors are the heaviest because they demand attention. The lighter shades and tones are less weighty. This is one reason why in corsages as in floral arrangements darker and heavier flowers are used in the centre with lighter tones on the outer edges of the forms.

The size of the corsage in relation to the size of the wearer is most important. A very tiny corsage would look out of place on a size 40 shoulder. A big spray of large blooms would look equally out of place on a very small person. Of course the occasion affects the size of a corsage. A smart tailored one for daytime wear is smaller and more compact than a loose spray corsage meant for evening wear.

I would advise the beginner to start with simple lines, forms and color harmonies. Practice will bring confidence and lead to experiments which may give a great deal of pleasure and be quite profitable too.

I am going to list a few of our local garden flowers which have a lasting quality and are therefore suitable for corsage work. These are: Carnations, chrysanthemums, cornflowers, daisies, gladiolus, hyacinths, lily of the valley, marigolds, pinks, roses and zinnias. There are many others that can be used with good success.

Foliages considered for use in this work should be given a trial treatment, although actually most leaves stay reasonably fresh for a period of time. Some of the favorite garden leaves used for corsages are from the lily of the valley, columbine, geranium, ivy, barberry (holly), violet, rose and many others including ferns and evergreens.

For better lasting quality and freshness in blooms and foliage do the cutting the day before they are to be used and condition in water overnight. There are exceptions and an extreme example is the gardenia bloom which

drinks through its petals and has to be placed under a moist covering, preferably in an airtight container to preserve and lengthen its freshness.

Ribbons are important and are selected to suit the corsage and the occasion. They can add glamor, be an accent or simply be in harmony with the finished product. Metallic wire, cords and chenille serve the same purpose and are chosen to suit the occasion. Leaf forms, bows, initials, loops, insignia, etc., can add glamor to a simple corsage when made with wire and covered with ribbon or other suitable material.

Other essential materials are wire and stretchable floral tape. The four sizes in wire generally used for corsage work are Nos. 32, 28, 26 and 24, grading from fine to coarse. Occasionally No. 20 or 18 are used for extra sturdiness but tend to make the finished product heavier. The beauty and durability of a corsage depends on proper wiring. Substitute wire for natural flower stems wherever possible. There are several reasons for this. Wire is lighter and less bulky than natural stems, is more flexible and can be maneuvered as desired but is rigid enough to hold the completed design in position.

Perhaps the basic wiring is the most important so I am showing in the accompanying sketches some of the wiring methods used for different types of flowers.

For special purposes there are many ways of dyeing flowers and also special treatment of foliage.

Each month has a flower especially associated with it. This monthly calendar of flowers is as follows: January — Carnation or snowdrop; February — Violet or primrose; March — Jonquil or daffodil; April — Sweet pea or daisy; May — Lily of the Valley or hawthorn; June — Rose or honeysuckle; July — Larkspur or water lily; August — Poppy or gladiolus; September — Aster or morning glory; October — Calendula or cosmos; November — Chrysanthemum; December — Narcissus or holly.

Corsages at the flower show should be attractively displayed. Plenty of space and good background are important in staging corsages. The height at which they are placed is also important. Pedestals on tables could raise the height and the background made to look more nearly vertical than horizontal to give the desired effectiveness and beauty of a corsage.

Point scoring usually is not required but a competitor would do well to study the following approved judging scale of points: Design 30; Color 25; Originality and distinction 20; Suitability to occasion 10; Combination of materials 10; Technique 5.

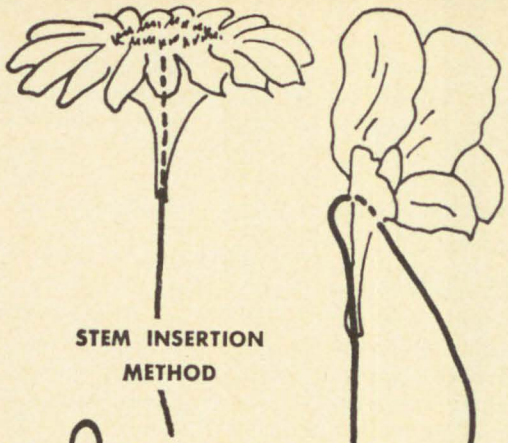
In larger shows classification of corsages should be practiced. There are two ways of achieving this, either by type of flowers specified for use, or by special classes such as tailored, evening, informal or formal corsages.

The beginner should be encouraged by having a novice class in the prize list.

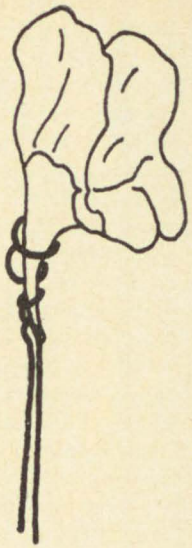
Enjoy making a corsage for your local show and your compact, simple and well-formed corsage will give pleasure to the viewer.

Throughout the history of mankind there is mention of flowers and garlands. A Chinese proverb says: "Habits and customs differ, but all peoples have love of flowers in their hearts."

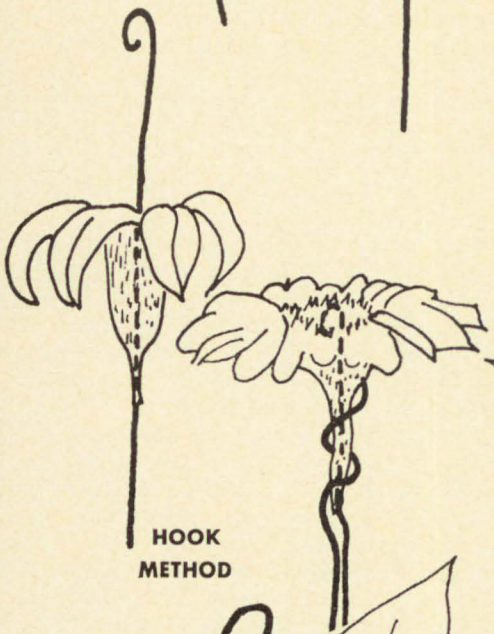
Let us have fun with our garden flowers and corsage-making.



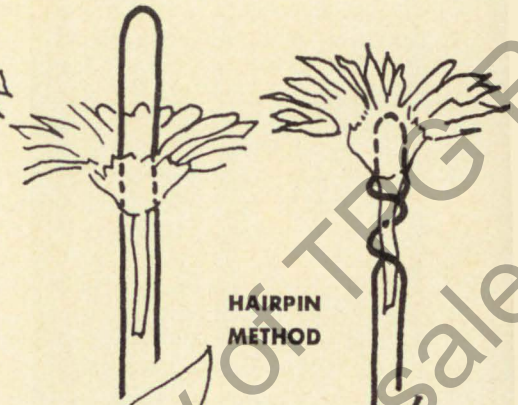
STEM INSERTION METHOD



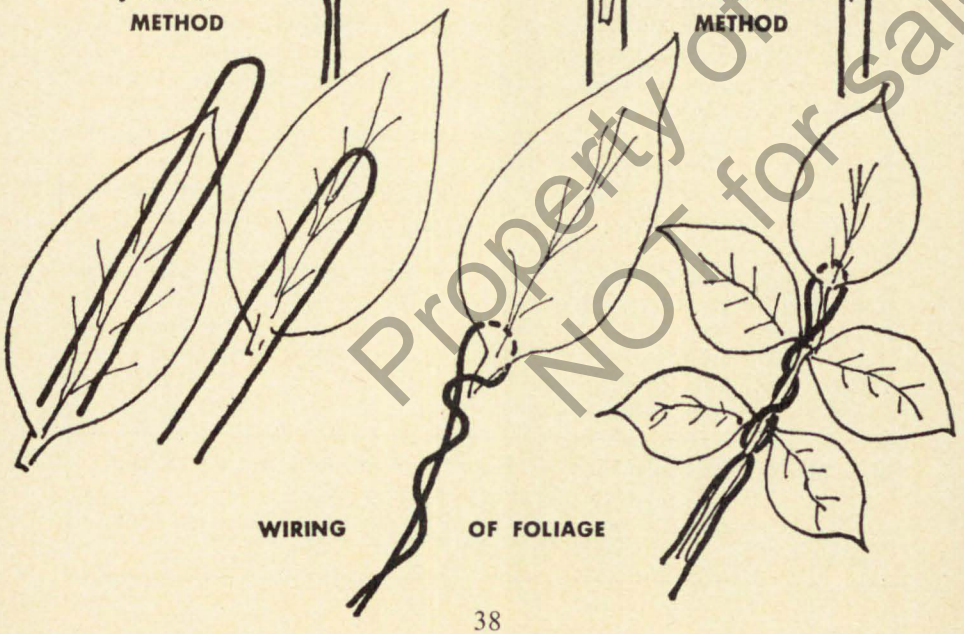
CLUTCH METHOD



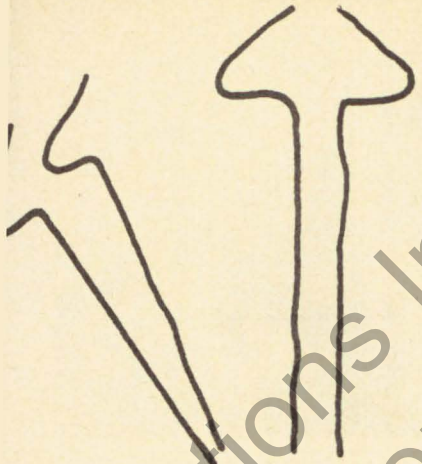
HOOK METHOD

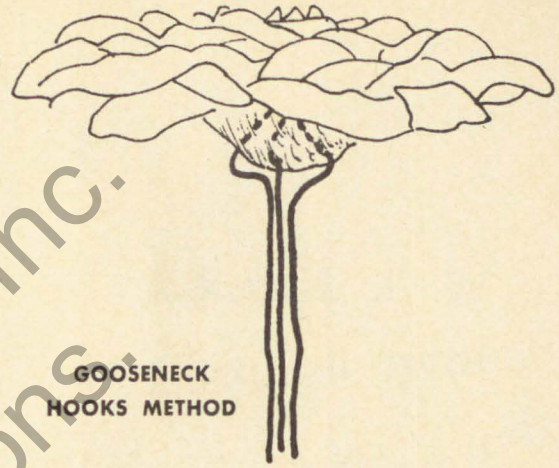


HAIRPIN METHOD

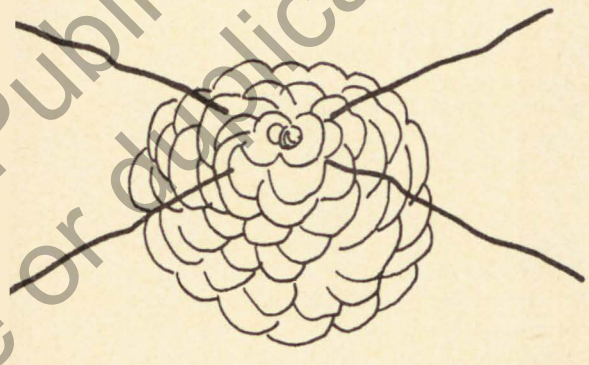


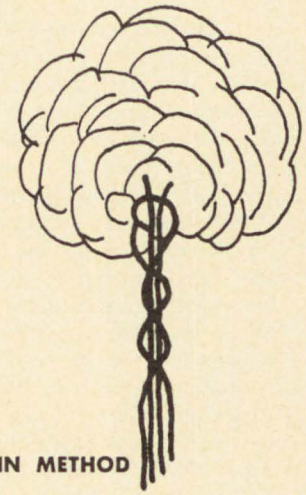
WIRING OF FOLIAGE



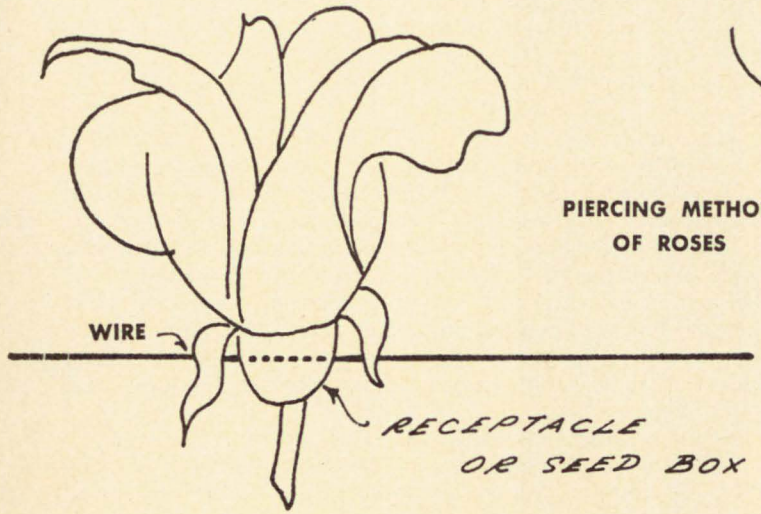


GOOSENECK HOOKS METHOD

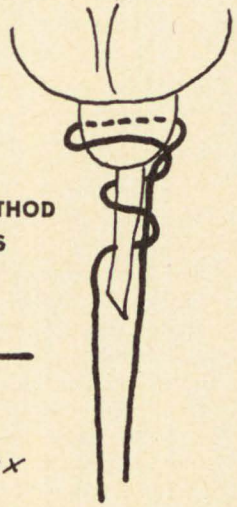




SEWING OR PIN METHOD



PIERCING METHOD OF ROSES



W. L. Kerr, 1970 Recipient of the Stevenson Memorial Gold Medal

The Stevenson Memorial Medal for "conspicuous achievement in the field of practical horticulture" will be awarded to William Leslie Kerr of Saskatoon, Saskatchewan by the Manitoba Horticultural Association at its annual convention in Winnipeg, February 12 to 14, 1970. Mr. Kerr will be the thirteenth eminent horticulturist from both Canada and the United States, to receive this award since its inception in 1935.

Les Kerr was born and raised in Ontario, graduated from the Ontario Agricultural College and proceeded to the University of Maryland for graduate studies. He earned and was granted an M.Sc. degree in 1928. He spent the next four years in Maryland working with the Federal-State Fruit & Vegetable Inspection Service. In 1932 he joined the staff of the Canada Department of Agriculture and became Assistant to the Superintendent of the Rosthern Experimental Farm. Later that same year he transferred to the Morden Research Station, where he remained for the next ten years as Research Officer in charge of fruit breeding. In 1942 he was appointed, by the Canada Department of Agriculture, Superintendent of the Sutherland Tree Nursery which later became the P.F.R.A. Tree Nursery, Saskatoon, Saskatchewan. With the phasing out of the Tree Nursery by the Department in 1966, Mr. Kerr retired from the federal service. The beautifully landscaped grounds area of the Tree Nursery, developed by Les, was taken over by the Parks & Recreation Division of the City of Saskatoon and he was retained as Supervisor of the Forestry Farm Park, a position which he still holds.

Mr. Kerr's most notable and lasting contribution to prairie horticulture, has been in the field of plant breeding and the resultant cultivars introduced, many of which have gained international recognition. From his work at Morden, Almey rosybloom crabapple, Toba hawthorn, Dura and Manor cherry-plums, Northern and Bounty plums, Prairie flowering almond, Scout apricot and Kerr crabapple (named in his honor) were derived. From Sutherland he introduced Sutherland, Royalty, Dainty and Pink Cascade rosybloom crabapples, Sutherland and Plume caraganas, Sutherland larch, Sutherland Golden and Goldenlocks elders, Wheeler poplar, Pinky flowering almond and several hardy garden chrysanthemum cultivars, including Sutherland Pink, Cree, Early Autumn and Popeye.

Mr. Kerr has many more promising selections and hybrids on hand, some of which will eventually be named and released, others will be used in further breeding. He has always been very willing to share the progeny of his plant breeding with other plant breeders and the effects of his imaginative and resourceful work will continue to show up in the years ahead.

Les has also excelled in his contributions to the field of nursery management including propagation, weed control, pest control, nursery machinery, irrigation and storage. He has studied and become an expert on plant materials for shelterbelts, wild life conservation and landscape use.

He has been active in many organizations in the fields of horticulture, conservation and community affairs. To mention a few: Western Canadian Society of Horticulture, Past President and Honorary Life Member; Great Plains Section of the American Society for Horticultural Science — Past President; Saskatchewan Horticultural Societies' Association — Director and Honorary Life Member; Saskatchewan Fish and Game League — Honorary Life Member; Canadian Society for Horticultural Science — Honorary Life Member. He is a Rotarian, belongs to the Canadian Club, has been a Director of the Canadian National Institute for the Blind, and of the Saskatoon Fair Board.

William Leslie Kerr has made deep and lasting footprints on these Canadian prairies and richly deserves our highest commendation.

Lighting In The Home Garden

J. M. C. Smith

Just think how much more useful your garden could be all year round if it were lighted after sundown. In summer you could escape from a warm house into a cool breeze to relax on the patio or to work in the garden. In fall outdoor suppers would be especially enjoyable in the crisp air. With garden lighting, you can have outdoor living by night as well as by day.

But garden lighting can do much more than simply illuminate the landscape at night. It can make your garden a beautiful and enchanting place—emphasizing its good points and minimizing the bad ones. The trick is to provide lighting that is practical and at the same time creates a pleasing atmosphere.

Selection and Location

Begin by planning the selection and location of all lighting fixtures and the best angle at which to install each one. Many lighting experts create a master plan — first experimenting by playing the light from various types of fixtures and bulbs, and from several angles in different parts of the garden until the best effect is achieved.

In planning garden lighting, it is often desirable to make a scale drawing of the garden layout. If you do this, note the types and heights of shrubs or trees and study their density, form, and foliage outline. Also, draw in the boundaries and the background height of the property, the outdoor living areas, and each area that is to be illuminated.

Plan the over-all flood lighting first. It is often best to have it come from a tall object like a house roof or a tall tree. And when you do your planning, don't overlook lighting for steps, stepping stones, passageways, and driveways. A safe garden lighting system begins with weatherproof wiring, backed by adequate circuiting and switch control. Check bulbs for their ability to withstand water without breakage. Generally, bulbs of low wattage like 15 and 25 watts and projector bulbs such as PAR 38 can be used without protection. But any others should be covered or enclosed.

Weatherproof Units

Many types of adequate weatherproof units are available for garden lighting. These range from the functional swivel holders for spot and flooded bulbs to the decorative garden units, hanging lanterns, and post lights. Some decorative lighting fixtures are designed to look like leaves, bird houses, or rocks. Some take on shape of lily pads in a design to clip over a bulb and float on the water to illuminate the garden pool. You will find many different kinds available.

The homeowner who wishes to create a setting and a mood already has most of his problems solved. The actual scene is already formed; house, trees, shrubs, plants, ponds, are in place. For night-time enjoyment of the outdoors, only the proper lighting effects are needed.

Best effects are achieved when light sources are concealed. Glare from light bulbs is not only annoying, it can destroy the scene. Except for decorative lighting fixtures, try to have a minimum of lighting equipment visible. To do this, take advantage of any heavy ground cover such as shrubbery, hedges, trees, or foliage for natural shielding. Simple reflector hoods or ornamental fixtures can also be used to cover exposed bulbs. Less obvious than eye-level mounted fixtures, are those placed on a roof.

In planning, be sure to analyze the texture, form, line, and the background of the scene. Head-on lighting tends to make objects look flat while modeling and dimension is achieved by lighting from both sides, with more light on one of the sides. Light striking a surface at a very narrow angle emphasizes texture of plants, buildings, or fences. Back lighting with a low light directed toward the front accentuates translucency, depth, and foliage.

Special outdoor features like a sculpture or pools can be highlighted. Any lighting effects for these features should be judged from the point from which you view them. For an over-all picture, one focal point of interest should be more brightly lit than anything else.

Experiment with colored lights, too, for highlighting specific areas. But be cautious. To bring out natural colors of plants and flowers, it is best to use white light. Colored light may produce grotesque effects, especially when focused on vivid flowers. For a party atmosphere, or for special treatment, use colored lighting on fences, walls, or garden ornaments. Mercury light is effective in adding dramatic touches of bluish-green to blue spruce, evergreens, and birch trees. Use a dense yellow light when insects become a nuisance.

Wiring

Having stirred your interest and quite possibly your enthusiasm for saving money by doing the wiring job yourself, I must begin by warning you not to do any such thing. However, you can save money by doing some of the tasks yourself. Leave the hook-up to your house current and the actual outdoor wiring to a professional electrician. He not only knows what precautions to take when installing the system, but what safety measures are necessary to protect you from short circuits or running-away current after the job has been completed. He also knows the requirements of your local electrical code. But talk to him about your helping out. You will save money, and he will probably welcome the chance to move on to the next job more quickly.

You will find that when you discuss your wiring plans with the contractor, that there are three basic ways of doing the job. First, weatherproof wire can be strung above the ground from post to tree or to a building corner. This is a time-saver, but despite the most careful precautions, there is a latent danger of damage by electrical storms. Second, wire can be strung along the ground unobstrusively. This, too, is a time-saver, and provides the greatest flexibility should you want to change your lighting plans

later. However, it's open to damage from storms, and also might be cut by a garden tool.

The Ready-Made Light System!

One of the most recent innovations is the twelve-volt light system. You can obtain Starbrite low-voltage outdoor lights to add a dramatic new dimension to outdoor living. You can purchase a complete outdoor light system and install it in minutes without permits, digging or conduits. It is safe and shockproof. A low-voltage transformer makes this possible. It is economical. It costs only pennies a night to operate. Installation is easy. Just plug into any house outlet. Lights clip on the cable and can be installed anywhere at anytime. The set comes complete with a transformer and timer if you so desire, with six lights of 18 wattage. These lights clip on the cable as mentioned before and are entirely shockproof.

The unit retails in Saskatchewan for about $112.00. Other lights and mushroom lights may be added to this 100-foot cable which is supplied with the unit. Outdoor lights for garden paths which we find in Saskatchewan are usually imported from the United States; therefore the cost of U.S. exchange and duty, etc., raises the price between 40 and 50%, and costs are at times prohibitive. The 12 volt lighting system, although it appears rather expensive to purchase, should last many years providing it is looked after.

There are units with which you can light your garden which are made by the large electrical companies. They are just the ordinary floodlights. These are fixtures that you may hang or place into the ground and they retail from $4.95 to about $5.95. They come in white, blue, amber, green and red.

Make Your Own Lights

You can if you wish, attempt to make your own lights, using a rod about three feet in length and attaching it to a waterproof socket. You make a lamp shade out of plastic containers. These are quite safe and harmless and may be used with a 10 foot extension cord and a colored bulb, preferably, white, blue or yellow.

I should mention that to install the lamp shade you go to the hardware store and buy an old-fashioned brass lamp bracket. You insert this over the waterproof socket. Drill a hole in the top of the container for the top thread and buy the old-fashioned screw that fits on the top of the lamp shade. Then screw it on. These lights become very effective if placed among shrubs and flower beds. The actual cost is about $2.80 and these lights are quite safe, providing your outdoor sockets are safe.

I did most of the installation in my back yard myself. Installing the electrical cable under ground and then had an electrician install and connect 15 waterproof boxes. My total outlay was about $100.

I have found the United Refrigeration Parts Company Limited of Regina very helpful in the selecting of lights and other equipment necessary to complete the lighting project in my back yard.

Wave the magic wand of light over your garden at night and you can change it into an enchanting place. It takes just a little imagination to give a garden after-dark charm.

Sparkle a Patio or Terrace

A pink or amber light under the eaves or on a tree adds soft light for home or apartment outdoor living area.

Bring a Flower Bed to Life

Spotlight your favorite flowers in bloom. Choose different colors to match and highlight those of the flowers.

Dramatize a Tree

A blue light will highlight the form of a tree, its leaves, bark and branches.

Highlight a Vine, Fence, Sculpture

Try a green light on a climbing vine. Add warmth to a redwood fence with an amber light. Use soft blue light for sculpture.

DON'TS

Don't try to get maximum results from only one or two light sources. An extra one or two will give you the effect you are after.

Don't over-light a particular object to be high-lighted. Over-lighting is a common fault.

Don't use too many light sources. Too much light is just as bad as too little.

Don't try to economize on the electrical switches that control the exterior lighting. Be sure you have enough master switches.

Don't expect the foliage to stop growing. Make allowances for plant growth.

Don't expect very satisfactory results in lighting evergreens. The shape and density of foliage makes them more difficult to light than other trees.

Don't make the fixture conspicuous when installing it. Try to make it blend in with the foliage.

Don't install fixtures so that they may be damaged by hand and power mowers.

Back Lanes – Their Adornment

F. C. W. Rice

Beautification of home grounds has been a continuing program of Horticultural Societies for many years. Garden competitions are held to encourage this program.

Back yard gardeners so often limit their efforts to the confines of the fence enclosing the back yard, neglecting that small strip between the fence and the road. This small strip if ignored can be very unsightly with weeds and debris, detracting from an otherwise attractive back yard.

With very little effort this otherwise unattractive strip may be made to bloom and complement the whole.

A few years ago many back lanes were planted to hollyhock and these made quite a splash of color. They have died out and the lanes are less attractive as a result. For myself I have been gradually planting perennials and in the meantime have filled in simply by broadcasting a few packets of mixed annuals.

The perennials I have used are those hardier types that are spreading a bit too far in their regular borders such as; Campanula, Heliopsis, Achillea and Iris. I have also used two plants, from seed, that are treated as biennials. These are Hespiris (Sweet rocket) and Lunaria (honesty or silver money). Both of these are blue flowers that bloom very early in the spring. Lunaria is a very interesting plant in that the seed pods if allowed to mature may be used as winter bouquets. The pods are flat about 1½ inches in diameter with a membrane of satiny texture with a cover on both sides within which the seed form. When completely dry the outer cover and the seeds may be rubbed off (carefully) leaving the satiny silver colored membrane, hence the name silver money.

Why not include the back lane in your plans?

Manitobans especially could well adopt this idea as a personal Centennial project and thus in our 100th birthday year really make Manitoba blossom forth as it never has before.

Growing Strawberries In The Garden or Ogallala Draped In Black

P. J. Peters

Ogallala (what a musical name) is an everbearing strawberry variety developed in Nebraska. Several varieties, as well as wild Rocky Mountain strawberry species, entered into its parentage. The fruit is of high quality, medium to large, and carrying a good size through the season. The skin is a rich, dark red but too tender for shipping. It is excellent for the home gardener who desires quality. The flesh is a bright red, firm, tender, sweet with a mild aroma. The plant has dense, dark green foliage and is winter hardy in Manitoba **if given winter protection.**

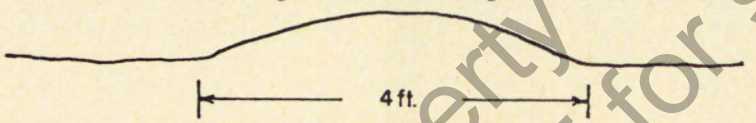
But Ogallala does have a serious fault. It produces far too many runners and tends to choke itself out if not carefully controlled. This is where the next character enters the stage. The name of this character is Black Polyethylene. Let Black Polly be your guard in the Ogallala garden patch.

You say you have an area where you wish to grow strawberries. This area is 4 feet wide and 50 feet long. You say this area has good drainage. This will give you one double row of strawberries.

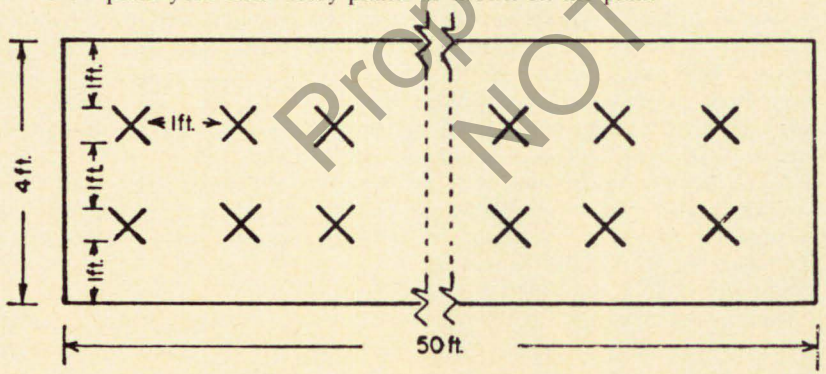
Prepare your soil in fall if possible. Cover your area with 3 to 4 inches of old rotten manure. Rototill the area several times to work the manure into the soil. Strawberries do well in a soil rich in organic matter and old manure is the best there is.

Order your strawberry plants early and get virus free or certified plants if at all possible. You'll need some 100 plants for your double 50 foot row. Get your plants about the second week in May.

Your 4 ft. wide, 50 ft. long field should be ridged a little as shown.



Now plant your strawberry plants as shown on the plan.



Use a cup of any starter solution for every plant. Now watch them grow, irrigating or watering when there is a need. In about five weeks the plants should have established themselves.

Now comes the Polly bit. Buy yourself a 50 ft. roll of 4 ft. wide 2 mill black polyethylene sheet. Start at one end. Dig the end of the sheet into the ground and unroll the 50 ft. sheet over your plants. You will be able to tell where your plants are. Use a sharp razor blade and cut an X in the poly right above each plant. The X should be about 2 to 3 inches each way. Pull the top of each plant through its polly slit until all your plants have been pulled through. Pull the polly strip tight on each side and cover the edge with soil.

Now your weeding is done. You irrigate the plot normally. Water will enter through the slits. It will move in sideways as well. Pull the few weeds that may come up through the holes where the plants are.

As soon as runners form, use a pair of old scissors and cut them off. Do this frequently. Do not allow any runners at all. The energy for producing runners will be saved and the mother plants will grow stronger. You should get a good crop the first fall.

For winter protection, use clean wheat or oat straw. After several good frosts or about the beginning of November, cover your planting with 5 or 6 inches of loose straw. Do not pack this. The following spring you uncover your planting when the plants underneath show signs of slight yellowing. Leave the straw beside the row. If spring frosts come when the bloom starts, throw the straw back on to prevent frost injury. After danger of frost is over, leave a little bit of straw near the plants to prevent dirty berries. Remove the rest of the straw.

To fertilize in the second and third year raise the black skirt and throw in a handful of complete fertilizer (10-30-10) about every two or three feet from both sides. Put down the polly and put earth on the edge once again. Do this after the first crop of berries is off or early in July.

Your spraying program need not be very elaborate. Spray with Kelthane about one week after you uncover the plants in spring. Use 2 tsp. of Kelthane per gallon of water. Kelthane controls cyclamen mites.

When the plants are about to bloom, spray with malathion at the rate of 2 tsp. per gallon of water. Repeat this spray in ten days or so. Malathion kills insects that cause deformed fruit. When the berries are formed, you can spray with Captan (2 tsp. per gallon of water). Captan reduces fruit rot.

Remember to always cut off runners as they form.

Your planting should last about 3 to 4 years. After that you start a new planting beginning with certified plants again and using a new site if possible.

Ogallala is a musical name. Proper care of your Ogallala patch will give you success. You should get about one quart from each plant each year. When your family enjoys this delicious fruit you, too, will feel like singing.

Exeter Apple, Goodsoil, 1969.

The Goodsoil Test Orchard

D. R. Robinson

In co-operation with local farmers and the Agricultural Representative Service three small test orchards were planted by our Division in 1965 in northern Saskatchewan. As might be assumed, the main reason for these plantings was to discover which varieties, if any, of some of the more recent introductions could be grown successfully in those communities bordering on the northern edge of agricultural settlement. It is, of course, too soon to make a definite statement in this regard, but the story of our most northerly orchard is of some interest, and future prospects appear to be reasonably good. This orchard is located on the farm of Mr. J. B. Hollman in township 62, near the village of Goodsoil.

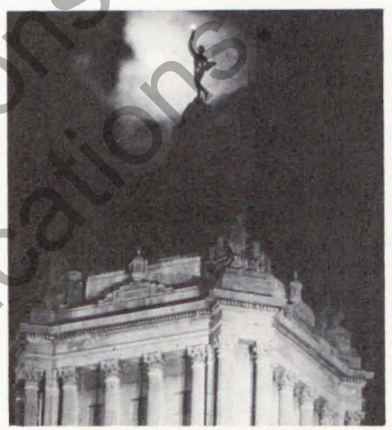
The orchard contains 45 fruit trees made up of 26 varieties. These may be grouped as follows: apples — 12 varieties; crabapples — 1 variety; plums — 8 varieties; pears — 3 varieties; cherries — 2 varieties. The apples and the one crabapple have made good growth and almost all of them fruited in 1968. The plums, pears and cherries have grown more slowly and have not fruited to date. In 1968 yields of fruit from the larger individual apple trees were as follows: McLean — 70 lbs.; Rutherford — 60 lbs.; Yellow Beauty — 54 lbs.; Harvest Special — 54 lbs.; Patterson — 50 lbs.; Exeter — 45 lbs. One tree of Dawn crabapple yielded 45 lbs. The fruit of Dawn was ripe on August 18. In a normal season these yields of fruit from four-year-old trees would probably not be considered remarkable. However, the severe frost that occurred throughout much of Saskatchewan (some 10 to 12 degrees) on June 12 will long be remembered. As a result of this frost yields of tree fruits were markedly reduced in the western half of the province. (An exception may be noted with reference to Saskatoon and the immediate vicinity.)

Referring again to the Goodsoil orchard three factors are worth mentioning. The orchard is protected on the north and west by an extensive belt of aspen poplar. Several colonies of bees are located within 100 yards of the fruit plantation. The orchard is located on a large flat hill or plateau sloping gradually to the south to a draw or drainage basin roughly three hundred yards distant. It seems entirely probable that this slope provides protection from frost damage in springtime by drawing off the cold air to the lower level at the bottom of the draw. This question of orchard sites and air drainage was discussed by the writer in the 1965 Prairie Garden. It is a subject that merits more consideration than it has received in the past.

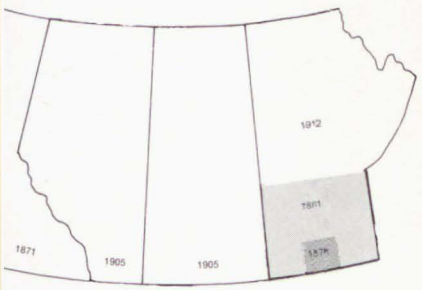
Manitoba's Centennial Year

The Spirit of '70

1870 MANITOBA CENTENNIAL 1970



The Torch



**With glowing torch held high, the Golden Boy,
above our city, pulsing with desire,
facing the Northern vastness of our land
sets all our people's pride and love on fire.**

**Pride in our land, in this auspicious year,
pride in our pioneers, who built and fought
to mould a province strong, a province free,
united both in action and in thought.**

**This torch of progress, lit for all to see,
it is a symbol of what life can give
to those who dare to probe the wide unknown,
to those who dare to dream and dare to live.**

**This torch of freedom of a province proud,
a province young yet rich in heritage,
proclaims that we will e'er defend the right,
proclaims that Manitoba's come of age.**

**Torch of the future, may its glowing light,
guide us to grasp our opportunity
to live, to build, to love with heart and soul
a stronger Manitoba, proud and free.**

P. J. Peters

MANITOBA'S CENTENNIAL PLANTINGS

The following ten plants plus the front cover photo have been chosen as the Growing Symbols of Manitoba's Centennial Year. With the exception of the 'Butterscotch' Marigold, they have all originated in Manitoba.

ANNUAL
'Butterscotch' Marigold. A lovely vigorous annual covered with masses of double rich red flowers with golden centers, growing to a uniform height of ten to twelve inches.

PERENNIAL
'Morden Pink' Lythrum. A hardy perennial with a profusion of rosy pink flower spikes throughout the summer. It grows to a height of five feet and is easily propagated from green wood cuttings. It was introduced by the Morden Research Station in 1937.

A Hundred Years Of Horticulture

J. P. de Wet

Manitoba is the oldest prairie province. The first prairie dwellers settled along the Red River and later the Assiniboine River. The improvement in prairie horticultural practices began around Winnipeg a hundred years ago.

The breeding of prairie-hardy fruits, and prairie-hardy ornamental trees and shrubs started in the province in the nurseries of men like A. P. Stevenson, H. L. Patmore and F. L. Skinner, and was continued and expanded in the Canada Department of Agriculture experimental farms, first at Brandon and next at Morden.

The following pages will record in summary the names of the men and their successes during the past hundred years, 1870-1970, related with more detail in "A Hundred Years of Horticulture in Manitoba" to be published in Manitoba's Centennial Year by the Manitoba Horticultural Association with the support financially and staffwise of the Manitoba Department of Agriculture.

Contributing most usefully to the early stages of horticultural progress on the broad, western plains with advice, with many varied stocks, and with knowledge to be applied to a land formerly inhabited by herds of buffalo, wandering Indian tribes, and trappers and hunters of fur-bearing animals, were: William Saunders, 1886, first Director of the Dominion Experimental Farm Services, Ottawa; W. T. Macoun, 1888, Dominion Horticulturist, Central Experimental Farm; Angus MacKay, 1888, superintendent, Indian Head Experimental Farm, Saskatchewan; S. A. Bedford, 1888, superintendent, Brandon Experimental Farm; N. M. Ross, 1903, superintendent, Department of the Interior Forest Nursery Station, Indian Head; and F. W. Brodrick, 1906, horticulturist, Manitoba Agricultural College, Winnipeg.

Along with these able men were A. P. Stevenson, Morden (in 1870 planted an apple tree in Winnipeg on what is now Portage Avenue); H. B. Hall, Headingley (in 1878 had a Tetofsky crabapple in fruit); Thomas Frankland, Rockwood, 1878; W. J. Boughen, Valley River, 1891; F. L. Skinner, Dropmore, 1895; William Oakes, Miami, 1900; Magnus Wilson, Gladstone, 1900; H. A. Loat, Kenville, 1901; D. W. Buchanan, St. Charles, (in 1907 published his "Horticulture in the North. A Guide to Fruit Growing in the Prairie Provinces").

With the staffing of the prairie experimental farms and stations, the Canada Department of Agriculture met the need for continuous research and frequent introduction of new and better varieties of fruits, suitable trees for shelterbelts, and ornamental trees and shrubs. The farms and stations were manned to study the problems of prairie agriculture; to test numberless trees and shrubs; and to determine proper methods of culture.

The appointment of S. A. Bedford to the Brandon Experimental Farm was wise and fortunate in every respect. He had homesteaded near Darlingford in 1877 and later farmed in the Moose Mountain area of Saskatchewan. He had assisted land companies in settling new arrivals to prairie life. He knew the pressing necessity for extensive tree planting to provide shelter for the home and for the fruits, for ornamental trees and shrubs, and for gardens that would support comfortable life on the open plains.

Within five months after his arrival, 650 maples and white spruce had been planted, some of which have become a farm landmark called Bedford Drive. Three-quarters of an acre was seeded to native ash, basswood and maple. In the following year he started in earnest with 12,000 forest trees and shrubs of 118 varieties received from the Central Experimental Farm. Year after year thereafter, further large numbers were received from eastern Canada, Iowa, Nebraska, from Russia, Siberia, northeast Asia. Manitoba and northwest Ontario native trees were added.

And so commenced Bedford's ambitious and certainly rewarding plan to make Manitoba, the land that in 1870 became a province of Canada, an example and an encouragement to the farther west Northwest Territories, also to become the satisfying home for many men, women and children, and now the provinces of Saskatchewan and Alberta.

Horticultural societies were being organized. Earliest was the Manitoba Forestry and Horticultural Society in Winnipeg in 1883, at the urging of Rev. W. A. Burman of Griswold. Next was the Brandon Horticultural and Forestry Association in 1893. Then in 1895, the Western Horticultural Society was formed in Winnipeg. This Society grew well under a succession of varied names, and in 1927 changed permanently into the Manitoba Horticultural Association. The 1902 annual report of the Western Horticultural Society listed 47 standard apples, mostly hardy European introductions, 8 hybrids, 18 crabapples and some plums, at their show on August 29, 30 and 31 the previous year.

The Manitoba Department of Agriculture extended further aid with the appointment of J. R. Almey in 1921 as Provincial Horticulturist, a graduate that year of the Ontario Agricultural College, Guelph. Succeeding appointments have been John Walker, 1929, M. R. Bevan, 1936, C. R. Ure, 1939 and F. J. Weir, 1949.

An Extension Division in the Department was added in 1910 to gather and distribute good advice and recommendations on varieties and cultural methods, in printed form available without cost on application. W. J. Black was the first Director, followed by S. T. Newton in 1915 and N. C. MacKay in 1923 until his retirement in 1954.

A. P. Stevenson was a Perthshire Scot of astonishing vigor and enthusiasm who became known as The Apple King of Manitoba. He and Norman M. Ross, from 1903 to 1941 superintendent, Department of Interior forest nursery station, Indian Head, were the founders of successful orcharding on the Canadian prairie lands. For many years Stevenson's Pine Grove Nursery at Morden was the Mecca for farmers and visitors who wanted fruit. They could see Manitoba apples really growing. They could pick what they wanted from the trees right in front of their eyes. At one time this Scottish man had over a thousand trees in his orchard, many with fruit.

The Manitoba Horticultural Association in 1932 gave lasting shape to thoughts that had lingered in men's minds for some time — a Gold Medal bearing the name of this great prairie horticulturist to honor individuals for their "Conspicuous achievements in the field of practical Horticulture." The first Medal was given to Frank L. Skinner in 1932 by Mrs. A. P. Stevenson; and in 1941 Norman M. Ross received his Medal jointly from F. W. Brodrick and Robert Stevenson.

Skinner, in 1900, at the age of 19, settled on a quarter section at Dropmore; began growing trees and shrubs the following year; and during his eventful life from then until his death in 1967, his mind, his work, all his days were concentrated on improvements — improved fruits, improved ornamentals, improved herbaceous perennials: caragana, clematis, ornamental crabapple, honeysuckle, mockorange, rose (13 varieties), scambucus, spirea, lilac (21 varieties), anemone, chrysanthemum (18 varieties), dianthus, iris, lily (29 varieties), lythrum, nepeta, and seven varieties of fruits covering cherries, cherry-plums and plums.

— continued on page 56

ROSE

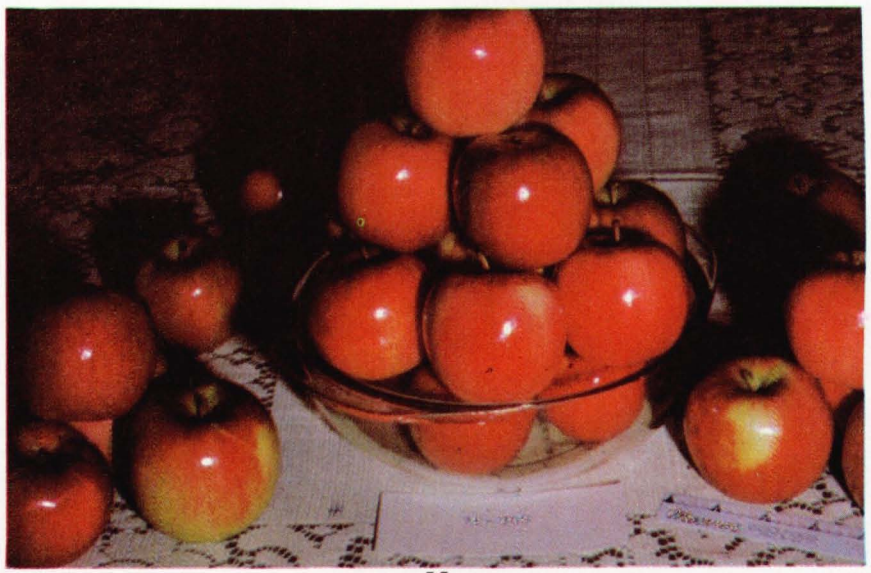
'Cuthbert Grant' is an outstanding new hardy bush rose with large dark red semi-double blooms borne in clusters of from three to six, on new wood, from July to October. It is a vigorous plant to three feet in height with large clean foliage. Softwood cuttings root freely. It was released by the Brandon Research Station in 1967.

VINE

'Scarlet Trumpet' Honeysuckle is one of the most colorful vines in Manitoba with its scarlet flower trumpets standing out against its dense green foliage from June until late fall. It was introduced by Dr. Frank L. Skinner at Dropmore in 1950.

FRUIT

'Carroll' is a hardy large fruited red apple, excellent for eating out of hand and for cooking. It was introduced by the Morden Research Station in 1961.



Ross joined the Dominion Forestry Service in the spring of 1901, and in the spring of 1903 was assigned to the Department of the Interior forest nursery station at Indian Head with charge of the free distribution of shelterbelt trees to prairie farmers. He had to organize the work, encourage the growing of shelterbelts on prairie farms, and distribute suitable seedlings and cuttings running into the many millions. W. T. Macoun, Dominion Horticulturist, often said of Ross that "he was the best endowed natural horticulturist in the nation".

The early settlers found wild plums and a variety of berry fruits awaiting their arrival — but no apples. To meet that urgent need was the duty to which the early fruit breeders directed their energies and applied their growing experience. But in the later 1880's the men of the Canada Department of Agriculture experimental farms devoted themselves to the task which has given results today, and will continue to do so in the hundred and more years ahead.

Their work commenced at the Brandon experimental farm and later was transferred to the Morden experimental farm, now Research Station, where the land was better suited for successful fruit breeding. Apple improvement at the Morden farm began in 1916 under S. A. Bjornason with the planting of around 26,000 seedlings, mainly of Russian varieties collected at the Central Experimental Farm, Ottawa.

The second stage in apple improvement started about 1926 with controlled pollination between species, between varieties within species, and between species hybrids. Research in fruit propagation covers evaluation of methods, production of firm, strong-framed trees, and development of hardy rootstocks specially adapted to the high-lime prairie soil. These were the objectives of the Prairie Cooperative Fruit Breeding Program instituted at Morden in 1946 with the cooperating Universities of Manitoba, Saskatchewan and Alberta; with the experimental farms and stations at Beaverlodge and Lacombe in Alberta, and at Scott, Melfort, Rosthern and Indian Head in Saskatchewan; and with the Alberta Provincial Horticultural Station at Brooks. You will read about their striking successes in the Manitoba Horticultural Association's "A Hundred Years of Horticulture in Manitoba" later this year. You will learn also with profit the respective origins of Manitoba's recommended Centennial Plantings: Morden research station's Carroll juicy apple, Kelsey Rosybloom ornamental crabapple, Miss Canada red lilac, Morden Pink lythrum, Manitoba tempting tomato, and Pee Wee tiny cabbage; Frank L. Skinner's Dropmore Scarlet Trumpet honeysuckle and Sister Justina white lilac; Brandon research station's Cuthbert Grant dark red bush rose; and Patmore Nurseries' Brandon pyramidal cedar.

Lawrence A. Stuckey

Prairie Anemone
Pulsatilla ludoviciana
Floral Emblem of Manitoba

Ancient Prairie Gardens

Dr. W. R. Leslie

This year, 1970, when the first province of the Great Plains region celebrates its hundredth official birthday, is a time to glance back and ponder on conditions as they prevailed a hundred or more years ago. Did the Redmen till gardens then or depend upon unassisted Nature for their plant bounty? What plant parts were eaten? What about salt? Calendar? Compass?

At the turn of the century there was considerable gardening done at various trading posts. The Hudson Bay Company staff had gardens as far north as Churchill. It is recorded that Radisson in 1670 sowed garden seeds and reaped crops at Charles Fort. In 1694 a reward was given for industrious gardening at York Fort. Albany and Moose Forts were noted as successful in growing carrots, peas, beans, turnips and cabbages.

Some dates of special moment are: Henry Kelsey in 1691 arrived on the prairies and saw herds of buffalo. In 1738 La Verendrye and his sons reached the Red River. Upon visiting the Mandan and kindred tribes along the Missouri River in North Dakota, he was amazed at the excellence of their garden-farming. The Selkirk settlers came in 1812-1815 and occupied the rich river-wash lands along the Red River. The Mennonites arrived between 1874 and 1876 and soon changed the scene in southern Manitoba by planting trees and adding melons and gay flower beds in their home gardens. The first wave of Icelanders came in 1875. The influx of Ukrainians began in 1892. Each of these special groups contributed some features to prairie gardening. In 1869 Canada had acquired the land holdings of the Hudson Bay Company. Three years later it was opened for homesteaders.

It is interesting to read in the diary of Alexander Henry the Younger, written at his North West Company post, Pembina, under date of October 17, 1804:

"I took my vegetables up — 300 large heads of cabbages; 8 bushels of carrots; 16 bushels of onions; 10 bushels of turnips; some beets, parsnips, etc."

And, Oct. 20: "I took in my potatoes — 420 bushels, the produce of 7 bushels, exclusive of the quantity we have roasted . . . and what have been stolen, which must be at least 200 bushels more." Other produce included Indian corn, cucumbers, squash, pumpkins and melons.

During the decades since those early trading post days, prairie gardening has unfolded greatly. Widening scope is presented year after year. Appreciation of what many pioneers contributed personally is expressed in the current book, History of the Manitoba Horticultural Association, published by the Manitoba Department of Agriculture.

Gardening was most impressive in the valley of the Mandans. All white men who visited them were astonished at their scientific methods and superb results. They maintained pure lines of seed, which is difficult with a wind-pollinated crop like corn (maize). Their ingenious methods of storing their produce and protecting supplies of seed commanded admiration. They grew four classes of corn, fifteen varieties of beans, squash, pumpkins, gourds, sunflowers, and tobacco.

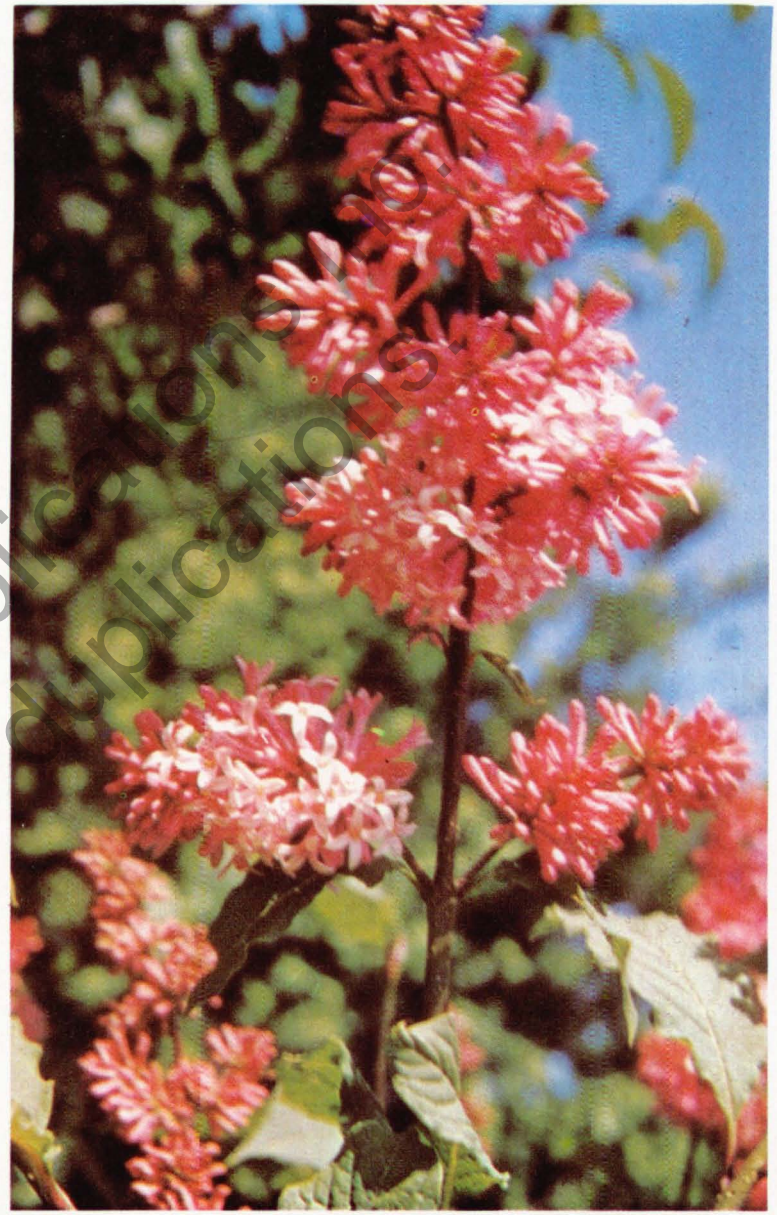
Their calendar was provided by the world about them. When the first migrating geese appeared on their way north the garden was cleaned

— continued on page 60

Plan to include at least several of these Centennial Plants in your garden in 1970.

EARLY LILAC

'Sister Justina' is a single pure white hardy lilac of exceptional purity and beauty in both panicles and flowers. It blooms in May or early June, and was introduced by Dr. Frank L. Skinner at Dropmore in 1956.



LATE LILAC

'Miss Canada' is a hardy late flowering lilac with brilliant clusters of rosy red flowers. The bush itself is compact and attractive. This lovely lilac was introduced by the Morden Research Station in 1966.

up. Willows and brush spread in the fall was now burned. This made the ground softer and easier to dig with their digging-sticks, which had been hardened in the point by charring in embers. Women dug corn hills and after planting the corn, the area between hills was cultivated with a bone hoe made from a shoulder-blade of an animal fastened firmly to a stick handle. A rake was made by attaching a deer antler to a stick. The hills were from twelve to eighteen inches in diameter and a long step apart. The first crop sown was sunflowers, planted around the edge of the garden at the time the ice breaks up in the river. Corn seed was dropped in the hills when the wild plum came into blossom. Beans and squash were delayed until the hawthorn burst into snowy flowers. The last succession planting of corn for roasting ears was made when the saskatoon berries turned red.

Local Indians on the Canadian prairies chiefly depended on wild, uncultivated plants for the vegetable part of their diet. Roots were dug up with a stick curved at the end. Gleanings about plant uses follow:

Vegetable Plants

—American Knotweed *Polygonum bistortoides* — thick rootstock was added to stews and soups.
—Alpine Mountain Sorrel *Oxyria digyna* — acid leaves as a garnish or as cress.
—Arrowhead *Sagittaria latifolia* — starchy bulbs taken from sloughs and stored.
—Arrowleaf Balsamroot *Balsamorrhiza sagittata* — fresh leaves in spring as salad. Seeds ground into flour. Roots, freed of rind, put in stews.
—Biscuitroot *Lomaticum* — in the parsley group. Roots eaten raw.
—Bracken Fern *Pteridium* — stems when young, eaten raw, or eaten as asparagus. Inner parts of root were roasted.
—Canada Milk Vetch *Astragalus canadensis* — root eaten raw or boiled.
—Cattail *Typha latifolia* — creeping rootstalks dug up, dried, and ground into flour; or eaten raw; or roasted.
—Chive or Purple Garlic *Allium schaenoprasum* — source of vitamins and flavoring.
—Cow Parsnip *Heracleum lanatum* — tops used as rhubard, or roasted and peeled.
—Evening Primrose *Oenothera biennis* — roots of this biennial gathered in autumn and stored for later use.
—Indian Milk Vetch *Astragalus abo riginum* — slender yellow roots used.
—Labrador-tea *Ledum greenlandicum* — leaves as a beverage.
—Narrowleaf Gromwell *Lithospermum angustifolium* — long roots into flour.
—Nodding Wild Onion *Allium cernuum* — spring tonic; flavoring by bulb and top.
—Prairie Potato *Psoralea esculenta* — a staple food of much importance. Tuberous roots dug in autumn, eaten raw, boiled, roasted, or dried in the sunshine to be ground into meal for adding to soups.
—Silverweed *Potentilla anserina* — roots roasted.
—Spring Beauty *Claytonia lanceolata* — little tubers boiled.
—Sunflowers *Helianthus* — oil removed from seed by boiling; seeds eaten raw or ground into flour used in cooking.
—Veiny Dock *Rumex venosus* — tender tops as greens or as rhubarb.
—Wild Rice *Zizania* — grains dried, scorched and eaten through the year.
—Wood Lily *Lilium* — bulbs steamed and used as potato, in spite of somewhat bitter taste.

Berries, Fruit

The historian Paul Kane wrote: "I never saw any berry which the

Indians would scruple to eat, nor have I seen any ill effects from their doing so." However, some of us have been warned by friendly redmen against eating some. One instance was the Canada Buffaloberry. But Donald Wyman approves the use of those small red berries for making jelly. It appears that to many of the Redmen, fruits were second only to meat in their nourishment. Many were sun-dried to be used as needed throughout the year.

—Buffaloberry *Shepherdia argentea* — raw and cooked.
—Bunchberry *Cornus canadensis* — edible but insipid.
—Canada Buffaloberry *Shepherdia canadensis* — cooked.
—Chokecherry *Prunus melanocarpa* — raw; gathered, dried and then ground, stones and all, to be used in pemmican, soups and flavoring of stews.
—Clove Currant *Ribes odoratum* — tasty berries ripening over several weeks; esteemed raw and cooked.
—Elder *Sambucus* — mostly used in cooking.
—Mountainash *Sorbus* — in cooking.
—Redosier Dogwood *Cornus stolonifera* — acrid taste but eaten.
—Saskatoon *Amelanchier alnifolia* — extremely valued; eaten raw, and in various cooking and in pemmican.

Other common fruits used freely were strawberries, raspberries, blueberries, cranberries, currants, gooseberries, wild grape, hawthorn, viburnums, and roses.

Homage is due the American Indian. He has shared a truly wonderful garden heritage with those from other continents. Among the wholly American contributions are Indian corn, potatoes, tomatoes, sweet potatoes, all kinds of beans other than the broad bean, peanut, red pepper, pumpkin, blueberry, cranberry, cocoa, cashew, pecan, brazil nut.

From the article, "Plant Heritage from the American Indian", in Plants & Gardens, Vol. 24 No. 4:

"The American Indian used no salt as we know it but cooked greens, and roots with wild garlic or onion for flavor, or with the root stock of fern which gave a slightly salty taste. He sometimes boiled food in the "water of the sugar tree" . . . and if he lived near the sea he harvested oysters, clams and seafood for the salty flavor. . . .

"The Indian approached and used Nature with reverence, and we may well take a lesson from his attitude. If he stripped bark from a tree for weaving into baskets or cloth, if he gathered pokeweed shoots in early spring, or tightly curled fern fronds (those fiddleheads so delicious boiled and served with butter and seasoning), if he cut a dogwood branch for fashioning into tool or dagger, he begged: "Forgive me, brother, for I have need of this."

When plants were dug, the Indian replaced it with seeds of some useful plant.

"The Indian approached and used Nature with reverence!"

Postscript:

Compass? The Indian was a close observer and used the one unerring guide as to directions that is appreciated by nature lovers today. It is the Quaking ASPEN *Populus tremuloides*. Trees out in the sunshine develop a white mealy coating on the bark at the south side of the tree. This natural protection against strong sun is missing at the north side where there is a strip of green bark. The difference in coloring is evident in dull weather when the sun is no longer seen.

EVERGREEN

'Brandon' Pyramidal Cedar is an excellent well proportioned tree with a diameter of about three feet and a height of twenty feet. It prefers well drained sandy soils but will do well in heavier soils particularly if given some protection from winter winds and early spring sun. This fine everygreen was introduced by Patmore Nurseries Ltd., Brandon, Manitoba.

This is Manitoba's
Centennial Year.
Do your part!

Acknowledgements

Color photographs by Dr. Chas. Walkof, W. A. Cumming, H. H. Marshall.
Canada Department of Agriculture.
Courtesy of F. J. Weir, Provincial Horticulturist
Soils and Crops Branch, Manitoba Department of Agriculture.

VEGETABLE

'Pee Wee' Cabbage is the smallest (one half pound) of Morden's "Baseball Series" of Cabbages, which include 'Little Leaguer' (one pound) and 'Junior' (one and one-half to two pounds). Their heads are firm with fine textured leaves and are delicious either cooked or in raw salads. These first real dwarf small-headed cabbages were introduced by the Morden Research Station in 1966.

VEGETABLE

'Manitoba' Tomato is a bush type Tomato producing fine firm well colored fruits, averaging about two and one half inches across, in early August. They have a delicious mildly acid flavor.

This tomato was developed by the Morden Research Station.

The Winnipeg International Flower Show Board

The Winnipeg International Flower Show Board was formed about fifteen years ago when the Directors of the Winnipeg Horticultural Society and the Winnipeg Gladiolus Society decided to stage one large joint show, rather than continue to compete with each other in holding smaller individual shows.

The first show held in the Winnipeg Auditorium in 1955, was a huge success. Response from exhibitors and public alike was overwhelming and all doubts were dispelled as to whether or not Winnipeg could and would support a major flower show.

Since then the show has expanded each year until now it has become the largest horticultural show of its type in North America. In 1967 it outgrew the Winnipeg Auditorium and moved to larger quarters in the Polo Park Shopping Centre. During all these years the Board has tried to maintain as its prime objective the encouragement of horticulture in this area.

To do so they have always tried to provide the best possible opportunity for our gardeners to exhibit their products in competition with other growers from all over the country, and to keep the general public up to date on the latest advances in horticulture. The continued success of the show is ample proof that these aims are being achieved.

In 1970, to celebrate Manitoba's Centennial, the board plans a greater than ever show including not only a complete horticultural show, but the Canadian Rose Society's Annual Show, and the Canadian International Gladiolus Show. This will be the first time for a national rose show on the Prairies, but with the growing popularity of this flower in our ares it should be a major attraction in itself.

The people of Winnipeg and all Manitoba are fortunate in having such a strong group willing to devote so much time and effort to the staging of this show. However, a successful show demands a large number of entries. It is therefore up to all gardeners throughout the province to get behind the board, and come out and exhibit. Newcomers will be especially welcome. Don't let inexperience deter you — there's always someone around only too willing to help and advise.

Plan Now to Exhibit At and Attend

THE FIFTEENTH WINNIPEG INTERNATIONAL FLOWER SHOW

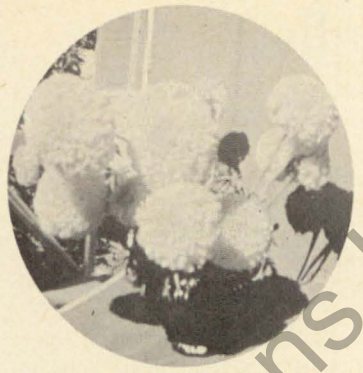
AUGUST 20th and 21st, 1970—POLO PARK SHOPPING MALL

Sponsored by

THE WINNIPEG HORTICULTURAL SOCIETY AND
THE WINNIPEG GLADIOLUS SOCIETY

NOTE: Shipping charges to a maximum of $5.00 per shipment will be refunded to prize winners. All exhibits must be forwarded (prepaid) to arrive at the Polo Park Shopping Mall before midnight, August 19th, 1970. United States exhibitors should advise by wire and mark packages "Cut flowers for exhibition—no commercial value."

For complete prize list write to: MRS. W. E. CROWLEY Secretary
Winnipeg International Flower Show Board
1065 Downing St.
Winnipeg 10, Manitoba



Selection And Preparation of Marigolds For Show Purposes

James Robinson

Assuming your Marigold bed or border has been tended to full bloom and you have been cajoled or brow beaten by some enthusiastic gardener into entering blossoms for competition in a local or Provincial Bench Show, the question now is — What should be done? What preparations are recommended?

A week prior to the Show the plants should be given a thorough watering at ground level with an open hose, avoid sprinkling from the top as the blooms could absorb sufficient water to break the stems, and of course it would be some of those "good ones" you would have chosen! — What if it rains? Be thankful for it and do not lament those broken ones.

If a prize list indicates an entry of six blooms then 12 to 15 of the most uniform and "tidy" blossoms should be collected 2 to 3 days prior to the Show day and kept in a cool place. A portion of the stalk proper and a very limited amount of foliage still attached is desirable, a few of the blooms selected should still evidence a slight green tinge in the centre with the hope that the additional time might mature some of them sufficiently for inclusion in the entry.

The blossoms when picked should be placed immediately in a basin of water into which has been pressed a double layer of chicken wire. This double thickness of wire ensures the stems will be kept erect and eliminates the possibility of the blossoms rubbing and leaning against each other.

For the benching of your entry a low dish with a good heavy frog is recommended. — This permits positioning of the blossoms so that they do not touch. Some stems should be longer than others with the resulting entry having an "airy" open look. — This too provides the judge an opportunity to inspect each bloom if he so wishes.

Unattached or too much foliage is to be avoided and could perhaps result in an "arrangement" which is not the purpose of your entry. — The very limited amount of foliage mentioned is merely to eliminate the "naked" look. — Avoid jamming the blossoms into a jar or bottle "up to the neck", where they appear to be not only fighting each other but have lost the natural growing look.

Although some phases of the remarks herewith might apply to the smaller types of Marigolds they are specifically directed to the large orange and lemon African variety.

Poplar Galls

Dr. A. M. Harper

In the prairie regions of Canada poplar trees are often grown for shade in cities and as shelterbelts in rural areas. Native poplars grow along many of our river banks and in our foothills and parkland areas. Many of these trees are attacked by aphids and mites that cause galls.

A gall is an abnormal plant growth consisting of cells, tissues, or organs that proliferate under the influence of a parasite to form a tumor. When the gall is being formed the cells simply grow larger and more numerous as a result of some sort of stimulation.

Galls on poplar trees appear to be caused by chemicals injected into the leaves or twigs by aphids or mites as they feed. The chemicals appear to have an action similar to that of the normal growth hormones that are present in the tree.

Mite Galls

One species of mite, the poplar bud-gall mite, seriously damages poplars in Western Canada. It attacks many species of poplars including the native trembling aspen, the cottonwoods, and many hybrid poplars. The mite damages the trees by causing a leaf cluster to be distorted into a dark, green, deeply convoluted mass. As the season progresses these galls turn red and later become grey brown. The mites spread from branch to branch and from tree to tree and may gradually weaken the tree until death results.

Aphid Galls

Most aphids that produce galls are rather efficient parasites and, therefore, cause little damage to poplar trees. But some poplar gall aphids have secondary hosts to which they can cause considerable damage.

The sugar-beet root aphid causes a gall to form on the leaf blade, usually next to the midrib, of the narrow-leaved poplar or the balsam poplar. This aphid later migrates from the poplars to sugar beets where it can cause serious reduction in yield of the beets. It appears to be a prime example of an insect that once was of little consequence to agriculture but which has become a serious pest as a result of changes in cropping practice. The sugar-beet root aphid is a native of the prairies that originally appeared to alternate between the native poplars along river banks and lamb's-quarters, a native weed of little or no economic value. With the introduction of sugar beets as a commercial crop the insect included this crop as a secondary host and became a pest in the irrigated areas of Southern Alberta. This insect also will infest such garden crops as spinach, swiss chard, and table beets.

The lettuce root aphid causes galls on the leaves of the lombardy and the griffin poplar. It lives part of its life on these trees and part on lettuce. A gardener or commercial grower who notices a white mold-like substance around the roots of lettuce will, if he looks closely, probably see small white insects crawling amongst the "mold." The insects are lettuce root aphids and the "mold" is a white waxy secretion produced by the aphids. This aphid, like the sugar-beet root aphid, can overwinter on poplar trees as eggs or in the soil as wingless adults. It is of major importance in California and England but fortunately it is of minor importance on the Canadian prairies at present.

The turnip root aphid causes galls on the leaf petiole of the deltoid poplars *Populus deltoides* 'Siouxland' and later migrates to turnips and cabbages. The aphid, although present throughout the Canadian prairies, is not a problem here although it is a serious pest in Texas.

Other gall aphids found on the prairies include the folded-leaf poplar aphid, which causes galls on the leaves of the balsam poplar and migrates to the roots of buttercup. Several other poplar gall aphids form galls on poplar trees and produce migrant forms that probably feed on other undetermined hosts.

Control

Mites

Because the poplar gall mite spreads slowly the removal of galls is an effective control measure. There is no chemical that has been found that will effectively control the mite. All galls should be pruned from trees and burned during the late fall, winter, or very early spring. Some hybrid poplars are completely immune to this mite. It would be advisable, therefore, when planting new poplars, to plant only resistant trees where the gall mite is a problem.

Aphids

The gall aphids are kept under fairly good control by predators such as ladybird beetles, anthocorid bugs, and syrphid fly larvae. As the aphids are protected in the galls and the predators tend to move from one part of a tree to another, spraying for these aphids with insecticides may cause more harm than good as the predators may be killed and the aphids survive. The gall aphids seldom harm a tree but, if many leaves become disfigured, they can be pruned from the tree. Occasionally the vagabond gall aphid, which occurs on deltoid poplars, may be numerous enough to warrant spraying. As the aphids are well protected from contact sprays good control can only be obtained with systemic insecticides such as dimethoate. In using these systemic insecticides the directions and cautions given on the label should be carefully followed.

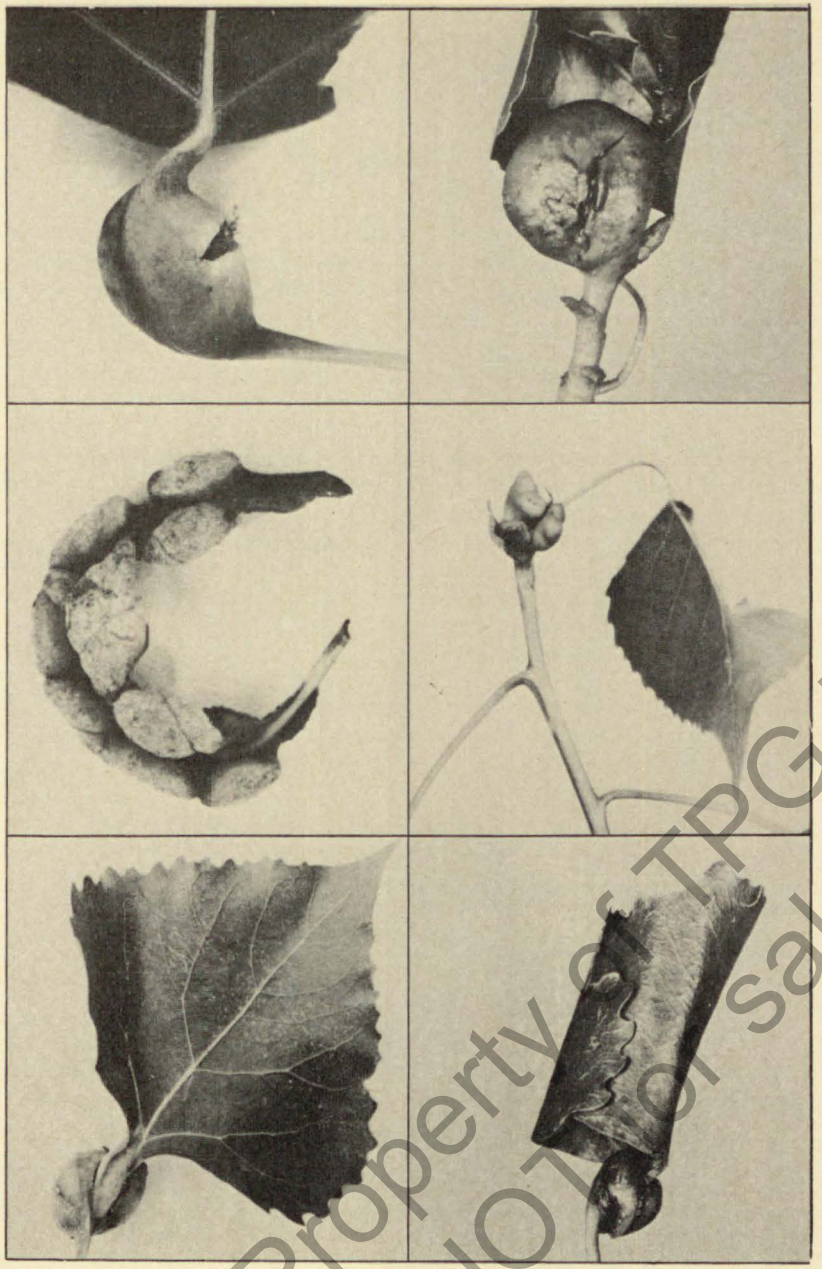


Plate 1

Upper left: Gall on deltoid poplar leaf caused by turnip root aphid.
Upper right: Gall on deltoid twig caused by poplar twig gall aphid.
Centre left: Gall on narrow-leaved poplar caused by beadlike poplar gall aphid.
Centre right: Immature gall on deltoid poplar caused by vagabond gall aphid.
Lower left: Gall on deltoid poplar caused by petiole-blade gall aphid.
Lower right: Gall on deltoid poplar caused by poplar leaf-petiole gall aphid.

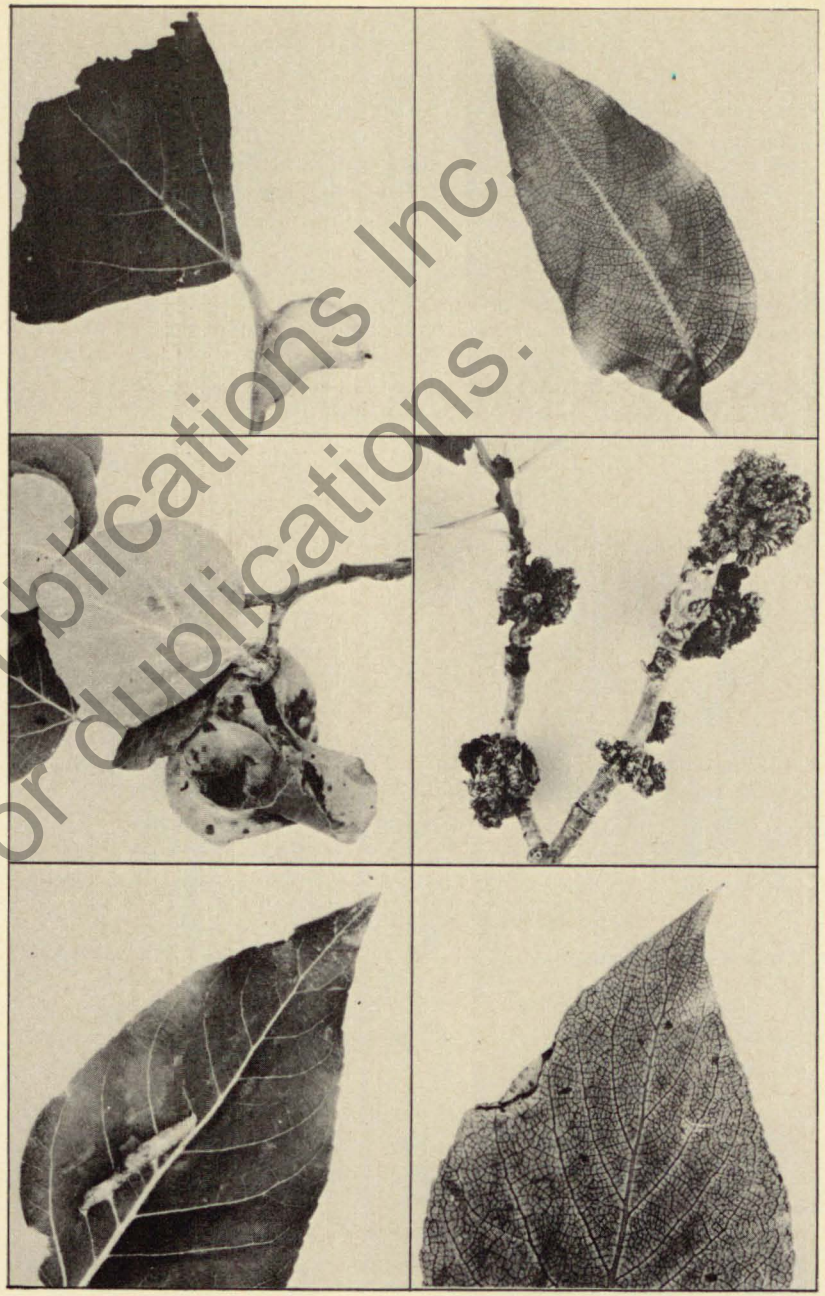


Plate 2

Upper left: Gall on lombardy poplar caused by lettuce root aphid.
Upper right: Gall on balsam poplar caused by poplar bullet-gall aphid.
Centre left: Gall on aspen poplar caused by aspen leaf-pocket aphid.
Centre right: Gall on northwest poplar caused by poplar gall mite.
Lower left: Gall on balsam poplar caused by poplar blade gall aphid.
Lower right: Gall on balsam poplar caused by folded-leaf gall aphid.

Lilac Leaf Miner

R. D. Dixon

The leaves of many broadleaved trees are attacked by the larvae of leaf-eating insects, which bore within and feed internally on the leaf tissue. The damage they do is usually insignificant, since these trees are able to replace their foliage each year. Insects with the leaf mining habit belong in the main to the order Lepidoptera (moths and butterflies), a few beetles *Coleoptera,* flies *Diptera* and wasps *Hymenoptera* also have this habit.

From June to September the leaves on lilac shrubs and hedges sometimes acquire a scorched brown appearance. An examination of these leaves reveals the presence of mines and blotches containing many small pale green insect larvae with black heads. These insect larvae vary from a minute size up to one quarter of an inch and are called *Gracillaria syringella* Fabr: the lilac leaf miners. These insects belong in the Family Gracillariidae (leaf blotch miners) which in turn belongs to the order Lepidoptera. The adult insects are moths. The lilac leaf miner hollows out irregular-shaped mines or blotches between the upper and lower surfaces of lilac leaves and besides feeding on lilac, they may occasionally be found in mountain ash and some shrubs. This insect does not usually kill the host plant, however, the browning of the foliage reduces the effectiveness of these plants as ornamentals.

Fig. I

A mined leaf—early symptoms.

Fig. II

A rolled leaf—latter symptoms.

Life History and Habits.

The blotch leaf miner is a small slender greyish brown moth about one quarter of an inch in length. The adult moths usually appear in the latter part of May or early June. Mating takes place and the females lay their eggs during evening hours. The eggs are laid in small batches along the midribs on the under-sides of the leaves. In approximately a week the eggs hatch and the larvae first burrow into the leaves and later begin to mine between the leaf surfaces. The first symptoms of larval feeding show up as small discoloured spots, later the mines become blotches. Figure I.

Approximately three weeks later the larvae come out of their mines, roll the leaf downwards and feed inside the roll. Figure II. The larvae at this stage of development are pale yellowish in color and approximately one quarter inch long. After ten days or so they drop to the ground on silken threads and pupate just beneath the surface of the soil debris. In early August, a second generation of moths appear and the life cycle is repeated.

The second generation of larvae feed until mid-September. By this time the larvae are mature; they drop to the ground, and burrow in just below the surface. Here they pupate and spend the winter in cocoons and the adult moths emerge the following spring.

Control.

There is more than one way to control these pests. The essential point to remember is that although the lilac bush becomes discolored, it usually is not killed. The simplest method for private gardens is to pick off the infected leaves and burn them. This may take more time than chemical control but is much safer, where children, pets and birds are concerned.

Chemical control can be achieved by using malathion according to the manufacturers recommendations. A systemic insecticide such as Dimethoate 20% Emulsifiable Concentrate (or 40% E.C. Dilluted to half strength) applied in a three inch band for each one inch diameter of stem once in mid-June, and again at the end of July, gives good control. This compound can also be used as a foliar spray.

Pear Slugs

R. D. Dixon

During the latter part of the summer ornamental trees, bushes, and hedges on many farmsteads and in residential areas begin to assume a brown, scorched color. From a distance this appears to be fall discoloration. However, a close inspection reveals numerous, dark green to yellowish, slug-like "worms" feeding on the upper surface of the leaves. These "worms" are the insect larvae of *Caliroa cerasi,* the pear slug, actually the larvae form of the wheat-stem sawfly.

This widely distributed insect skeletonizes the leaves of cotoneaster, mountain ash, pear, cherry, plum, quince and apples. The type of injury caused by these insects cannot be confused with that of any other pest. Pear slugs feed only on the upper surface of the leaves. Identification of the causative agent is very easy since the epidermis is the only part of the leaf eaten by pear slugs and areas of transparent tissue interlaced with the leaf veins is distinct evidence of pear slug damage. See figure II.

The defoliation of fruit trees and the subsequent reduction in fruit yield is a serious problem, however, the damage to plants of ornamental value

is of greater importance in urban areas. In addition to plant damage, pear slugs in their wanderings over foliage often crawl on adjacent structures such as fences and walls, thus they may accidentally get brushed onto the clothing of persons coming near them. Where clothes lines cross over bushes, laundry often becomes covered with pear slugs and the laundry becomes stained.

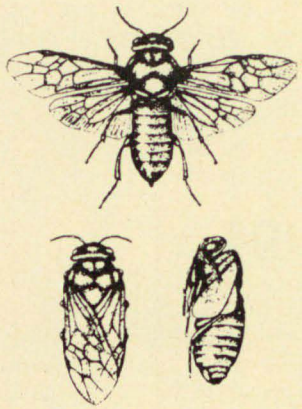


Figure 1

Pear Slug Adults

Figure 2

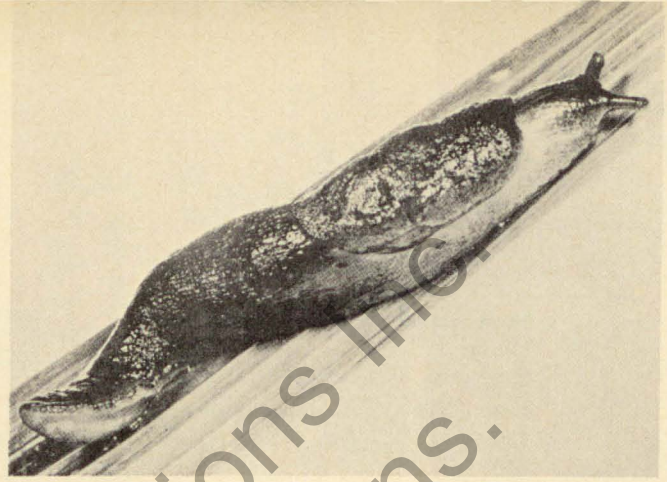
Pear Slug Larvae and Damage

Life History and Habits.

The adult insect is known as a sawfly, and like many other sawflies, passes the winter in a cocoon two or three inches below the surface of the ground or in the leaf litter beneath the host plant. In the late spring, shortly after the host plant comes into full leaf, the black and yellow, wasp-like adult sawflies emerge from these cocoons. They fly to the host plant and mating takes place. The female sawfly inserts her eggs into the leaves and a tiny blister forms over the place where each egg was laid. After a few days these eggs hatch into soft bodied "worms" or slugs which begin to feed on the epidermis of the leaves. The feeding period varies from two to three weeks and as the slugs grow in size they become somewhat lighter in color; when full grown they are a green-yellowish color. At this stage the larvae drop or crawl to the ground, burrow in, and change into pupae inside cocoons. Adults emerge again in late July and early August. These adults lay eggs which hatch into a second generation of slugs. It is this second generation that usually causes the greatest amount of injury during the late summer and early fall. When the larvae of this second generation are full grown they drop to the ground, pupate, and remain there for the winter.

Control.

It is very easy to control pear slugs especially with insecticides. If ornamentals are habitually attacked Malathion 50 Emulsifiable Concentrate at a rate of 1 tablespoon per gallon of water applied to leaves and stems as soon as larvae are seen or damage is noticed, will control them provided the upper surfaces of the leaves are well covered. Because malathion breaks down rapidly a second application may be necessary.



Garden Slugs and Their Control

D. L. Smith

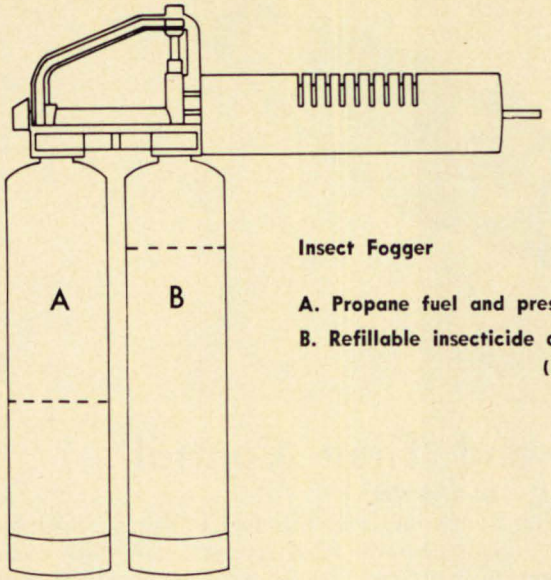
The common garden slug *Limax maximus* was first found in Manitoba in the Winnipeg area in 1933. This pest was relatively rare until 1947 when it became numerous enough to be considered a pest in home gardens and commercial market gardens. During the past few years it has moved to many rural areas of Manitoba. Although the method of spreading to rural areas in Manitoba is not definitely known, it is most probable that bedding plants and shrubs moving out of the Winnipeg area carried either eggs or immature stages of this pest.

Slugs are grey in color, have a slimy appearance and are up to one and one half inches in length. They require relatively humid conditions for survival and ordinarily do not become numerous in the type of climate that we have in Manitoba. However, well cared for home gardens provide an artificial climate which is suitable to slugs. They thrive under the shady, damp and warm conditions provided in most home gardens.

Successful control of slugs is difficult but not impossible. Good sanitation around vegetable and flower gardens is a major factor in reducing slug infestations. This pest cannot survive for long when exposed to heat and sunlight and during the heat of day they seek shelter in protected areas under old boards, boxes and similar trash. Such materials should be removed and destroyed. As vegetables are harvested, the discarded parts of plants should be worked back into the soil immediately instead of being left in mats or piles in the garden. All efforts to keep border areas of the garden free of plant material and other refuse will help reduce infestations.

Chemicals are a necessary part of a successful slug control program, and for best results control efforts should cover as large an area as possible. The most effective chemical available for slug control is Metaldehyde and is available in bait, pellet, liquid and dust formulations. Since Metaldehyde has the disadvantage of being very unstable, fresh stocks should be used for best results. If you and your neighbours are planning a slug control program, contact your local pesticide dealer and have him order a fresh supply for you.

The best time to begin a slug control campaign is around mid-June when most of the overwintering eggs have hatched. Co-operate with your neighbours. Slugs can be effectively controlled in an area if everyone takes control measures on his own property. Apply Metaldehyde as directed on the container label and use the rates of applications suggested. By applying too much or too little chemical you will either waste chemical or not get effective control.



Insect Fogger

A. Propane fuel and pressure cylinder.

B. Refillable insecticide cylinders (holds approximately 32 oz.).

Fogging for Mosquito Control

Dr. R. Brust

The average home owner does not have the resources, equipment, or time to locate and treat the breeding sites of mosquitoes, and for the most part has no breeding sites on his property. The mosquitoes that plague him in his back yard are produced in pools anywhere from nearby to 5 miles from his home. Hence, a home owner must resort to personal protection with mosquito repellent, proper clothing, and staying indoors during humid days and warm summer evenings. If he insists on being outdoors and refuses to use repellent and protective clothing, he may try fogging with an insecticide.

There are several types of fogging devices on the market, depending upon the home owner's interests and problems. One type can be attached to a lawn mower, another to a small garden tractor, and still others are portable. There are electric or propane portable foggers, both quite reasonably priced for a home owner. This writer would recommend the propane portable fogger (Fig. 1) because it is trouble-free and the high temperature obtained on the coil, using propane heat, produces an excellent fog blanket which penetrates shrubs, trees and flower beds where adult mosquitoes are resting. This fogger costs less than $50.00 in most outlets, and is sold by propane dealers.

The critical factors in using fog for controlling adult mosquitoes are: when to fog, how often, which insecticide and carrier to use, and at what concentration.

1) Fogging should be done only when wind speeds are low, less than 3 mph. A high wind will carry the fog away before it can get in contact with the mosquitoes.
2) Fogging should be done only when mosquitoes are actively flying about. Since the insecticides recommended here are short-lived and produce no residual control if used at the recommended rate, fogging should be done during the early morning or in the evening. Direct the fog into tall vegetation, shrubs and trees, since this is where the adults are resting. Fog should be directed along the lee side of the house under the eaves, and in the grass alongside the house. Adults do not rest in the lawn unless the grass is more than two inches high. They must have moist vegetation during the day in order to survive.
3) When adults are plentiful and the air is warm, humid and still (no wind), it is necessary to fog twice a day to have any effect on the population. Fogging during the evening, about one hour before sunset will get rid of the adults for 1-3 hours, depending on how well the fog carries into the adult resting areas. Since peak adult activity occurs after sunset, about 9-11 p.m. and 4-6 a.m., more adults will move into the yard overnight. These will have to be controlled in the morning, 6-8 a.m., if the yard is to be enjoyed during the day. If the daytime hours are sunny, the relative humidity is low and a slight breeze is blowing, the adults will not leave their resting areas and the morning fog will not be necessary. What must be kept in mind at all times is that the fog will kill only the mosquitoes which come in contact with it. Any that move into the yard after one or two hours will not be killed.
4) Two insecticides are recommended: (a) Vapona (DDVP or Dichlorvos) which is sold by Shell Oil as a prepared formulation of 2% vapona in a light paraffin oil; (b) Malathion. This can be purchased as 3.6% malathion in a light parabase oil sold by Abell Waco Ltd., Toronto. Since this mixture (Malthane) is not readily available, a mixture of 3% malathion in a light mineral oil (paraffin oil) can be prepared by the operator. If the fogger can use a heavier oil, then malathion may be mixed with diesel fuel. Since malathion is generally sold as a 50% mixture, it should be diluted 17:1 to obtain a 3% mixture.

In all cases, keep the machine far enough away from tall vegetation, especially sensitive flowers, so that the fog temperature is the same as the air temperature. If the machine is too close, you could "burn" the leaves of plants and shrubs. Also, the fog close to the machine may be "wet", and if this falls on sensitive plants it may cause damage.

Insecticide Residues and the Future

Dr. A. J. Thorsteinson

The modern era of chemical control of insects started during World II when DDT provided a defence against typhus and malaria and other dread diseases. Some lice and mosquitoes that carry these plagues acquired a resistance to DDT, an example of Darwin's law of evolutionary survival. The use of DDT meanwhile spread from the control of insects directly affecting the health of man and animals to operations against insects that destroy crops. Here again DDT was often dramatically successful though some pests ultimately acquired resistance by the genetic process.

For many years DDT was considered a safe insecticide especially by comparison with parathion, a legacy of war gas research used to kill mites and other pests that proved resistant to DDT. Parathion indeed was so dangerous to handle that it could be used only by skilled operators but after a transient deadly effect it decomposed into harmless end products. On the other hand DDT appeared to cause no illness or deaths and was even licensed for household use. It has, however one insidious trait — its molecule is so stable that DDT residues require years to decompose in the soil and waters where it is adsorbed on colloidal particles and carried down the watersheds to the lakes and oceans. There it enters the food chains leading from insects and crustaceans upward via fish to the birds of prey. Although the evidence is not as crystal-clear as a scientist could wish, we cannot reject the suggestion that the dwindling populations of osprey and golden eagles may be an aftermath of the widespread use of DDT years ago.

Forebodings of such consequences disturbed some people from the beginning. Many scientists directed their research toward non-insecticidal solutions to insect problems. They sought to find ways to control insects by adjusting times of seeding, irrigation or cultivation or by developing resistant varieties by the methods of plant breeding. Concurrently some laymen raised a hue and cry against the widespread use of insecticides. The most effective voice was that of Rachel Carson who wrote "Silent Spring".

Although some of the efforts to control insects without chemicals were successful they did not provide solutions for many of the more serious insect threats to agricultural production. A number of new insecticides were developed to cope with insects invulnerable to DDT. Some of these, notably dieldrin, were spectacularly effective especially in controlling the grasshopper and locust plagues of the fifties and early sixties. Alas it soon proved to be even more treacherous than DDT. Some soils became so contaminated that farms had to be condemned, as occurred in B.C. To forestall such disaster here the Government of Manitoba banned dieldrin and aldrin in 1962 in spite of the fact that no very effective alternative was available for grasshopper control. Indeed, now, seven years later we still do not have any highly effective insecticide but fortunately we have had no serious grasshopper outbreaks since the ban on dieldrin.

Recently there has been a domino sequence of bans on the use of DDT, beginning with an act of the Swedish government last year and including the ban on DDT by the Ontario government last summer and by the federal government in November 1969. However, the use of DDT had already declined to relatively low levels. Agricultural use of DDT in Manitoba was estimated in the summer of 1969. It had fallen very steeply in recent years, and the reasons for the large drop in DDT use are various.

DDT resistance in the original insect population or acquired by genetic selection was a factor in the switch to other chemicals. I believe that the apprehensions of prophets such as Rachel Carson had a direct effect both on the insecticide industry and economic entomologists. Otherwise we would not now have an arsenal of alternative insecticides that are at the same time safe to handle, effective against many of our insect pests and yet do not accumulate persistently in our soils and waters. It is of some interest and perhaps importance to realize that legislative bans cannot be credited with these advances. On the contrary, the bans became feasible largely as a consequence of them. Nevertheless much remains to be done and what progress has been made should be more a stimulus to continued efforts rather than an excuse for self satisfaction.

Among the promising possibilities for new ways to control insects are the use of chemicals that imitate the effects of insect hormones and the use of insect attractants. Work of this kind is being done in our laboratory. Of more immediate practical use is the "operational approach" that exploits materials and methods now available to the best advantage. This approach emphasizes the shrewd selection and securance of key information about the growth and distribution of insect populations so that the safest chemicals can be used where and when needed and not otherwise.

In the light of these recent developments in pest control, we should see very few persistent chemicals used in the future. Meanwhile, we must hope that populations of birds or other valued species that may have been affected by the use of DDT or other persistent insecticides will soon return to normal levels.

Gardening by Radio and T.V.

Stan Westaway

F. Lionel Moore

Many radio programs have been conceived, nurtured and developed over the years but few have enjoyed the life span of the gardening programs in the CBC schedules. While the CBC gardening programs may claim a few months longer lifetime in the east, the first Prairie Gardener program showed up on Sunday morning radio on September 26, 1943. The first television gardening program was part of Country Calendar program number one of February 14, 1955, on the Winnipeg TV station CBWT, the first TV station in the prairies. As the other TV stations were set up in the Prairie Provinces, this gardening feature was among the first of the network programs to be carried.

Like the programs themselves, those associated with the programs have enjoyed a lengthy run. Stan Westaway has handled the Gardening Television series ever since the very first program. Dr. A. R. Brown, well-known prairie horticulturist, wrote the scripts for the radio programs from the very first until his death in 1961. Since that time, H. F. Harp, who recently retired after a lifetime of horticultural work at the Morden Research Station, has continued to write the scripts. George Secord has been 'the voice of the Prairie Gardener' for the 26 year run of the series, and has only missed a few Sunday commitments in all that time. Even when he was confined to his home with his leg in a cast a few years ago, he made most of the program deadlines by recording the scripts in his own livingroom.

O. J. W. Shugg, the man who conceived the idea and developed the first Farm Broadcast programs for the CBC, was the originator for the radio gardening programs. Mr. Shugg is still with the CBC. He is now located in Ottawa as Special Assistant to the Executive Vice President of the Corporation. He says that the gardening programs were part of his overall plan to provide different kinds of information service programs, primarily for rural people. From the listener response to the programs it has been obvious almost from the beginning that a much wider constituency was being served. He had known Arthur R. Brown well before his career began in radio. He knew of Dr. Brown's love and knowledge of all things horticultural, and it was Mr. Shugg who presuaded Dr. Brown to write the first scripts for the Prairie program. Dr. Brown was a gifted amateur horticulturist, well-known and well respected by the professional horticulturists among whom he had a wide personal contact, which he maintained during all of the years that he wrote the scripts. While the CBC never went out of their way to publicize the fact that the Prairie Gardener program was a two man effort, neither did they deny the working arrangement.

When his Alma Mater, the University of Saskatchewan, bestowed the honorary degree of Doctor of Laws on A. R. Brown in May, 1956, the CBC published a story on this event in the CBC Times, along with the details

of the program production, noting that "while everyone is familiar with the voice, few know very much about the man himself because he has never actually done the broadcasting and his name has never been mentioned on the program. George Secord has been the man with the voice and while Mr. Secord is the first to admit that he really couldn't tell a petunia from a pomegranate, his voice has been, and continues to be, accepted as the voice of authority on all things dealing with gardening on the prairies."

Dr. Brown often visited with Mr. Secord on his trips to Winnipeg from his home in Saskatchewan, later in Watford, Ontario, and their voices were really not that much different. Often when Dr. Brown was finished making a speech, guests would tell him that he sounded just like he did each Sunday morning on his broadcasts.

Bert Harp has had a lifetime of background in horticulture and even before he began writing the scripts, he often answered much of the mail listeners sent in to the Prairie Gardener as a service from the Horticultural Research Station at Morden. So, he was a natural successor to the writing chores for the Prairie Gardener programs. Mail to the program has increased in recent years, as Mr. Harp has offered bulletins and booklets dealing with the various phases of gardening on the prairies. He has often stated that these booklets don't do the home owners much good stored in government offices, and untold thousands have been distributed as a result of mentioning them in the Sunday morning broadcasts. The mail comes from a wide cross-section of interested listeners, young and old, city doctors, rural merchants, as well as farm and city home or apartment dwellers, who have questions or problems with their grounds or houseplants. In recent years more and more young people have been writing to the Prairie Gardener seeking help and guidance on landscaping their home grounds, many mentioning that costs are a high priority problem in their plans.

When the CBC was looking for a man to handle the gardening portion of Country Calendar, many interviews were set up and several were auditioned. Stan Westaway's 'gargly' voice should have almost eliminated him on the first interview. This probably would have been the case except that he has that certain something that has made him an outstanding TV performer over the years. Keith Morrow, Director of CBC operations in Newfoundland was the Farm Broadcast Supervisor during the early days of Farm Television and met many of the people interested in the gardening assignment prior to the start of the series. When he met Stan Westaway in the Greenhouse at the University of Manitoba he was impressioned with Stan's down-to-earth approach to all things dealing with his horticultural interests. The clincher was when Mr. Morrow asked Mr. Westaway about a poinsettia in the corner of the greenhouse. Stan explained how the specimens developed, and how they could be carried over, and then proceeded to pluck a leaf off the plant to show the family characteristic of exuding the milky substance from the end of the stem. As we left the greenhouse, Mr. Morrow said "There's your man. He's a born demonstrator. He'll 'show' viewers rather than 'tell' them." His programming has carried him throughout the length and breadth of the Prairie provinces since those early days, and taxi drivers and people on the street or in airports often stop him to ask about their particular gardening problems. "Gardening with Stan" has been a separate Regional Network Program for many years and is carried on all CBC stations and on some of the affiliates.

These have been a few rambling notes on the CBC gardening programs on radio and television in the prairies, the longest lived regional series in the CBC schedules. In closing it should be noted that many private stations, too, carry excellent local programs for gardening enthusiasts and we hope that prairie horticulturists will continue to be well served in this regard.

The Tomato as a House Plant

T. A. Sandercock

Growing tomatoes as house plants dates back to the 16th century when tomatoes were first brought to Europe by explorers who visited the coast of South America. They were used mainly as ornamentals in the garden and were seldom eaten. They were given away as tokens of affection. Sir Walter Raleigh was said to have presented Queen Elizabeth with a tomato plant but then promptly lost his head. This, however, is no reason to believe that tomatoes are poisonous.

Growing tomatoes as house plants I feel could be extremely interesting and fascinating. They would not only be useful as a conversation piece but they would also produce fruit that could be used as it ripened.

The type of tomato best suited for this purpose would be the cherry tomato. This is a bush type that grows fairly compact and produces a profusion of red fruit which can be eaten out of hand like cherries. The large tomato varieties can also be grown but they would be a little more cumbersome and would need more attention from the standpoint of staking and tying and no doubt would require larger containers to hold them. The seed of cherry type tomatoes can be obtained from most seed companies in Manitoba.

To produce the tomato as a potted plant the procedure would be very similar to that of growing individual plants for setting outdoors. You may start them by placing two or three seeds in a small jiffy pot and selecting out the best one when they emerged or by producing a large number of small seedlings in a dish and then transplanting the more vigorous ones into individual pots. These pots may be small in the beginning and the plants moved to successively larger pots as they progress. I would suggest that the final pot be at least 8" in diameter.

To produce a strong vigorous plant, attention must be paid to providing the plant with a suitable soil mixture, continually supplied with adequate plant food throughout the life of the plant and a plentiful supply of strong light with average growing temperatures of 68-70°F. The soil mixture used by the staff at the university is two parts of soil and one part each of sand and peat moss. Once the plants become well established and start to make significant growth, additional plant food is added in the form of 10-52-17. This fertilizer is mixed with water in the proportions of three level teaspoons per gallon of water. The plant is then given from half to one pint of this solution once every ten days. The heavier application is used as the plant becomes laden with fruit.

Tomato plants like plenty of strong light for vigorous growth. Thus they should be placed in a southern exposure where they will get direct light throughout the day. When they are flowering it may be wise to extend the period of light by the use of lamps to obtain a better fruit set. This is especially important during the short days of winter.

Tomatoes are a self-pollinating plant and do not require bees or insects to transfer pollen from one plant to another. However, they can stand a little help. As the flowers come out into full bloom, a light tapping of the stems will help scatter the pollen and improve pollination. Tomatoes do not set fruit at night temperatures below 58°F, thus they should be kept away from drafty windows or cool corners of the room.

Producing a healthy, vigorous plant with an abundant set of fruit is a challenge that every plant lover should accept as a Centennial project. This is one that I am sure you will enjoy and one that you can gain a great deal of satisfaction from your efforts.

Fibrous Begonia – A Rewarding House or Garden Plant

Jack Nichol

One of the most versatile of house plants is the begonia *Semperflorens* commonly known as the fibrous rooted begonia. Numerous ways may be used to propagate these plants for use in the garden or the home.

If growing from seed, the seed should be started in January or early February. The plants will then develop and make good growth in time for transplanting outdoors in June, if to be used as a bedding plant.

Plants brought inside in the fall should be cut down so that they will branch and produce new growth for use as cuttings in the early spring. These cuttings will root directly in water or a rooting media such as sand, perlite, or Vermiculite. When rooted they can be planted in flats and grown for planting outside.

The old plants can also be divided in the spring, generally in March. Each plant is split up into as many new plants as possible. All that is required is one or two bits of stem with some roots attached for each new plant. If these are planted in flats about three inches apart in March, nice plants will have developed by setting out time in June.

Well shaped, preferably short plants, can be potted up from the flower border in the fall, and these make excellent house plants for the winter. In potting up these plants use light porous rich soil which should contain a generous portion of leaf mould. Periodic feedings of plant food about once a month will keep the plants in a healthy growing condition.

These begonias have nice blossoms and very attractive foliage when used as a house plant. I find that my favorite, the double pink flowered with the bronze foliage, has a tendency to produce slightly smaller, lighter colored flowers than when grown outside. Also the bronze coloring in the foliage is not as bronze as when grown outside.

They are excellent for growing in groups or for making semi-formal flower beds. For example, if a group of white flowered and light green foliage plants are grown beside a group of double pink or red flowered and bronze foliage plants, a very pleasing effect is obtained.

I do hope that more of you will try using these plants in the garden. You will be well rewarded and pleased with the results obtained.

The Best Year-Round Treatment for Amaryllis, Gloxinia and Achimenes

W. H. Gray

Hippeastrum, commonly called Amaryllis, is one of our most beautiful flowering indoor bulbs, and at the same time is very easy to grow. Although the initial cost of the bulbs may seem expensive, if treated properly, the bulbs may be kept and will bloom for many years.

The method of potting will determine the success you will have, not only in the first blooming season but in the years to come. The best soil mixture is: two parts garden loam; one part leaf mold or peat moss; one part well rotted manure; and one-half part of sharp sand. The size of the pot is very important because these bulbs seem to give much better results if they are kept a little "pot-bound". The pot should be about one inch in diameter larger than the bulb. The pot should have very good drainage. The bulb should be placed so that one-third of the bulb is exposed above soil level. Make sure the soil is quite firm.

Water thoroughly the first watering and then keep moist until the growth appears. Then increase the amount of water. The best temperature for starting growth is from 55 degrees to 60 degrees. It usually takes from six - eight weeks from starting until the Amaryllis blooms. The bulb will throw up the flower spike first and when almost ready to bloom, the leaves will start to grow.

After the bloom is finished, the flower spike should be cut down to the bulb. Keep the soil moist and give a little liquid fertilizer every two weeks. After danger of frost is over, the pot should be placed out in the garden in a semi-shaded area. In September, take plant indoors and place on its side in a dry, cool place. The pot should be laid on its side to keep soil dry so that the bulb can "rest".

In December, the pots should be brought up and the bulb started back to life. Once the bulb is placed into its original container, care should be taken not to disturb the root system. The drainage should be checked and then about one inch of soil removed from the top of the pot and replaced. The same soil mixture as before should be used with a little bone meal added. The same growth cycle as mentioned above is then followed.

Gloxinia — The Florist's Gloxinia has been developed from a Brazilian plant named *Sinningia*. It is a tuberous-rooted plant which, although very showy, is quite easy to grow. They may be grown much like African Violets to which they are similar in many respects. They are propagated from seeds or leaves (using the same method as with African Violets) and will soon develop bulbs. As the bulbs are available in many retail stores, we will discuss growing from bulbs.

The bulbs are usually started during February and March in pots slightly larger than the bulb itself. When the pots become well filled with roots, the plants should be re-potted into 5-inch or 6-inch pots. The best soil mixture is: one part loam; one part leaf soil or peat moss; and one part sharp sand. (We found Turface in place of sand to be excellent.) The pots must be clean and have good drainage. The bulbs should be planted just

under the soil surface not more than one-half inch deep, and the soil must be firmly packed.

Watering is very important. After the first potting, the soil should be well watered and then kept moist. Water should not be allowed on the foliage and the plants should be sheltered from direct sunlight. When the flower buds are forming, liquid fertilizer is applied twice a week. When flowers open, cease fertilizing.

After the blooms have faded, watering is gradually decreased and, when the leaves have died, the pots are stored on their sides in a cool, dry area. In February or March, the pots may be brought up, the old bulbs taken out of the old soil, cleaned of soil, and started as mentioned above. This process has proved very successful and bulbs should last for several years.

Achimenes — These plants are once again becoming quite popular and although they are grown and treated very much the same as Gloxinia, they are quite different in nature.

They grow from rhizomes (rootstocks) which are small, scaly tubers or tubercles. They are started in February in a soil mixture of equal parts of loam, leaf soil or peat moss, and sand or Turface. Place three rhizomes in a 3-inch pot, just under the soil surface and keep soil moist but not too wet. When the pot becomes fairly full of roots, it can be moved into a 5-inch or 6-inch pot. A light feeding with a liquid fertilizer once a week is helpful until plants start to bloom. Some people like to start their rhizomes in a flat or large pot and then split them when they start to grow. This system works well but there is always a chance of damaging the root system if one is not very careful. Achimenes do very well if planted in baskets or hanging pots and hung in a window. Do not place in direct sunlight, especially when plant is in bloom. Keep water off foliage of mature plants.

After the plant blooms, gradually reduce watering. Remove withered flowers and leaves, and store pots in a cool place until the new growth starts. Water sparingly until plant is well under way, and then treat as above. Achimenes needs repotting only every two years, but pots should be checked to make sure the drainage is good.

The above methods have proven very successful with us at the Assiniboine Park Conservatory. No doubt there are many other methods of care that are just as successful, but whichever are used, I am sure you will find much satisfaction in growing these tuberous plants.

"My Method of carrying Geraniums over Winter"

Anthonie M. Jansen

The Geranium is one of the most popular plants for spring bedding. However, as prices for geraniums which we buy each spring for our flower beds, window boxes and patio pots are fairly expensive, in quantity at least, we often try to keep them over from one season to the next.

The young plants purchased from the greenhouse in the spring, should be disease and pest free. If you are planning to keep these plants over for the next season, it would be preferred to grow them in a flower bed planted at least twelve inches apart in a soil mixture that is well drained, with some well rotted manure added to the soil to supply the plants with enough nutrition during the growing season. Watering during the growing season should be kept to a minimum, so as to produce short, sturdy and hard growth.

There are three methods of carrying over geraniums for the following growing season:

1. Cuttings taken from the stock plants.
2. Stock plants saved to take cuttings from during the winter.
3. Plants carried over winter and used again the next season.

The first method of taking cuttings from the stock plants might sound to be the easiest, but for the home gardener it is quite often a problem; even the commercial grower has his troubles. Cuttings taken should be from clean, vigorous growing stock plants, and of medium hardiness. Quite often the commercial grower will cut back the main shoots of a geranium plant and thus encourage side shoots, which during the fall will have shorter and sturdier growth. The cuttings should be about four inches long, but shorter cuttings can be used, even leaf-bud cuttings if stock is scarce, but more time is then required to produce a plant. The cuttings may be allowed to wilt without injuring them and if soft cuttings have to be taken the drying of the cut end by exposure to air for about six hours will reduce loss by damping off. Only the lower leaves should be removed to facilitate the placing of the cuttings into the rooting medium. Removal of too many leaves reduces the speed of rooting and the vigor of the root system. Treatment with a rooting hormone is used by some commercial growers. I use a rooting medium of either coarse sand or perlite. The sand of course should be sterilized before sticking the cuttings into it, and any container, flat or bench, used for rooting cuttings should also be sterilized. Pano-drench has worked very good for me for sterilizing my propagating benches. After sticking the cuttings in the medium, they should be given a heavy watering and then carried somewhat on the dry side. Further watering may not be necessary for as long as two or three weeks, depending on the fineness of the rooting medium and the temperature of the area where the cuttings are rooted; however, the cuttings should not be allowed to become so dry that they wilt severely. Cuttings may be potted when they are rooted and

can be placed into two and one-half or three inch pots. The soil mixture I use for the rooted geranium cuttings is three parts soil, one part well rotted manure, one part peat and one part sand. Added to this is three oz. of single superphosphate to a bushel of soil.

The second method of carrying over geraniums during the winter period for the next season is by saving the stock plants from which to take cuttings during the winter time.

Once again it should be emphasized that only clean, disease free and vigorous plants are to be saved for this method of propagation. After the cuttings have been taken, the stock plants are cut back so that the shoots left on the plant are approximately five inches long. Some of the longer roots can be cut off as well, as this will help encourage new fiberous roots to form.

The stock plants are then potted up, perhaps I should say potted down to a four inch pot, or if not too much space is available they can be placed into a four or five inch deep flat.

To ensure that the stock plants have sufficient leaf area to develop food for new shoots, no less than three perfect leaves should remain on the shoots left on the stock plant.

The soil medium used should be the same as was used for the rooted geranium cuttings mentioned earlier. Rank growth on stock plants should be avoided by adding to the soil, nutrient materials which are high in phosphorous and potash such as 0-12-12 fertilizer. This can be watered into the soil medium at a rate of one tablespoon to a gallon of water and applied approximately every four weeks after new cuttings have been taken, but it should be emphasized that at least three perfect leaves should be left on the shoot from which a cutting was taken, for the food development for new shoots. After the cuttings have been taken the same procedure can be followed as mentioned before.

These two methods of carrying over geraniums can be done quite successfully and easily by any home gardeners who have a greenhouse structure. The last method I will briefly discuss is for home gardeners who do not have the facilities of a greenhouse and have to try and keep geraniums during the winter in the house. Just before the frost sets in the geranium plants are pulled up. The plants are cut back so that the stems left on the plant are no longer than five inches in length. Any leaves left on are removed, so that only the bare plant and stems are left. The soil left on the geranium plant is taken off and any large roots cut off. These stock plants are then placed in four or five inch deep containers or flats. These containers can be picked up quite easily from any of the grocery stores. Tomato and grape boxes discarded by these stores are just the ideal container for this purpose of boxing geraniums. The cut back stock plants are planted in these containers as close as possible, soil is filled in around the plants, ordinary garden soil can be used for this purpose. A thorough watering is required after planting. Any watering after this time is only required to just keep the plants alive. We do not want to produce any new growth at this time, all we want to accomplish is keep the stock plants alive. These containers are placed in as cool a place as possible, not freezing of course, and in an area with as little light as possible. Any new growth that should develop, is removed. About the last half of January the stock plants are taken out of the containers and potted into three inch pots and are treated and cared for the same as rooted cuttings from then on. After four or five weeks these plants should be ready to be repotted into a four inch pot and these plants will make beautiful plants for the coming growing season.

Geraniums

for the House and Garden

Gordon Boone

While traveling through Manitoba sight-seeing early one Spring, which is always an adventure in itself, I stopped at several small greenhouses. At each one I found one or two different geraniums, which I hadn't seen before, and so I bought one of each.

When I got home, I set about trying to find the names of my new plants and, much to my surprise, I found there were hundreds of named varieties. This is when my interest in geraniums began.

Bedding geraniums grow in any reasonably well-drained garden soil. Most do well in full sun, but will not flower in heavy shade Established geraniums do not need much care, and can even stand quite a bit of neglect.

I have found the single-flowered varieties seem to do better than doubles in our cool climate, which have poorer quality flowers in cool weather.

Zonal geraniums are the finest of pot plants. They can be the size of a teacup, or as large as a bushel basket. They should be potted in a soil that gives good aeration and drainage, but still pots up firmly. Good growth can be had with a pH of 5.5 to 7.5.

They should be started in a 2½ inch pot, then to 4, 6, and 9 inches, but the smaller the pot, the smaller your plant will stay.

Geraniums require a lot of water when they are growing well, and potted plants need to be well watered. It is often said that geraniums should be grown dry. This is not so. They need as much water as most pot plants, and more than some.

Geraniums grown in pots eventually need fertilizer. Hard short jointed slow growth and small flowers are signs of their need of feeding. Soft growth with long joints, very large leaves and poor flowering indicate too rich soil. I use a water soluble fertilizer which contains the trace elements.

Geraniums have no natural dormant period and will flower year around if suitable conditions are provided, but getting enough light is the major problem. To get good winter bloom, geraniums must be kept in a sunny window.

A 3 or 4 inch pot is best indoors, because geraniums flower most freely when somewhat pot-bound.

Fancy-leafed geraniums, are Zonal Geraniums in which part of the leaves are yellow-green, yellow, or white, instead of the normal green.

The fancy-leaved geraniums are a little harder to grow because of their weak root systems, and so well drained soil is important.

Bird's Egg Geraniums apparently originated in France around 1900. These geraniums have many, small colored spots on the petals. All varieties have more spots in warm weather than in cool. All are good house plants.

Now we come to my favorite, the Dwarf Geraniums, which are miniature Zonal Geraniums.

Plants in a 2½ inch pot will stay only a few inches tall for years. In a 3 inch pot they will grow only a little larger, but are easier to handle. Dwarf Geraniums in a 4 inch pot form into beautiful bushy plants 6 to 9 inches tall. These plants flower heavily and are showy for windows, porch, or patio decoration.

Many of the Dwarf Geraniums have dark leaves. Some are olive-green, but most are a blackish-green. There are a few very rare Dwarfs with colored leaves. Some Dwarfs have small flowers, others have large blooms, but all bloom abundantly.

There are many other types of geraniums, such as the scented leaf, Regal, Cactus, and Carnation Flowered.

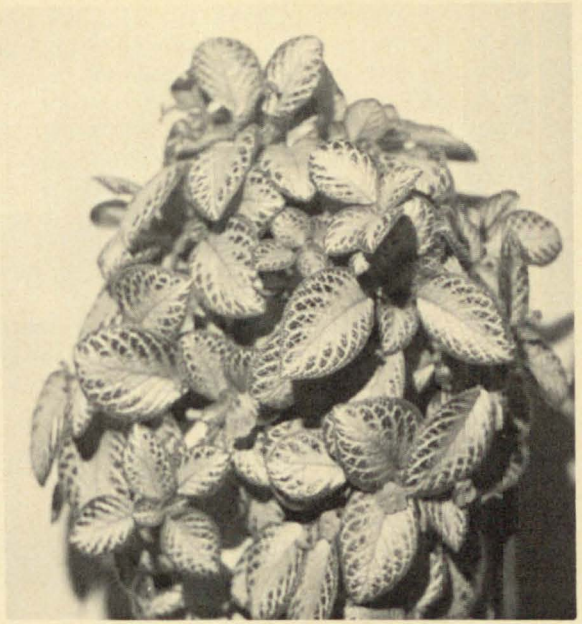
As with all gardeners, I have my favorites. In the bedding geraniums there is PARADE, which has single, purple-crimson blooms with a white centre. It is a large free blooming plant. BROCADE, which has soft red shading to white centre large double flowers with the color stippled as though painted on. WHITE MAGIC, is an excellent rain resistant white, with beautiful white blooms. It is a bushy medium sized plant which likes partial shade.

In the Fancy-leaved Geraniums, WILHELM LANGGUTH is my favorite. It has large, double cherry-red blooms, and is a vigorous growing variety and good for bedding. SKIES OF ITALY, has sharply-lobed dark green leaves with splashes of crimson and orange, and a narrow yellow edging. The shape of the leaf is like that of a maple leaf. It has small, single vermilion flowers.

In the Bird's Egg Geranium, BODES CORAL is my favorite. It is a large flowered soft coral, with rose speckles.

In the Dwarf Geraniums, there are so many, that I can't say I have a favorite. But here are a few which are very good. RED BROOKS BARNES, has dark zoned foliage. The flowers are single bright orange-red. READ'S CRIMSON, has large single crimson blooms. It is a compact plant with medium green foliage. SNOW WHITE, has large single pure white blooms. FRILLS, is a beautiful, soft coral double with narrow petals. It has dark green foliage, and has a long blooming period.

These are just a few of the geraniums I have grown in the greenhouse, and the house. I have found geraniums one of the most interesting of plants to cultivate, because of their wide variety, types, and uses.



Episcia – A Colorful House Plant

A. R. Buckley

African violet fans are forever looking for a flaming scarlet or golden-yellow cultivar of their favorite flower, but so far, except for a washed-out cream cultivar, no such colors have become available. But there are red- or orange-flowering plants of the same family and with similar leaves, but requiring quite different treatment, which are often referred to as flame violets. The name of these plants is episcia. Strangely enough the plant has never had a common name of its own, and even the one appended to it, flame violet, is quite inappropriate, for only one group has red flowers and the plant is not an African violet at all. Nor can it lay claim to being in any way related to the common violet family, Viola.

There are several pronunciations of the word episcia, but the one finding most favor seems to be eh-pish-ya.

Episcias have tubular flowers with five usually wavy or fringed petals. The flowers come in more colors than the African violet. They may be red, wine, orange red, orange, yellow, pink, lilac and white; and some have a combination of these colors. The leaves vary a great deal in color and pattern, so much so, that the plants could be grown for their foliage alone. The leaves may be light emerald, jade green, bronze, copper, or silvery, and their texture may be smooth, pebbled, glossy, or dull. To further enhance their beauty many species possess runners that trail over the sides of their containers and have great ornamental value.

There are about thirty-five species of episcias, several interspecific hybrids and a few cultivars of the common silvery-leaved one *Episcia cupreata*. All are native to parts of Mexico, Central America, South America and the

southern islands of the Lesser Antilles. Of the 35 species only nine are generally grown and are easily available.

In the Plant Research Institute the most common species is *Episcia cupreata*, with bronzy-green foliage and a faint touch of silver. There are many forms and cultivars of this species, and a few interspecific hybrids involving it and *Episcia lilacina*. All have red or yellow flowers but a great diversity of foliage color. Of the ones with attractive leaves, the following are outstanding: Chocolate Soldier, a robust plant with dark-brown leaves with a silvery-green center band; Shimmer, similar in foliage pattern and color but much neater; Ember Lace and Bronze Lace, two interspecific hybrids with dark bronzy-brown, marbled leaves streaked with larger blotches of pink; Columbia Orange, which produces an abundance of orange-colored flowers against a background of bright-green leaves; and Acajo, with leaves of dark mahogany against a central bar of shining metallic silvery green.

Episcia dianthiflora is a most unusual and showy species with tufted white flowers that have cut or laciniated petals remindful of a single garden pink. *Episcia lilacina* has lilac flowers and *Episcia punctata* spotted creamy-white flowers.

To grow episcias well, pay close attention to cultural conditions. Cultivars and species require varying intensities of light. Plants with very hairy leaves will stand almost full sun, but those with smoother leaves need light shade. A dark-leaved, very hairy type needs much more light than a smooth glossy one. To produce flowers all need more light than African violets.

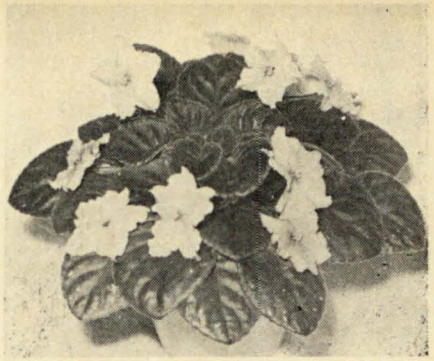
The planting medium should be porous and easily drained. This can be obtained by mixing lots of volcanic rock, gravel, perlite, crushed bricks or other available inert material with a standard African violet soil.

The higher the humidity the better will be the foliage and flowers of episcias. Although they need more water than African violets, don't over-water them or let them sit in water. Keep the soil slightly on the moist side and don't let the plants wilt at any time.

Once the plants are well established and the pots are full of roots a bi-weekly feeding with a mild house-plant fertilizer is strongly recommended.

Since these plants are from the tropics, the temperature should be kept above 55°F at all times. If the temperature drops below this it is not uncommon to see some of the leaves turn black as though a frost had struck them. The plants do best with a night temperature of 70 degrees.

Growing African Violets



Mrs. Venie V. Peake

If you are looking for a hobby that will bring you much pleasure and no end of friends, then start growing African violets. Everybody likes them and they are the most rewarding house plants which can be made to bloom all year round with proper care. Thanks to our wonderful hybridizers in U.S.A. and Canada there are over 17,000 varieties, each differing in leaf shape and color of bloom — so there is no end to the size of your collection. They also vary in size from 6" to 25" and 30" across.

And then of course the biggest thrill of all is to enter your perfectly grown plants in the flower shows, where it is everyone's hearts desire to win Queen of the Show. In Winnipeg these wonderful shows are sponsored by the Winnipeg Horticultural Society and the Winnipeg Violet Society. Join them both and attend their regular monthly meetings for enjoyment and to gain a great deal of information about growing all kinds of plants.

Amount of Light

To grow violets with a profusion of bloom you must consider whether you are giving them enough and the right kind of light. Daylight coming through a North or East window is ideal. By a South or West window they must be protected from the hot sun by a drape or blind. During winter a bit of sunshine is beneficial because the daylight hours are short and the sun's rays are not hot enough to burn the leaves. Artificial light coming from a fluorescent light fixture with two 40 watt tubes is the best as both the distance and time can be controlled. For best results the distance from the table to the top of the fixture should be 18 inches and the time could vary between 12 to 14 hours per day.

Soil Mixture

The soil mixture is also very important. There are as many as there are growers — some good and some bad. Generally, a rich black soil made porous by adding Perlite, Vermiculite and peat moss is what the plant likes — in other words, a soil mixture that is easy for the roots to penetrate in search for food and allows good drainage. Experiment with different proportions of the above ingredients until you find a mixture that gives you good results.

Temperature

Violets like a temperature just about the same as we do — which makes them suitable plants to grow where we live. Around 75 degrees in the daytime and as low as 65 degrees at night, is adequate. The dark period with a cooler temperature during the night allows them to rest, which is as important to them as it is to us.

Humidity

Here again, violets are like people. They thrive and grow healthier in a moist atmosphere. The leaves grow shinier and the plant produces more and larger blooms with deeper color. The humidity may be raised by misting over the plants with a sprayer, by placing the plants in trays containing moist rock, vermiculite or perlite, or by running a humidifier or vaporizer near the plants. The humidity reading should be kept at 60 degrees if possible.

Watering

How often a plant needs watering depends on how vigorously it is growing and how profusely it is blooming, and its root system. Also, it depends on the temperature, humidity and air circulation around the plant. When the top soil is slightly dry to the touch, water so that it runs through, pouring all around the plant. Allow the plant to dry back before watering again. *Caution* — don't let it sit in water and don't let it dry to a wilting stage. City tap water at room temperature seems to be all right, but if you can provide your plants with melted snow or rain water, they will be much happier, just as your garden and lawn look after a rain.

Feeding

Food may be added to the soil mixture in the form of Bone Meal, Dehydrated cow manure or sheep manure. Then the plant doesn't need feeding for perhaps three of four months. It will tell you. When no bloom buds appear, when the center isn't growing and the outside leaves begin to lighten in color, use any of the fertilizers recommended for violets and, to be on the safe side, use half strength. There are many fertilizers on the market recommended for violets. Here again experiment until you find one that works well for you. Always try a new type on one or two plants before using it on your whole collection. Don't forget the results may not show up for weeks. It is not wise to fertilize during the hot summer months, July and August, as the heat activates any fertilizer already in the soil, making it work overtime. At all times avoid over-fertilizing or you will have hard, crisp, bunched-up leaves and small tight bloom buds that will not open.

Clean Plants

A plant thrives when it is free of dust as then it can breathe. Clean

plants shine and sparkle in the light while dusty ones look dull and drab. Wash the leaves with a sprayer or under the tap with tepid water, allowing them to dry away from bright light. Dust particles may also be removed with a soft brush or a damp cloth. Clean plants are a must at a show.

Diseases and Insects

Don't wait until you see insects and disease on your plants — that may be too late. The first step in prevention is to let fresh air circulate among your plants by keeping them far enough apart. Run a couple of small fans in your violet room to keep the air moving and don't forget fresh air must come from outside. To prevent insects on the plants, spray periodically with Malathion (2 tsp. per gal. water), house and garden Raid or Violet Spray. To prevent trouble in the soil, use a drench of Malathion (1 tsp. per gal. water) or Cygon 2E (½ tsp. per gal. water) a few times during the year. Mildew can be prevented or cured with a light spraying or dusting with Sulphur. Prevent root rot by adding Fermate to the soil (3 tbsp. per bus.), also by not over-watering and using a porous soil. At all times, keep a watchful eye so that nothing gets a head start. Check the flowers and leaves almost daily and the water that flows through the soil into the saucers when you water. I grow hundreds of plants and everyone has its own saucer.

To Grow more Plants

The quickest way is to remove the little suckers that grow around the stem of the mother plant. These must be removed on a show plant or it will be disqualified — only one-crowned plants are considered. Root these suckers, which are really little plants, in vermiculite. Then plant in soil and in a very short time you'll have a plant in bloom. A second method is to take green, healthy leaves from about the second row of the parent plant. Leave a stem of 1½" and set in moist vermiculite. Keep moist at all times and provide some light and warmth. After some months, little plantlets appear, which can be separated from the parent plant when they are about 2 inches high, and planted into small pots of soil. This takes a long time, depending on the variety and the conditions around it (light, warmth and fresh air). Use a very weak solution of fertilizer when the plantlets are well over the growing medium, to strengthen them before they are separated. Violets can also be started from seed, but this is a very lengthy and delicate process as the seeds are as tiny as dust. Here we must again thank our wonderful hybridizers for having the know-how and patience to grow from seed to bring us so many new varieties every year that we can propagate very easily and enjoy to our hearts content.

Re-Potting

If a plant has been growing in a small pot for a long time and is root-bound with yellowing outside leaves, it is time to re-pot or transfer it to a larger pot, that is, from a 3" to a 4". Simply slip it out of the 3" pot and place it in the 4" pot with a bit of soil in the bottom, then fill around with fresh soil. In this way, you haven't disturbed the roots and the plant keeps on growing as though nothing had happened. If you want to leave it in the same small pot, then ruffle off the old soil from the roots and fill around with fresh soil. If you don't want your plants to grow too large it is best to leave them in small pots.

Long Necks and Crooked Necks

This calls for an operation. Cut off the main stem at soil level and trim off the bottom leaves until the plant looks even. Scrape off the scales and scars, then root in water or vermiculite before potting into soil. Another method is to fill a pot full of soil, then make a well in the center. Fill this well with vermiculite and plant the stump in the center. The plant can be left to root and grow on, as the roots will penetrate the vermiculite and out into the soil.

The "Prairie Gardener" Says-

ROSES

Therese Bugnet is one of the best hardy roses for the prairies. The five-foot bush with masses of double rosy-red flowers in July is fully hardy even in the coldest and driest parts and will bloom freely with a minimum of attention. The canes are strong, upright and healthy and the foliage is good. Metis, the 1967 Morden introduction, is Therese Bugnet x *Rosa nitida*. It is hardy, has red stems, burnished bronze foliage for weeks. The soft pink flowers are double.

Garden roses show to best advantage when grown in separate beds.

Varieties with high ratings include Tiffany, Chrysler Imperial, Helen Traubel, Granada, Charlotte Armstrong.

The petals have tiny perfume glands. The thick velvety petals of the reds and deep pinks have more perfume glands than the thinner petals of yellows and whites. The volatile oil soon evaporates when the air is hot and dry. It lasts much longer when the air is moist and pleasantly warm. The Damask rose is considered to have the real rose scent. Mrs. John Laing, a hybrid perpetual, has been eclipsed by the more glamorous hybrid teas but none has a sweeter scent.

As we look at the modern hybrid teas it is hard to realize their ancestor was a simple five-petaled wilding!

Roses that have become debilitated by premature defoliation caused by black spot will suffer most from winter injury.

In cutting roses, every leaf you remove weakens the plant. Leaves are the factories that use up sun's energy to make plant food.

Never fertilize on dry soil. First water; then fertilize; and water again. Keep fertilizer off the leaves. A mulch of two inches of acid peat conserves moisture, prevents soil from cracking, and prevents heavy rain from splashing, thus helping control Black Spot.

"No plant in your garden will give more pleasure than a rose".

Greenhouse Activities

J. R. Almey

The greenhouse can easily be an added pleasure to that which gardening gives to the Prairie tillers of the soil. True, it will not give the heady excitement of the speeding motor boat or the fast gliding snowmobile. Luckily, we still have freedom of choice to engage in whatever suits our leisure hours best. One could easily write a good sized book on how to operate a greenhouse, but that is beyond the scope which this short article has in view.

The majority of those who read this are already keenly interested in some phase of gardening. All outdoor gardens are subject to the variations in weather conditions and climate. The greenhouse operator controls the five basic principles of growth, namely, the supplying of moisture, warmth, food, air and light. It is here where we meet the challenge of knowing what to do and when to do it.

Probably the most important basic principle is the food supply to the plant. The harm done by insects and disease is by way of cutting off part or all of the food supply. Remember what "damping off" did to your young seedlings in the past; what that heavy aphid attack to your begonias resulted in? A greenhouse is no place for the slipshod. One must always be able to perceive trouble in its early stages, but better to plan the work so that the trouble never arrives.

We find it too costly to operate a greenhouse through our winters. A fluorescent light in the basement takes care of those perennial plants that need to be carried over winter. Heat in the greenhouse is provided by one 3 foot electric baseboard heater and a length of lead covered soil heating cable buried in one bench under 3 inches of soil, both heating units manually controlled. (Greenhouse size 8 x 10 feet) A daytime temperature of 70 degrees and a night temperature of 50-55 degrees will give satisfactory results for the usual mixed group of annuals, although a higher temperature may be needed for some seed germination.

We usually start the greenhouse work in mid-March and hope to have it empty of plants by the end of May. In mid-September it is again put into use, rooting cuttings, drying off the sweet Spanish onion crop, also a place to finish ripening various special home grown seeds. The soil for next spring's use is stored, either in the greenhouse or close by, where it is allowed to freeze solid in a damp condition. Using bushel baskets I like to have three or four filled with our Red River black loam, two with granulated peat and two with sandy acid soil.

One of the most satisfying pleasures of one's own greenhouse is to enjoy the early work in March and April, when outside conditions are still unpleasant. This fact also brings to mind that once seeds and plants get underway constant *daily* care is necessary. Almost hourly heat control is a must. On clear, bright, sunny days the temperature will quickly jump to over 90 degrees unless proper ventilation is given. As the spring days lengthen and outside temperatures rise, very little heat is required during the day. I would recommend under-watering rather than over-watering of plants. Slight wilting of the plants will indicate water is needed. If they are over-watered the damage is often not indicated until it is too late for the plants to make a complete recovery. Root rot, which may result from over-watering of young plants, spells disaster.

One of the most recent innovations for growing plants is the use of Jiffy 7 pellets. These are discs of compressed peat about one-half inch

thick and two inches in diameter, enclosed in a nylon fabric net. They are manufactured in Norway, and plant nutritives are added to the peat. When placed in water they expand to two inches high and two inches wide. Cuttings of many plants readily root in them, and single seeds of plants which are difficult to transplant can be sown in them, and the peat container and plant set out in the garden without disturbing the roots. Strawberry plants are now being rooted and sold in them. With gladiolus one of the problems in our short season areas is the growing of bulblets (cormels) to sufficient size or more equal to the size grown in areas in the southern States. Using Jiffy 7 pellets is one method of obtaining quick propagation of those special expensive varieties or seedlings which can be purchased, usually 10 bulblets for the price of one bulb. They can be peeled, rolled in a fungicide *Captan*, planted singularly to a Jiffy 7, and will grow into No. 1 bulbs the first season. Gladiolus are notorious for their dislike to being transplanted, but by this method little ill effect is encountered.

The illustration accompanying these notes shows a bulb grown from a bulblet planted March 30th, dug October 4th, and photographed in November. The net which encased the peat has been opened and shows in the background. We have used these Jiffy 7 pellets two seasons for gladiolus and one season for some varieties of annual flowers with excellent results, and plan to use them next season for more kinds of vegetables and flowers.

KENTUCKY BLUEGRASS

Dr. A. C. Ferguson

Traditionally we have depended on Common Kentucky bluegrass to produce the best turf for our lawns, golf course fairways and sports fields. This grass which has developed through generations of natural selection grows best under relatively cool conditions where moisture supplies are adequate. It has, however, the ability to adapt to a rather wide range of growing conditions; if moisture is in short supply it will become dormant and turn brown but as soon as moisture becomes more plentiful it will spring to life. Disease may thin it out but usually the resistant plants or excapes will prevail and take over.

While Common Kentucky Bluegrass thrives under good management it will produce a very satisfactory turf as long as it is mowed between one and one half and two and one half inches, receives enough water to keep it green and the occasional sprinkle of nitrogen fertilizer.

The ability of Common Kentucky bluegrass to adjust to its environment arises from the fact that it is not a "Pure" line but rather is made up of many different lines which although looking more or less alike respond differently to environmental stresses.

Because much of the bluegrass seed is produced asexually by apomixis, these lines tend to remain distinct entities. It is possible, therefore, to select many different types out of a stand of Common Kentucky bluegrass, each of which can be propagated by seed without charge through generation after generation.

Probably the most serious drawback to the use of Common Kentucky bluegrass is the inability to duplicate a stock. In other words a lot of seed purchased today may not produce the same results as another seed lot purchased two years hence. Results will depend upon the source.

The first attempts to improve Kentucky bluegrass resulted in the production of such "varieties" as Arboretum, Delta and Park. These varieties were developed by bulking several good performing and relatively similar clones. Being of a broad genetic base they produce a turf very similar to Common. For example, Park will establish itself more quickly and more uniformly from seed than Common but in mature stands is indistinguishable from it.

During the past decade and especially within the last 5 years many new bluegrasses have been named and released, some of them with a good deal of publicity. These new "cultivars" have been closely selected for one or more specific characteristics. They may be resistant to a particular disease or disease complex, they may tolerate close mowing or have some other characteristic that fits them to a specialized use. Plant type within these new releases is usually very uniform.

Although it appeared on the scene a good many years ago and we all know it well **Merion** was the first of this "new breed"! Opinions on Merion are rarely moderate; on the one hand will be those who swear by it and on the other, those who swear at it. Our experience with Merion at the University has been mostly favorable. We know that it needs almost twice as much nitrogen as Common, we know that it requires more frequent thatch removal and should be mowed no higher than 1½ inches. If these requirements are fulfilled it will produce a very superior turf, both good looking and hard wearing.

Newport — another not so new bluegrass has performed well with us. It requires somewhat more nitrogen than Common but if given good treatment at regular intervals is very attractive from early spring to late fall. It usually stands out over all others late in the season. In contrast, many reports from the U.S. are critical of Newport because it tends to thin out after two to three years.

Some of the newer names to appear in our test plots are **Fylking 0217, Cougar, Nuggett, Belturf and Sodco.** Fylking which is of Scandinavian origin was introduced with the greatest fanfare. Apparently it has been tested extensively in certain areas of the U.S.A. and has been found to be resistant to Helminthosporium leaf spot, establishes quickly and produces a highly attractive closely knit turf that does well when mowed at three quarters of an inch.

Unfortunately we do not have enough data to either recommend for or against any of these new cultivars. After one full season, some of them look especially good (**Nuggett** and **Belturf** have attracted notice) but lets wait and see.

Whether we continue to place our faith in Common Kentucky or opt for one of the newer types will depend on at least two factors: one, is the new cultivar adapted to the area and two, are we willing to give it the extra care necessary to bring out the best in it. If we are lawn fanciers, then one of the newer cultivars will probably give us the most satisfaction. If we are only willing to provide minimal maintenance, then stay with Common.

The "Prairie Gardener" Says-

THE LAWN

SODDING — Place the sods as close as you can; firm with back of the spade. Cover cracks with fine soil, rake it in, and give the area a good watering. This will wash the soil down the cracks and seal the joints. A second topdressing of fine soil will be needed and a light dressing of soil over the whole area will be beneficial.

SEEDING — Make an even surface before sowing grass seed. It is false economy to sow seed too thinly. Four pounds of Kentucky bluegrass-creeping red fescue mixture goes on 1,000 square feet. For the same area two pounds of Merion bluegrass is sufficient, adding one pound of Redtop as a nurse grass. Merion gives a thick sward of dark green grass with high resistance to leaf spot. It is of slow growth and susceptible to powdery mildew, when planted in the shade. Park bluegrass germinates quickly, is brighter green than Merion and is not susceptible to mildew. Bentgrasses are not recommended for the home lawn.

Only light sprayings of water are needed to ensure good lawn germination but this must be done regularly as it will be disastrous if the seedbed dries out just as seed is germinating. A reel-type mower does the best job on young grass.

Clover adds nothing to the lawn. In fact in dry weather it will spread to make unsightly patches of dark green against the lighter grass.

PORTABLE GREENHOUSES

Gordon G. Fear

A greenhouse will open a bright new world to the amateur gardener. Colorful flowers as well as seedlings can flourish in the winter in a controlled climate, thus assuring a healthy start before the spring outdoor season begins. These portable greenhouses are within reach of more amateur gardeners than ever before. The setting up of the house is quite simple and the instructions that come with the kit are easy to follow. The location of the greenhouse is of the greatest importance. A sunny spot well protected from the cold winter winds is the most desirable location. The morning sun is the most beneficial to the growing plants and seedlings, lack of light is one of the limiting factors to plant growth. With a little knowledge, you can landscape the greenhouse base with a variety of low-growing shrubs and hardy perennials.

This greenhouse comes in one size, 8' x 8'. The frame is made of a durable galvanized steel, which is a "U" bent channel that will give your greenhouse extra support. This house has won an award for design. The cover is a 'G' grade fibreglass which will give the best light value in the growing of the plants. The cost of the 8' x 8', less the heating unit, is $299.

The construction is simple. In the greenhouse kit you will find a complete set of plans which will be helpful for the inexperienced amateur gardener or the home handyman. A few basic garden tools are required to set up the greenhouse. All the "U" channel frames are pre-drilled and cut to the right length to make the setting up easier.

First the area where the greenhouse will be erected has to be levelled. Then a hole is dug for each corner post and a short piece of angle iron is placed in each hole. The hole is then filled with a good mixture of cement. You must allow a piece of the steel to stick up out of the cement so you can attach the base rail to this corner post. The end frames are then assembled and bolted to the bottom rail. The bottom channel base is then

bolted to the frame around the greenhouse to add extra strength. Next the fibreglass panels are bolted to the ends of the greenhouse and the pre-assembled door is bolted to the frame. You then lay out the sheets of fibreglass on the ground to determine their location on the greenhouse. Once this has been done they are then bolted securely to the roof area. The benches are not included with this kit as each individual owner has his own preference as to the size and arrangement of the benches.

There are three types of heating suitable for this type of greenhouse. The choice is up to you, as one of these will suit your needs better or perhaps is more readily available to you in the locality where you live. The next thing you must look at is whether the house will be heated the year round or only part of the year.

Electric Heat

The baseboard style of heaters are available in different wattages and range in price from $40 to $65 per unit. No chimney is required. The information as to the size and installation of these units can be obtained from your local electrical power company.

Gas Heat

On this type of heat you can have a line brought in from your present gas line to the heater unit in the greenhouse. Again, if you intend to use this heater year round, a larger model should be used. Gas heaters range from $125 to $160 and a blower fan unit will be approximately $40 extra, plus installation. The gas units run from 35,000 B.T.U. and 50,000 B.T.U. output. These should have a metal chimney installed to the greenhouse. Your local gas dealer who does installation work in your district will be glad to answer all your gas questions.

Oil Heat

Several floor model heaters are obtainable in the price range of $165 to $195. On the back of these oil heaters there is an oil reservoir which holds about 5 gallons of oil. This should supply your greenhouse with heat for several days. The heater stack can be put through the back panels of the house. To insure maximum safety, a metal guard should be installed around the heat stack where it enters the wall panelling. You should check with your local code regulations on installations of oil burners.

Heat Rating for 8' x 8' Greenhouse

Minimum Outside Temperature	Size of Heating Unit Required to Maintain Minimum Inside Temperature of 50° F.
- 10 deg.	32,000 BTU
- 20 deg.	38,000 BTU
- 30 deg.	45,000 BTU
- 40 deg.	62,400 BTU

This small greenhouse will bring many relaxing hours to the amateur gardener for the whole year instead of only a few months each year.

Plants for Indoor Planters

M. E. Parkin

Before choosing the plants to go in to our indoor planters, some thought should be given to the planters themselves. Unfortunately so many planters are built for architectural reasons, often in the dark area between two rooms or as protection between the front door and the living room. So little notice is taken of the requirements of the plant, which often results in poor and ugly plants; and disappointment, ending with the adaption of the planters into a bookcase!

Plants are grown for many reasons; such as their beauty, the psychological effect of something green and living in our long winters or just for the enjoyment of growing them. Whatever the reason, a healthy and attractive plant in a suitable container is the required result. The amount of attention needed is related to the type of plant; cacti may need the least attention and flowering plants the most, also the attention these plants need is related to their position in the house. A planter is often a permanent fixture so its location should be carefully chosen according to the type of plants you wish to grow. If the planter is already in existence, thought should be given to protecting the area from cold draughts, maybe by putting up a clear fibre glass screen or the closing of a hot air register to prevent intermittent blasts of hot air. You can also add supplementary lighting, either to lengthen the daylight; or completely provide artificial light which should be special fluorescent tubes or a mixture of incandescent and fluorescent light. This should be on for sixteen hours a day and a time clock to control this is a good investment. The amount of available light will control the type of plant to be grown.

If you are able to install your own planter, decide on its size and shape before siting it. A massed group of plants with different shapes and colour of leaves always looks better than a long narrow line of plants. The outside of the planter should be made of a material which would fit in with its surroundings; from concrete to an antique jardiniere. The final purpose of the plants should be considered. Maybe you intend to extend your patio landscaping into the house or hide the house next door by placing your planter in front of the picture window inside the house. The interior of the planter should be water-proofed inside and drainage material should be placed in the bottom. There are two ways of growing your plants; one is to fill the planter with moist peat moss and plunge the pots so the top of peat moss and pot are level. This appears to be a better method than planting into soil in the planter as the plants can be watered individually; if one is not growing satisfactorily, it can easily be removed or extra flowering plants can be added to brighten up the planter. If you wish to plant directly into the soil, use a good potting mix which can be prepared from garden soil, peat moss and sand, or can be bought. The plants may be in this soil for a number of years so care should be taken in its preparation, following recommended formulas for the type of plant you wish to grow.

There are many plants suitable for growing in planters, in fact so many that it is often difficult to choose between them. *Ficus decora* is well known as the rubber plant because of its latex-like sap but other members of the

same family include a variegated green and yellow *Ficus elastica Doescheri* or the large leaved fiddle back fig — *Ficus lyrata*. There is also a small leaved *Ficus nitida* which grows into a shrub. This particular group of plants do well in light or medium shade but if the new leaves appear smaller than the older leaves, this is an indication that the plant is growing in too light an area and needs more shade.

Another plant well known to us is the split leaf *Philodendron pertusum*. *Philodendron cordatum* has large heart shaped leaves and grows slowly, making it an ideal house plant. *Philodendron scandens* (scandens being latin for climbing) often is disappointing as it becomes very leggy and with a bare stem. If this should happen it is possible to bend it back to the root, tying it in a circle and this will force shoots to grow from the base of the stem rather than from the tip; when these are growing well the remaining stem can be cut off. *Philodendron selloum* is a very large plant which needs to be grown in a light place but it is very attractive when grown well. *Philodendron wendlandii* has simple elongated leaves and is a little different in appearance to the others.

Dieffenbachias do well in shady locations and usually have variegated leaves which lighten up a dark corner. They have several disadvantages in that they grow fairly quickly and yet if not fed and watered regularly, deteriorate rapidly. Also they are very poisonous if eaten or chewed, the common name being dumb cane because of the effect they have on people.

A third group of plants that are well known are the sansevieras or mother-in-law's tongue. They are slow growing, do well in sun or shade. Often they are grown in pots that are too large and suffer from over-watering as a result; rotting and then falling over in the pot. This plant is a good illustration of the need for individual care when in a mixed planter.

Some smaller plants to use around the base of these large plants are members of the ivy family or hederas. The size and shape of the leaf varies and often they are variegated; normally they like plenty of light but once established in a shady place, do well. Ivy may suffer from infestation by scale insects and should be checked regularly. Another group of small plants which are very useful are the peperomias which have leaves which vary from glossy green, green and yellow, green and white to dull green and corrugated according to type or variety. This group should not be over-watered.

The bromeliads are an interesting group of plants which are ideal for integrating with other plants because of their unique shape and colored leaves. There are many different types of succulents, the most common one being the jade plant. This will flower after a number of years but only if exposed to bright sunlight during the summer months. The variegated form does not appear to flower. *Chlorophytum comosum variegatum* is often known as the spider plant because of the way the flowering stems root. Another interesting plant named after the animal kingdom is the shrimp plant, *Belaperone guttata* which should be grown in full sun. The wandering jew of *Zebrina pendula (Tradescantia zebrina)* is a useful plant and is quick growing but can be rooted easily so can easily be renewed every four months. The boston fern does well where it will not dry out too quickly and the atmosphere is not too dry. The asparagus fern is not a true fern, likes light and should be fed during the light months of the year. Neanthebella is a type of palm that also does quite well in an indoor planter.

This is not intended to be a comprehensive list as there are many plants not even mentioned such as begonia, but is intended to show that if a plant from one family grows well for you, there may be others in the same family but a different shape or colour which will do as well in the same surroundings.

EXHIBITING ROSES

Nina E. L. Marshall

Permit me to say that, in my opinion, a good exhibitor should be a disciplined person who can bear to lose gracefully. Competition should be for LEARNING and not necessarily for WINNING. The warm glow of success should be the reward to the one who has grown good roses and who has entered the field of competition with good manners and a sporting attitude. If the practice of using three judges to a team and enough teams to judge the show quickly and with efficiency is followed by the Show Committee the chances of mistakes are reduced to a minimum and their decisions should be final.

If, by any chance, you have reason to believe that a mistake has been made may I suggest that your complaint be put in writing and submitted to the show secretary who, in turn, should meet with the head judge and the team involved. Our friends in the National Society of Great Britain follow this rule, and go one step further. They require that a certain sum be deposited with the complaint. This deposit is returned to the exhibitor if the complaint is justified, but not if 'the complaint is found to be frivolous!' We might think seriously of incorporating this rule on our show schedule since on occasion exhibitors have been known to be rude and unruly.

And one more point on the ethics of the good exhibitor! DO, PLEASE, leave the Show Hall before the judging begins!

Like any other skill that of being a competent and respected exhibitor is not acquired overnight. If you feel that you are growing good roses worthy of exhibiting by all means get in there and try! New exhibitors provide the lifeblood of any society. My own modest beginning, many years ago, was with four entries, three of which won awards. The thought of that particular day still warms my heart . . . . not because of the actual winning, but the remembrance of the wonderfully warm and friendly comments and congratulations from my highly skilled competitors. THIS is the way it should be!

Your success as an exhibitor may be summed up in a few words . . . . . your ability to grow good roses and your capacity for organization of your resources. A skilled exhibitor will be able to set up one hundred blooms and still have time for a last minute check on each entry . . . . an unorganized exhibitor will take the same time with twelve blooms and almost have a nervous breakdown. Here are a few tips to help you to enjoy exhibiting successfully.

1. Check your schedule well ahead of time . . . . in the garden . . . . . and have a good idea of how many classes you may be able to enter. We would hope your schedule has been drawn up with great care with clearly defined rules. Read these several times and have them fixed in your mind. The responsibility for the wording of the schedule is that of the Show Chairman and his committee and should be aimed at presenting a challenge, but also, with recognition of the limitations of the exhibitors.

2. Plan to cut your blooms at the right time of day . . . . after dinner the night before the show is best. Each stem is cut on a slant and with a careful eye to cutting at a length in scale and proportion with the bloom. Place the bloom in a bucket of water at once and LABEL immediately

. . . . . when you get away from the garden it is easy enough to mix them. By keeping the flowers in deep, cool water, in a dark place, away from all drafts, you are, in fact, conditioning them for their appearance on the show bench. This treatment is of utmost importance!

3. Be your own objective judge while you are cutting your blooms and never, please, never, put into the show an inferior bloom in the hope of catching a point to add to your aggregate score for some special award! This is a practice which DOES exist and, in my opinion, it is deplorable. It is a Standard of Excellence we are looking for and, as a potential future judge, you must learn to assess the value of a bloom in exhibition terms.

4. If there is evidence of spray on your blooms or on the foliage make absolutely certain to remove it. With great care, and using a soft cloth, immerse the specimen in a tub of cool water, and cleanse gently, shake gently, and replace in the bucket of cool water. DO NOT use glycerin or any other substance for either cleansing or dressing.

5. In the morning wrap each bloom in wax or brown paper, replace in bucket of water, and good luck to you on your way through traffic to the show! Blooms damaged in transportation will be penalized but the penalty for evidence of poor culture or the improper use of insecticides or fungicides and the marks of insect damage will be much steeper than for accidental or weather damage. You will learn to assess these damages in the proper ratio as you become more skilled at exhibiting and judging.

6. The use of a small, soft brush for grooming your blooms is most helpful, but here, again, you learn to use this brush skillfully. Go ahead, try it! Practice while you are sitting in your garden some time. You will be surprised to find how you can alter the character of a bloom by slightly re-arranging the symmetrical position of the petals, but be gentle and develop your artistry because some of these judges are smart experienced exhibitors themselves and an over dressed bloom may not find favour with them! On the other hand, if you are clever you may steal the prize right out from under the nose of another competitor. This is legitimate and fun.

7. Before leaving for the show assemble in a small light basket or bag a pair of clippers, scissors, pen and pencil, brush, small atomizer for spraying the blooms after they are set up, YOUR SHOW SCHEDULE, a piece of soft cloth, and any other small light things which you may need. Keep these close at hand and consult the schedule frequently to make sure you have your exhibits in the right class.

8. In any class which calls for three blooms make a good try at getting three which are as uniform as possible and of the same colour.

9. Remember that in a standard show no other foliage, other than that on the specimen itself is allowed.

10. Keep in mind the rules regarding EARLY and CORRECT disbudding of blooms. Evidence of recent disbudding will be penalized. In the case of Floribundas or Grandifloras my own feelings about the removal of spent blooms are quite definite. Their removal may be obvious but more acceptable on a show table than ANY dead bloom.

11. The practice of tying blooms with very soft, thick wool to prevent premature opening is useful . . . but don't forget to remove this after the specimen is in place. A tied bloom is not judged!

12. Back to our original thought regarding ATTITUDE . . . . . if you are growing good roses you are needed and wanted as an exhibitor, but make exhibiting pleasureable and profitable for yourself. If you NEVER win a ribbon we think you will have much fun and make many friends if your approach is based on good sportsmanship. And GOOD LUCK to you!

Perlite – Peat Moss, The Growing Media Twins

G. S. Reycraft

Perlite is a siliceous volcanic rock which, when crushed and heated quickly to a temperature of approximately 1800°F, expands (like popcorn) to form non-combustible light weight particles. Being an inert inorganic material it is long lasting and completely sterile. It can consequently be used without steam sterilization or chemical treatment of any kind. It is odorless, snow-white in color with an essentially neutral reaction and retains three to four times its weight in water, the water being held on the particles, not in them, and thus will not become soggy.

Peat Moss is the poorly decomposed remains of several species of sphagnum mosses. It is light tan in color when dry, has a porous spongy texture made up largely of transparent cells which absorb over ten times its weight in water. It is mildly acid in reaction and is slowly decomposed by microorganisms when nutrients and water are added. It is also free from weed seeds, diseases and offensive odors.

A mixture of one part each by volume of perlite and peat moss will give you a superior uniform growing medium for which you will find many horticultural uses. They are best mixed together after first being moistened with water. However, as the materials in this mixture are practically inert it is important, particularly if used in flats or containers, that adequate nutrients be added. Approximately five pounds of a complete fertilizer per one cubic yard of mixture followed by applications of a liquid fertilizer is the normal recommendation.

An ideal potting soil may be made by mixing one part perlite, one part peat moss and one part soil. For a propagating medium either 100% perlite or three parts perlite with one part peat moss or five parts perlite with one part peat moss and one part sterilized soil is recommended.

The "Prairie Gardener" Says-

ANNUALS — and perennials grown as annuals.

Bedding plants will provide most of the color in the summer garden. It is important to get plants off to a good start and so obtain early flowering.

Too much fertilizer is worse than not enough. It results in abundance of leaves at the expense of flowers.

It pays to pick off the faded flowers from the kinds that quickly run to seed. For example, snapdragons. Pick off the florets as they fade and the spikes will last longer.

Sweet Alyssum needs to be sheared in August to give plants a new start. Plants soon recover and give new blooms.

Most showy are petunias, snapdragons, marigolds, salvias, phlox, etc.

Annual Toadflax or Linaria blooms freely all summer with dainty snapdragon-like flowers, in fairy-like proportions, in all sorts of bright colors.

Nigella with its finely cut foliage makes a splendid foil for its misty blue flowers.

Cloud Grass *(Agrostis nebulosa)* with misty panicles on slender foot-high stems is useful for associating with sweet peas in a bouquet. Fountain Grass *(Pennisetum)* makes a graceful edging for a bed of Cannas. Quaking Grass *(Briza)* is decorative but of no use in a mixed planting of annuals, as it quickly dries up in summer heat.

Light frost affects balsam, ageratum, marigolds, dahlias, and the tender salvia. The leaves are blackened when they thaw out. Hardier are snapdragons, ten-weeks stock, and pansies. Petunias and ten-weeks stock give a long season of blooming.

Spiderflower or Cleome is a bold, fast-growing plant to fill a bare corner or make a background for more refined plants. The vigorous four-foot plants ars handsome with, dark green foliage; the flowers are elegant panicles either pink or white.

Cosmos is the last of the daisies to bloom in the annual border. The variety 'Sunset', with semi-double bright orange-red flowers which are not so large as the ordinary white, pink, and red cosmos, blooms a bit earlier.

Landscaping a Corner Lot

F. J. Weir

Living on a corner lot is like living in a fish bowl, so one of the first requirements in landscaping such a property is to provide some privacy. This can be done by erecting a solid high fence around the corner to completely screen off the lot from public view. However effective this might be, few home owners would adopt such a plan because it would be expensive as far as construction and yearly maintenance was concerned, as well as being unattractive. It would also tend to create the impression that the residents were anti-social. The same thing could be said for a continuous tall hedge.

A fence of any form always seems to make the front yard look like a paddock. There may be cases, however, where a fence is felt to be a necessity in order to deliniate the edges of the property and to discourage short cuts across the lawn. Where this is so, a wire fence is definitely not preferable. There are many different types of fencing but in this area a fence does not need to be over four feet high, it should be selected so that it will harmonize with the structure of the house and, if possible, with other houses in the neighbourhood, and also be easily maintained.

A fence by itself looks artificial and group plantings of shrubbery at the corner and in strategic areas along the fence help make it look more natural and merged into the picture provided by the house and the foundation plantings.

Fences, too, can be expensive either from the standpoint of original cost of construction or of yearly maintenance. Actually, a fence around the corner lot is not necessary if careful consideration is given to the use of suitable shrubbery and adequate planning done for its location, so that some privacy is achieved. This can be easily accomplished by arranging for a corner planting of shrubbery and clumps of shrubbery along the street sides to define the property. The corner planting could consist of a group of shrubs to occupy a larger area than those along the sides, and could be made up of two or three taller shrubs in the center and lower shrubs at the end of the group. An example of such a planting, depending on the size of the lawn, could be a Japanese tree lilac with Siberian dogwood facing it on both sides, with one or two extra dogwood at either end of the group. Such a planting would soften the harsh corner lines of the streets and would be attractive in the spring when both species are in bloom. It would be colorful in the fall with the brilliant red autumn shades of the dogwood leaves, and in winter with the tawny seed pods of the lilac and bright red bark of the dogwood.

Deciduous shrubs would be preferable here to evergreens, which tend to hold the snow either on the property or on the street. If the home owner wished for more color in the summer, a bed of flowers such as petunias could be located on the inside of the planting so that they could be seen and appreciated from the home.

Plantings along the street sides of the property should be in clumps or groupings rather than a hedge, marking the edges of the property but

in proper proportion to the house, the house yard, and the other plantings. Hardy shrubs should be selected of less height than those in the corner plantings. Shrubs should be chosen that need not be trimmed and which would be attractive for the whole year, rather than those which put on a display of bloom for one or two days in the spring and are uninteresting for the rest of the year. Shrubs such as cotoneaster, spirea, dogwood, cranberry, prinsepia cherry, elder, euonymus, and shrub roses, might be used.

If clumps of different species of shrubs are located in this way along the outer edges of the lawn it is helpful, in order to create the impression of unity, to have one specimen of this same shrub included in each or several of the groups and also somewhere in the foundation plantings around the house. This ties all the plantings together, making them an attractive whole and an intrinsic part of the property.

Most corner lots have the house set back from both streets occupying the inner corner of the lot, which usually leaves a rather open and exposed area of lawn on two sides of the house. If this lawn area looks too expansive in proportion to the house or the area occupied by the house, a large shrub or small tree can be located in the lawn area. Care should be taken that this plant is not so attractive that it takes attention away from the house itself; and that it is located far enough from the house to create a view which can be enjoyed from the window. Suitable trees might be mountainash, small leaved basswood, honeysuckles, Shubert chokecherry, ornamental crabapples or one of the many lilacs.

The back portion of a corner lot can be screened from the public the same way as a normal lot, by means of fencing, hedging, or clumps of shrubbery.

If the soil level around the shrubbery plantings is maintained at about the same level as the lawn area, and the edges of the plots are kept trimmed attractively each spring, then very little other maintance is required. The lawn can be mowed with little additional grass trimming by hand. There is no fence to maintain and yet the border and border plantings, in a subtle manner, will emphasize to the public that this is private property yet at the same time allowing the public to see and admire the corner lot and the residence.

CBC 'Prairie Gardener'
Outstanding Horticulturist

BERT HARP RETIRES

Herbert Frederick Harp was born in England but soon after, his family moved to Wales where his father continued his nursery and landscape gardening business, and so you can see that in reality Bert has always been a gardener. After working with his father for some years he became an apprentice gardener with the Hardy Plant Nursery at Llanishen where he served out his five years of apprenticeship.

No doubt realizing the possibilities of putting his talents and experience to greater use he came to Canada in 1927.

After working around Saskatoon he had an opportunity to take charge of the greenhouses for that pioneer firm of Brandon, the Patmore Nursery Co. where he remained till 1933.

In that year the Morden Experimental Farm was casting about for an assistant to William Godfrey, their renowned Head Gardener. Bert was invited to apply for the position and then followed a partnership that was to result in the introduction of many hardy plants suitable for prairie gardens. William Godfrey is considered by many to have been one of the really great gardeners of his time. When Mr. Godfrey retired Bert Harp was appointed Head Gardener in 1947 and with the encouragement of Dr. W. R. "Russ" Leslie, then Superintendent of the Farm, Bert carried on in the "footsteps" of his predecessor.

Bert spent four and one half years in the R.C.A.F. during the second Great War returning to the Experimental farm in time to take over from William Godfrey.

He found time to serve on the Board of the Manitoba Horticultural Association. He was President in 1962 - 1963 and is a Life Member of this Association.

For several years he has written the very popular C.B.C. Radio program the "Prairie Gardener", listened to by so many gardeners on farms, in towns and cities right across the prairies. He has brought information about the many new introductions from the Morden Experimental Farm in the propagation of which he along with his predecessors played such a vital part. These are too numerous to mention, suffice it to say that his roses, chrysanthemums, fall asters, lythrums and many others are looked upon as musts in "Prairie Gardens".

Bert has always been in great demand as a speaker at horticultural gatherings and never fails to delight his listeners with his infinite knowledge and powers of description.

Having retired from active employment in the fall of 1969 Bert is now devoting his time to the completion of his book "The Prairie Gardener" which will be available in the spring of 1970.

New Gardening Books for Canada

The Prairie Gardener — by H. F. Harp

Many of you have listened to the "Prairie Gardener" program on Sunday morning C.B.C. Radio. This is the man who writes the script. See pages 78 and 108 of this issue. He now brings to you in book form a lifetime of gardening.

You will now be able to tap the wisdom of this outstanding prairie gardener in a well illustrated valuable publication THE PRAIRIE GARDENER which will be available to the public at about $7.95, in May, 1970.

Chatelaine's Gardening Book for Canada — by Lois Wilson

Mrs. Wilson is well known throughout the continent for her writings on flowers. She is also garden editor for Chatelaine. She has published several books. Flower arranging is one of her specialties.

This publication soon to be available after "three years of the hardest work I have ever done" is a truly comprehensive achievement of over four hundred pages, full of helpful colour pictures and black and white "how-to" drawings. Twenty-eight Western Canadian nurserymen and professional horticulturists have been her consultants while W. A. Cumming, Chief of the Ornamentals and Fruit Section C.D.A. Research Station, Morden, Manitoba, has checked her complete manuscript. Available at booksellers in April.

Better Ways to Successful Gardening — in Western Canada — by Charles and Isabelle Young

Mr. and Mrs. Young have been for close to fifty years two of the most active and successful gardeners in the Calgary area. They have won almost every award available in their area both for their home grounds and on the showbench. Mr. Young has also been garden columnist for the Calgary Albertan and the Lethbridge Herald for many years.

This book of over three hundred pages, divided into twenty-two chapters covers all phases of western gardening.

Mr. and Mrs. Young have spent over three years writing and compiling this outstanding publication. The editor has read over the final proofs and strongly recommends it to our readers. It will be available early this spring, at a price of approximately two dollars and fifty cents.

The Canadian Gardener's Handbook — by W. R. Leslie and Margaret Kennedy

Dr. W. R. Leslie, horticultural consultant and garden columnist in Winnipeg and former superintendent of the C.D.A. Research Station at Morden, Manitoba has been well known over a period of fifty years as an authority on Western Canadian gardening.

This book is divided into ninteen sections covering all phases of gardening and is naturally written with a full knowledge of prairie horticulture. This publication is available at most book counters at a cost of one dollar.

Gardening Practices for Manitoba — by Prof. John Walker

Professor John Walker has some fifty years of gardening experience, having held various posts in Western Canada including superintendent of the P.F.R.A. Tree Nursery at Indian Head, Saskatchewan and with the Plant Science Department of the University of Manitoba.

This publication is in reality a collection of pamphlets prepared by the Plant Science Department of the University of Manitoba, answering questions most often asked of them by mail or telephone. These articles, twenty-five in all, now in book form, will answer many of your gardening problems. It is available from the Department of Plant Science, University of Manitoba, Winnipeg 19, Manitoba at a cost of one dollar.

Quality Vegetables from the Home Garden

Dr. B. B. Chubey

Quality has been defined as degree of excellence. Are vegetables grown on the Prairies of high quality? Many are and those that are not can be improved by good management. Plan your garden to meet your requirements.

Without doubt the single most important factor for high quality vegetable production is selecting a good variety, one which will suit your purpose. Different varieties have different uses — some are suitable for freezing and canning while others should only be used in their fresh state. Almost without exception, the later maturing varieties are of superior quality. However, to obtain a longer supply, it is wise to grow both early and later maturing types. Play it smart and get a revised list of recommended varieties each year from the nearest Research Station or Agricultural Representative.

Good cultural practices will help determine your successes or failures as a gardener. Mother Nature has endowed the Prairies with good growing conditions, it is up to you, the gardener, to do the rest and produce vegetables of high quality. Seeding, weeding, watering and insect and disease control are all very timely operations. "A stitch in time saves nine" certainly applies in vegetable growing. Time is essential. You cannot delay any of these steps and hope to make up for it with extra effort at a later date.

Now that you've grown a high quality product capture and preserve its quality by proper harvest and post harvest handling. To obtain peak quality the vegetables should be harvested when they reach their peak maturity. Peak maturity is when peas are sweetest, corn kernels are filled with milk that is sweet and not starchy, and snap beans have lots of "snap". It is better to harvest vegetables slightly on the immature side rather than those which are likely to be tough or starchy.

Quality can be lost but not improved once the produce is harvested. From the moment vegetables are harvested they start to deteriorate. "Let no time be wasted or your produce will be" is a good adage to heed. Whether the produce is to be used immediately, processed or stored, proper handling practises are essential to retain quality.

Canning preserves the nutritive values of vegetables very well but leaves much to be desired from the flavor and color standpoint. It is not that canned vegetables do not have pleasing flavors, but rather that their flavor is different from that of the fresh vegetables. Hence, freezing is preferred to canning to retain "garden-fresh" quality. The best "garden-fresh" quality is obtained when the time lapse between harvest and freezing is only the time required for washing, cutting, sorting, blanching and packaging. Of these, blanching is the most critical and should be done carefully. Some quality changes occur during storage and are greatly accelerated by even slight increases in storage temperature; 0 F is generally recommended for frozen vegetables.

Some vegetables such as root crops, cabbage and onions will keep their good quality if properly stored. Most homeowners, however, do not have the correct storage facilities required by each vegetable. Try to have a common storage with a temperature of 40 degrees. In this storage vegetables which require high humidity, such as beets, carrots, parsnips, rutabagas and turnips should be placed in large perforated plastic bags or packed in sawdust. This will keep them crisp and prevent wilting. Potatoes store best in bins. Onions should be kept under cool, dry conditions.

What's in a Name?

NATIVE HOMES

Amurensis — Amur River territory
Arkansana — southern Great Plains
Canadensis — northern North America
Carolinensis — south-eastern North America
Cathayensis — chinensis: sinensis (from China)
Gallica — ancient Gaul (France, etc.)
hudsonia — Hudson River valley
japonica — Japan & North China
occidentalis — western
orientalis — from the Far East
persica — Iran
tatarica — from central Asia
virginiana — eastern North America

NATURAL AREAS

alpinus — from above the timberline
ammobium — living in sand
campestris — of the open plains
communis — general
lacustris — pertaining to lakes
maritimus — of the seas
montanus — of the mountains
palustris — of marshes
petraeus — rock-loving
riparius — of river banks
ruprestris — rock-loving
sativus — cultivated
saxatilis — found among rocks
scopulorum — of the rocks

PERTAINING TO SURFACES

canescens — hoary
cereus — waxy
cortusoides — resembling Cortusa herbs
glabratus — smooth
glandulosa — bearing sticky glands
glauca — covered with whitish coating that rubs off
laevis — smooth
lanata — densely woolly
lanuginosus — gray-woolly
mollis — soft downy
pubens — downy
rubiginosus — rusty
rugosa — wrinkled
scariosus — shriveled
tomentosa — densely clothed with woolly cottony hairs
villosa — with long soft hair

What's the Best Variety of Potatoes?

G. E. Stone

This question is frequently posed by home gardeners and it is not easy to answer, except by asking the following questions: What qualities do you like to have in the potato you eat? Do you want bakers, boilers or fryers? Do you want to make potato salads? When the tuber is cooked, do you prefer a dry, mealy or a moist smooth texture?

In addition to cooking characteristics, it is important to know some of the cultural requirements and growth habits so that the variety chosen will meet the needs of your particular family and garden location. To assist in the choice of a variety for your garden, consider the characteristics of three of the major varieties in the prairies.

Norland is a medium-bright, red skinned variety with shallow eyed, oblong to round attractive tubers. Yields are good and tubers mature early. The tubers are moderately resistant to scab but susceptible to seed piece decay. Insect damage to the foliage combined with a hot, dry period in July frequently results in reduced yields of Norland. The dormancy period of Norland is short and tubers must be stored in a cool place (below 40°F) or treated with a sprout inhibitor if they are to be kept after the end of January. Norland is a good fryer, a good boiler, a reasonable masher and a fair baker. It tends to be somewhat moist with a smooth texture when boiled or baked and is subject to after-cooking discoloration in some years. Norland is an acceptable all purpose potato.

Kennebec is a white skinned variety with large, shallow eyed, oblong, somewhat flattened tubers. Yields are high and maturity is late. The plants are resistant to late blight and more tolerant to drought and insect damage than Norland. Kennebec is very susceptible to sunburn in the field and greening in storage. Because of this, tubers must be well covered with soil and stored in a completely dark area at all times. Kennebec is excellent for frying, good for boiling, mashing and baking. It tends to be more mealy than Norland with a slightly granular texture. Since the tubers tend to be large in size they are not ideally suited for a family who requires small portions of potatoes at a meal.

Netted Gem is a russet skinned variety with shallow eyes, long type tubers which can be rough and knobby when growing conditions are unsatisfactory. A uniform supply of moisture and a soil with good tilth will significantly reduce the percentage of off-type tubers. The variety is late maturing and will yield well under good moisture, fertility and cultural practices. However, yields can be disappointing where these conditions are unsatisfactory. Tubers are resistant to scab but the variety is susceptible to the effects of most other potato diseases and insects which feed on the plants. The dormancy period of Netted Gems is long and the variety can be stored at 45° for at least the major part of the winter with very little sprouting. Baking quality is excellent, mashing quality good, boiling and frying quality is poor to fair. This variety makes excellent french fries when the tubers are stored at 45° or somewhat higher temperatures. The cooked tubers are dry and mealy with a somewhat granular texture. Care must be exercised when the tubers are boiled or they will slough unnecessarily.

The above are the main characteristics of these common varieties of potatoes. Select the one most suited to your needs and conditions; purchase seed potatoes to plant in warm, fertile soil, and the first steps towards a good crop have been taken.

Look around you

A. Boyd

No doubt many of you while at summer camp or in the wood have taken particular note of some of the native trees, flowering shrubs and wild fruits growing there and have given thought as to how some of them might well fit into your landscape plan at home.

We have quite a number of native trees in our area just a mile south of Cochrane, Ontario, such as tamarack, birch, jack pine and white spruce. We also have elderberry, highbush cranberry, pin cherry, chokecherry and mountain ash. Saskatoons are also common. I might add that we have not done all our landscaping with native material but have merely used them as extras.

In selecting various native trees and shrubs a high degree of discrimination must be used. Normally the use of native trees as specimen trees in an ordinary city lot is a mistake but they do have their place along with a number of native shrubs as background material.

I have found that spring planting is very successful, and should be done as soon as the ground thaws. Do not attempt to transplant trees over three to four feet high. When the tree or shrub is dug up care is essential in getting as much of the root system as possible out with your tree. Hampers of soil from this area, preferably top soil should also be taken. The excavation should be of a generous size at least three feet or more in diameter depending of course on the root system and the height of the tree. The roots should be well spread out and covered with the soil you have brought in the hampers. This of course will not be sufficient to fill the hole, so we can now take some good garden soil and finish the job. Care should be taken to tramp the soil in firmly and also to make sure there are no air pockets around the root system. It is a good policy to keep the ground well dampened for the summer, this can be helped by scattering dead leaves over the bare ground around the tree, straw can also be used. I, however, do not advise the use of manure. If the tree is placed in an open area where wind or heavy snow is common, then staking would be a help to the tree at least until it is well established.

I believe that each tree, or shrub has its own individual beauty whether it be its foliage or its fruit. The tamarack, although not really an evergreen, has needle type foliage similar to spruce, which turns to yellow in the fall season and drops to the ground. The mountain ash has its distinctive clusters of flowers early in the spring and when the berries begin to turn red, the tree stands out very prominently. I need not say much on pin cherries and chokecherries as they stand out and are quite well known. I find that keeping new growth from coming up increases the beauty and also the yield of the tree. They are good to put along a fence in some cases. Birch trees are of course at their best when their white bark shows against a darker background. High bush cranberries also stand out as their fruit turns from green to almost yellow and then a bright red. This against green leaves makes it an eye catcher. No doubt in your area there are of the trees and shrubs I have listed, quite possibly others; give them consideration and I am sure that you will enjoy the results.

Birth Pangs of a New Potato

Dr. R. C. Zimmer

In the 1966 issue of 'The Prairie Garden' a history of program development in Canada for evaluation of potato selections, varieties and breeding material is outlined. In brief, a system of National Potato Trials was initiated in 1947. Tubers of potato varieties were sent to various Experimental Farms across the country. However, because of the great geographical range and diverse growing conditions the trials lacked proper co-ordination and uniformity. As a result of the changing needs of the potato industry, in 1955, the National Trials were sub-divided into 5 regional groups: Atlantic, Quebec, Ontario, Prairie and British Columbia. Annually members of each region meet to discuss progress of the past year and to plot the course of future research. Representatives of each region then meet to bring the program into focus on a national level.

The Experimental Farm at Scott, Saskatchewan has since 1955 had charge, for the Prairie region, of growing and evaluating potato varieties and selections for various agronomic characters and freedom from disease. At the 1968 annual Prairie Region Potato Committee meeting the decision was made that all potato introductions coming into the prairie region first be indexed for disease by a pathologist at the CDA Research Station, Morden, Manitoba. Those introductions passing this disease indexing program are then to be grown in an isolation plot at the CDA Research Station, Melfort, Sask., where any plants which may have escaped detection of disease at Morden, and those possessing undesirable characters are rogued out. Tubers from introductions surviving this test are then sent to the CDA Experimental Farm, Scott, Sask., where they are screened for their adaptability to prairie conditions. Those which appear to be adapted to prairie conditions are sent to the cooperating establishments on the prairie for inclusion in adaptation trials. The material remains in these trials from 1 to 3 years and is evaluated each year for season of maturity, tuber yield, type of top growth, tuber characteristics such as depth of eyes and skin color, disease resistance and total solids or quality.

The replicated or advanced trial, which follows the adaptation trials, is the ultimate measure of the worth of a potential variety. Material for this trial comes from the adaptation trials and is decided by the Prairie Region Potato Committee at its annual meeting. The material in this trial is evaluated on the basis of: total and marketable yields, scab, total solids, tuber characteristics, storage qualities, and where facilities are available quality tests are conducted for boiling, baking, chipping and french frying. A 'block trial' affords a "last minute look" at a potential variety and is normally conducted in the area(s) where the particular seedling or variety appears most promising, i.e., a particular variety or selection may perform better in Manitoba than in Alberta. A 'grower trial' is conducted before a final decision is made to introduce a variety in order to evaluate its reaction to field production methods and to obtain a grower's evaluation of the potential introduction.

If an introduction consistently performs better than existing licensed varieties in one or more characteristics after going through the various phases of the evaluation program it is recommended for licensing. However, usually before final agreement to license an introduction is achieved, the

Plant Protection Branch of the Canada Department of Agriculture obtains tubers of this introduction for selected growers to increase for seed under a closely inspected program. The final goal is to have high quality disease — free tubers available for the public when the new variety is introduced.

The seedling selections and varieties that may be introduced into the prairie potato improvement system come from other potato research institutions in Canada and the United States. They are the results of years of breeding and selection, and as described the successful seedling candidate must then journey through the exhaustive evaluation system of the Prairie Region before it is recommended for licensing.

Whence comes the potato variety that the prairie gardener plants in his backyard garden.

Tommy: "Did you see what happened to the math teacher's plant?"
Johnny: "No. What?"
Tommy: "It grew square roots."

Heyer Apples

Editor's Note

Percy H. Wright, outstanding Western Canadian plant breeder, now residing at 407, 109th Street, Saskatoon, Sask., recently mailed to the editor a copy of a letter written by Adolph Heyer shortly before his death. The name Heyer is well known in the prairie provinces for his Heyer No. 12 apple. However, Mr. Heyer had a whole series of seedling apples on his farm near Neville, Sask., and his letter gives his evaluation of them.

Mr. Heyer not only originated his No. 12, but also No. 2, No. 6, No. 7, No. 9, No. 14, No. 18, No. 20, and No. 24 (among still others). It will be noted that he regarded No. 2 and No. 18 as his best achievements, not No. 12.

Mr. Wright is eager to discover anyone who is still growing any of the Heyer apples, other than No. 6, No. 12, No. 14, and No. 20, which seem to have survived the usual neglect. If anyone has scionwood of No. 2 and No. 18 to spare, Mr. Wright would be especially grateful to receive a few buds in early August, 1970.

A Short Description of Leaf Characters Useful in Plant Identification

Wilbert G. Ronald

The mention of leaf characters may bring a number of pictures before our minds such as the colourful Poinsettia leaves so common at Christmas time or the brilliant fall colours of our trees and shrubs. Throughout the year, as we watch outdoor developments, we are also reminded that leaves are either deciduous or evergreen. The person interested in taxonomy should know of the division of the Angiosperms or flowering plants on the basis of leaf venation and the number of first formed leaves or cotyledons. The monocots with parallel venation and single cotyledons as in the grasses and the dicots with netted venation and two cotyledons make up the colourful flowering plants which are of great interest to all of us.

Leaves may be defined simply as lateral outgrowths from a stem or shoot apex, normally consisting of a flattened portion or blade and an axis or petiole. They may be classed as simple leaves when consisting of one blade attached to the petiole or as compound leaves when two or more blades or leaflets are attached to the petiole.

The fact that leaves show a wide variation in structure makes them useful characters for identifying individual plants and for assembling them into synthetic groups such as genera, families and orders.

Leaf characters most often used in plant identification are leaf form, leaf position, leaf outline, leaf apex, leaf base, leaf margin and leaf vesture or surface.

LEAF FORMS. Fig. 1.

a. Simple — one blade
b. Trifoliolate or ternate — leaf composed of three leaflets
c. Palmate — three or more leaflets arise from a common point
d. Odd-pinnate — terminal leaflet, number of leaflets is an odd number
e. Even-pinnate — no terminal leaflet, number of leaflets is an even number
f. Bi-pinnate — doubly pinnate

Fig. 1 a. b. c. d. e. f.

LEAF POSITIONS. Fig. 2.

a. Alternate — one leaf per node
b. Opposite — two leaves per node
c. Whorled — three or more leaves per node

Fig. 2 a. b. c.

LEAF OUTLINES. Fig. 3.

a. Orbicular — round outline
b. Deltoid — triangular outline
c. Ovate — oval, widest at base
d. Rhombic — widest in middle of leaf
e. Lanceolate — narrow and widest at base
f. Linear — very narrow, usually four times as long as wide
g. Obovate — oval, widest at apex
h. Oblanceolate — narrow, widest at apex

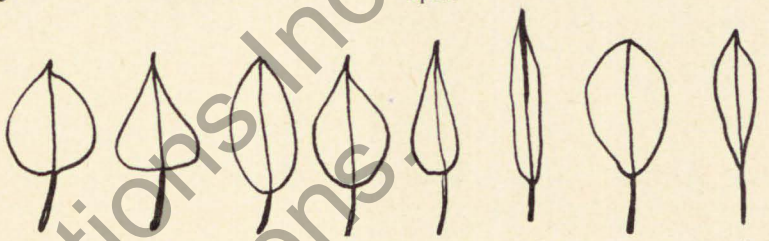


Fig. 3 a. b. c. d. e. f. g. h.

LEAF APICES. Fig. 4.

a. Obtuse — blunt rounded apex
b. Acute — narrow with pointed apex
c. Acuminate — short pointed apex
d. Attenuate — long narrow pointed apex
e. Retuse — apex indented

Fig. 4 a. b. c. d. e.

LEAF BASES. Fig. 5.

a. Cordate — heart shaped
b. Truncate — base of leaf at right angles to petiole
c. Obtuse — rounded
d. Cuneate — wedge shaped
e. Oblique — unequal leaf base

Fig. 5 a. b. c. d. e.

LEAF MARGINS. Fig. 6.

a. Entire — no indentations
b. Dentate — sharp indentations perpendicular to margin
c. Serrate — sharp indentations pointed towards apex
d. Crenate — small rounded indentations
e. Lobed — large rounded indentations

Fig. 6

LEAF VESTURE. Leaves with hairs are said to be pubescent while those without hairs are glabrous. Many other terms are also used to describe types of vesture.

PETIOLE FORM. The petiole may take many forms such as round cross-section or flattened cross-section.

We can illustrate the usefulness of the leaf characters and at the same time demonstrate that plant names are closely linked to leaf characters, by keying out five of the poplar species native to Western Canada. The leaves of these five species appear as shown in Fig. 7.

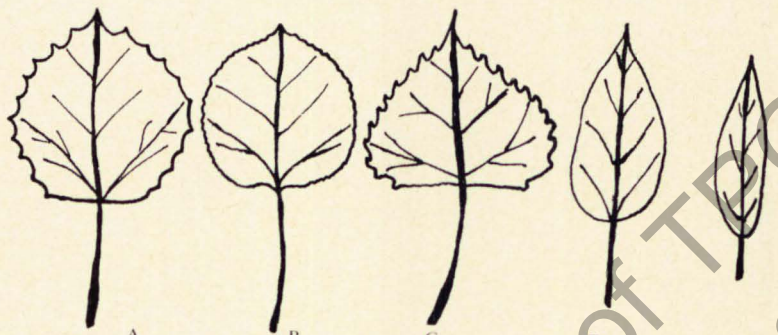


Fig. 7

Dichotomous Key to identify poplars

a. Leaf round in outline.
  b. Leaf margin coarsely dentate . . . . .
A. *Populus grandidentata* — large-toothed aspen.
  bb. Leaf margin finely crenate . . . . . .
B. *P. tremuloides* — trembling aspen.
a. Leaf shape not round in outline.
  c. Leaf shape deltoid, petiole compressed, leaf margin coarsely toothed
C. *P. deltoides* — Cottonwood
  cc. Leaf shape lanceolate, petiole round, leaf margin crenate.
  d. Leaf broadly lanceolate, petiole usually longer than 1" . . . . .
D. *P. balsamifera* — balsam poplar.
  dd. Leaf narrow lanceolate, petiole less than 1" long . . . . . .
E. *P. angustifolia* — narrow-leaf poplar.

If you have used the key correctly you will have identified the poplars in the same order in which the leaves are arranged proceeding from left to right. Although only a small number of the characters used in plant keys have been illustrated, you may find it very interesting to attempt to key out other native plants and relate leaf characters to plant names.

Use of Native Trees and Shrubs

Alpine Firs

D. Martin

At the University of Saskatchewan, Saskatoon Campus, the selection of plant material is one principle under the term of reference for developing the landscape portions of site plans. In selecting plant material we consider that native plant material should be used in preference to exotic plants wherever practicable. Domesticated plants developed in prairie nurseries and experimental stations are to be used in preference to imported varieties. By and large, the trees and shrubs should be ones with which people are familiar and which could be readily used in any Saskatchewan park, boulevard or garden.

Consequently, over the years we have made use of many native plants in our landscape development at the Saskatchewan Campus. These native plants are playing an ever increasing part of our overall campus landscape. They are helping in relating the campus more naturally to the surrounding areas.

The following is a listing of the native plants that we have used on the campus, with short comments describing our observations and experiences with them:

First, I would like to mention that one will experience a wide variety of behaviours of native plants while changing the ecology of these plants. Some of the native plants will succumb under our so called sophisticated horticultural practices and others will grow like weeds. It is very difficult duplicating the native environment of plants, and in a man-made landscape next to impossible. This is why we are just planting native plants into their new environment and let the plants do the adjusting.

Balsam Fir — *Abies balsamea*

We have 400 6" - 16" Balsam Fir in our Nursery growing satisfactory. Several tall trees are growing at the Sutherland Forestry Station and are doing well under ordinary grounds maintenance. However, at an older age this tree is much more open and ragged than a spruce. Nevertheless, this quality may be desirable for some landscaping effects. We think that the Balsam Fir is worth growing.

Alpine Fir — *Abies lasiocarpa*

On the campus there are approximately 60 trees 18-20 ft. tall. A very attractive evergreen doing extremely well on dry land and in exposed locations. Two years ago we transplanted several trees 18 ft. tall with the result of some suffering to the trees planted in a heavy, wet soil location. On the other hand, we also planted in a lighter, drier soil and these trees are doing much better.

The greatest difficulty experienced is in the young seedling stage, particularly from the one to three year stage; they sit in the frames at times rather stunted and may succumb during this period. Perhaps this is one reason why this tree is not available commercially. However, once this tree is established, it is a good grower and a better ornamental.

Manitoba Maple — *Acer Negundo*

This tree is really not utilized extensively these days, the main reason being that it is very susceptible to 2,4-D and also to aphid infestation. Still we have many old and some young Manitoba Maples on the campus adding beauty to the landscape with their contorted stems and dark bark during the winter. This dioecious tree has male and female flowers on different trees. The male plant is the more desirable as it has a better form and does not produce seed. There are at least two very attractive male Manitoba Maples in Saskatoon which we are attempting to propagate vegetatively. I definitely feel that there is room for both female and male Manitoba Maples as the female tree provides some food for Pine Grosbeak.

Paper Birch — *Betula papyrifera*

An excellent tree because of its white bark and reddish branches. We have used a good number of these trees on Campus.

Kinnikinnick — *Arctostaphylos uva-ursi*

This native little broad-leaved evergreen has attractive bright red fruit and the leaves turn red in the fall. This plant does best when planted on dry sandy soil. We planted 900 Kinnikinnick in an area which received regular irrigation and there we experienced difficulty with some plants succumbing.

Red-osier Dogwood — *Cornus stolonifera*

One of our best known native shrubs with its white flowers during June and its red stems during the winter stands out from the snow-covered ground. This shrub is very useful and is easy to transplant.

Green Ash — *Fraxinus pennsylvanica var. lanceolata*

Another dioecious tree which leafs out usually in the latter part of

Scots Pine and Quaking Aspens underplanted with Western Snowberry

Red-osier Dogwood

May and drops its leaves after the first frost in the fall. Leaves are shiny green in the spring and turn to a yellow to brownish yellow in the fall. The last two years the Green Ash on the Campus displayed a wonderful fall colour. The brown seeds on the female trees hang onto the trees almost all winter long which adds interest to this tree.

We have been using this tree for a long time and will continue using it because it is a good ornamental, quite long-lived, neat, has a good form and has a very fibrous root system which makes the tree easy to transplant.

Creeping Juniper — *Juniperus horizontalis*

Creeping Juniper is very common throughout drier parts of the prairie; this plant forms large mats on dry banks and sandy hillsides. We planted this Juniper as a ground cover in large masses, the results are very good where we kept this plant dry. However, in irrigated areas this juniper has a very tough time making any appreciable growth. It is very easy to propagate by cuttings.

Jack Pine — *Pinus Banksiana*

and

Lodge-pole Pine — *Pinus contorta latifolia*

These two pines do very well with us if they are not irrigated, however, they definitely will deteriorate if subjected to a regular irrigation program. This has been our experience over the last 12 years. Both of these pines are good ornamentals particularly the Lodge-pole pine.

Quaking Aspen — *Populus tremuloides*

This tree is very common, extending completely across Canada. It is one of our theme trees together with Scots Pine and usually underplanted with Western Snowberry At the beginning we had difficulty in transplanting and propagating the Quaking Aspen, but have solved this problem. In our estimation, seed propagation is the most practical method and we have had good success.

I believe that this tree is a very useful ornamental with its light to yellowish-green leaves trembling in the slightest breeze; its attractive bark from the smooth, greenish to yellowish brown and becoming rough furrowed, grey to dark with age and with its slender, open and light structure. One only has to walk through an aspen bluff to experience the gracious and pleasant atmosphere which these aspens create.

Bristly Gooseberry — *Ribes setosum*

We took this plant out of the prairie around Saskatoon and found it to be a useful ornamental. It is particularly effective and extremely winter hardy in outdoor exposed pots. Many other plants winter-killed in the exposed pots but the native gooseberry seems to be the hardiest for surviving the winter.

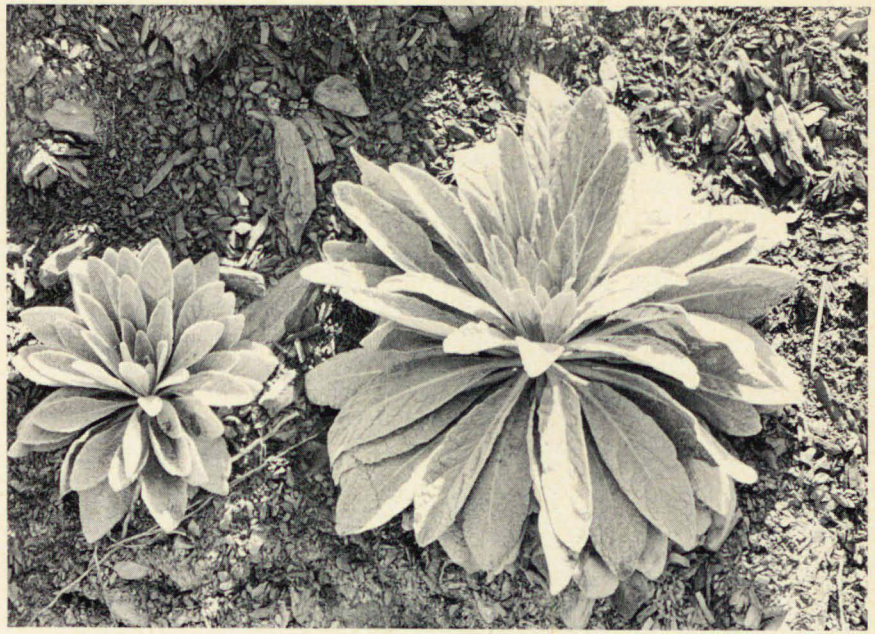
Silver Buffaloberry — *Shepherdia argentea*

Russet Buffaloberry — *Shepherdia canadensis*

Both buffaloberries are good ornamentals. The Silver Buffaloberry is a thorny bushy tree up to 15 feet tall with whitish branches and silvery leaves with scarlet to orange coloured fruit. The Russet Buffaloberry is just a clean 2-4 ft. high drought-resistant shrub.

Western Snowberry — *Symphoricarpos occidentalis*

A shrub 1 to 4 feet high, very common, can be found in dense stands on open prairie, in ravines and woodlands. We used this shrub in large masses in underplanting trees and also as a ground cover. We are interested in obtaining a lower-growing variety such as *Symphoricarpos albus pauciflorus*, 4-12 inches high, which is reported to be growing in the area of the Cypress Hills.



How Some Plants are Adapted to the Prairie

Dr. F. Paul Ralston Jr.

The several world biomes (life-zones, such as desert, jungle, tundra, prairies, temperate forest, etc.) are so various in their requirements for survival that there are few truly universal adaptations of all living things. One of these few would surely be that normal functioning of cells requires liquid water to be present in the cells. No other life activities (metabolism, growth, reproduction) are possible unless normal cell function can operate — at least part of the year.

What are the conditions on a prairie to which living things there must adapt? For one thing, the environment swings between great extremes of conditions throughout the year, and over a period of years.

There would also be a trend towards aridity, with low annual rainfalls which may almost approach desert conditions during some dry periods. Both in summer and in winter the incessant wind exerts a powerful drying effect on living things, and to which most native plants are adapted by virtue of their deep-rooted growth habit. At the westernmost parts of the prairie (Sask., Alta., Montana) there was no doubt as to the growth conditions there: the low vegetation reflected the aridity. But, at the easternmost parts (Manitoba, Minnesota, Iowa, etc.) there was a constant "struggle" between grassland-type plants and forest trees as to whether a given area would be prairie or forest. Fires would tend to drive the forest boundary back by

killing the tree seedlings and sucker shoots. Long drought conditions would also cause a die-off of young trees. On the other hand, long periods of above average rainfall can encourage an advance of the forest onto the prairie. Lack of periodic prairie fires may have a like result.

Any attempt at order of priority for considering the relative importance of the plant's adaptations would be a little like trying to decide on whether man's nervous system or circulatory system or respiratory system were most important: all of the body's systems are needed. Thus who's to say that a plant's ability to withstand drought is any more significant than the potential of the seed to germinate or of the leaves to form a pattern for maximum exposure to the sun. A few of the more striking adaptations will give us some insight into the occupational hazards of being a plant on the prairie.

Just because a prairie plant lives in a relatively dry place: its need for water is no less great than that of a person or a sea weed. The differences are primarily in the abilities of arid zone plants to retain the water they do take in. Although a few land plants obtain some part of their water intake directly through the stems and leaves from fog, rain, or dew, the great bulk of water is taken in via the soil and roots. This is by way of saying that there is nothing really special about prairie plants: they have essentially the same life style as other plants living in conditions of medium moisture (i.e. between that of a desert or a marsh).

The drying effect of the wind on plants is a little like that of a wash drying on the clothes line. On a still day — more or less regardless of the temperature — the clothes will not dry nearly as fast as if there is a brisk wind. This is because an area of moist air builds up around the clothes, and on a calm day, this "halo" of moisture slows down the further loss of water from the clothes. But let the air be in motion, and this surrounding moist area is immediately removed, so that water molecules can thereafter "leap" away from the clothes into the air. Prairie plants are similarly prone to moisture loss — an occupational hazard of all land plants — and have developed structures to best obtain and to conserve water. Bearing in mind that a prairie would look like a jungle if it were turned upside down, a great deal of the energy of prairie plants is directed towards developing extensive root systems. In fact, the roots of a 1 ft. high Blazing Star (*Liatris punctata*) may go 16 ft. deep into the soil and spread out laterally many times greater than the stems and leaves. Thus the deeper soil moisture layers can be tapped even when the soil subsurface has been dry for a long time. Practically all of the native prairie grasses, herbs, etc., have a great development of their root systems. This is the main explanation for their ability to survive continued drought conditions which long ago would have killed off non-prairie introduced exotics.

One of the most obvious features of a plant's growth habit is simply the manner in which the stem and leaves are arranged. This spatial dispersion can get hopelessly complicated in the case of a tree, but in low, ground level plants it may be quite simple. It is to most plants' advantage that its leaves be arranged so that each gets maximum exposure to the sun and at the same time they don't shade one another. At the beginning of the growing season on the prairie, the vegetation is still quite open. Thus considerable sunlight can actually reach the soil surface. Later in the season, when the grasses are in full leaf, much light will be intercepted by the "canopy", but in spring there are many rosette plants. These have a series of spatula-like leaves radiating out from the stem at ground level. The photo shows a very simple rosette plant, with its leaves quite evenly spaced and scarcely or not at all overlapping one another. A dandelion

is also a rosette plant, but more three-dimensional: like a powder puff. Not all weeds are so "basal" in their growth habit, so perhaps that is one of the main reasons why dandelions are such vicious competitors of lawn grass, but are less able to compete with prairie grasses whose principal photosynthetic activity takes place a foot or so above the ground. Quite a few prairie plants have this rosette growth habit of their basal leaves, a few such as the Everlastings or Pussey toes (*Antennaria* sp.) form large "carpets" of rosettes because interlacing runners send up a new rosette whenever they touch ground and root.

Look closely at the photo again to see a structural feature of leaves to aid in resistance to desiccation — that of leaf hairiness. There are all grades of epidermal "hairs" on leaves ranging from very few, thin hairs present, to leaf surfaces which are practically woolly. This structure of leaves is probably an adaptation to reduce air movement across the surface, and hence decrease the loss of water by transpiration, — though in all fairness it should be noted that leaf hairs can protect a plant in a variety of other ways unrelated to water loss, such as to discourage grazing because of spiny and/or bad tasting "hairs".

If reducing air monement at the leaf surface would slow water loss, surely eliminating (practically) completely an exposed transpiring leaf surface would be the ideal for water conservation. Amazingly enough, this nearly ideal solution is attained simply by many native prairie grasses, and is one of their principal mechanisms for survival during drought conditions. A typical leaf would be a little like a sheet of paper. We could completely enclose one surface by joining the opposite edges together to form a tube. The prairie grass leaves — in cross section — are like a shallow ⌄, and this openness is due to their ⌄ actually being held "apart" by special swollen cells in the upper epidermis. These bulliform or motor cells are like wedges holding the other leaf cells apart, and it is these bulliform cells which are among the first to react to the diminishing of the continuous water supply normally provided by the roots from one of several soil layers. In times of drought, when even deep soil layers have been exhausted, the roots can no longer extract adequate soil moisture and when the plant's water supply can not keep ahead of transpirational water loss, there occurs a drop of water pressure of the plant's cells. Wilting is the name commonly applied to this process, but what is happening is that each cell is something like a balloon that is slowly leaking. If many glued-together balloons lost their pressure the whole structure would droop of wilt. Where the bulliform cells function as a protective device, is that they are among the first cells to react to a decrease in water supply. They shrink, and therefore let the arms of the ⌄ close together ○ , so that the leaf's breathing pores — mostly on the top surface — are completely enclosed in the "folds" of the leaf. Some grass leaves even fold themselves into a spiral. When the normal soil moisture conditions return, there is a restoration of turgor, or internal cell pressure, and the bulliform cells swell again so that the leaf opens out to its normal shape.

There is a whole vast group of plant survival mechanisms which are not nearly of the obvious nature of some of the ones described herein. These are mainly lumped together as biochemical and have to do with the plant making this or that chemical in order to do many subtle things: taste bad, set buds or flowers or fruits earlier (or later), photosynthesize at lower (or higher) temperatures, grow in more (or less) saline soil, and so on ad infinitum. But since these aspects of a plant's life are not reflected in some definite structural feature, they are difficult to describe, although the result is easy to see: a plant which prospers in that environment.

Information, Please

Gardeners are well advised to build up a ready reference shelf of gardening books and bulletins. It will materially assist you in your gardening pleasures and successes.

As well as gardening books now available on prairie horticulture, our governments and universities prepare bulletins and circulars for public distribution. In most cases they are supplied free of charge upon request.

We list below the services available to gardeners, in the three prairie provinces. We would also like to remind you that The Prairie Garden 1969, has a listing of the publications available from Manitoba, Saskatchewan and Alberta, while The Prairie Garden 1968, tabulated the publications available from Ottawa.

Manitoba: Publications available from the Economics and Information Branch, Manitoba Department of Agriculture, Norquay Building, Winnipeg 1.

Saskatchewan: Publications available from the Extension Division, University of Saskatchewan, Saskatoon; The Department of Agriculture, Government of Saskatchewan, Regina; or from Agricultural Representatives' Offices throughout the province.

Alberta: Horticultural Guide and other publications available from the Publications Service, Extension Service, Provincial Department of Agriculture, Edmonton.

Many excellent publications (and a list of them) also available from the Publications Division, Canada Department of Agriculture, Ottawa; priced publications are also sold by the Queen's Printer, Publications Division, Government of Canada, Ottawa; or through Queen's Printer bookshops.

We would further like to refer you to two other publications: **The Gardeners Bulletin** is a four-page quarterly published by the Extension Division, University of Saskatchewan, Saskatoon, on behalf of the Saskatchewan Horticultural Societies Association. Its articles on flowers, ornamental shrubs, fruits, vegetables and related topics are written both by practical gardeners and the so-called experts. It is in its ninth year of publication. Subscriptions are available from D. R. Robinson, Extention Horticulturist at the above address. The subscription rate is $1.00 for two years.

The **Alberta Horticulturist** is the four-page quarterly published by the Alberta Horticultural Association covering a variety of gardening subjects as well as news on the activities of this Association and its affiliated societies. Mr. P. D. McCalla, Head, Horticultural Branch, Alberta Department of Agriculture, Edmonton is editor. Subscriptions are available from Mrs. Dorothy Adamson, secretary, Box 1083, Lacombe, Alberta.

The Annual Provincial Flower and Fruit Show for Saskatchewan will be held in Moose Jaw in late August 1970. Watch for Show dates.

The Annual Provincial Horticultural Show for Alberta will be held in Red Deer on August 20th and 21st 1970.

The Annual Provincial Fruit and Honey Show for Manitoba will be held in conjunction with the Winnipeg International Flower Show in Wpg., on Aug. 20 and 21, 1970.

The Manitoba Horticultural Association is the co-ordinating body for all Manitoba Horticultural Societies and their activities — Secretary P. J. Peters, Manitoba Department of Agriculture, Norquay Bldg. Winnipeg 1. Manitoba.

Contributing Authors

J. R. Almey was Manitoba's first Provincial Horticulturist from 1921 to 1929 after which period he left to assume the position of Agricultural Agent with the C.P.R., retiring in 1960. He was one of the founders of the Stevenson Memorial Gold Medal Award. He has been very active in hybridizing gladiolus. Canada's Centennial tree "The Almey Crabapple" was named in his honor. He is still living in Winnipeg, Manitoba.

Gordon Boone, Lac du Bonnet, Manitoba, gardener, florist. His article on geraniums clearly illustrates the enthusiasm that activates him in his profession.

A Boyd is an ardent gardener, active in horticultural work in the Ansonville area just a few miles south of Cochrane, Ontario.

Dr. R. Brust is with the Department of Entomology, University of Manitoba, Winnipeg. One of his specialties is mosquito abatement.

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J. P. de Wet, ardent gardener, Chairman of the Industrial Grounds Committee for Metropolitan Winnipeg, since its inception and long standing director of the Winnipeg Horticultural Society. He was also a member of The Prairie Garden Committee for many years.

R. D. Dixon is an entomologist with the Crop Clinic, Plant Industry Division, Alberta Department of Agriculture, Edmonton.

Gordon G. Fear has many years of landscaping experience in the Winnipeg area as well as some seven years in commercial seed growing in Victoria, B.C. For the last ten years he has been affiliated with Simpson-Sears Garden Shop in Winnipeg, Manitoba.

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H. F. Harp, recently retired Head Gardener and Technical Officer (Ornamental Horticulture) Canada Research Station, Morden, Manitoba comes to you in this publication under the heading: the "Prairie Gardener" says. See page 108-9 for further information.

Dr. A. M. Harper is an entomologist with the Canada Department of Agriculture Research Branch, Lethbridge, Alberta. Dr. Harper's field of activity is the biology, ecology, and control of aphids and other sugar beet insects, poplar gall aphid and aphid cytology.

Donald G. Hoag is Professor of Horticulture, North Dakota State University, Fargo, North Dakota, U.S.A.

Anthonie M. Jansen is employed by the Government of Alberta with the Department of Public Works and is in charge of the greenhouse located on the Legislative grounds in Edmonton.

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Dr. W. R. Leslie, formerly Superintendent of the Canada Research Station at Morden, Manitoba, for many years is now active as a landscape consultant and garden columnist in Winnipeg. He is a recipient of the Stevenson Memorial Gold Medal.

H. H. Marshall is Head Gardener and Supervisor of Grounds at the Canada Research Station in Brandon, Manitoba. Mr. Marshall has done considerable breeding work with Monardas, Chrysanthemums, Roses, Heuchera and Geum. In 1965 Mr. Marshall was presented with two awards for his introductions 'Assiniboine' Rose and 'Brandon Pink' Heuchera. His latest introduction is 'Cathbert Grant' Rose.

Nina E. L. Marshall is a rose grower of distinction and a member of the Executive Committee of the Canadian Rose Society. She resides in Toronto, Ontario.

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D. R. Robinson — Mr. Robinson, an agricultural graduate, is Extension Specialist in Horticulture with the University of Saskatchewan at Saskatoon. He is responsible for the supervision of horticultural societies in Saskatchewan. His studies of winter hardiness of tree fruits in his province are available in printed form.

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D. L. Smith is Chief, Entomology Division, Manitoba Department of Agriculture Extension Service, Winnipeg.

Mrs. E. J. Stanfield, Graduate in Home Economics, formerly Woman's Editor, Country Guide Winnipeg. Specialist in perennial flowers. Daughter of the late Dr. H. M. Speechley, Winnipeg, Manitoba.

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Lawrence A. Stuckey, Brandon Manitoba is an expert photographer as well as a naturalist. His slide shows of native flowers have been enjoyed by many an audience.

Dr. A. J. Thornsteinson is Head, Entomology Division, Department of Agriculture, University of Manitoba, Winnipeg.

F. J. Weir is Provincial Horticulturist for Manitoba and Chief of the Horticultural Division of the Soils and Crops Branch, Manitoba Department of Agriculture, Winnipeg, Manitoba. His specialties are ornamentals and landscaping.

Dr. R. C. Zimmer is a plant pathologist working for the Canada Research Station at Morden, Manitoba.

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