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The

Prairie Garden

***Published by* WINNIPEG HORTICULTURAL SOCIETY**

Don't Buy Blind

The Prairie Garden is deeply concerned over the merchandising of plant material unsuitable for prairie gardening, and offers the following observations for the protection of its readers, and as advice to everyone interested in buying and selling plants.

We have observed dried out and completely dead plant material, shrubs (including hybrid tea and floribunda roses) and trees offered for sale in chain stores, shopping centers, drug stores, etc.

At other times we have seen woody plants with long, white shoots and half-dry roots, and perennials, including lilies and other bulbs, with long, spindly shoots which sap the strength from the roots—all making for a mighty poor investment.

In all cases the plants seen had the appearance of having been sturdy and strong when dug, but had become worthless through mishandling by the retailer. In our opinion, the fault lies in the ignorance of the store owner or manager of the proper care of live plants.

Instead of trying to keep the plants dormant by providing cool conditions and proper humidity, they are left lying around for days and weeks in a hot, dry store. We strongly advise our readers, when buying plants, to choose only specimens with plump, fresh twigs and dormant buds; to check packing material on roots and to make sure that they are not dried out.

We have seen offered for sale in Winnipeg stores Sycamore trees, McIntosh apples, and other trees and shrubs which will not survive a prairie winter. Again we like to think that this is due to inexperience on the part of the management in regard to suitable plants for our conditions. We can hardly believe that reputable business people will deliberately offer for sale merchandise which will prove worthless to their customers.

Another form of misleading plant merchandising which *The Prairie Garden* calls to the attention of its readers is the display advertisements in some of our leading newspapers and magazines offering for sale Trees of Heaven, fly-catching plants, etc.

The Tree of Heaven will not go very far in the direction of heaven in our climate; and folks who expect to replace their fly stickers and window screens with a plant are due for a rude awakening. *The Prairie Garden* does not accept this type of advertising.

We have been taken to task for accepting advertisements naming hybrid tea and floribunda roses as hardy. Last September we saw both varieties in The Pas, north of latitude 53 degrees, and in Flin Flon, north of 54. Their owners assured us that their plants had lived through several winters with very little protection.

We realize, of course, that in many locations these roses will not survive. Still, hundreds of our readers are quite successful in wintering roses in all three prairie provinces, and we think that there is justification for the claim of hardiness. Since roses are deservedly popular, we are happy to carry advertisements of reliable sources of supply in our pages.

We, of *The Prairie Garden*, do not wish to tell you where to buy. We, however, do believe that you can order with confidence from the advertisers in our publication. We do caution you to select material suitable for your climatic conditions. If you are not sure yourself, ask someone with experience to advise you.

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The Prairie Garden

WESTERN CANADA'S FOREMOST HORTICULTURAL ANNUAL

Published by

WINNIPEG HORTICULTURAL SOCIETY

(Established 1931)

A non-profit publication dedicated to the advancement of Horticulture in our Northern Great Plains area.

19th Annual Edition Winnipeg, Manitoba February 1962

We are happy to bring to our many thousands of horticultural friends the Nineteenth Annual Edition of The Prairie Garden. Nearly 10,000 families, members of horticultural societies, garden clubs and enthusiastic gardeners in over 650 Western centers purchased copies of The Prairie Garden last year as their special reference for regional garden information.

We strive each year to bring to you up-to-date factual information, to assist you in your gardening pursuits. Many books are published on horticultural subjects. Few, if any, have direct practical application under the climatical conditions in our Northern Great Plains area. Our efforts are directed toward filling this need.

Each year the demand for The Prairie Garden not only increases, but expands. We know no national borders. Our distribution ranges from Texas to Alaska, while we have requests for books from libraries as far away as India, England and several countries in continental Europe.

We wish to express our thanks to the many outstanding professional and amateur horticulturists who, through their valued assistance and contributions to our publication, have made it possible to bring to you another edition of The Prairie Garden.

Front cover photo courtesy of T. & T. Seeds Ltd.

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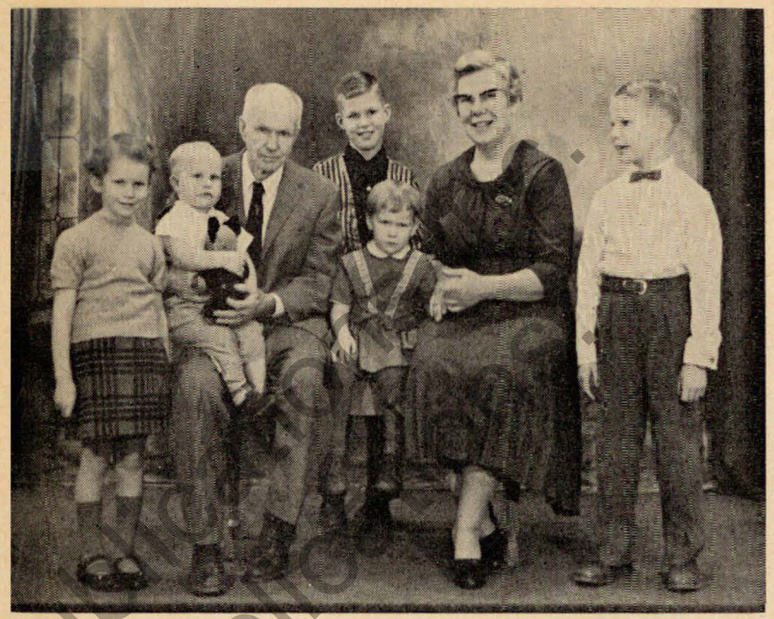

We believe that most Prairie Gardeners have heard of Dr. F. L. Skinner who has spent most of his 79 years near the small town of Dropmore, Manitoba. Since the early twenties when Skinner's Nurseries came into being he has bred and developed many hardy and outstanding new plants for prairie horticulture.

This picture taken two years ago shows Dr. Skinner with his gracious wife Helen, his three boys and two girls.

A Manitoba Plantsman Takes a Busman's Holiday

This story is of Dr. and Mrs. Skinner's trip to Britain and the continent this last summer

by **F. L. SKINNER, M.B.E., LL.D.**

On July 20, 1961, my wife and I boarded a plane in Winnipeg for a 40-day holiday that took us to Scotland, England, Sweden, Holland, Germany, Switzerland and France and of course we visited some of the most noted horticultural establishments in each of these countries. I had some definite objectives in mind before we set out and managed to accomplish most of them.

On the 21st we arrived at Edinburgh and called on Dr. Fletcher and that afternoon we were shown some of the things I was most interested in at the Royal Botanic Garden among them a Lilac from Korea that has neat small leaves and only grows about two feet tall at maturity, this should make an excellent dwarf hedge for prairie gardens and I have been promised scions at the proper time. In the famous Rock Garden at the E.B.G. there are some very fine varieties of shrubby Potentilla and I got cuttings of three of the most distinct of them that afternoon as well as a prostrate Cotoneaster and a deeper red Spirea than Anthony Waterer; these are now established in our propagating beds. I was also shown Rhododendron caucasicum grown from seed collected by Dr. Peter Davis at an elevation of 9,000 feet in the Caucasus Mountains and the equally dwarf R. chrysanthum that grows at elevations up to 15,000 feet in N.E. Asia; plants of both these species are now established at Dropmore and with other closely allied species should form the basis for a race

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of dwarf Rhododendrons that will be hardy anywhere in Canada where soil and moisture conditions are to their liking.

I had a nice chat with Dr. Davis who has collected a lot in Asia Minor and as I had already suspected he said there were many dwarf shrubs in the cold dry interior that should be hardy with us. These are mostly species of Prunus (almond and Cherry) and various Pea shrubs.

That first day at Edinburgh Dr. Fletcher arranged with the garden secretary for the National Trust for Scotland, Mr. Eric Robson, that he should drive us out to Culzean Castle in Ayrshire, on Saturday. Culzean Castle is a National Trust Property and besides having a large garden the upper story of the Castle is reserved for the use of General Eisenhower during his lifetime. In the spacious grounds Rhododendrons are being planted under the old trees and on my suggestion Martagon Lilies (supplied from Dropmore) are to be naturalized among the Rhododendrons. On arrival at the Castle we were taken to the General's sitting room and there given refreshments, so for a time we sat on the seats of the mighty without any of the responsibilities attached thereto. On our way back we drove past Burn's Cottage.

From Edinburgh we went to Aberdeenshire where I still have some relatives and friends. In Fraserburgh I saw, for the first time, the true Eryngium alpinum; this is a much finer flower than the variety we have been growing under that name, the lacey bract under the flower head being about three inches across and an intense steely blue. My cousin, in whose garden it was, got a spade from the tool shed and told me to help myself as soon as I admired it and it is established at Dropmore.

From Aberdeen we visited a cousin up Deeside and also the younger brother of the Doctor who superintended my arrival to this world, though 95 years old this Doctor had a most wonderful memory and regaled us with stories of the history of Aberdeenshire.

My cousins drove us to some of the interesting spots on Deeside including Castle Fraser where there is an avenue of California Redwoods about four feet in diameter. Our next stop was at Guildford near London, there we stopped in a very old Inn called The Angels. Guildford is quite near Wisley and we spent two days in the Royal Horticultural Society's gardens there. The Director of the Gardens is Mr. Frank Knight who trained at the Edinburgh Botanic Garden at the same time as Mr. Hector Macdonald. Besides showing us the most interesting features of the Gardens Mr. Knight drove us to such interesting spots as the Waterer Nursery and the Saville Gardens in Windsor Great Park. Of course we did a bit of sight seeing in London and flew from there to Stockholm taking the train from there to Uppsala, the University town where Linneas worked.

Quite near the hotel where we stayed was the Uppsala cathedral and we spent some time in it, this was the cathedral in which Dag Hammerskjold was later to be buried.

One of my objectives in going to Sweden was to try and find the northern limits of the upright Swedish Juniper, owing to our limited time and the language difficulty I failed in this but I did trace it as far north as Uppsala and west to Lake Malar and there I was able to collect a small quantity of seed.

From Sweden we flew to Amsterdam where we were met by Mr. and Mrs. John Fopma who drove us to Boskoop and placed themselves and their car at our service while we were in Holland. One of the interesting things they showed us was the cut flower market at Alsmeer, here five days a week many

tons of cut flowers are sold daily by auction and shipped by air to all parts of the world.

Boskoop is the center for the production of trees and shrubs and it was a revelation to one from our dry western climate, to see how many plants can be grown on a small piece of land when ample water supplies are available and skilled gardeners are in charge. An enormous amount of hand labor is envolved in the production of the material grown here as each plant is staked and tied and all weeding and cultivation is done by hand. Choice evergreens are grown as close as six inches apart and there is no waste land on these nurseries.

Our next point of call was Munich and at the Botanic Garden there, considered one of the best on continental Europe, Dr. W. Schacht has gathered many plants from central Asia and Asia Minor. On our first evening there Dr. Schacht kindly showed us kodachromes of his most recent collecting trip to Asia Minor and I was able to show him some of my hybrids and collected material which they did not have at Munich.

From there we flew to Geneva and took the train from there to Grenoble and a bus to Lautaret. These continental trains travel fast and do not stop long at the stations so one has to be prepared to get off as soon as the train stops; in my hurry to get off quickly I stubbed my toe on something and fell over my valise wrenching my back a bit and it was touching to see how though we could not speak each other's language, half a dozen hands were outstretched to help me.

From Grenoble to La Grave the road ran through interesting mountain scenery but the last 7 miles was along a steep grassy mountain side which we were told was covered with narcissus and crocus in June. Here were many hair pin bends and had the bus left the road it would have rolled 500 to 1,000 feet before coming to rest. Wherever there was a small patch of ground where one could stand on without spiked boots the land was under cultivation and the grain was being harvested while we were there; it was cut by scythe and bound by women in the same manner as it had been 2,000 years ago and much of it was carried down to the road on the backs of the farmer himself. Some of these fields were about half an acre or even an acre in extent but others were barely as large as a Manitoba farmer's potato patch and it seemed very difficult to me that people could make a living in this manner under present day conditions. An Alpine Botanic Garden is a department of the University of Grenoble and during the summer months the Professor of Botany teaches students who come to study the Flora of the High Alps. The Garden is situated above the tree line and in plain view of a glacier across the valley. Among the interesting plants grown here is a Lavender that grows wild between La Grave and Lautaret, L. angustifolia, and it is now established at Dropmore. I noticed that the wild plants usually grew in scree and very good drainage is probably one of its requirements.

Dr. and Mrs. Skinner in Trafalgar Square (Canada House in background).

From Lautaret where we stayed three days, we went back to Geneva where there is a very fine Botanic Garden under the directorship of Dr. Zimmerman. Though Dr. Zimmerman does not

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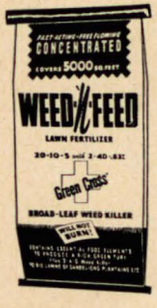

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speak English, with the aid of one of his assistants who does we had a very interesting visit and carried with us cuttings of a new hybrid Erigeron when we left by plane for London, these are now established at Dropmore.

From London we went direct to a niece in Norfolk whose husband carries on a very modern dairy and hog farm, where as complete records are kept as in our Experimental Farms and where a full time secretary is kept busy. Near here is the largest wholesale nursery in Europe dealing with perennial plants. When I visited the owner I found that he already knew of my work having heard of me 30 years ago.

At this, Alan Bloom's nursery there were quite a few Erigerons, perennial Asters and Goldenrod hybrids that Mr. Bloom had raised and some of these should be worthy of trial in Manitoba, they are certainly an improvement on their parents.

We had to go to Scotland a few days before our flight was due to leave so as to validate our tickets, so paid a final visit to the Botanic Garden at Edinburgh and secured small plants of two hardy Rhododendrons and these are now established at Dropmore, we were also able to take in a Shakespearian play at the Festival and paid a hurried visit to Pitlochry to see Mr. Hector Macdonald's mother. On this visit the Heather was at its best and we pulled a small plant in the hope of being able to bring it home alive, however a vigilant Custom's Officer in New York spotted it and we had to leave it there. Incidentally that was the first time we had been asked to open our baggage since we left home.

A corner of the pond, Royal Botanic Gardens, Edinburgh.

WE ARE HAPPY to associate ourselves with the efforts that the Winnipeg Horticultural Society is making to promote good gardening in Western Canada and take this opportunity of wishing its members a successful 1962.

SEARLE GRAIN COMPANY, LIMITED

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Garden Calendar

by **DR. W. R. LESLIE, Winnipeg, Man.**

Superintendent of the Morden Experimental Farm at Morden, Manitoba, for many years, Dr. Leslie is now active as a landscape consultant and garden columnist

January: Make plans for a still more beautiful and satisfying garden in 1962.

Attend horticultural meetings.

Remove snow from those low evergreens which are weighed down by snow, easing it off with a broom, gently lifting the burdened branches.

Inspect tubers, bulbs, and other plants in storage. Sprinkle the covering medium sparingly when signs of shriveling show.

Refresh potted plants by immersing the top in slightly soapy, luke warm water now and then. Keep up the moisture in the air by such convenient means as letting the electric tea kettle boil in the room for a time; having pans of water on the radiator, or shallow pans or trays partly filled with sand, gravel, or peat moss that is kept wet; and by syringing the foliage on sunny days.

February: Attend the annual meetings of the Horticultural Association.

Sow seeds of such perennials as Delphinium, Shasta Daisy, Aquilegia, Pyrethrum, Sweet William, Coreopsis, Gaillardia, and Hollyhocks about the first of the month. (The sowing of this list may be delayed a month if accommodation for transplants is small).

Sow seeds of Spanish Onion for production of exhibition bulbs.

Make cuttings of Geranium, Begonia, and Coleus to furnish window boxes, and flower borders.

Force sprays of flowering trees and shrubs by splitting the stems to increase water intake and place in vessels of water. Start in a cool room, gradually moving to warmer positions. Most kinds will require about six weeks to display bloom.

Keep the bird-feeding stations regularly replenished with grit as well as heat-producing foods.

March: March 1—sow seed of Pansy, Lobelia, Castorbean, Verbena venosa.

March 15—sow Antirrhinum, Annual Pyrethrum, Chrysanthemum, Dahlias, Canna, Balsam, Nicotiana, Salpiglossis, Celosia, Drummond Phlox, Verbena, Rudbeckias, Salvia, Gomphrena, Nierembergia, Penstemon, Petunia, Statice.

Start tuberous Begonias in flats or seed pans, using half sand and half peat. Press the small tubers into the mixture, hollow side up, at from 2 to 3 inches apart, to a depth that leaves only the tips exposed. Bring Geranium plants from storage, repot, and cut back most of last year's growth. Soak in a tub of tepid water. When new leaves show, set in a sunny window and avoid over watering.

Cut a supply of scions for top-working of fruit trees, Lilacs, Hawthorns, etc. Store the scions in a plastic bag set in the refrigerator for use in early May.

Pruning is done to good advantage in March and April. Remove insect galls, black-knot and fire-blight cankers and burn these to prevent re-infection. Behead down to near the ground those hedges which are old and tired, or uneven.

Get catalogs and order nursery stock, seeds, tools, fertilizer, and pesticides.

April: Plants awaken and activity outdoors commences on full scale.

Sow seeds of Asters, Stocks, Zinnias, Nemesia, Dianthus, Ageratum, Anchusa, Heliotrope, Salvia, Sweet Scabiosa, African Daisy, Tagetes, Marigolds, Arctotis (African Daisy), Gaillardia, Schizanthus, Alyssum, Larkspur, Balsams, Amaranthus, Cosmos, and the following material, known as "Everlasting Flowers" for winter bouquet arrangements – Rhodanthe, Acroclinium, Globe Amaranthus, Ammobium, and Helichrysum. Sow from the first of the month to the 17th according to growing conditions prevailing.

Sow vegetable seed, April 1st—Celery, Peppers, Eggplant, Onions, Parsley; about April 10th—Tomatoes; April 15—Head Lettuce, Cabbage, Cauliflower, Broccoli.

Harvest over-wintered Parsnips and Salsify from the garden. They soon start into growth and become useless. Feast on new growth of Winter Onions, Chives, Seakale, and Belgian Spinach (Sharpleaf Dock). Force a Rhubarb plant by placing a keg over the crown and banking it to increase the warmth.

Complete spring pruning. Some shrubs perform best when cut back to near the ground. Examples in this class are the Bumalda Spireas, Froebel and Anthony Waterer; Tamarisk, Hydrangeas, and Tea Roses.

Plant trees, shrubs, and hardy vines as early as feasible. Take advantage of the cool, moist soil conditions prevailing in early spring. This results in maximum development of root and branch.

Plant out hardwood cuttings as early as possible. Mulch the row with a 2-inch spread of straw or hay to keep the ground cool and moist.

Groom the lawn with a gentle dandelion rake. Apply Ammonium phosphate at a rate that will provide 2 pounds of nitrogen to 1,000 square feet. Spread when the grass is dry and water generously at once. Spray to kill broadleaf weeds when dandelions commence to flower.

Loosen the soil in flower and shrub borders. Fertilize old borders. Treat the soil with insecticide dusts if there be evidence of cutworms, wireworms, slugs, etc.

May: Leaves clothe the trees and flowers gem the borders.

Sow garden seeds. The hardy kinds go in as soon as soil is ready. Prairie redmen planted corn when the wild plum blossomed, and squash, melons and beans when the hawthorn showed flowers.

Harden off transplant stock of tender vegetables and flowers for about two weeks before setting them in the ground. Hotcaps and cloches hasten the season.

Top-working is done most favorably when the buds begin to show green tips of new leaves.

Complete removal of mulches from tender stock in borders, vines, and roses about the first of May. Fasten vines, grapes, and climbing roses to their wire or wooden supports.

Complete clean-up and pruning early. Finish planting woody material.

When leaves are about half grown, spray all trees, shrubs, and vines with Malathion against aphids and other insect pests. Protect Currants and Gooseberries against fruit fly maggot by spraying the bushes well with Methoxychlor, first when flowers fade and second in 10 to 14 days.

Liven up old lawns by using an aerifying fork. Set the mower to cut the grass at about 2-inch height. Mow frequently so that clippings are less than one inch in length. In late May give a second spread of fertilizer.

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Ammonium Sulphate is good. Apply at rate of one pound nitrogen to area of 1,000 square feet.

Divide and replant Autumn Aster, Daylilies, and other perennials which develop broad crowns in 1 or 2 years. Furnish the spaces between Tulip plants by sowing seeds of annuals or setting transplants. Set out Chrysanthemums when Darwin Tulips reach full bloom. Plant Dahlias and Cannas during the last week of May. Put Gladiolus corms in about mid-May and make weekly plantings thereafter. Place window boxes and furnish them. Mulch most plants to keep the roots cool and moist and to maintain mellow soil conditions.

June: The month of flowers, strawberries and salads.

Record all new plantings in your garden book. Memories are short.

Complete planting out of vegetables and bedding plants. If hot and sunny, shade transplants for a few days. Thin vegetables and flowers in seeded rows. Keep weeds eliminated. Irrigate so that plants do not become uncomfortably dry at any time. Prune out surplus stems of bushy perennial plants, leaving the strongest and those in position to produce a well balanced specimen. Stake Tomatoes, Sweet Peas, and other vines.

Keep the garden in good heart by grooming away all trash, and by spraying or dusting to maintain control over insects and diseases. Keep down sucker growths of fruit trees, Roses, and the surplus suckers of Lilacs, Raspberries, and Sorbaria. Remove blossoms on newly set patch of Strawberries until the first of July. Give an 8-inch space between new runner crowns. Thin surplus fruit from apples, pears, and plums.

Clean up spent crops and replant the areas. Remnants of lettuce, radish, spinach, and cress go onto the compost heap.

Early in the month place layers of shrubs and fruit trees for "own-root" increase. Keep the soil over the layers moist continuously.

Lythrums are readily increased by rooting the side branchs in moist sand, peat, or vermiculite. Rooting takes place in a short time. Clip off all spent flowers. Prevent seed setting on ornamentals, other than those for increase or which display beauty in berry or seed mass.

Watch plants for chlorosis and feed iron to plants that show yellowing of the leaves. Follow a proper spray calendar to keep Spruce, Pines, and other conifers free of Pine Leaf Scale and Spider Mites.

Trim hedges. Mow lawns frequently. Prune many of the spring flowering shrubs, such as Spireas, when flowering ceases.

July: Garden Roses, and annual flowers.

Clip coniferous hedges and specimens the first week of July.

Stimulate vigorous growth of plants by irrigation, shallow cultivation, control plant pests by spraying whenever necessary, staking tall weak plants, eliminating weak and surplus stems, syringing foliage occasionally and by removing flower stems as soon as petals fade.

Cease harvest of Rhubarb the first of July. Apply manure to Rhubarb and Asparagus beds.

Keep surplus vines of grapes cut out. Support heavily laden fruit trees by notched boards, crotched willow sticks, or padded rods.

Sow seed of Chinese Cabbage, Rutabagas, and for succession cropping leaf Lettuce, Beets, Carrots, and Radish. Shade Cauliflower heads by fastening the tips of leaves together with a rubber band. Plant bearded Iris.

Dig up Tulip bulbs when the leaves turn brown. Store the bulbs for

planting in late September. Harvest summer Squash in the juvenile stage for finest quality. Can surplus vegetables and fruits.

Do budding of Roses, Lilacs, and tree fruits.

August: The month of plenty; melons, cherries, plums, apples, flowers.

Treat Spruce trees for scale insects and spider mites about the 7th. Use both Malathion and Aramite.

Exhibit at horticultural shows.

Prune the raspberry patch, removing all but this year's canes.

Make final clipping of formal hedges. Transplant Spruce trees about mid-August. The third week of August is the most favorable time to sow grass seed. Transplant Oriental Poppies. Sow seed of Delphinium, Gasplant and other perennials that have short vitality. Plant up Freesia bulbs. Take cuttings of border Geraniums to produce stock for next spring. Transplant to the flower borders your spring-sown seedling perennials. Plant bearded Iris. Blanch Celery.

Keep Chrysanthemums in the borders well watered. Stake tall types of Autumn Asters against wind damage.

Visit garden shows and go on organized garden tours.

September: The time of harvest.

Gather fruit as soon as is "hard ripe."

Fight borers on plums, lilacs, and other infested woody plants with a "death-ring" of Paradichlorobenzene, spread around the infested stem not closer than 2 inches to the bark, and covered with a cone of soil reaching up about 8 inches. Keep the soil surface moist to make the fumes most effective.

Fertilize the lawn with a chemical that will supply one pound of actual nitrogen to 1,000 square feet. Elevate the mower to the 2½- to 3-inch level. From mid-September on plant Peonies, Lilies, and as the stock becomes available Lily-of-the-valley, Ixiolirion, Squills, Grape Hyacinth, Narcissus, and Tulips. Make over old tulip beds where the plants have become crowded.

On very cool clear nights cover tender plants with mats or rugs. Remove wraps when the mid-morning sun has warmed the air. Pot up some Parsley and Chives to serve as edible house plants. Move potted plants that have summered outdoors to the house when weather becomes chill.

Do autumn planting as soon as leaves drop from shrubs and trees. Early moving permits new root growth to take place. This is helpful. Mulch the plants.

Pull all vagrant weeds in early morning when damp so seeds will not be scattered. Remove spent flowers to prolong season of blooming.

Gather gourds as they become hard ripe and before frost hits.

October: Thanksgiving.

Complete planting of Lilies and Dutch Bulbs. Lift and store Dahlias, Cannas, Gladiolus, and tender Lilies. Bring in tubs of tender Water-lilies.

Fertilize and dig the garden and borders deeply. Leave the surface rough and cloddy. Empty the compost pit, using the valuable contents in the borders. Refill the pit with leaves, healthy garden refuse, and fertilizer.

Sow seed of trees and shrubs in frames or protected seed beds. Winterize the Rose bed, and tender vines. Prune the grapes and cover remaining vines with 10 inches of dry earth or compost.

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About the middle of the month soak the evergreen trees and shrubs with a slow stream of water. Heel-in and water the nursery stock delivered for April planting. Do not water herbaceous perennials after mid-month. They are likely to rot if they enter winter in a soggy condition.

Spread straw or hay mulch over the Strawberry bed. Use brush to cover the rock garden and to trap snow over flower borders. Place a mound of soil over newly transplanted trees, shrubs, and vines. Mulch bulb beds with a couple of inches of leafmold, compost, or peat. Drain water pipes. Clean equipment and bring under cover.

November: Autumn fades and plants become dormant.

Spread a mercuric fungicide on lawns that have become subject to Snow Mold and other cool-weather fungus diseases. Spread some tree prunings on wind-swept parts of the lawn and borders to trap early snowfall.

Mulches are spread to fullest advantage when the earth is frozen to a depth of 1 to 3 inches. Materials include strawy manure, flax straw, marsh hay, peat leafmold, compost, pea-vine, corn stalks, sawdust, ground corn cobs, evergreen boughs, and brush. Newly planted herbaceous perennials, bulb beds, and tender vines derive vital benefit from a cover to depth of at least 1 inch. In many situations 2 inches are more comfortable. A mesh of twigs over evergreen plants is desirable to stop and hold snow.

Wrap dwarf evergreens with a loose band of burlap to prevent snow-crush. Erect screens on the west and south sides of exposed dwarf conifers, such as Arborvitae (White Cedar) and Yew. Protect the trunk and main branches of fruit trees from rabbits, mice, and sunscald injury with wrappings of wire cloth, aluminum foil, white building paper, old magazines, or wood veneer.

Renew membership to horticultural and natural history societies, and subscriptions to garden journals.

December: The end of the calendar.

Plan for a still more beautiful and productive garden. "To the improvement of gardens there is no end." Aim at maintaining interesting features in the dormant season as well as in the leafy month of May, the rosy month of June, and the fruitful months of August and September. Color in mid-winter is practical and much appreciated.

After heavy falls of wet snow ease it off the branches of evergreens by lifting and gently shaking with a house broom. Spread branches on wind-swept spaces. Shovel snow onto flower beds.

Where mice may get into cold frames and borders, bait traps with peanut butter or fried bacon pieces held on with a piece of plastic tape and set these in a covered mouse runway.

Where salt is used to lessen snow nuisance on sidewalks, the lawn may be protected by stretching a roll of clear polyethylene plastic and weighting down along the edges. The plastic is helpful to the grass. Black plastic is to be avoided as it bleaches the grass. Avoid use of tar paper as plant wraps.

Inspect plant material in storage. If molds appear, dust with Sulphur or spray with Captan, 1 ounce in 3 gallons of water.

House plants are not to be stimulated with feeding during the short-day season. Most plants will tolerate a south window now. Coleus will display full coloring only in full light. Syringe plants every sunny day. Maintain humidity in the atmosphere in the space occupied by potted plants.

Quite a Family to Care for . . .

My Indoor Garden

by **WINNIFRED A. MOFFAT, Calgary, Alberta**

Living in an old house may be a very fortunate thing for a plant lover. It is so in my case, because my house is on a N.W. corner and there are two big bay windows in my dining room, one on the south, the other on the west, extending out in a alcove from the house making it possible to put boards across and enlarging the window ledge space.

Here my nine varieties of geraniums bloom all winter long, although, according to the experts, they should be resting in the basement! These are slips cut from those grown all winter, cut down in spring and rooted in the garden all summer. They do not make much of a showing in the garden, unless the frost is late, but are ready for potting by fall and brighten the house all winter.

The older poinsettia plants are slow this year, although they were in the garden all summer. Last year there were lovely blooms decorating my windows for Christmas. But a slip, which was too small to put out in the summer, already (late November) has one bloom nearly out and no less than five others coming and it is only 10 inches high. I am thrilled!

One of the Christmas cactus buds is just ready to burst open and many more are coming. The sword cactus had many lovely red blooms during the summer, with petals like feathers. I call it my octopus, because one is always running into the long arms when watering. Over the years there have been several evening cacti. When they get too large for me to handle, I give them away and start a new one. The long-stemmed white blooms, also like feathers, last only one evening in their perfection, but there have been as many as five blooms out at once, on the old plant. The orchid cactus is very temperamental. It only blooms when it thinks it will. I do not think I have solved the problem of how to care for it. I hope to some day.

One summer there was a showy petunia, which was too beautiful to leave for Jack Frost to nip. It was a single, deep rosy red with wavy edges, called Ballerina, I think. So I brought it in, and it bloomed in my south window all winter long. Next season, I put it in the garden, cutting it down. In a few weeks it was covered with bloom again. That fall I brought it in again. Now it is in full bloom in the south window and this is the fourth year I have done this. The nurseryman was surprised that it would live. I wonder if others have tried it. I have also done the same with clove pinks or carnations.

I have about 13 different kinds of African violets — single and double white; ditto of pink and purple; mauve and dark purple fringette, light purple, light blue, double white with purple center, and one which started from a leaf, grew two plants, one a double reddish purple and one a double white. This must be a "sport" too, like another single reddish purple one, which sometimes has white blooms edged with reddish purple.

But my prize plants, and those that are the least trouble, are the Amaryllis. The hybrid with a gorgeous bright red bloom measuring up to 8½″ by 8″ with 6 blooms on a stem and 2 stems, and a smaller, darker red bloom with crinkly edged petals and a white stripe down the center of each, bloom twice a year — a month after resting all summer under the lilac bush outside; and again in the spring. They are usually re-potted in the fall and I take off the small

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bulbs grown on the old one and give them away. But many people do not understand how necessary it is to rest them and therefore do not have blooms. The large hybrid bulb was here in this house when I came to Calgary as a bride in 1926. It has been looked after ever since, has never missed blooming, though sometimes only once a year. Now, in a 9″ or 10″ pot, it keeps up its record of 6 blooms to a stem, 2 stems twice a year. That would make it at least 35 years old. Is this a record life for an amaryllis bulb? I've often wondered.

Besides these, I have a fuchsia (Ballet Girl) 15 years old or more; a crown of thorns, pelargonium; grapefruit, which as yet has never bloomed for me; calla lily; two other lilies, which refuse to bloom; glacier ivy with a pretty green and white leaf, which climbs around the window; four lovely coleus, which grow so fast and are forever needing to be cut down and started again; Norway plant, pink oleander, with gorgeous bunches of sweet-smelling blooms in the summer; a hoya with its tiny but perfect fragrant bunches of blooms. The royal purple is striking with its bright green leaf covered with purple hairs, but it loses the lower leaves, and the bare stem is now over a yard long and has to be tied to the drape. Also I have baby's tears, two begonias, a Boston fern and a philodendron.

Resting in the basement now until spring are purple and white and red spotted gloxinias, which I have at last learned how to grow, and make a bloom; a dainty pink Zephyr lily and Achimenes or cupid-face, small cone-like bulbs, grown eight or so in a pot and which all summer are a mass of purple blooms somewhat like pansies. Also there is an Easter lily which should be started again soon. Usually I have a couple of hyacinths, daffodils and narcissus but missed getting them this year.

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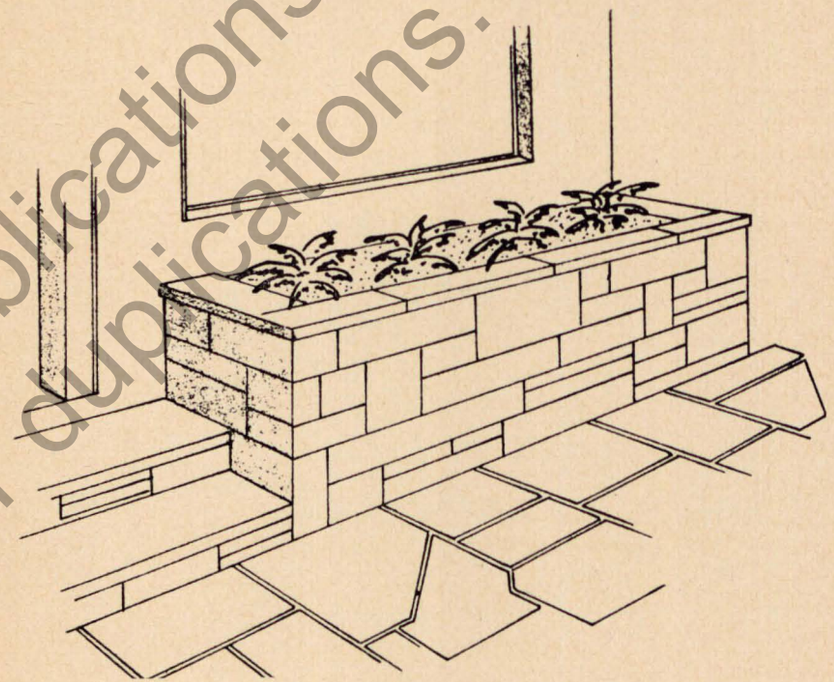
CATALOGUE ON REQUEST

Plants in Modern Landscaping

by **GUNTER A. SCHOCH, N.L.I.**

A well known Winnipeg Landscape Designer

In recent years decorative planters are appearing more frequently in the average home garden. In most cases they are connected to the house being a part of the architecture. In this way they form a valuable medium between structure and landscaping and their living contents are very much suited to



Cut No. 1

soften the severe lines of present day designing. This type of masonry planter, when attached to the building, is located mostly beneath the picture window (cut No. 1), or as a separate low unit, enclosing the terrace or patio area close to the house.

Experience has shown that many planters have been constructed too narrow. One often finds it difficult to squeeze even the root ball of a Geranium between the walls. Any plant pressed into such a narrow structure will soon run out of food or just dry up, unless the home-owner makes constant use of fertilizers and watering can. The planting space between the wall should amount to at least 9 inches for annuals and not less than 18 inches for low shrubs and evergreens.

If at all possible, the planter should be built of the same type of brick or natural stone as used in construction of the house. If the planter is joined to the front of an existing building the walls should be erected on a concrete beam, 24 inches wide and 10 inches high (cut No. 2). The beam must be at least 6

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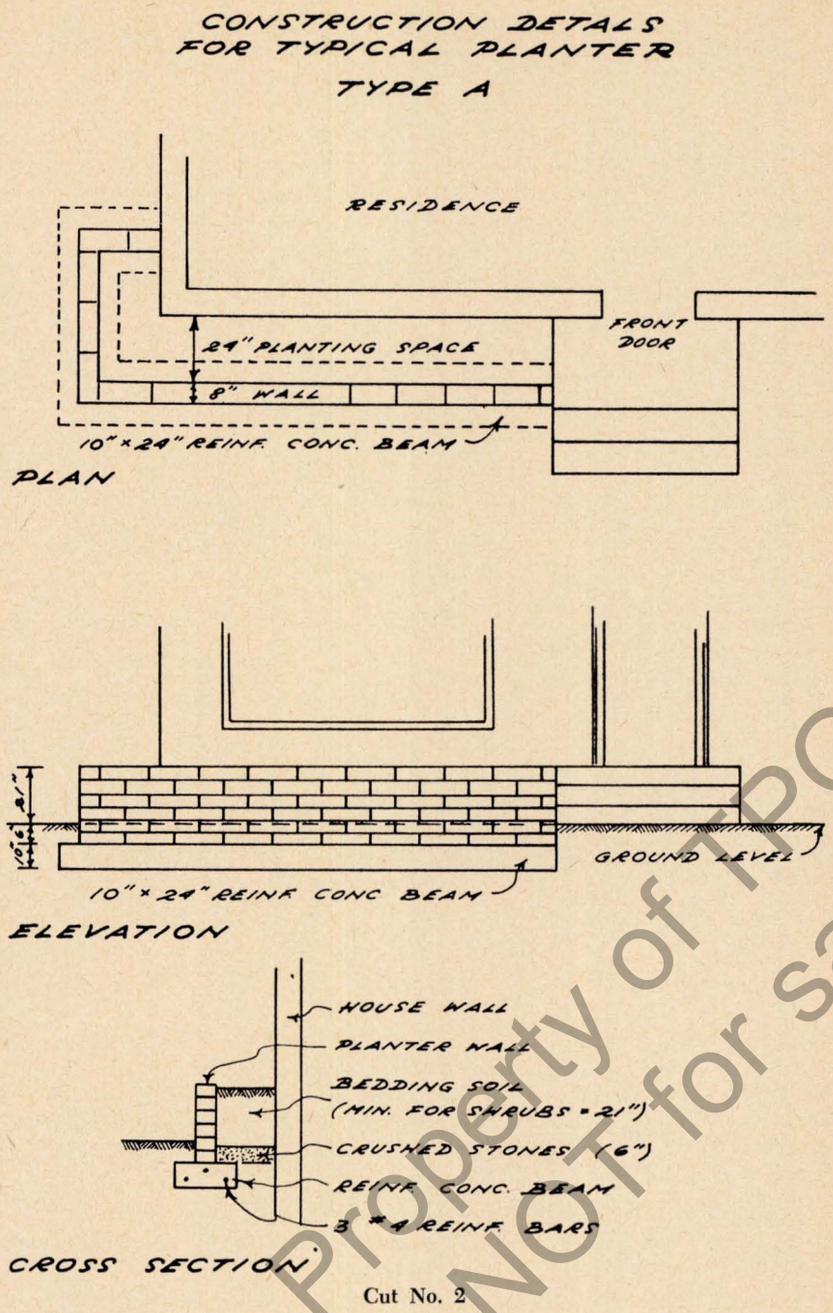
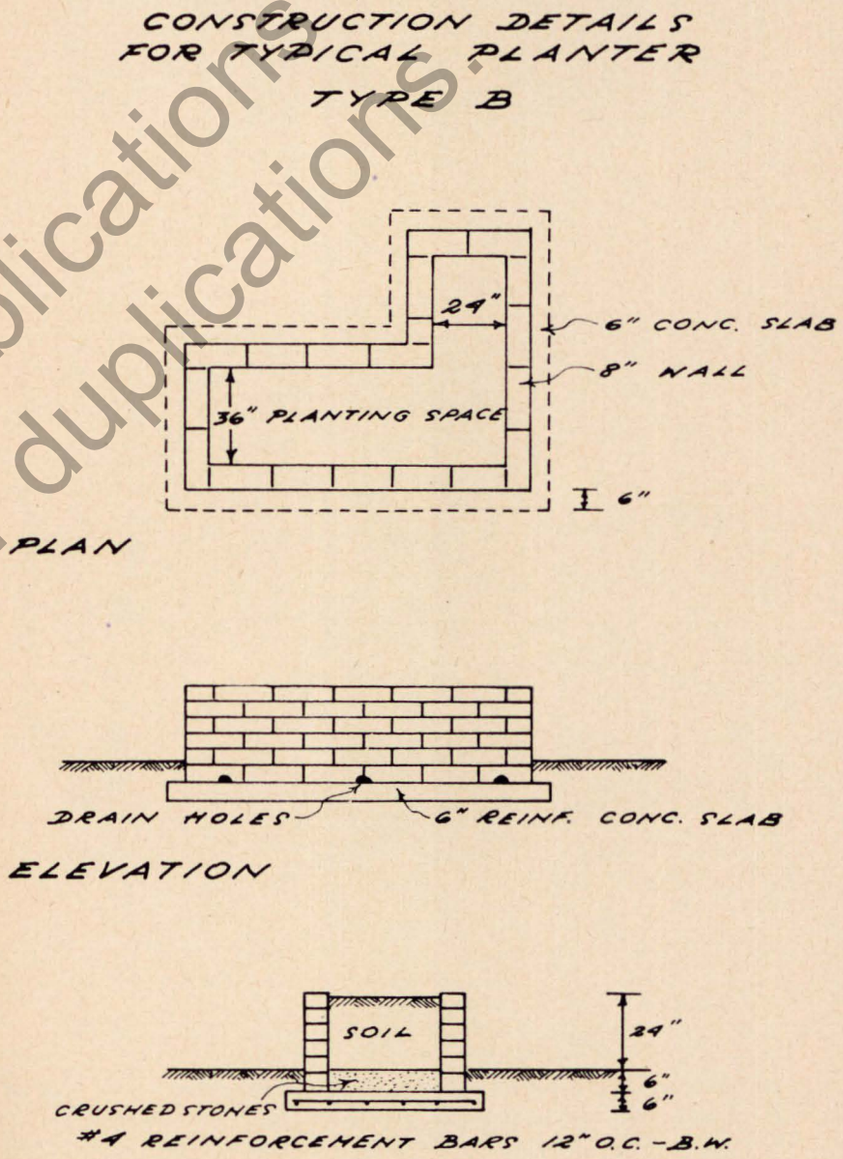


Cut No. 2

inches below ground level, so that the ground can be landscaped right up to the wall. It is advisable to place a membrane of waterproofing material in front of the existing wall to prevent moisture from seeping into the building.

Of late, brick planters may be found away out in the front yard. Sometimes these structures do not conform with their surroundings. They may look

rather lost on a large lawn area where a good size bed of flowers and low shrubs would be more suitable. On the other hand, in proper proportion of the available space, a planter could be an attractive feature of the front yard, possibly in conjunction with a light standard or a house number sign. In constructing such a planter a sound foundation is necessary. It can be obtained by pouring a 6-inch thick concrete slab, 6 inches wider than the outside measurements of the planter, reinforced with ½ inch steel bars. The top of the slab should also be 6 inches below ground level (cut No. 3).



Cut No. 3

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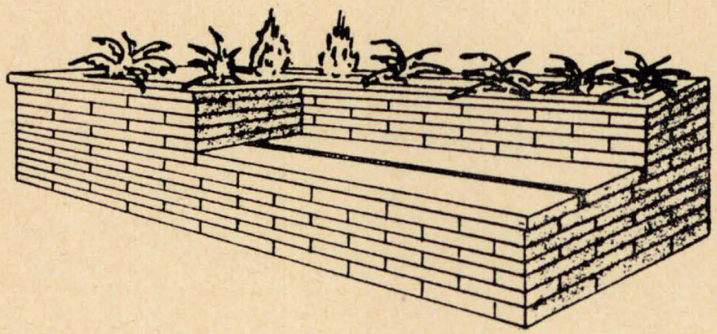
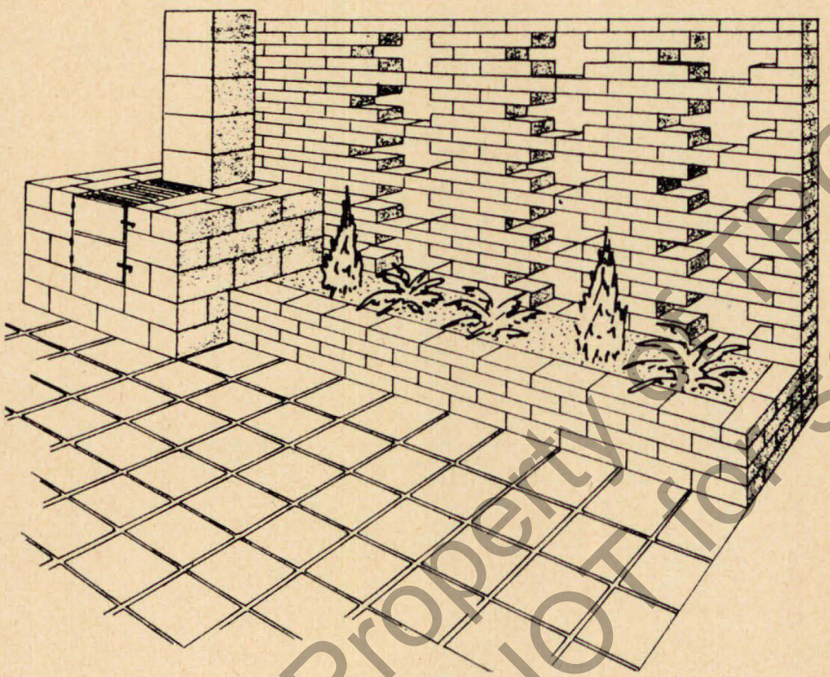
For a more practical purpose we might place a planter in the back yard, the outdoor living room. There is usually more space available here and a larger structure may be built. If the walls are kept in seat heights they may be



Cut No. 4



Cut No. 5

covered with wooden planks and serve as a favorite garden bench (cut No. 4). It could also be connected to an outdoor fireplace or barbecue (cut No. 5). If it were built in connection with a lily pond, valuable points of interest could be created in any home yard. Curved lines may be effectively developed here by following the curving line of a terrace or to give visual interest to a retaining wall (cut No. 6).

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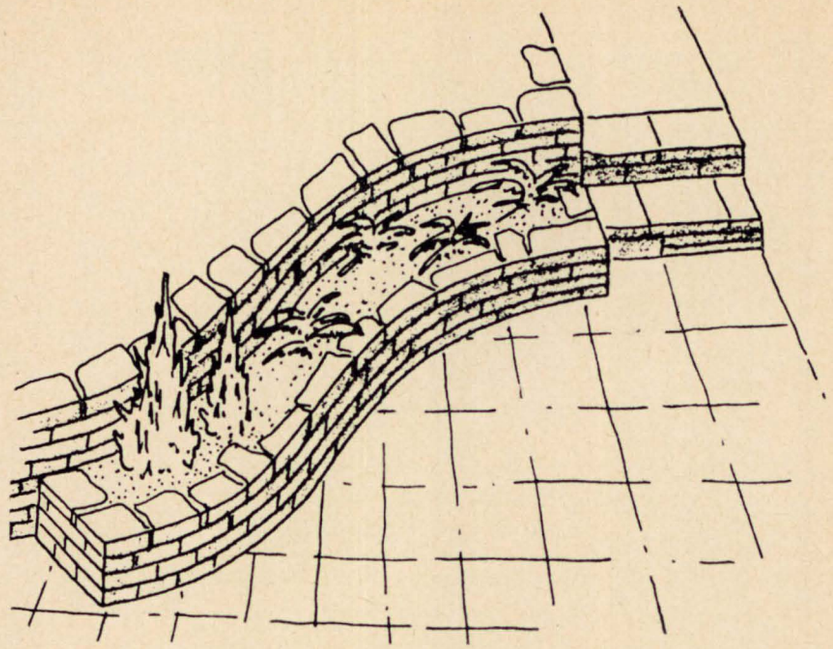
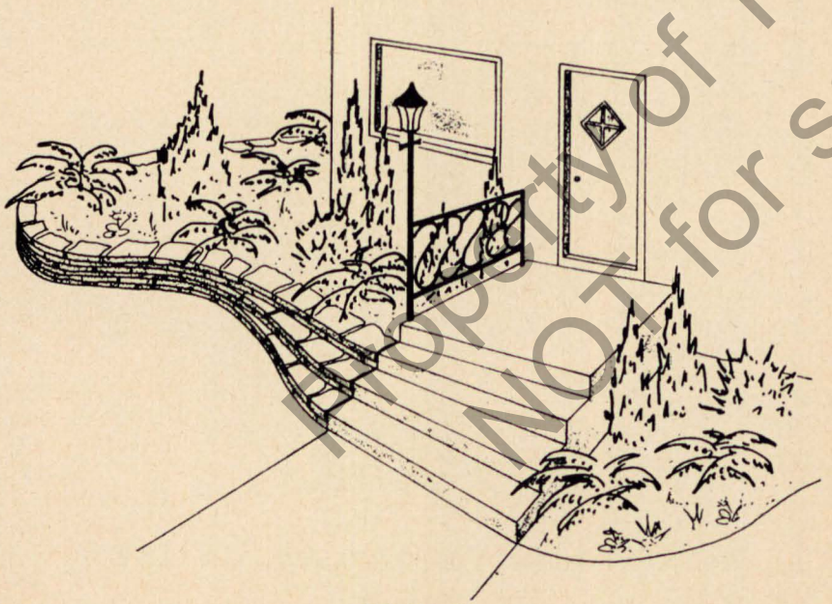


Cut No. 6

The definitions "planter" and "retaining wall" may conflict in some circumstances where the so called dry wall is employed. For this type of construction flat natural stone is used. It is laid in layers of different thickness, using soil instead of mortar. There is no foundation necessary. This is especially applicable for older 2-3 storeyed residences with windows high above the ground. This form of raised bed creates a rather large planting area and has been used quite successfully. It allows the impression of cutting down the height of a building (cut No. 7).



Cut No. 7

Brick and stone are not the only materials employed in planter construction. Wood is a very suitable medium too. Using specially treated lumber, a wooden planter can last a lifetime. It has the advantage of being movable to any part of the garden, wherever it is needed most.

In preparing for planting, it is of importance to fill the bottom of the planter with crushed stones or other coarse material for good drainage. Planters not protected by a roof-overhang should be provided with drain-holes so that excess rain water might run off readily. As the planting medium we should use a good bedding soil mixture composed of 2 parts top soil, 1 part rotted manure and 1 part sand.

A large variety of plants are suitable for our planter. The smaller one is usually chosen to retain the gay colours of bulbs and annuals. An early display of tulips could be followed by Salvia or Petunia. Geranium and blue trailing Lobelia still seem to be the favorites. Succulent plants present fascinating effects with their varying colors and textures. The best known are the many kinds of Stonecrop (Sedum) which make an excellent planting material. In semi-shade, Tuberous Begonia is second to none. For the more spacious planter in eastern or northern exposure, the all-year-round attractive low evergreens (Juniper, Mugo Pine, Cedar) are good choices. In a sunny location, low flowering shrubs like Red Spirea Froebeli or the fine textured Potentilla and Pygmy Caragana might be used.

Planters can be dressed up by covering the soil with granite or marble chips. A floodlight may be placed to light the planter at night, giving it a function to perform around the clock. Wherever you place your planter and however you may plant it, surely, it can be the most interesting feature in your yard.

Cactus Blooms for Christmas

by **MRS. LULA M. WICE, Winnipeg, Man.**

The so-called Christmas cactus is a popular houseplant but one that has an annoying habit of not blooming at Christmas time as it is by tradition supposed to do. Recently I have been successful in getting my plant to flower at Christmas. This is the method I use.

After danger of frost is over in the spring, I put the cactus out in the garden. It is given a very light dressing of fertilizer and watered sparingly during the summer. Before danger of frost in September, the plant is again brought indoors and put in a sunny but cool basement window. There it is left until just a couple of days before Christmas, giving it only enough water to keep the leaves from drooping. By the middle of December the plant is covered with buds. About December 24 it is brought up into the living room and the pot is placed in a large flat dish filled with moistened perlite or vermiculite. Usually the buds open almost immediately and present a fine display of bloom on Christmas day. It is essential that the plant be surrounded by the damp medium, otherwise the warm, dry air of the living room will cause it to drop its buds.

After the plant has finished blooming it is returned to the basement window until spring.

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Starting Annual Plants Indoors

by **JOHN WALKER, Division of Plant Science**
The University of Manitoba, Winnipeg

Soil: Soil for early-sown seeds should not be too rich. A friable loam soil from the field or garden is quite satisfactory. It can be improved by the addition of sand, 1 part to 3 parts of soil. Coarse material should be screened out; use ½-inch mesh screen. Clay soils need more sand added to make them suitable.

Seedlings may also be started by sowing seeds in vermiculite, sand or spaghnum moss. With these materials more attention is required as regards watering, and delay in transplanting may cause deterioration of seedlings since there are no nutrients to support plant life.

Seeding: Seeds are sown in shallow boxes commonly called flats. These are usually about 4 inches deep, 12 to 15 inches wide and 24 inches long. When small quantities of seeds are to be germinated, it is customary to sow them in flower pot, seedpan or other container. Bottom drainage in these containers is necessary.

Depth of sowing is governed by size of seeds. Very fine seeds, like those of lobelia, petunia, celery and parsley should be barely covered when sown. Soil for covering the seeds should contain a high percentage of sand to keep the top from "crusting", and should be screened through mosquito netting.

For watering newly-sown seeds it is wise to have available a shallow pan or tank into which the seed flat, pot or seedpan can be placed so that water may wet the soil **from below**; care must be taken that no water rises over the edge of the flat or seed pan. This practice ensures thorough wetting of the soil, and lessens danger of losing seedlings by damping-off fungi. By placing panes of glass or plastic covers over the containers until seedlings begin to appear, the need of frequent watering can be lessened.

Guard against too early sowing of seeds in spring. Sowing during the first 2 weeks of March is desirable for dianthus, lobelia, petunia, snapdragon and celery, while the first week of April is satisfactory for marigold, stocks, zinnia, cabbage and tomato. An in-between date will suit most others requiring an early start.

Germination of early-sown seeds will take place when containers are placed in a sunny window, greenhouse or hotbed where a temperature of 65 to 70°F. can be maintained.

Seedlings require transplanting: This is an intermediate step prior to planting in the garden. Transplanting of seedlings should be attended to as soon as the first pair of true leaves has developed. They require sufficient space to permit normal development of foliage and of an extensive root system; distance between seedlings may vary from 2 to 4 inches each way.

Flats are desirable and a lower temperature than recommended for germination is necessary for the production of sturdy transplants. Soil for transplants should contain less sand than that used for seeds. In addition, a small amount of well-rotted manure or leaf mould improves the texture. Too much sand tends to cause the soil to crumble and fall away from the roots when the plants are planted in the garden.

Roots of seedlings should be damaged as little as possible during the transplanting operation. To avoid damage to roots, try lifting the seedlings

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from the seedpan in clumps by using an ordinary table fork. The soil around the roots will readily crumble and individual seedlings separated. In transplanting, a "dibble" or "planting stick" is necessary to make a hole for the seedlings' roots and to firm the soil about them. A thorough watering with a fine spray should immediately follow. Shade from direct sunlight for about 2 days is also necessary.

The Castor Bean

by **MRS. L. F. FLURY, Weyburn, Sask.**

With the building of so many new homes in urban and rural areas, there usually follows a period of 2 or 3 years when the appearance of the new yard leaves much to be desired. Shrubs and trees require a few seasons to establish themselves and create the effect anticipated.

My solution to this problem has been greatly assisted by the generous use of the Castor Bean. Strangers as well as acquaintances have inquired about the attractive foliage with the tropical appearance.

The Castor Bean is a half hardy annual which grows from 3 to 10 feet in height. This magnificent foliage plant is picturesquely showy and imposing, lending to the garden a truly sub-tropical effect. It may be grown singly to form a pyramid of gigantic leaves, which with brightly colored seed pods, make a perfect oriental setting. They may be planted in rows to form a hedge between flower and vegetable garden or in groups of three or five in corners where growth would be attractive.

The seeds appearance is that of an ordinary garden bean brown in color. They should be planted 2 inches deep after danger of frost is past. The seeds may be started in the house for more rapid growth. I would recommend cutting paper milk cartons and placing the pieces side by side in a low planting box, so that the plants may be removed without disturbing the root system, thus hastening the desired growth.

These plants grow well on the prairie and require little care. I can think of no investment in a 15 cent package of seed that has given me more pleasure or reward.

There is one note of warning and precaution however. The seeds produced by the Castor Bean are POISONOUS and should be removed before maturing in case children are attracted to them.

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Honeysuckles for the North

by **J. A. WALLACE, The Beaverlodge Nursery, Beaverlodge, Alta.**

The Tatarian bush honeysuckle, *Lonicera tatarica,* has long been one of the favored shrubs in prairie gardens. Ease of culture and availability to the early settlers are probable reasons for such plentiful planting of the species. It is regrettable that most of these plants were seedlings and produced blossoms of poor color and substance.

During the past 25 years or so the bush honeysuckles have been much improved by breeding and selection which has included species such as the Blueleaf honeysuckle (*L. korolkowi*) and Morrow honeysuckle (*L. morrowi*).

There are a number of honeysuckle varieties in a wide range of blossom colors which are hardy and well suited to northern Alberta conditions. The Blueleaf Zabel, *L. korolkowi* variety is probably the best known of the reds. Blossoms are bright clear red, rather small but produced in such quantities that the leaves are almost hidden. Berries are red. Magnared, a newcomer from the Beaverlodge Nursery, produces blooms equally as dark as Zabel but with a magenta undertone, blossoms are larger and of better substance. Berries are glowing orange. Beavermore, an introduction from the Beaverlodge Experimental Farm, produces bicolored blossoms resembling *L. pulcherrima.* Petals are short, broad and of very good substance, red centered with pink margins. Berries are orange. Carleton, from the Central Experimental Farm, Ottawa, produces the largest blossoms of any variety we have grown, lively, glowing pink. Red berries follow.

Clear white is not a usual color among honeysuckle seedlings. Frosty, a new selection made by the Beaverlodge Nursery, produces an abundance of clear, frosty white blossoms which appear to retain their color reasonably well through the fading period. Blossoms are also of good size and substance.

The very hardy Albert Thorn honeysuckle, *L. spinosa alberti,* is valuable where a very spreading, semi-bush is required for foundation or large rock garden plantings. Very fragrant, lilac-colored blossoms are well set off by the linear, grayish-green foliage. Bluish-green berries follow. Mature height is approximately 4 feet with a spread of 6 feet or more.

Mr. Georges Bugnet of Gunn, Alta., selected two valuable varieties from the Sweetberry Honeysuckle *L. coerulea edulis.* Both varieties are very neat, dense growing, rounded bushes reaching a height of 4-5 feet. Foliage is pale-green and the blossoms, produced in early spring, are creamy white in color. The plentiful crops of blueberry-like fruit matures in early July. A tangy preserve or jam can be made from these berries which remain in good condition on the bush until near mid-August. These varieties are named Georges and Julia Bugnet.

Dr. F. L. Skinner's hybrid climbing honeysuckle Dropmore Scarlet Trumpet is not quite hardy but is easily protected against winter injury. Growing it on a hinged trellis which can be dropped to the ground and covered with a snow-holding material, such as spruce boughs, has given good results. Height of the vines is approximately 6 feet. Clustered scarlet blossoms are plentifully produced from about mid-June until autumn frosts.

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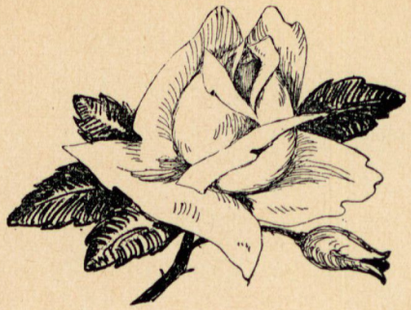

The Color Question in Roses

by **MRS. W. M. MacDONALD**
Chairman, Rose Section
Winnipeg Horticultural Society

Recently the subject of color in planning a rose garden was mentioned. How should colors be arranged? There, we thought, was a question for which one could find many answers – and we certainly found several different ones. We are not drawing any conclusions; we'll merely tell you what we heard.

Some people like the idea of planting a solid mass of one color. Lovely! This is wonderful for exhibition purposes or where there is unlimited space. In an average garden the grower would be limited to just a few varieties. Most of us want to try "something of everything," even if it means only one of each variety.

There is another school of thought which favors blending the colors–reds into pinks, then paler pinks, yellows, whites and blends. This is considered more restful on the eye than mixing colors. We are also told that reds and oranges, which catch and hold the eye, should be close to the house or patio while paler colors should be planted farther away to give the effect of distance. But wait; we find an opposing opinion which holds that the darker colors have a receding effect and should be toward the back of the garden, with lighter colors toward the front; yellow and white roses should be near the house. Confusing, isn't it?

Another expert warns that some varieties of roses are more susceptible to disease than others. Therefore, if disease were to develop, we are assisting its spread when we have several of the same variety planted together. This man feels, too, that there is aesthetic value in mixed colors.

By the time that we had absorbed all these opinions we could agree with the words of Omar Khayyam:

".....and heard great argument
About it and about: but evermore
Came out by the same door as in I went."

Actually, the average grower does not usually plant a complete rose garden all at one time; it is often a case of starting with one rose–or a few–and adding or replacing during successive seasons. Then, too, a rose has so many attractive features that color is not the only consideration in planting, really. We take into account the way a bush grows, its fragrance and foliage, and so on.

The final decision rests with each grower and, although quite happy to discuss or argue the question of color with other rosarians, he or she will end up by planting according to individual preference. And that's how it should be, if we are going to enjoy our roses. As for our own garden, we'll carry on with mixing the colors–aesthetic value, you know.

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Reference Guide for Horticultural Shows

These recommendations have been made by a committee appointed by the Manitoba Horticultural Association, in an attempt to standardize where possible the terminology, the sections, classes, and numbers of specimens to be used for horticultural shows. *Numbers of specimens should be changed to suit local needs, and various sections may be deleted, depending on local participation.*

General

For a *collection* (flowers, vegetables or fruit) the prize list should specify the minimum number of specimens to be exhibited. No display material or accessories should be allowed. In judging, "quality," "number," "interest" and "correct naming" should be considered.

For a *display*, the prize list should specify the area (length by width, or area in square feet) to be used for each entry and for flowers, the type of container. A display is judged on the quality of the specimens, correct naming, and on the attractiveness of the display. Extra material or accessories may be used, but this material should not detract from the purpose or theme of the display.

Vegetables

Vegetable classes should be divided into two subclasses, i.e., *Above Ground Vegetables*, and *Root Vegetables*. This would make it possible to have prizes of greater value given to such vegetables as beets, carrots, etc., where, in a small garden, most of the plot may have to be dug in order to get a suitable entry. An exhibitor showing 12 pods of beans can select these without damaging the rest of the crop.

Root Section–beets 5, carrots 5, parsnips 3, potatoes 5, turnips 2. If several sections are used for potatoes, the following are suggested: potatoes, pink or red; potatoes, white; potatoes, russet.

Above Ground Section: Beans 12 pods, broccoli 2 heads (roots removed), brussel sprouts 12, cabbage 2 heads, cauliflower 2 heads, celery 2 specimens, citron 2 specimens, cucumbers slicing 2, cucumbers pickling 5, corn 3 ears, marrow 1 specimen, egg plant 2, cantaloupe or muskmelon 2 specimens, onions pickling 12, onions cooking red, white, yellow, brown 5, leeks 2 specimens, lettuce head 2 specimens, lettuce leaf 2 plants, parsley 1 bunch, peas 12 pods, peppers 2 specimens, pumpkin 1 specimen, radishes 6-12 in bunch (tied), rhubarb 5 stalks, spinach 2 plants, squash 1 specimen, swiss chard 2 plants, tomatoes 5 specimens.

As there is usually some confusion where a section "Onions–from seed" is used, this section should be deleted. A judge cannot tell if onions have been grown from seed or transplants by looking at them.

Fruit

Apples 5, crabapples and apple crabs 12, pears 12, standard plums 12, plum and sandcherry hybrids 12, raspberries ½ pint (1 cup) on plate, strawberries ½ pint (1 cup) on plate, gooseberries, currants ½ pint (1 cup) on plate.

Flowers

Many of our cut flower varieties are more attractively displayed in suitable containers than in bottles. It is strongly recommended that many cut flowers be shown in suitable containers, rather than as a specified number. In this section it would be assumed that the flower's own foliage could be used, but no other type of foliage, unless so stipulated in the prize list.

A *suitable container* may be defined as any container (other than a basket) which is made of any material, suited to the entry in form, size, shape and color.

Some flowers recommended for showing in suitable containers are:

Achillea, begonia tuberous, butterfly flower (schizanthus), calendula, calleopsis, chrysanthemum, cornflower (bachelor's button), dahlia (under 4 inches in diameter), gloriosa daisy, gaillardia, godetia, hollyhock, larkspur, mallow, marigold (under 2 inches in diameter), mignonette, nasturtium, nemesia, pansy, petunia, annual phlox, pink (dianthus), poppy, rudbeckia, salpiglossis, sweet pea.

Arrangements

Basket—is a container made from any material with a handle over the basket which is permanently attached to the sides. A prize list should state emphatically how baskets are to be judged, i.e., from one side only, or from all sides.

Miniature arrangement—is an arrangement not to exceed 3 inches in any direction. If a further section is required for larger miniatures the section might be listed as—Miniature arrangement—3 inches to 6 inches in any direction.

Dining-table arrangement—is an arrangement not to exceed 14 inches in height suitable for dining-table.

Accessories—may be used in arrangements where the prize list so specifies, but plant material should remain the center of interest. Accessories, figurines, etc., should not be used where they might detract from the appearance or purpose of the arrangement.

1. *Bloom*—A "bloom" denotes one flower. For an effective bloom a strong, well-developed stem is essential. Good examples of a "bloom" are zinnias and roses. It is important that no side buds are allowed to remain, as there is always the possibility that these will have opened by show time. If side buds have been removed in good time, the food and moisture saved will help to improve the size and quality of the bloom to be retained. Sufficient foliage should be kept for maximum attractiveness.

2. *Spike*—A "spike" can be defined as a single elongated flowering stem, composed of a large number of florets uniformly distributed along a central main axis or stem. Good examples of a "spike" are gladiolus and snapdragon.

3. *Stem*—A "stem" refers to the portion of the plant on which several or many separate florets in either dense or open clusters are produced. A stem does not have the uniform elongated arrangement of the "spike." Good, typical examples of a stem are sweet pea and clarkia. A stem should not have any side branches but it could be a single side branch removed from the main stem. This could be the case where the main stem is past its best, and the side stems are in better condition.

Milk Bottles or Other Standard Containers

If milk bottles are not available, an attempt should be made to have containers supplied by the society and covered, so that their appearance is

(1) A "bloom" should have a well developed stem but no side buds. (2) Gladiolus is a good example of a "spike." (3) A "stem" may have several or many florets but no side branches.

more standardized. If milk bottles are unobtainable, plastic containers such as those used for detergents can be used. However, for purposes of uniformity, these should be painted one color with a good latex paint.

Flowers recommended for showing in milk bottles or other standard containers are, aster 3 blooms, candytuft 3 spikes, carnation 3 blooms (no side buds), clarkia 3 stems, dahlia over 6 inches 1 bloom, dahlia 4-6 inches 1 bloom, delphinium, large flowered 1 spike, gladiolus 1 or 3 spikes, lily 1 stem, lythrum 3 spikes, rose H.T. or H.P. 1 bloom, rose multiflora 1 spray, rose single or bush 3 blooms, marigold (over 2 inches) 3 blooms, salvia 3 spikes, scabiosa 3 blooms, snapdragon 3 spikes, spider plant (cleome) 3 spikes, statice 3 stems,

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stocks 3 spikes, strawflower 3 stems, sweet peas 3 stems, sweet sultan 3 blooms, verbena 3 stems, zinnia pompom 3 blooms, zinnia 3½ inches and over 3 blooms, zinnia 2-3½ inches 3 blooms.

House Plants

Ferns—Some confusion exists in setting up classes for ferns, and the following are recommended.

True fern—Maidenhair, Boston, or related species.

Fern type—asparagus plumosus, sprengeri.

Planters

Many exhibitors fail to differentiate between cacti and succulents. To avoid confusion it is recommended that such a section be called:

"Planter of cactus and/or succulents."

If an additional section for planters is required it may be listed as: "Planter—any other varieties of indoor foliage plants."

Wild Flowers

The committee strongly recommends that, in the interests of conservation, no sections be provided for wild flowers, as collections, displays, or individual specimens.

In place of collections of wild flowers, collections of pressed weeds properly named, or leaves of decidious trees and shrubs might be substituted.

Pansy . . .

the Flower with a Human Face

by **A. E. COLLETT, Regina, Saskatchewan**

Varieties recommended. Origin Giant, Maple Leaf Giant, Swiss Giant. Do not forget the Viola. Buy the best.

Pansies to be grown satisfactorily should be started in February or early March. Sow seeds thinly in pots or flats in soil made up with one-half good soil, one-quarter sand, one-quarter vermiculite or peat. Cover seeds with a light covering of fine soil or peat, press firm with a piece of board and water from a watering can using a fine rose. Cover the pot or flat with paper and a piece of glass and place in an area where the temperature is around 60 degrees. When the seeds have germinated, give air by raising glass and at this time discard paper. The soil must be moist, not wet.

Plants can be raised under artificial light or close to a south window in your home—small seedlings need lots of light and air. When plants have second pair of leaves, transplant into flats spacing plants two inches apart. Water to the top and keep plants out of sunlight for a few days but when the seedlings have rooted, watering must be from the base.

When the weather warms up, gradually harden plants off outside in a frame. Pansies can be transplanted to the beds when the temperature is around 35 or 40 degrees. They like to be shaded from the afternoon sun and love rich, cool, moist, well drained soil cultivated to a depth of not less than ten inches with the plant spacing six to eight inches.

Keep dead blooms cut off before seed pods form. The pansy is disease resistant if grown under the proper conditions. Each month I recommend spraying with insecticide or dust with 5% DDT dust to kill the pansy caterpillar.

Twenty Questions

by **DR. W. R. LESLIE, Winnipeg, Man.**
Landscape Consultant and Garden Columnist

The following comments are gleaned from the Over The Garden Wall garden columns in the Winnipeg Free Press. They are chosen because of the frequency they are asked.

1—Spruce Trees look dingy and fuzzy. Needles have white dots on them.

A—Spruce Mite sucks the juices from the tissue and, spinning webs, makes the base of the leaves and the twigs fibrous. The waxy spots are the homes of the Pine Leaf Scale. They absorb juices from the needles. Both pests weaken the tree and unless combated may cause death to spruce and pine. Spray against the mites as soon as seen, using Kelthane or Aramite. Repeat the spraying whenever mites are present. The creatures are very small, so use a hand lens. Or, place a sheet of white paper under the branch and tap the side branch. The tiny mites will show up as dots on the paper, if many are present.

To kill the scale insects spray with Malathion when common Lilac are in bloom. Repeat about the end of the first week of August which is the time the females are readying to lay their eggs on the needles. That is, spray twice a year—the first week of June and the first week of August.

2—Sugar Maple from Seed. When and how to sow the seed?

A—It is most desirable to have sugar maple trees about us. The leaf is our national floral emblem. The hardy strains from northern Minnesota and from the Thunder Bay Hills west of Lake Superior are adapted to southern Manitoba. Strains from Niagara are rather tender. The seed soon loses its vitality so plant the seed soon after it ripens in early October. A seedbed or cold-frame is favorable and preferred to sowing in the open garden. Place the seed in sandy loam, cover with about 1 inch of humusy soil. Water well. It helps to place 1 inch of peat or compost over the ground after freeze-up in November. Remove this mulch in April.

If unable to sow the seed in autumn, stratify the seed in moist sand in a tin or box and bury this deeply at the north side of shelter. In April dig up the container and sow the seed in a row in a seedbed or sheltered spot in the garden. Seedling should grow to about 1 foot high the first season and to 3 feet the second year.

3—Pruning. When? Wound dressing?

A—Aim to do all heavy pruning in spring, preferably before leaves emerge. Never prune fruit trees in autumn. Open wounds suffer from prolonged cold and drying, penetrating winds. Cover all wounds larger than a 25 cent piece with Braco or some other asphaltum dressing. Orange shellac is an alternative. Avoid use of paints that contain turpentine or other drying agents. They are toxic to the cambium or layer of growing cells.

4—Bare Patches on Tree Trunks.

A—Trim the bark to a smooth edge with a sharp knife or chisel and shape the wound to that of a canoe with pointed ends at top and bottom. This favors healing. Cover exposed wood with a thin layer of asphaltum paint. It remains tacky but clings to the surface. Apply with a thin label, putty knife or small brush. The dressing keeps in the moisture and excludes spores of decay organisms.

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5—Lawn Clipping. How late?

A—A final clipping about the first of October usually works out well. Plan on having the grass about 3 inches high at season's end. Closely clipped lawns tend to winter kill. Overly long grass may mat and suffer fungus troubles.

6—Toadstools on Lawn. How to eliminate?

A—Toadstools may be unsightly but are not doing any real harm. The portion we see is the fruiting body. The main part of the saphrophytic plant is composed of white strands which are underground and feeding on decaying vegetable or animal matter such as rotting logs or barnyard manure.

The surest cure is to dig up the area and remove the decaying matter on which the toadstools are feeding. Another treatment is to bore numerous holes in the ground about 6 inches deep and soak these with a fungicide such as Bordeaux Mixture or Captan. This may require repeated dosing. The simplest approach is to keep the heads down by repeated use of the back of a rake, or face of a dandelion rake. They will gradually give up.

7—Plum Tree. The tree flowers profusely but fails to mature fruits.

A—Our hardy plums are almost, if not altogether, self-unfruitful. That is, they do not set fruit to their own pollen. Either plant a good pollinizer variety in the garden, or graft one branch of the tree to the pollinizer. As emergency, when the tree comes into full bloom get a few branches of wild plum and place them in a pail of water. Set this on a box or stool near the tree so that insects will carry pollen to the flowers of the tree. Among the strong pollen varieties are Norther, Bounty, Dandy, Assiniboine, and Kaga.

8—Chlorosis. Leaves on Amur Maple and Hansa Rose turn yellow in early summer.

A—This "green sickness" is common in the Red River valley where the soil is overly supplied with lime. This ties up the iron in chemical forms which make it indigestible to many plants including spireas, mountain ash, as well as Rugosa roses and some maples. Suggested treatments:

1—For immediate relief, spray the foliage with iron sulphate solution — 1 ounce dissolved in 1 gallon of water. Use a fine spray. Repeat fortnightly. (Use at half strength for young plants).

2—Apply iron in a trench dug around the bush, deep enough to reach the feeder roots. Use dry iron sulphate, 1 pound of the chemical for each inch in diameter of the tree. Fill in with soil and soak with water. Iron chelates are even more effective but are more costly.

3—For large chlorotic tree, bore ⅜-inch holes downward on a slant, to a depth of 2 to 3 inches depending on depth of the bark, around the lower trunk and into the main roots, as close as 3 inches apart. Fill the cavities with dry ferric citrate and plug with asphaltum tree-wound dressing. This should suffice for 3 years.

4—On needy flower borders and strawberry patches spread 1 pound of iron sulphate to a square yard. Water it in.

5—Increase acid content of the soil about the plant by applying wettable sulphur and granulated acid peat or aluminum sulphate.

8—Slugs. What control measures?

A—Keep debris picked up. Dust the surface about plants being attacked with 5 per cent Chlordane dust, or with Metaldehyde-dust, or with both. Do watering in mornings so soil will be dryish at night when the snails move about to feed.

9—Garden Rose. The second year tall stems grew but did not bloom.

A—The strong shoot comes from the understock or root. Cut it off as soon as seen. If the part above the bud (knob on stem) is dead, dig up the plant and replace it.

10—Climbing Roses. How to protect for over-wintering?

A—In late October lay the plant flat on the ground. Cover with about 24 inches of dry leaves and place a waterproof wrap on top. This may be a tarpaulin, spread of plastic, or board roof. About the first of May remove the cover over a period of about 3 days. Place the vines back onto their upright supports.

11—Strawberry. Everbearers after a year of good production, became dwarfish and gave little fruit.

A—The trouble is likely one of disease. Dig up and destroy all the plants. Get a new supply of "Virus-free" stock and plant it on fresh soil.

12—Pesticides. List a simplest assortment of chemicals to combat insect and disease pests.

A—Most of the common insect and disease pests can be controlled by — Malathion for insects; Captan for diseases; an all-purpose Rose dust for general use on ornamentals, preferably being one that contains Karathane to combat mildew; and an all-purpose Garden dust for use on edible crops. Apply all at the strengths advised on the container wrappers.

13—African Violets. Cause of lack of flowers?

A—The condition is usually due to insufficient light.

14—Lawns. How deep should the soil be worked? When is seed to be sown?

A—A lush dense lawn is possible only when grown on well prepared, deep soil. Work the earth to a depth of about 9 inches. Incorporate a generous amount of organic matter—barnyard manure, acid peat, leaf mold, compost. Bring the surface to fine tilth. The most favorable time to sow the seed is the third and fourth weeks of August. Weeds are less active; soil is cooling; evaporation is lessening; and autumn rains aid in strong root growth.

15—Ailanthus. Is this fast growing tree recommended?

A—No. The plant is too tender. It may reach a height of about 8 feet but nearly always kills back to the snow line by spring.

16—Mildew. What chemical will keep mildew from roses, delphiniums, pansies, and zinnias?

A—The commonest are dusting Sulphur and Karathane. Keep a thin layer of the chemical on the surface of the leaf to prevent the fungus getting a start. Pull off and burn badly infected foliage.

17—Old Hedge. How can a tall caragana hedge be thickened?

A—In late March or April cut back the stems to a height of about 12 inches in the center and 6 inches along the edges of the row. Make cuts at a slope. Paint largest wounds with asphaltum dressing. Stimulate growth by applying fertilizer. Spray with Malathion to control aphids. Train the hedge to conic form.

18—Herbaceous Perennials? What kinds bloom for a long time?

A—Among the many are Morden Rose lythrum. Dropmore Purple lythrum, Shadow Valley carnation, Carpathian bellflower, Obedient plant (False dragonhead), Caucasian scabious, Missouri Evening primrose (Ozark sundrops), Perrys White achillea, Rosyveil gypsophila, Pink Sensation delphinium, Shasta daisy,

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Heliopsis, Pink yarrow, Wideleaf sea-lavender, Croftway Pink beebalm, gaillardias, Purple coneflower, Double Tall buttercup, Iceland poppy in cool spots, and violas in variety including pansies.

19—Live Stumps. How to kill a stump that continues to send up sucker growths?

A—If not too large, remove stump and roots with a grubbing axe. To kill, gash the bark and wood deeply around the base of the trunk and the exposed large roots. Soak the wounds with "Brush-kill" mixed with old crankcase oil. Or, dig away the soil to depth of 4 or more inches to expose main side roots, hack these with an axe and saturate the cuts with a solution of sodium chlorate, 1 pound of the salt dissolved in 3 or 4 quarts of water. Use care as this chemical is inflammable.

Peeling all the bark from the stump kills many kinds of trees.

To hasten rotting of the stump, drill holes with an auger and fill these with saltpeter, or with commercial sulphuric or nitric acid and close the holes with corks or plugs.

20—Shade Shrubs. What shrubs are adapted to the north side of the house?

A—There are many that do satisfactorily. Most of the native shrubs found growing as undergrowth in our woods do well. Among them are dogwood, hazel, viburnums, Canada yew, saskatoon, and Flowering raspberry. Others worthy of use are Mountain currant, Dwarf and Turkestan euonymus, cotoneaster, Fragrant sumac, Red elder, Snowhill hydrangea, chokeberry, goldenbells or Forsythia, Oregon hollygrape, Ural false-spirea, Japanese barberry, and snowberry. Many of the evergreen conifers will tolerate considerable shade. Examples are Savin and Arcadia junipers, Dwarf Japanese yew, Pyramidal cedar, Montgomery spruce, and Mugo pine.

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A Few Good Roses

by **D. R. ROBINSON, Extension Horticulturist**
University of Saskatchewan, Saskatoon, Sask.

There is a fairly general agreement among those interested in rose culture that the Hybrid Tea Roses, while outstanding in quality, are not sufficiently hardy for the prairie provinces. Likewise, it is generally true that the Hybrid Perpetuals and Floribundas are only slightly more hardy than the Hybrid Teas. However, because of the beauty and appeal of these roses considerable numbers of them are planted each year by prairie gardeners. With proper care and protection some varieties will survive for several years and the rose lover is usually repaid for the risk he has taken. Briefly rose bushes of these types should be planted with the graft 3 or 4 inches below ground level and a good winter mulch provided about the end of October. Some prefer a soil mulch, others use dry peat moss and, perhaps as an alternative, either dry shavings or sawdust would do. Some experienced growers suggest that when these roses are propagated on *R. canina* rootstocks there is better survival under our conditions than where *R. multiflora* rootstock is used. This is a point well worth considering when next you order either Hybrid Tea or Hybrid Perpetual roses.

Several months ago a questionnaire was sent out to members of our Gardener's Guild mailing service and some interesting information on roses was contained in the replies thereto. All of the varieties mentioned below have survived two or more winters out-of-doors in Saskatchewan. Three Hybrid Teas are rated as outstanding in quality and above average in hardiness. These are Crimson Glory, Peace and Frau Karl Druschki. (The latter until recently was classed as a Hybrid Perpetual.) Crimson Glory, as the name suggests, is a double dark red. Peace is a large double yellow, tinted with pink. Frau Karl Druschki is an old variety, free flowering, and with snow-white double blooms. The Floribundas are represented by Else Poulsen, a semi-double rose-pink. Three Hybrid Perpetuals are mentioned in the replies. These are Mrs. John Laing, Captain Hayward and Hugh Dickson. It is of interest to note that these roses have stood the test of time—all three having originated more than 50 years ago. Mrs. John Laing is described as a clear pink double with fine fragrance. Captain Hayward and Hugh Dickson are crimson doubles, free blooming and fragrant.

Along with the varieties already mentioned are three Rugosa Hybrids. This group may be considered as moderately hardy without winter protection. These three roses are Belle Poitevine, Rose a parfum de l'Hay and Mrs. Anthony Waterer. Belle Poitevine has semi-double rose-pink flowers borne in clusters. Rose a parfum de l'Hay is a fragrant, free-flowering variety with double, dark crimson blooms. Mrs. Anthony Waterer has double red flowers with fine fragrance. Again it may be noted that these Rugosa Hybrids were originated more than half a century ago. As a result of the publicity associated with various new varieties it may be that these old-fashioned roses have been neglected. Several of the roses mentioned above are available from nurseries located in the prairie provinces. Others may be obtained from nurseries located elsewhere in Canada.

* * *

Fame is the scentless sunflower with gaudy crown of gold;
But friendship is the breathing rose, with sweets in every fold.

—Oliver Wendell Holmes.

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The Lily Pool

by **DAISY M. CHEESBROUGH, Furness, Sask.**

After reading all available articles on the subject of lily-pools, I decided to make a plastic one. The fine-gauge plastic costing just over $2 for 25 by 72 inches wide was what I used. The plastic was heat-sealed to make it wide enough and there was enough for two pools the size of mine.

The pool is about 6 feet square with rounded corners. I dug one corner deeper for the lily, and left a shelf only about 1 foot deep—taking 6 to 9 inches of water – for shallow water plants. Plastic will shape itself to any style of digging, if it is left slack when filling.

We filled the pool with the only available water supply, which was hard well water, and left it to stand for 24 hours to warm up. The lily was planted in an apple-box, with plenty of dairy manure mixed in the soil, then dropped from a plank across the pool. This box cannot be moved around on the plastic once it sinks, but there is plenty of time, before it becomes completely water-logged, to maneuver it into the desired position. Two Cyprus plants, which I had in the house went on the ledge. The pool was edged with sandstone blocks to hold the plastic in place and to make a neat edge, and dwarf phlox were set around. Within a few weeks the phlox were flourishing, and the lily came into bloom early in July, and bloomed from then on. The weather was so hot that we had to keep topping up the pool to keep the required 6 to 8 inches of water over the water-lily. I found, when I was lazy and let the water level fall, that the lily did not bloom so well.

Hoping to use snails and weed from slough-water, I hadn't ordered scavengers or oxygenating plants, so was much bothered with green algae, which had to be cleaned out regularly. One disadvantage of a plastic pool, is that it is temporary, which precludes the planting of perennials, but there are many annuals that make a gay border, and can be changed each year.

Our weather here (near Lloydminster) is too severe to leave the lily out all winter, so we stored it in the cellar until spring. In a warm basement this would need more looking after.

The pool was much appreciated by all as we enjoyed watching the water-bugs that took up residence, and the many frogs and birds that paid us visits.

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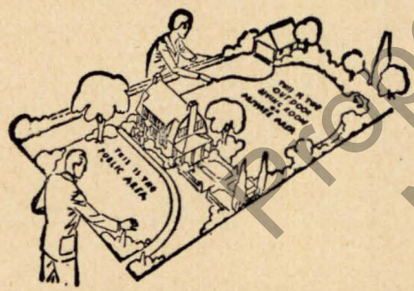

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Wintering Roses in the Chinook Belt

by **JOHN F. CANNING, F.R.H.S., Fort Macleod, Alta.**

Mr. Canning last contributed to our publication in 1957. He was at that time considered the Champion Sweet Pea Grower of Western Canada—and probably still is. He has been secretary of the Fort Macleod Horticultural Society for many years as well as an active writer of horticultural articles for various dailies, weeklies, and several magazines.

A rewarding rose garden in the Chinook belt depends to a great extent on the protective covering given the bushes. This is to enable them to withstand the alternate freezing and thawing that occurs in an average winter.

A deep snowfall may be followed by a few days of thawing weather, and when the snow has blown away or melted, or both, below zero weather often strikes. If the ground under the roses can be kept in a state of solid frost until the latest possible time in spring, roses will come through in good shape.

The writer has had only a loss of one bush from among 25 in each of the last 3 years. And these have invariably been of kinds that did not make vigorous growth the previous season. Around the time of freeze-up, or about the first part of November, here, the bushes are cut down to about 6 to 8 inches above ground level. Any puny shoots are cut at ground level. Dry leaves are then placed around the base of the bushes, followed by some clean soil. This is repeated until the shoots are covered entirely. After a few days some sinking will have taken place, and another layer can be added. If this is not done the shoots will invariably kill back to the point at which the shoot is exposed.

The time to uncover in the spring is somewhat of a conundrum. If done too soon the new shoots may freeze back with a late frost, and if left too long, the shoots will be tender and white. These can easily be "burnt" with a cold wind, and actually damaged as much as if frozen.

The writer tries to hit a happy medium, favoring the early side and then being prepared to cover the bushes with a cardboard box if freezing temperatures are forecast.

The shoots are cut back to leave 4 or 5 on each bush, and if the largest blooms are desired all buds but two on each stem are rubbed off. Those left should be on the outside of the shoots. The soil and leaf covering is carefully taken away, as a build up of soil results if this is not done, to a point where a narrow bed will be so high that watering is a problem due to run off.

You will note that there has been some sinkage of the soil around each plant. Another layer of soil would give more protection. Leaves or straw would also help.

Hybrid Teas that grow and bloom well here include: Peace, Diamond Jubilee, Chrysler Imperial, Helen Traubel, The Doctor, President Hoover, Sutter's Gold, Virgo, White Knight, Mojave, Sister Theresa, Frau Karl Druschki, and among Florabundas, Queen Elizabeth, Picture, Ma Perkins, Independence.

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Over the Garden Fence

by **T. G. McINTOSH, St. James, Manitoba**

Seven years ago, when I made a start toward planning a garden, I hardly knew a dandelion from a Teraxacum (they are one and the same), a potato from a Solanum tuberosum, which is the Sunday name for a potato. I did not know that the plebeian potato carried such an aristocratic moniker. I had never heard the words "osmosis" or "ecology."

My introduction to gardening literature was in the pages of "Better Homes and Garden." Browsing through Winnipeg book departments, I discovered "The Flower Grower," "Popular Gardening" and the British "Amateur Gardening." My daughter gave me, as a Father's Day gift, a book entitled "Shrubs and Trees."

I was stung by the gardening book buying bug, and have acquired quite a library of gardening books on various gardening subjects, to the extent that my wife has threatened to boil me in Malathion or some other such evil smelling bug killer.

What have I learned in these seven years? Well, my reading taught me that I must do something to "friablize" the clay gumbo of my soil. In an effort to accomplish this, I dug in sand, peat moss, cinders, grass clippings, bone meal, blood, sweat and tears. The "tears" were in my shirt, pants and epidermis.

I learned too, that there are hundreds of plants, perhaps thousands, besides the old familiar favorites, such as, marigolds, zinnias, sweet peas, petunias, etc.; that there are plant clans, tribes and families; genus, species and varieties. It was Carolus Linnaeus, a Swedish scientist who classified the various plants, and brought order out of chaos, by giving them Latin names, to ensure uniformity of nomenclature, so that the gardener in Toronto, Timbuktu or Tokyo would know that the plant which "lesser breeds without the law" in Winnipeg or Wampum would call Sweet Pea, was actually Lathyrus odoratus, that Baby's breath sported the hifalutin name of Gypsophila.

The many familiar plants whose names are household words, have different local names in different parts of the country, which would tend to make "confusion worse confounded," hence the necessity for a uniform and overall name.

It is interesting to note that the Solanum family (Solanaceae) includes the potato, tomato, petunia, deadly nightshade and others; that the cockscomb (Celosia) is closely related to pigweed. Yes, plant families have poor relations with whom they are not on speaking terms, perhaps an avuncular ne'er do well whose name is not mentioned with pride.

In "Amateur Gardening" I saw an ad for a seed catalog which attracted my attention. I sent the required shilling, and, in due course, received the catalog. This catalog lists about 5,000 seeds of plants of every description, besides shrubs, trees, ornamental grasses, even vegetables for those who are not convenient to a supermarket. So, many of thse seeds cannot be found in the usual retail outlets. Even if one didn't buy any seeds from this most interesting catalog, it will be found to be an invaluable book of reference. There are many beautifully colored illustrations, too. It may be purchased from Thompson and Morgan (Ipswich) Limited, Ipswich, England. From this

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catalog I got the urge to try something different, even difficult. Of course, it would be foolish to try growing tropical plants unless one had a greenhouse or conservatory, but there are many interesting annuals and perennials which can be grown in our prairie soil, and in our Canadian climate. It is no use trying to grow acid loving plants in our prairie soil, which contains too much lime. It could be done, of course, by going to a great deal of trouble, digging out the existing soil and replacing it with a predominantly acid mixture, or treating it with copious draughts of an aluminum sulphate solution, or some other acid concoction, but would it be worth the trouble? That is what is meant by ecology, which is that branch of biology which deals with the habits and habitat of living organisms and their relations to their environment.

It is interesting to try something different and distinctive; something removed from the hackneyed and commonplace; something by way of a conversation piece. There is no need to discard the old favorites, but the introduction of something novel, even exotic, if ecologically possible, will add interest to the garden and offer a stimulating challenge to the gardener.

While there may not be much, if any, difference in the make up of the soil in different parts of a small garden, there are different light and temperature conditions. The north side of the house, garage or other building is, of course, shadier than the south side, and, consequently, cooler. For the northern exposure, one grows tuberous begonias and other shade loving plants. Pansies seem to thrive better in the cooler parts of the garden.

There are plants suitable for all the varying light and temperature conditions.

Among other things, I learned that weeds are not always the villains which they are usually cracked down to be; that they actually perform a useful function in the garden, apart from stimulating the gardener's profane vocabulary. Deep rooting weeds probe down into the subsoil and bring up much needed chemical nutrients, one authority tells us; they are also credited with opening up the soil for more respectable but less "pushing" plants.

I learned that the cure for athlete's foot (permanganate of potassium) may be used to sterilize soil in seed flats, reducing the danger from "damping off;" that paraffin, thoroughly worked in to the affected parts of apple trees will remedy American blight; that if a newly planted rose seems slow to show signs of life, it should be covered with a burlap sack and kept soaking wet for 48 hours. This treatment will bring the buds out.

I have said nothing about lawns, soils, fertilizers, compost piles, hot beds or cold frames, nor the interesting and fascinating subject of electricity in the garden.

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Lawn Grasses

by **A. C. FERGUSON**

Department of Plant Science, University of Manitoba

Good lawns do not occur by accident nor by a combination of unplanned or haphazard events. They result only when certain basic principles are adhered to during construction and subsequent maintenance. Not least in importance of these is the use of well adapted, good quality seed.

Selection of a suitable lawn grass or mixture of grasses should not be too difficult since for any particular area there are, in most instances, only 3 or 4 grass species that will produce top quality turf. In this general zone the Kentucky blue grasses, some of the fescues and possibly the Colonial Bents are the only ones that can be depended on. By reviewing some of the characteristics of the various grasses it should be reasonably easy to select those that will suit the need.

1. **Kentucky Blue Grass (Poa pratensis)**

This is the most widely adapted and valuable lawn species. It is a hardy, aggressive grass that spreads by underground rhizomes and which under reasonable management will produce a fairly dense, medium textured, long wearing sod. It thrives in relatively cool moist condition but while it grows slowly and may turn brown during hot dry periods it is not usually permanently damaged by drought or heat. Kentucky blue grass germinates slowly (3-5 weeks for emergence) and requires considerable attention during this period if a good stand of seedlings is expected. Besides common Kentucky blue there are two strains of the species that have performed well in trials at the University of Manitoba. Merion blue grass which has received much publicity in recent years is a superior strain. It is more aggressive, has a darker green color, a lower growth habit and a deeper root system than common Kentucky blue. It will tolerate lower mowing and has more drought tolerance. Merion is resistant to Helminthosporium leaf spot but is quite susceptible to rust. Rust susceptibility, coarse texture, high fertility requirements and slow emergence after seeding are its important weaknesses. However, a well tended Merion blue grass lawn will be the envy of the neighborhood. Park blue grass, a strain developed in Minnesota is almost indistinguishable from common Kentucky blue but germinates and emerges somewhat sooner than other Kentucky blue grasses thus giving it an advantage during early stages of growth.

2. **Creeping Red Fescue (Festuca rubra)**

Strains of this species are adapted to poorer, drier and shadier locations than Kentucky blue. When properly managed this species will produce a dark green very fine, dense turf. Although the grasses have some ability to creep by rhizomes, this characteristic is not well developed and hence will become bunchy unless properly managed. During hot dry periods the grass may become wirey and hard to cut. Duraturf is an outstanding variety of Creeping Red Fescue. In tests at Manitoba it has been superior to all other fescues in density of turf, color, spring recovery and summer appearance. Pennlawn, a synthetic variety from Pennsylvania is well adapted and rated second only to Duraturf. Chewing's Fescue did not perform well and is not recommended.

3. **Red Top (Agrostis alba)**

This is a short lived grass which when grown alone produces a coarse open sod that deteriorates rapidly with age. It has the ability to creep and

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is adapted to a wide range of conditions but the only characteristic that qualifies it for a lawn species is its ability to germinate and establish quickly. Since it is short lived, when mowed at lawn height, it is soon replaced in the lawn by other species.

4. Colonial Bent (Agrostic tenuis)

This grass, also known as Brown Top and New Zealand bent, will produce an excellent lawn but requires considerably more care than Kentucky blue or Creeping Red Fescue. It spreads by short rhizomes, producing a dense, very fine uniform turf if grown under high fertility, if never allowed to dry out and if kept mowed short (¾″ or less). It is susceptible to snow mold and large areas may kill out each winter unless treated with chemicals. Penncross, Seaside, Astoria and Highland are varieties of Colonial or seeded bents; the first two mentioned being superior to the others in the Manitoba tests.

5. Miscellaneous Species

In areas that are dry or semi-dry and where irrigation is not possible, Fairway Crested Wheatgrass has provided a satisfactory ground cover but it is not a lawn species. Meadow Fescue, Tall Fescue, the rye grasses, wheat grasses and Timothy do not have qualities that are necessary in lawn species and therefore should not be used as such in either pure stands or mixtures.

Pure Stands or Mixtures

Because of uniformity of turf in color, texture and quality, it can be argued that seeding one species of lawn grass is the most desirable. If the home owner is able and willing to spend the time and effort necessary to establish and maintain a pure stand turf, then it is recommended. However, a good mixture will, in all probability, meet the needs of the average person better than a single variety. The reasons for this are twofold: (1) growing conditions usually are not uniform throughout the lawn area and since species differ in their requirements a mixture will increase the chances of being a good turf throughout. (2) Species that germinate and establish quickly will protect the area for the slower growing grasses. These fast growing species should not be sown too thickly lest they "choke out" the backward ones.

A good lawn grass mixture for this area will have two or more of the following grasses in it: Kentucky Blue (Common, Merion or Park); Creeping Red Fescue (Common, Duraturf or Pennlawn); Red Top; Colonial Bent (Penncross or Seaside).

The proportions will vary with particular conditions but for the average lawn Kentucky blue grass probably should make up the largest part (50-80 per cent) of the mixture. If Red Top is included it should not exceed 10 to 15 per cent.

The most important considerations when selecting a lawn grass seed are:

(1) What grasses and in what proportions are present in the mixture. Are the species desirable and are they adapted?

(2) Does the seed have good germinability?

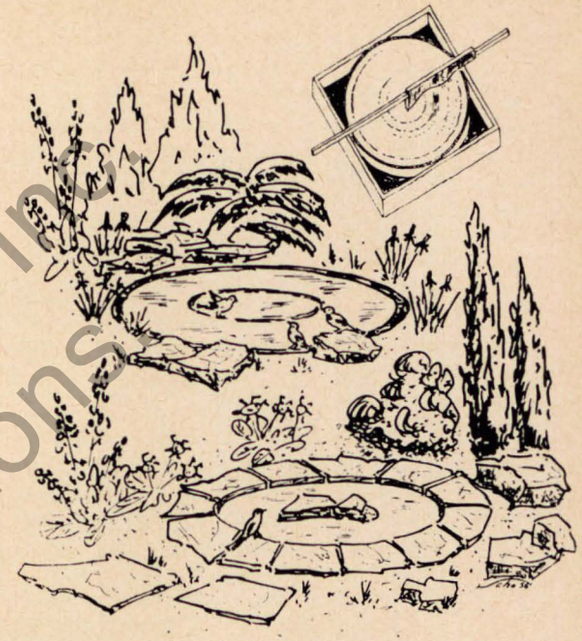
(3) Is it reasonably free of weed seeds?

Any grass seed mixture that does not have this information stamped on the box or the label should be viewed with suspicion and avoided. DO NOT BUY CHEAP SEED. Buy the best you can afford.

Bird Bath . . .
A Different Kind

by
GUNTER A. SCHOCH, N.L.I.

Landscape Designer of the Winnipeg Board of Parks and Recreation



Next to plants and stone, water is the most important element in landscape architecture. In the gardens of ancient Egypt as well as in the formal gardens in the time of Absolutism, water has played a major role in landscape design. The purpose of construction is the only thing that has changed slightly over the years. The "landscape artist of old" created enormous fountains and impressive water cascades for ornamental purposes. Today, the aesthetic value of the design is aligned with practicability.

In recent years one or more water features have been added to most home grounds. The swimming pool for sport and relaxation, the wading pool for the delight of the children, the lily or fish pond for the enthusiastic collector of water creatures and the bird bath for the devoted bird watcher. These features should be blended into the landscape and made points of interest in our garden.

Bird baths are found quite frequently today in various home settings. Their design mostly follows a similar pattern lacking imagination and tending toward the monotonous. They are usually high legged, mushroom shaped, white painted, and placed in a conspicuous location in the landscape. We should attempt to create a more natural appearing structure which will fit favourably into the surroundings.

One relatively simple way that this might be accomplished is to use a large flat stone, hollowed out on one side. This nature-made birth bath may be placed between a planting of rock garden perennials or low evergreens. However plants and stone should be arranged in such a manner as not to give concealment to predators.

Another structure which might be presented quite attractively is a self-made concrete bird bath, built in ground level with a colorful planting as background. It could be constructed by placing into a prepared location a 20 to 30 inch square wooden frame, 4 to 6 inches in height. An interior circular form may be made of light plywood or metal. This would serve as the basin design. A length of half inch pipe could be placed in the center of the project, to be used either for filling, spray, drainage, or as a means of amplifying the center. If the structure is to be quite durable, some steel reinforcing

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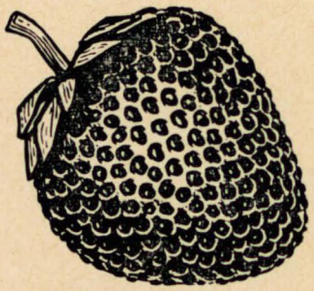
should be introduced into the workings before the concrete mixture is poured —i.e.—wire mesh, etc. A mixture of prepared concrete is poured into the frame and the contents fashioned to the desired shape. The basin could be shaped by using a small board as shown in the accompanying drawing. The concrete surface must have a rough finish to secure safe footing for the birds. It should slope gently toward the center where it might reach a maximum depth of 3 inches for a small basin. A bird bath over 4 feet in diameter should have a center depth of not more than 5 inches.

In preference to concrete, natural stone may be used. Flat sections or pieces of limestone may be laid in desired shapes in a prepared location. The top surface of the stone should be level with the surrounding lawn or bed area. A good concrete mixture is introduced between the stone and to the center of the structure and fashioned to form a basin. There are a great variety of shapes and sizes in which bird baths may be built, using natural stone.

Options may be incorporated in the construction, i.e., sprays, drains, lights, etc.

Bird baths may be very attractive when created in conjunction with rock gardens or retaining walls, using similar materials. It is much more desirable to deviate from the old fashioned standard bird bath and build a structure utilizing imagination and beauty both for the pleasure of our feathered friends as well as our own.



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Use of Compost in the Home Garden

by **MRS. F. R. SMITH, Winnipeg, Man.**

Someone once said "Compost is the poor man's fertilizer." Add to that that it is his garden-saver as well, and you will understand why we maintain that everything that has come from the earth should, as far as possible, be returned to it, consequently tea leaves, fruit and vegetable peelings, egg shells, sod, grass clippings, sawdust, plant foliage free from pests and disease, all find their way to the compost, and we never take a trip to the beaches or the country without the standard equipment of a shovel and some old sacks as there is a wealth of lovely peaty material along the sides of some of the roads, but I suppose leaves make up the bulk of our compost, and in this respect home owners and children play an important part, as they rake them up into neat piles in the fall. If a car and a little time is available any amount may be gathered at no appreciable cost. It grieves us sorely to see so many being burned each year, although we must admit the smell of burning leaves is very pleasant.

We find two composts useful, one to work from, and one to build on. They need not be big, and can usually be tucked away in an inconspicuous place in the garden.

We mulch the asparagus bed, the raspberries, strawberries and small fruits in the fall, and leave a liberal sprinkling on in the spring when we are uncovering the plants. It helps to keep the berries clean, retain moisture, and is gradually incorporated into the soil. Sawdust, if available, is handy to place around strawberries to keep them clean, too.

This year compost has played an unusually important part in our garden as the summer was so dry. We used liberal amounts to keep as much moisture in the ground as possible. We have also adopted the use of compost when we have had to be away for sometime, especially around the perennials, along the rows of gladioli and amongst the annuals. Apart from retaining moisture, it keeps down weeds, aids in lightening the soil, and in making it more friable. We have found that where compost is liberally used there is an abundance of earthworms, and their activity keeps the soil worked up.

The rose bed, too, is given a goodly mulching once or twice a season, depending on the amount of moisture available, and the intensity of the sun, and I am sure some of the compliments we have received have been due to the benefit of compost.

We use dry leaves, preferably oak as they don't pack as tightly as some of the other leaves, to protect the roses during the winter. Each rose is covered with a cardboard box which has been opened at the end. The box is filled with leaves, and the ends folded over to keep the moisture out. We then place a piece of wire netting, branches, or some similar material over the bed to hold the boxes down. The perennial beds are also given a liberal covering of dry leaves, held down by wire, branches, etc. We find they come through the winter quite well when protected in this manner, although it is hard to resist taking the covering off too early in the spring as we are so anxious to see the plants put forth new growth. When it is safe to remove the covering, the leaves are carefully gathered up and added to the compost, thus doing double duty.

Compost plays an important part in the vegetable garden, too, and if there is time between harvest and freeze-up we dig leaves into the garden

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as we dig it in the fall. Ordinarily there is enough moisture in the ground to decompose them before next spring's planting, and as our soil is inclined to be heavy, they are a great factor in helping to lighten it.

When the ground has warmed up in the spring, and the tomatoes are set out, each plant receives a ring of compost to keep the warmth and moisture in. Cabbages, cauliflower, etc., are treated in the same way when they are established and growing well. Rows of carrots, peas, even the rhubarb benefits from a liberal application of compost.

As we like to grow our own seedlings and find the flats heavy when filled with earth, we use a liberal layer of leaves or compost in the bottom before the potting soil is added. Material from the compost will not burn, and therefore will not harm the delicate seedlings.

We believe in using first what Nature has provided, and so we say "Three Cheers for Compost!"

SANSEVIERIA . . .

the Plant that Thrives on Neglect

by **MRS. LULA M. WICE, Winnipeg, Man.**

Are you a beginning indoor gardener and doubtful as to whether or not you have a "green thumb?" If you are, then sansevieria is your plant. Sometimes called "snake plant" because its mottled green leaves are suggestive of the colouration on a snake, it is good in window boxes and makes a presentable appearance all the year round. Small plants are useful in dish gardens. The stiff, upright leaves which grow to a length of 30 inches in many cases are bothered not at all by hot, dry indoor air.

As an example of the neglect the sansevieria will take and still survive, the following illustration is pertinent. Last year we had a very large snake plant in a jardiniere. Because of holidays and other activities, the plant was practically forgotten all summer. In late August, it was noted that many of the leaves had fallen down. Further investigation revealed that about two inches of stagnant water had collected in the jardiniere around the bottom of the plant pot. This had kept the soil too wet and almost every leaf had rotted off at the root. Trying to save the plant, the soft mushy ends were trimmed off the leaves and the plant crowns were allowed to dry in the basement on a newspaper for a period of about a month. They were then put in a pot of moist sand and before long many of them had taken root. Later it was noted that where pieces of root had been attached to the leaf, the new plants were identical with the parent plant. With leaf cuttings alone, the new growth had lost a characteristic yellow fringe.

During the summer the plants, pots and all, are set out in the vegetable garden with the pots buried in soil to the rim. This seems to have a tonic effect on the plants because many of them bloom the following year. The pale yellow flowers on their long stalks are not particularly beautiful but the lovely perfume more than compensates for this lack.

If sansevierias are kept outside during the summer, they seem to be especially tolerant of shade during the fall and winter and are an especially happy answer to planters that must be kept out of direct sunlight.

Grapes and Their Culture in the Prairie Provinces

by **BR. T. LAFLAMME, C.S.V.**
Maison Saint-Joseph Nursery, Otterburne, Manitoba

Grape is the popular smooth-skinned juicy fruit of a woody climbing vine. It is probably the oldest cultivated plant. According to the Bible, Noah discovered the pleasant quality as well as the intoxicating powers of the wine grape. Grape culture always flourishes in the temperate regions on all continents and islands where climatic conditions are favorable.

This attractive and delicious fruit is used in many ways: eaten fresh, dried as raisins, or served in jelly, juice or wine. About 75 per cent of the world's grape production is yearly transformed into innumerable kinds of wine and alcohol. Modern and practical searchers are even using what is left of juice and pulp; the dark grape skin is turned out into purple labels for meats, a very flavorful oil extracted from seeds is popular for mayonnaise and potato chips. This oil sprayed on raisins prevent them from becoming sticky.

Grape, being the world's favorite fruit, was taken along when new lands were colonized. European grape (Vitis vinifera) was brought to America by Spanish missionaries. Its culture is flourishing more than ever in California. Early grape growers in North America did not succeed in growing European grape by European methods. Later on, many hybrid grapes derived from European and Fox grapes were adapted to the districts of the lakes: Erie, Ontario and Michigan. For more than a century now, the grape industry has become very successful in these fortunate districts. The variety Concord typifies this group of hybrid, and the varieties recommended for home garden in the prairies are the earliest in this important group.

Recommended grape varieties for the Prairie Provinces: Manitoba—Beta, Blue Jay, Fredonia, Moores Early, Van Buren, Portland (cover over winter). Saskatchewan—Beta, Hungarian, Manitoba natives (winter protection). Alberta —Beta, Riding Mountain, and other varieties that require winter protection: Patricia, Fredonia, Mary, Massasoit, Early Daisy.

The commercial production of grapes in the Prairie Provinces is still impossible. Grape culture for home use would probably be interesting to try. Careful choice of suitable varieties, ideal sunny location, proper care are the most important factors to produce grapes of good quality on the Prairies.

SOIL. Though this delectable small fruit may be grown on a wide range of soils, from heavy clay to sand; deep fertile loam is satisfactory. Grape being a long-lived plant, the soil should be well prepared and enriched with an abundance of organic matter: rotten manure, compost or heavy grass sod.

SITE. Since high temperature is a "must" to ripen the grape, the vines should be planted in a warm and well drained spot, in a good sheltered place. The south side of a wall or building, the sunny slope of a steep hill, the shelter of an efficient windbreak are favorable locations.

WINTER PROTECTION. Winter protection is essential for grapes. The vines can occasionally survive from severe cold weather, alternate freezing and thawing, but the next year fruit crop would be mostly annihilated. The canes

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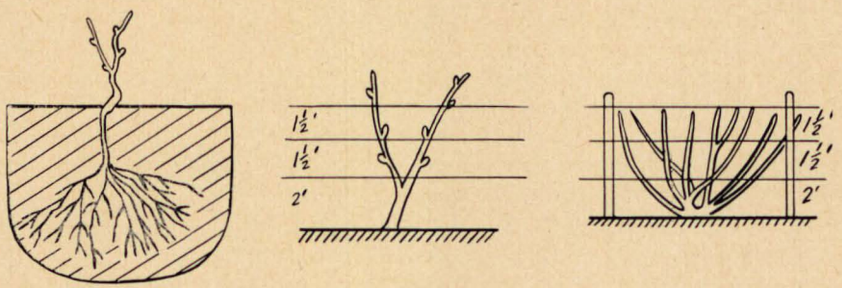
should be covered with soil at the end of October and uncovered when danger of cold weather is past, usually in May.

PLANTING. Two-year-old well-rooted vines are mostly recommended for planting. Spring time is most satisfactory. The plant should be set slightly deeper than it was in the nursery. It is very important to pack the soil firmly around the roots and to cut back the vine to two buds. Give a good watering. Do not use fertilizer at planting time. Grape plants are usually spaced from six to eight feet in the row and eight to ten between the rows.

TRAINING VINES. The grape vine being very attractive can play a double role: decorate your garden fence and produce delicious fruits. It needs a trellis to support the canes and keep the grape bunches off the ground. There are many systems used in growing and pruning grape. The fan system (illustrated) is an efficient and practical one. Three wires, the lower at two feet from



First Year. *Second Year.* *Third Year.*

the ground and the upper ones, one and a half feet higher, maintained by solid posts planted about 15 to 20 feet apart are suitable for that purpose.

PRUNING. The chosen training system and the pruning that goes with it, must be done each year, during dormant season. If this care is neglected the vine will soon become an unmanageable thicket of poor use for grape production.

First Year. At the end of the first season, one or two stout canes four to five feet long may have developed. In the fall, the thin unmatured tips of the canes and all the lateral branches should be cut off. Then the canes are laid flat along the row and covered with three to five inches of soil. The following spring, the earth should be removed from the vines when the buds have begun to break. They should be tied up straight to the three wires with raffia, "twist-ems' or other strong tying material.

Second Year. During the second year, lateral shoots will develop from buds along the two main canes; a few bunches of fruit may also be produced. Weak lateral shoots should be pinched off and only three to four shoots should be permitted to develop on each main cane. Late in the fall, each of these lateral branches are cut to two buds, which will at their turn produce sub-laterals, on which the fruit will appear the next year. Winter protection is again provided carefully.

Third Year. The following spring two to four additional vigorous main canes should be permitted to grow from the lower part of the vine. They should be tied to the wires at an angle of 15 to 20 degrees from the two older ones. Now the definite fan shape is established, this plant is considered as mature, and the same future pruning system will be substantially realized.

Pruning during the growing season is done by cutting out unnecessary lateral and terminal shoots. Doing so, the bearing shoots will benefit of full

opportunity to develop their fruits and will also be more favorably exposed to the sun.

CULTIVATION. It is necessary to cultivate the soil surface to control weeds. It should be done as shallow as possible, deep cultivation could damage the grape roots. Mulching with straw, leaves, lawn clippings, etc., is a very satisfactory practice for the home vineyard.

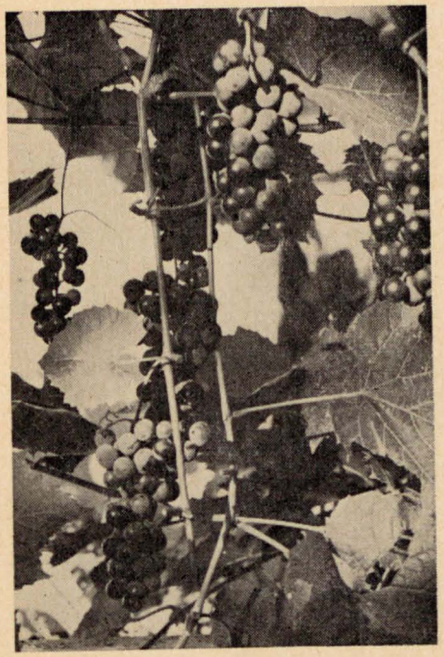
FERTILIZERS. They are more effective on soil well supplied with organic matter. Nitrogenous fertilizers are specially required to maintain the vigor of the vines, boost the size and quality of the fruit crop, accelerate its maturity.

HARVESTING. Grapes should be fully ripe when picked. They do not improve in sugar content and flavor after they are removed from the vine. Grape ripe seeds are brown and separate easily from the pulp. Remember also that grape, like many other fruits, ripens unevenly, then it requires to be picked two or more times to get the whole crop properly harvested at the right stage of maturity. Most of the grape varieties that can be grown in the Prairies do not keep long, on or off the vines after ripening. Use them promptly, doing so, you will enjoy them at their best quality. Sometimes, on account of adverse weather or shorter growing season the grape will not fully ripen. However the fruit can still be made into jelly.

Friend Gardener, take my advice, try to grow a few plants of grape in your home garden. You will undoubtedly greatly enjoy this addition to your hobby.

Grapes in My Garden

by **THE EDITOR**



I have one grapevine in my garden. This is a picture of some of the fruit as seen last summer. It grows on a trellis about 3 feet high and 6 feet long. I purchased it from Brother Laflamme some 7 years ago. It has wintered nicely. I merely take it off its trellis each fall, stake it close to the ground, mound some earth over it, cover it with leaves and wait for another spring.

The variety is Lutie. To me it looks like a Niagara Blue Grape, although slightly smaller. It is tarty but pleasant to eat. We made jelly with the fruit last year and it was excellent. Brother Laflamme advises he now has a newer variety named Fredonia, with larger fruit, a blue bloom but black skin and sweeter than Lutie. I must try it.

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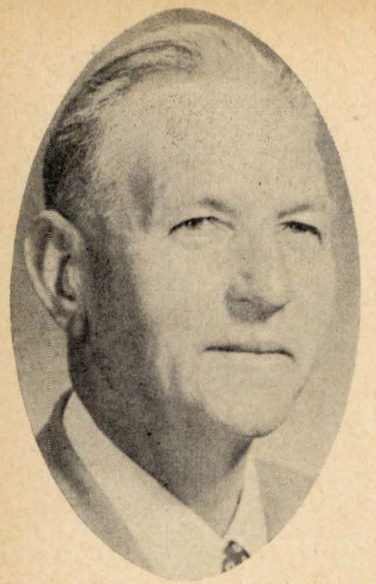

A New Strain of Hollyhocks

by **ROBERT SIMONET**
Edmonton, Alberta

Mr. Simonet is one of our most outstanding plant breeders. He was the first, with the exception of the Japanese, who kept it a professional secret, to establish completely double petunia varieties. As well as hollyhocks he has developed quite a number of outstanding flowers and vegetables among them being gladiola, roses, rhubarb and strawberries. He was awarded the Stevenson Memorial Gold Medal in 1960, for his "conspicuous achievement in the field of practical horticulture."

The breeding work that resulted in my new strain of double Hollyhocks started about 15 years ago. I was then raising and selling plants of the well known Chater's strain of Hollyhocks. Then a friend gave me a plant of a pink Hollyhock with very fully double flowers, and on this point, very much superior to any of the Chater's strain. The seed of this variety came from England but was the only one available with this flower quality. So the idea suggested itself that crossbreeding it with the Chater's varieties might possibly produce the whole range of colors in fully double flowers. I may now say it did just that and even added new colors in peach shades and a new mauve which I think is new in Hollyhocks.

The first season this fully double plant was crossed with a red and also a yellow of Chater's strain. As expected, seed from these crosses resulted in plants about halfway between the parents in both color and doubleness.

However, by selection in later generations, I have been able to get them to come true from seed. An interesting fact is that besides shades of pink, peach and yellow the cross of the pink and yellow also produced a pure white. In fact whites kept showing up for years in the yellow selections and it took some time to get a true breeding yellow.

Later crosses of the extra double pink with a lilac and a crimson Chater's resulted in fully double red and crimson selections as well as the new mauve which I favor much over the original purplish-lilac.

Seeds of these hollyhocks are now being propagated in California and should be on the market by 1963.

This picture is of a yellow and a pink selection that was grown by Hector Macdonald in the garden at Assiniboine Park, Winnipeg, Manitoba.

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The Cascades of Time Garden

Banff National Park, Alta.

by **W. J. JOHNSTONE, Horticulturist, Banff, Alta.**

The Cascades of Time Gardens are located within the grounds surrounding the Administration Building for Banff National Park at Banff, Alta. Situated at an elevation of 4,550 feet on the lower northerly slope of Sulphur Mountain they overlook the beautiful Bow Valley and the townsite of Banff.

The gardens were designed by Harold C. Beckett, Architect of Toronto, and constructed in the 1930's. The design incorporated a series of rock terraced plateaus and pools of informal design constructed of rock from the age or period of the geological column of Pre-Cambrian, Cambrian, Devonian and Cretaceous, contained in the mountain structure of Banff National Park. The ages were to be arranged in chronological order and connected by streams of cascading water conforming to the name "Cascades of Time." The construction and design were carried out, but unfortunately the materials relating to geological periods apparently were not carefully chosen. The gardens today, though imperfect in geological period structure, are considered to be among the most attractive and colorful gardens in Western Canada.

The pools and terraced plateaus with their green lawn areas and cascading water are generously shaded by stately conifers and deciduous trees. Stone-flagged paths lead over a number of log and stone bridges spanning the crystal clear streams tumbling over rocks from pool to pool.

Rustic pavilions, arbors and benches are numerous throughout the gardens, where one can rest to view the magnificnt panorama of the Bow Valley. In the evenings the gardens are illuminated with artistic displays of floodlights and colored lights reflected in the water, creating a most unusual effect.

An open-air theatre of rustic construction is situated at the summit of the gardens. Films are shown here during the summer evenings. Many visitors combine the shows with a leisurely stroll through the gardens before retiring.

Within the crevices of the retaining walls native and cultured alpine plants are to be found. The numerous flower borders contain displays of perennial and annual flowers. Some 50 different genera of annuals are used in the displays, requiring approximately 50,000 plants bedded out each spring. A great deal of research was necessary to achieve the massed colors and timed displays of flowering plants used in the gardens.

Trials of plant materials are continually under observation for suitable future display use. Selection requires hardiness to climatic conditions experienced in the mountains; flowering range and growth to provide a colorful display during the visitor season. Extremely cold water and soil conditions, hot, dry weather and cold nights combine to make careful selection of plant material necessary to ensure maximum effect during the summer.

The National Parks Service operates a nursery in Banff where this work is carried out. Glass-houses and heat controlled frames are filled to capacity in spring with flats of bedding and potted plants for window boxes and hanging baskets, to furnish the numerous displays in Banff and the adjoining Western National Parks.

Bedding out generally takes place during the last week of May or the first week of June for annuals. Annuals proved and grown successfully in Banff for displays in the gardens are:

Alyssum maritimum (Sweet Alyssum), both white and violet; *Anchusa capensis* (Alkanet, Bugloss) treated as an annual, but really a biennial; *Agera-*

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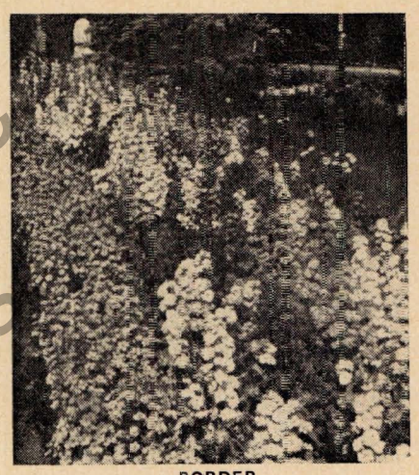
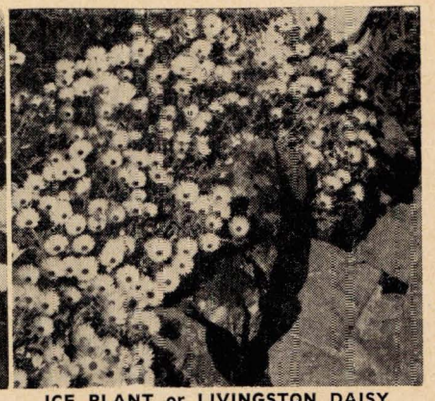
BORDER
Front: **VIOLAS**—Mixed
Rear: **ANTIRRHINUM** (Snapdragon)



BORDER
Front: **VISCARIA (Lychnis)** Dwarf "Blue Gem"
Rear: **MATHIOLA**—Stock

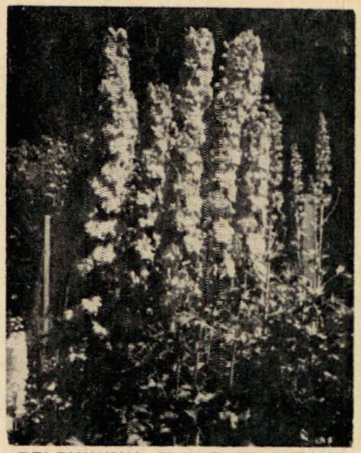
MILLFOIL or YARROW
Achillea Var.: The Pearl



ICE PLANT or LIVINGSTON DAISY
Mesembryanthemum Criniflorum

SALPIGLOSSIS—Var.: Emperor

VERBENA—Var.: Sparkle



DELPHINIUM—Var.: Pacific Hybrids

Back row: **STOCKS**
Middle row: **NEMESIA**—Nana Compacta
Left and centre: **TWO CLUMPS OF VISCARIA**
Front row: **TAGETES and PANSIES**

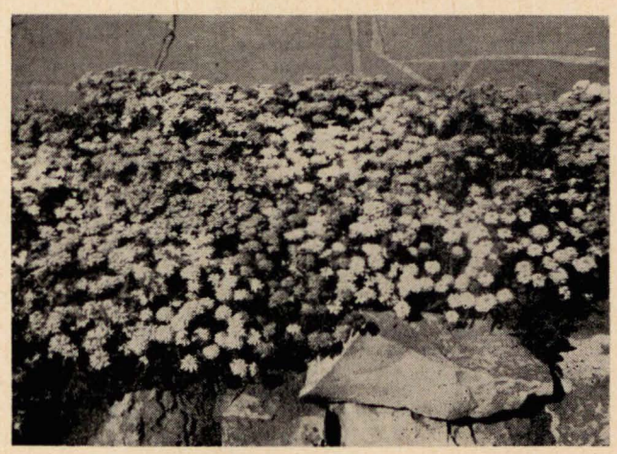
tum (Floss Flower) requires a sheltered location in this area, otherwise cold winds will cause blast damage to the leaf. *Antirrhinum* (Snapdragon) from dwarf to tall varieties, *Arctotis stoechadifolia var. grandis* (Blue-eyed Daisy); *Bartonia aurea; Bellis perennis* (English Daisy); Tuberous Begonia give best results in northern exposure window boxes. *Brachycome iberidifolia* (Swan River Daisy); *Campanula macrostyla* (Bellflower); *C. medium* (Canterbury Bell); *Calendula officinalis* (Scotch Marigold); *Callistephus chinensis* (China Aster) in variety; *Centaurea Cyanus* (Bachelor's Button or Cornflower); *Centaurea gymnocarpa* and *candidissima* (Dusty Miller); *Cheiranthus Allionii* (Siberian Wallflower).

Annual Chrysanthemums: *C. carinatum, C. coronarium* and *C. inodorum*. The latter, *C. inodorum, var. Snowball,* is most effective with its white flowers and fern-like foliage. *Cosmos; Clarkia elegans; Convolvulus, var. Royal Marine,* is very attractive in window box work. *Coreopsis* (Tickseed). *Dahlia*—the dwarf form—grown from seed and the dwarf hybrid types known as Coltness and Unwin are most suitable. It will be noted that quite a few perennials are treated as annuals at this location due to severe weather conditions during the winter months, making it impossible to carry through the species as perennials. Another favorite is *Dimorphotheca aurantiaca* (Cape Marigold), which does extremely well here. The biennials *Dianthus barbatus var. Indian Carpet; D. chinensis Heddewigii* and *Sweet Wivelsfield,* grow very successfully. *Delphinium* (Larkspur) is found to vary in quality, dependent on the type of summer experienced. *Escholtzia* (California Poppy); *Euphorbia; Godetia* (Satin Flower); *Gaillardia pulchella* and *Gypsophila elegans* provide a good display. The Everlasting or Strawflowers, *Helichrysum bracteatum,* and *H. monstrosum* do well at this altitude. *Iberis umbellata* (Candytuft)—The large hyacinth-flowered *Iceberg* and dwarf *Fairy Mixture* give a strong effect and contrast in the borders. *Lathyrus odoratus* (Sweet Pea) can be successfully grown if given the right care. The old-time favorite for border edging, *Lobularia maritima,* so often used in conjunction with *Lobelia,* makes an excellent edge for a border. *Lavatera trimestris* (Mallow) and *Linaria maroccana* (Toadflax) fill in where cover is required. *Lychnis viscaria* does extremely well. *Viscaria cardinalis* (red), *V. oculata,* "Rose Beauty" and white *V. candida* create a lift to a window box, while the dwarf forms of *V. oculata nana, "Blue gem"* and

"Rosy gem" make a wonderful compact border or edge plant. The old favorite Ten Week Stocks, *Mathiola incana annua,* and the night scented stock *M. bicornis,* grow well. The former rates high on the list for colorful displays in our gardens. The Marigold, both African and French, are inclined to be delicate in the leaf and subject to wind blast or light frost. They give a good account of themselves in the borders. The dwarf *Tagetes, var. "Gnome" (signata or tenuifolia),* makes a most effective edge plant, being very compact. *Mimulus* (Monkey Flower), when planted in damp locations grows well.

Nemesia strumosa compacta nana, rates high among our best annuals for Banff. This plant bedded en masse in mixed colors gives a wonderful show of color, or grown as separate colors can give a most attractive display. *Nemophila Menziesii* or Baby Blue-Eyes, prefers a moist location and finds a spot in the Cascade Gardens. *Nicotiana,* the flowering Tobacco and *Nigella* or Love in the Mist, are most useful for filling a gap or mixing. The latter is an attractive cut flower in an arrangement. The Pansy, *Viola tricolor hortensis,* excels in the Banff area and one of the finest displays of both pansies and violas is to be seen during the summer in the gardens. Such favorites as *"Rogglis originator's"* strain, *"Thunersee," "Alpenglow," "Hohenfuer," "Monch," "Eiger," "Jungfrau," "Blumislap," "Orange Sun," "Rhine Gold," "Ullswater," "Firebeacon," "True Blue," "Paydirt," "Clear Crystals," 'Royal Exhibition"* mixed, *"Felix"* and *"Engleman's Giants,"* are to be found in Banff displays. *Violas: "Blue Perfection," "White Perfection," "Chantryland," "Lutea," "Arkwright Ruby," "Admiration," "Ilona," "Puck," "Blue Butterfly"* and *"Firmament,"* are grown in Banff. The use of the pansy and viola in separate colors and various combinations gives a much admired effect in the displays.

Papaver (Poppy), like the Pansy, seems to do exceptionally well in this area. The Poppies grown are *P. nudicaule* (Iceland Poppy), well known hereabouts for the displays of this poppy at Lake Louise. *P. rhoeas.* The Shirley derived from this species is grown in profusion, both single, double and the double begonia-flowering *"Sweet Briar,"* and the carnation-flowered in all shades. *P. somniferum,* the Paeony-flowered Poppy, and *P. glaucum,* the tulip poppy, all provide a very colorful show. *Petunia hybridia* (the Petunia), another of our best annuals, is used generously in window boxes, planters and displays with the many types and varieties available. Colorful combinations can easily be achieved. *Phacelia campanularia,* the California Blue Bell, finds a spot in the pockets of the rockery formation in the gardens. *Phlox drummondii* is



DWARF CANDYTUFT
Iberis
Var.: Fairy Mixture

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NEMESIA—Nana Compacta

attractive in a retaining wall or window box. *Portulaca,* called Purslane or Rose Moss, is very colorful and gives a good showing among the rocks in a sunny, dry position. *Salpiglossis sinuata* does very well in this area with its trumpet-shaped flowers. *Salvia splendens,* or Scarlet Sage, creates a colorful splash of red, but must be pampered in the Banff vicinity. *Schizanthus,* the Butterfly-Flower, does best in planter or window box, but can be used in places throughout the garden in the Cascades of Time. *Tropaeolum,* the Nasturtium, fills in a pocket of the retaining wall or window box. *Ursinia,* or Jewel of the Veldt, is often used in mixed borders and does very well in this area.

Venidium fastuosum, the Monarch of the Veldt, is another annual from South Africa with a liking for our climate. *Verbena hybrida nana compacta,* or Florist Strain, grows profusely in the gardens or in a planter or window box. *Viscaria,* already mentioned, is another well-doer in Banff. At the end of the plant alphabet, we find the *Zinnia,* requiring dry, hot conditions. It varies in success according to the summer, but is most colorful and useful for bedding and cutting.

This concludes the annuals, which form our Banff displays in the Cascade Gardens and vicinity.

Perennials and biennials are to be found in the Cascade Gardens, and once again a good selection can be grown successfully in the region.

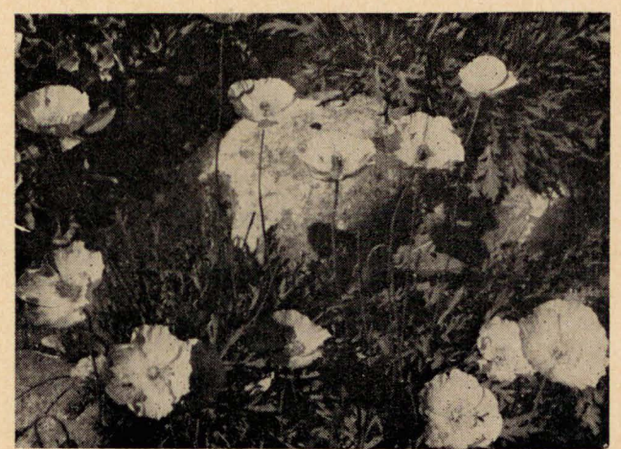
An alphabetical check reveals: *Aconitum napellus,* and *A. Wilsonii* (Monkshood), with tall spikes of dark blue and porcelain blue flowers stand erect and grow well in Banff. *Achillea* (Millfoil or Yarrow) grows strong, is hardy and cuts well for decoration. Native *Anemone multifida* and *A. occidentalis* grow freely in this area, with native *Aquilegia formosa* (Columbine) and hybrid aquilegias also being grown successfully in many colors and varieties. The wild *Anaphalis margaritacea* or Pearly Everlasting is found growing profusely among the rocks, with native *Arnica latifolia* showing yellow blooms in the sunlight. The native *Aster conspicuus* and the hybrid Aster or Michaelmas Daisy (similar in habit) are grown, but the hybrid is very late flowering at this location.

Campanula glomerata and *C. rotundifolia* are present in the rock crevices, in company with the wild *Chrysanthemum leucanthemum,* the Ox-eyed Daisy. *Castilleja,* the Indian Paint-Brush; the dwarf *Calypso bulbosa* or Venus' Slipper Orchid, and the native Golden Aster, *Chrysopsis villosa hispida,* abound in the area. *Chrysanthemum maximum,* the hybrid, is grown, and *Cephalaria* is also present in the garden. The *Dianthus* family seems to thrive here and in the

area *D. barbatus* (Sweet William), *D. chinensis Heddewigii, D. deltoides, D. Allwoodii,* will all grow successfully. *Dicentra spectabilis* (Bleeding Heart) is a favorite in Banff, as in most gardens. *Coreopsis* or Tickseed helps furnish the herbaceous border. *Echinops* (Globe Thistle) grows in a border, and *Erigeron* (Fleabane) is native to this area. *Equisetum arvense* (Horsetail) is present, but becomes a nuisance growing through the crevices in the damp areas. The native *Epilobium angustifolium,* the Fireweed, raises its tall spikes above the grasses. The Woodsia fern is growing beside a stream in the niche of a rock, shaded by the prolific growth of *Geranium viscosissimum* (Cranesbill). The native *Gaillardia aristata* (Blanket Flower) and *G. grandiflora* hybrids grow well with *Gypsophila* (Baby's Breath), filling a bare spot and are useful for cutting. *Helenium; Hesperis* (Sweet Rocket); Hollyhocks or *Althaea* may also be grown if the summer is warm and a sunny location is found. *Heuchera ovalifolia* is native to this region, and *Iris siberica* is present, growing in a damp border; *Lilium umbellatum* and the native *Lilium philadelphicum andinum* give a splash of color in this wild setting. *Lychnis chalcedonica* (Jerusalem Cross) and *Lythrum "Morden Pink"* show well in this area. *Delphinium grandiflorum* grows well in Banff and vicinity. The native *Delphinium Menziesii* is present and the hybrids are numerous, with Pacific Giants planted in various sites throughout the gardens. *Myosotis* (Forget-Me-Not) and *Nepeta mussinii* (Catmint) make an effective edge to the herbaceous border.

Matricaria eximia will also grow here. *Papaver nudicaule,* the Iceland Poppy, and *P. orientale* give a good account of themselves, as do the peonies and *Pyrethrum,* blooming for display or cutting. *Phlox diffusa* is native to this high altitude and *P. paniculata* or *P. suffruticosa* grow, but are sometimes late in flowering. In the crevices of the rocks *Primula,* and *Ranunculus occidentalis,* the native Buttercup, abound in our region, with the early blooming *Trollius* (Globe-flower), always a pleasant sight after the winter snows have gone. The native *Thalictrum occidentale* (Meadow Rue) is present and the *Trillium ovatum.* There is a clump of *Veronica longifolia* with its violet blue spikes giving a nice effect at the stone steps leading to higher elevations and mountain trails where alpine plants are ever present, the origin of so many of our hybrids.

This concludes a walk through the "Cascade Gardens" in Banff National Park, an unusual garden in a beautiful setting.



ICELAND POPPY
Papaver Nudicaule
Var.: Gartford Hybrids

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How to Make a Deal

by **W. C. SHELMERDINE**
Shelmerdine Nurseries Limited, Charleswood, Manitoba

All day long, every day, we are bombarded with advertising in one form or another. Save 25 per cent! See Honest Sam for a Better Deal! Fire Sales, Liquidation Sales, Warehouse Sales, Save 50 per cent! Save 75 per cent! In some cases one would be led to believe that the goods are being offered free of charge. We are threatened, cajoled, given false standards, hypnotized. We are led to assume that, because a TV star, movie actor, hockey player or football heavy-weight endorses a product, it must be good, whether he uses it or not.

Have you not seen at one time or another, a large display advertisement featuring give-away prices only to find upon visiting the store that the goods are not readily displayed and have to be asked for? Have you not also been subjected to advertising which promises wholesale prices, coupons, prizes, coupon books, puzzle contests and vague guarantees which are difficult to realize on.

In the midst of this bombast it is a relief to find someone, usually a well-established place, selling goods of equal or better quality at the same price or even less.

The laws governing the market place are as good as men have been able to make them. Much improvement has taken place during our lifetime. However, there are sellers who are quick to see loopholes and unfortunately, others equally willing to be taken in. There is the fly-by-night who, closed down in one location, opens in another. There are vendors who carry on until the law catches up with them, only to try another scheme until the law arrives again. The law is good but it is also ponderous and sometimes expensive. People are loath to resort to legal action because they do not want their friends and neighbors to know that they have been duped.

How can we protect ourselves and get honest value for every dollar spent? We cannot answer this question for all lines of merchandise but we can give some very solid advice as far as nursery stock is concerned.

First, try to learn something about the people with whom you are dealing. Their establishment usually bears the mark of steady progress regardless of whether they have been long in business or not. They have neat and tidy premises. They have a reputation for paying their own bills promptly. Their employees are usually on salary, are courteous, know their plants and seek to supply what you need and not what they happen to have left. They are usually a member of a trade organization. Organizations of this kind generally police their membership. A nurseryman does not long remain a member if his ethics leave something to be desired.

Do not hurry into a deal. From December until March 1 nurserymen have more time to discuss your landscape problems. One glance at your grounds, even in midwinter, gives the competent nurseryman most of the information he needs, to do a good job for you.

Do not buy on time and, by the same token, pay your bills promptly. It is hard for the writer to admit it, but nursery stock is not a prime essential to life. It is therefore ridiculous to pay interest and finance charges amounting to 15 per cent or more. There are two ways to avoid the use of the Friendly Finance Company. First, buy smaller plants at lower prices. Secondly, have a

landscape plan prepared for you by your nurseryman and buy only what you can afford each season. There is immense pleasure in watching a garden develop over the years.

Ask for information. This is available from your provincial horticulturist, the university plant science department, Canadian government experimental stations and your local nurseryman. These people all have specimen areas or accurate information and can give you a hardiness rating on practically any plant you wish.

Have a plan. To the writer's knowledge, there is no registered professional landscape architect in the province of Manitoba. However, many nurserymen will provide you with anything from a hurried sketch to a professionally drawn and copied set of landscape plans. Something midway between these two should be adequate for the inexperienced. The plan should show each plant accurately positioned so that the do-it-yourself home owner will know exactly where he should dig his beds and holes. This is no time to start looking for cheap stock. When you deal with one nurseryman only, he is more likely to give more thought to your problems and be more sympathetic toward your inexperience. You will probably find that you will make a long lasting and happy deal.

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Annual Flowers

by **C. W. CARLBERG**
Head Gardener, Canada Experimental Farm, Swift Current, Sask.

All gardeners grow annuals and most everyone loves them, particularly when they are artistically arranged in the flower garden, or in the home. Because annuals are grown successfully by so many it may seem a bit unnecessary to write an article on the subject. However, there are many ideas on how to grow them and most gardeners are openly or secretly curious to know how the other fellow produced such a colorful display.

Annual flowers are so well adapted to our climate. They grow from seed, bloom, and die all in one season. In the fall there is no fuss or bother with them. In the spring there is no disappointment because they failed to survive the long winter and we can start all over again adding some of the new varieties. Actually annual flowers are so popular that there is little need to present reasons for growing them.

Annuals are divided into two fairly distinct groups mainly for the purpose of indicating the method by which they will be grown. First there is the half-hardy group such as snapdragons and petunias. These require a longer season of growth before blooming and should be started indoors from one to three months before being planted out. To own or have the use of a greenhouse is, of course, ideal for starting plants. Next best is to grow them under artificial lights, but some gardeners do quite well starting them in the house and moving the seedlings to hotbeds and cold frames. Plant diseases such as damping-off can be a serious problem when starting seeds indoors so beginners should seek advice from successful growers. Most of the popular annual flowers belong to the half-hardy group.

The second group consists of the hardy annuals including sweet peas, clarkia and cosmos. These can be sown outdoors where they are to bloom. They develop quickly, bloom profusely and often go to seed and die before the season ends. However, most kinds can be kept blooming by cutting the flowers before or as they fade. There are a few annuals such as cosmos and zinnias which can be grown either as hardy or as half-hardy annuals. When convenient they are started indoors to obtain early bloom.

The kinds of annuals which can be grown are fairly well established but varieties are ever on the increase. Great improvements are being made particularly by the production of hybrids. The seed of improved varieties and hybrids is usually more expensive to obtain but is well worth the extra cost. Trying new varieties is most interesting and every gardener should establish for himself a small "do it yourself" program of testing. Your own interest and that of your friends will be greatly increased. Many new varieties are tested annually at the Swift Current Experimental Farm and the following recommendations are based on these tests. This list is by no means considered complete, but does contain many of the best and most popular kinds.

Half-Hardy Annuals

Aster—Often devastated by aster yellows but they get by in some locations. Wilt resistant strains are best.

Alyssum—Excellent for edging or low, flat beds. Royal Carpet and Carpet of Snow are good. Pink Heather adds variety but is not striking. Alyssum was severely damaged by flea beetles in 1961. Regular spraying with DDT would prevent this.

Ageratum—Useful for low beds or edging. Blue Mink is very good.

Celosia—The dwarf or medium-sized feathered types are best for bedding. Cristata or crested types add novelty.

Dianthus—Heddewigii (double) and Westwood Beauty (single) are good.

Dahlias—Unwins Dwarf Hybrids and the single Coltness Hybrids are excellent for large beds.

Larkspur—Annual delphinium for perpedicular lines at the back of the border.

Lobelia—Very good for edging. Blue and white are best colors. Slow growing.

Marigolds—Many new and interesting varieties available. The Petite and Cupid lines are suggested for edging. Butter Ball, Spun Gold, and Brownie are medium in size. Crackerjack, Glitters, Yellow Supreme, and Climax are good in large beds.

Nemesia—Very showy annual. When grown as Half-Hardy Annual it blooms poorly during heat of summer.

Nicotiana—Tall annual. White varieties grown for sweet scent. Sensation strain is colorful and blooms during daylight.

Pansies—Good for low beds, tolerate some shade. The Giant Exhibition strains are most attractive.

Petunia—A most valuable bedding plant. New single hybrids are best and well worth the extra cost of seed. Pink Satin, Coral Satin and Red Satin are tops, White Satin not tested. Ballerina, Maytime and the unusual Sugar Plum are good. The double and giant ruffled types are good but not as free flowering as the singles mentioned above. Shades of Rose and Sonata (double) along with Theodosia (Giant Ruffled) are recommended.

Phlox—Dwarf Compact Mixed and medium sized kinds are excellent for bedding.

Portulaca—A showy annual for sunny dry locations and light soil. Double flowering mixtures make a good show.

Rudbeckia—The new tall "Gloriosa Daisy" makes a good background for a large flower bed.

Salvia—Very showy, Blaze of Fire and St. Johns Fire are early and remain colorful all summer.

Salpiglossis—Beautifully colored bloom for those who look at the individual flower rather than the mass of bloom.

Snapdragons—Outstanding when at peak of condition but difficult to maintain appearance after first spikes fade. Semi-Dwarf strains are best for bedding.

Stocks—Often disappointing because of many single-flowered seedy plants. Selecting doubles at seedling stage or very close planting and removing singles later is good practice. Ten-week strains are best.

Verbena. The dwarf compact strains are excellent for bedding but have some difficulty keeping plants healthy. They seem to object to water on their foliage.

Zinnia—Have been much improved in the quality and color of flowers available. Choose named varieties in size of plant and color of flower required.

When growing half-hardy annuals it is important to time the sowing of seed so that vigorous plants will be on hand for planting out about June 1. Nurseries like to sell plants which are already in bloom but this may not be

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practical for the home grower with limited facilities. Weak, spindly plants often result from this kind of forcing. The following schedule is suggested:

Early March—Pansies, Verbena, Lobelia.

Third week of March—Snapdragons, phlox, petunias, dianthus, salpiglossis, nicotiana, larkspur.

Mid-April—Alyssum, asters, celosia, stocks, salvia, dahlias, verbena, portulaca, ageratum, nemesia.

Late April—Marigolds, cosmos, zinnias.

Hardy Annuals

These are grown mainly because of economy and some of our best material for cut flowers are hardy annuals. The following should be sown as early as possible in the spring:

Sweet Peas, Clarkia, Shirley Poppy, Centaurea, California Poppy, Annual Candytuft.

Sow these after danger of frost is past: Calendula, Nasturtium, Sweet Sultan, Bells of Ireland, Scarlet Flax, Morning Glory, Cosmos, Godetia, Early Marigolds, Early Zinnias.

Much more could be said on the cultural requirements of annuals since each kind has its own particular likes and dislikes. One warning, however, in this day of plant pills and fertilizers is to not overfeed flowering plants, particularly with fertilizers containing high amounts of nitrogen. You may end up with a great deal of foliage but few flowers. In other words the best fertilizer for the lawn may not be the best for the flower bed.

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Pest Control in the Home Garden

by **R. J. HILTON, B.Sc.(Agr.), Ph.D., Head, Department of Horticulture**
Ontario Agricultural College, Guelph, Ontario

The value of this brief article will depend upon careful use of the information in the tables which appear below. It is true that these tables contain only a few of the hundreds of compounds sold today for plant spraying and dusting. But these are the ones which are most easily purchased, and most safely handled, for home garden use. They have been tested and proved over a wide range of conditions, too, which is an important consideration before the watchful gardener sallies forth of an early evening to deal the death blow to the pests that threaten his precious plants.

A word anent this death blow dealing; don't let it be to yourselves. No chemical is proof against thoughtless or careless use. All of those listed are safe enough to be used without the bother of a gas mask, but I still wouldn't advocate their use in place of brown sugar on your morning porridge. In other words, be careful. Especially if spraying or dusting in windy weather, make certain that you wash face and hands carefully when you are through.

Concerning spraying procedure, always remember the "stitch in time" adage, and depend more on having protection on the plants, than on trying to "burn out" a disease or blast off a healthy batch of bugs, after they have become well entrenched. Also, many of the most troublesome insect and disease pests are most at home on the *undersides* of leaves, so care in the application of the chemicals is especially important. There is little point in obtaining a good sprayer and just the right material, if it isn't properly applied.

Just one more word of caution. Do *not* use your regular garden sprayer for 2,4-D, 2,4,5-T and chemicals allied to these, to control weeds on your lawn. You will not be able to clean these persistent herbicides out of the tank and nozzle, and will be plagued by 2,4-D type injury and abnormalities every time you spray roses, grapes, tomatoes, petunias, cucumbers and susceptible plants such as these.

Very recently, certain manufacturers have perfected very light and compact sprayers, or sprayer-duster combinations, that use an air-blast application

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principle and that are powered by a lightweight gasoline motor. They are very easily handled by knapsack straps for carriage on the back and when empty of spray solution may be as light as 22 lb. Their principle of operation, moderately low price range, and ease of handling, make them ideal for the home garden enthusiast.

TABLE 1. INSECTICIDES FOR GARDEN INSECT CONTROL

Chemical	General Use	Level Tablespoons for 1 gallon water
Aldrin (25%)	Cutworms and maggots in garden and lawns soils.	14 (per 1,000 sq. ft.)
Aramite (15%)	Mites (e.g. Red Spider)	1
Arsenate of Lead	Chewing Insects (e.g. most caterpillars)	6
Chlordane (40%)	Carrot Rust Fly Maggot and White Grub.	1½
Derris (Rotenone) (5%)	General (non-poisonous to humans)	4
DDT (50%)	Caterpillars, thrips, flies – but not mites.	3
Heptachlor (Emulsifiable)	Cutworms, Soil maggots, White Grub.	1½ (per 1,000 sq. ft.)
Malathion (25%)	General–toxic to almost all insect life.	4
Nicotine Sulphate (40%)	Similar to malathion but spray must be soapy.	1 (use care)
Pyrethrum	Similar to Derris–safe to use on foods.	°
Rotenone	Similar to Derris and Pyrethrum.	°
Thiodan	General – do not apply on edible plant parts later than 14 days before use as foods.	1

° Use as directed.

Notes:
1. Most of the materials listed above are available also in dust form. In humid climates or when dew is heavy, dusts are about as effective as sprays. When air is dry or windy, they are difficult to use.
2. Chlordane for carrot rust fly should be applied to the soil and worked in just before planting. If used after plants are up, the roots may have an oily taint.
3. For large areas, follow the dosage rate recommended on the container.
4. Malathion and derris will be found of general enough use for most garden plant insects except root maggots. Currant fruit fly however is best controlled with DDT at late blossom stage. Do not use malathion within 3 days, or DDT within 21, of harvesting food.
5. Bulbs and corms for over-winter storage should be dusted with a DDT 5% dust, plus a fungicide such as thiram.

TABLE 2. FUNGICIDES FOR EFFECTIVE CONTROL OF GARDEN DISEASES

Chemical	General Use	Level Tablespoons for 1 gallon water
Actidione	Turf diseases, cherry leaf spot.	°
Agrimycin	Bacterial diseases (as fire blight on apples, etc.).	°
Basic or Fixed Copper Compounds	General fungicide. Many formulations.	3
Bordeaux Mixture (Prepared)	Old reliable fungicide for general garden use.	20
Captan	Leaf spots, apple scab, grey mold, cedar rust, blights.	1½
Copper oxide	Disinfectant, spray or drench for "damping off".	°
Cyprex	New organic fungicide. Apple scab and cherry leaf spot.	2
Dichlone	Apple scab, rose black spot, brown rot.	°
Ferbam	Especially useful for potato and cane fruit diseases.	2½
Glyodin	Apple scab, cherry leaf spot, rose black spot.	°
Lime Sulphur	Old time fungicide, use when plants dormant.	32
Maneb	Gladiolus diseases, some leaf spots and blights.	°
Organic Mercury	Turf and tree diseases; eradicant use.	°
Sulphur, wettable	Mildew and apple scab.	3
Thiram	Turf diseases, blights, damping off of cuttings.	°
Ziram	Leaf spots and general tree diseases.	2½

°Use as directed

Notes:
1. All materials not provided with a concentration figure should be used carefully as directed on the containers. Determine the amount needed by reckoning that 1 quart = 2 pints = 4 cups = 32 fluid ounces = 64 tablespoons = 192 teaspoons. And 1 fluid ounce = 2 tablespoons.
2. For general spraying purposes (blights, spots and cankers) use prepared Bordeaux Mixture, Captain or Ferbam.
3. Most of the above compounds are sold under several trade names and may be obtained ready for dusting, or for mixing sprays. The label will tell you which effective ingredient it contains. Often a combined material can be purchased and used effectively; e.g. malathion and captan; or DDT, sulphur and malathion, etc.

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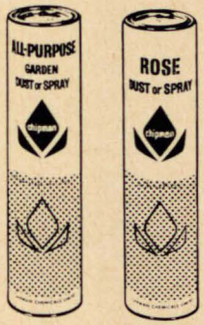

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Garden Chemicals

Control of Common Plant Diseases

by **BJORN PETURSON**

Department of Plant Science, University of Manitoba

Practically all cultivated plants as well as those growing without cultivation are subject to various plant diseases. These diseases are caused by fungi, bacteria, viruses, a few higher plants, nematodes and adverse environmental conditions.

There are a great number of plant diseases, no one knows exactly how many. According to reliable estimates there are about 7,000 fungi, 175 bacteria and 165 viruses that cause diseases of plants. Fortunately, only a small fraction of these disease organisms occur in any one area and a still smaller number attack any one plant family.

It is obvious that it would be impossible to deal adequately here with any appreciable number of the plant diseases which occur in any one area. However, it would perhaps be helpful to discuss some general plant disease control practices which can be used against plant diseases in general as well as a few specific diseases that occur commonly and affect a number of common plant species. It is to be distinctly understood that these hints are for amateurs, rather than for professional gardeners. In the following paragraphs these matters are discussed briefly.

Seed Treatments of Some Common Vegetables

Practically everyone interested in gardening grows vegetables of one kind or another. Everyone fully realizes that it is important to plant disease-free seed. As more often than not, one is not certain of the health of the seeds available it is very good crop insurance to treat all vegetable seeds, and other seed as well, that go into the home garden. Seed treatments for a few common vegetable varieties are recorded in Table I.

Most, if not all, seed treating materials, like most fungicidal sprays, are poisonous to animals and humans. Therefore, the precautions advised by the manufacturer of a product must be observed in detail. Always read the information on the label before the product is used.

Growing Healthy Plants

The prospects of avoiding diseases are fairly good if the gardener observes the following generally recommended practices:

1. Use disease-free seed. That is, seed grown in dry areas where plant diseases are absent or very scarce and seed from certified fields. As a measure of insurance all seed should be treated regardless of whether it is from disease-free areas of certified fields unless it has been demonstrated by tests that the seed is disease-free. As a matter of fact, even disease-free seed should be treated to protect it against soil-borne organisms.
2. Possibly the most useful and certainly the cheapest, plant disease control measure is the use of disease resistant varieties when these are available. Of course the resistant varieties must meet yield, market and other requirements.
3. As disease organisms often are carried over from year to year in crop debris, crop sanitation must be rigidly practiced.

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Table I. Chemical Treatments for Control of Some Common Vegetable Diseases

Variety and Chief Disease Controlled	Seed Treatments
Bean (lima and soy) Damping Off	(1) Spergon ½ teaspoon per pound of seed. (2) Arasan dust ⅓ teaspoon per pound of seed.
Beans (snap) Damping Off (when beans are planted in cold soil)	Arasan dust 20 teaspoons per pound of seed.
Beet Damping Off	Arasan—dust 2 teaspoons per pound of seed.
Cabbage Blackleg, Damping Off, etc.	Hot water treatment—soak at 122°F. for 25 min. After seed is dry dust with Arasan at ⅓ teaspoon per pound of seed.
Cauliflower	Same as cabbage.
Sweet Corn Damping Off	Arasan dust ¼ teaspoon per pound of seed.
Cucumber Scab, anthracnose	Corrosive sublimate ($HgCl_2$) soak for 5 minutes in a 1-1000 solution of $HgCl_2$.
Lettuce Damping Off	Spergon dust ½ teaspoon per pound of seed.
Pea Damping Off	Spergon dust ½ teaspoon per pound of seed.
Tomato Bacterial diseases Damping Off, etc.	Hot water soak at 122°F. for 25 minutes. The seed then should be dried and treated with Arasan.

4. Crop rotation must be practiced owing to the ability of disease organisms to live in the soil often for one to several years.
5. Soil sterilization sometimes must be practiced under field conditions against persistent soil organisms and certainly should be a regular practice in production of transplant material.
6. A good well-drained friable soil which contains all the necessary plant food elements makes the growing of vigorous healthy plants easier.
7. Good control of insects and weeds is essential for many insects spread diseases from plant to plant and weeds often harbor disease organisms and serve as sources of infection.
8. Some diseases, especially those caused by bacteria, are most easily spread from plant to plant in wet weather. It is, therefore, essential to refrain from working in the garden when the plants are wet.
9. Spraying and dusting the plants with fungicides and insecticides regularly during the season is one of the most important disease control measures.

Control of Some Plant Diseases Common in the Prairie Provinces

Powdery Mildew. Many of our garden plants, both annuals and perennials, are quite susceptible to mildew. The main body (the mycelium) of the mildew

is located on the surface of the leaves and feeding organs of the parasite penetrate into the cells of the attacked plants from which they extract food. Powdery mildew is rather easily controlled because fungicides can be applied directly to the external mycelium. In an article contributed by the writer on page 88 of the 1954 Winnipeg Flower Garden, it was stated that powdery mildew could be controlled by timely application of dusting sulphur. This statement is still valid. However, since that time, a fungicide (Karathane) has been developed which controls powdery mildew even better than does sulphur. Leading Canadian seed stores stock this fungicide. However, it is important to know that sulphur is not poisonous to animals while Karathane is and must not be applied to edible crops for at least a period of three weeks before harvest.

Rust Disease of Ornamentals. Some of our ornamentals, particularly hollyhocks and some roses, are attacked by certain rust fungi. These diseases can best be controlled by (1) collecting and burning affected plant parts in the fall; and by dusting the plants in the spring and early summer with sulphur, Zineb, Maneb, or Fermate, most of which are available from local dealers.

Lawn grasses are subject to rust attack throughout Manitoba. Both Kentucky bluegrass and Merion bluegrass are rust susceptible. Of these two grasses Merion bluegrass is the more susceptible. Spraying the lawn at 7- to 15-day intervals after rust first appears with a good rust control fungicide will control the disease. However, most of the rust control fungicides are poisonous to animals and humans and many people object to the use of these materials on their lawns where persons and pets would most certainly come in contact with them. Fortunately, there is an excellent non-poisonous rust control fungicide available, namely, wettable sulphur. If carefully used it should not leave an objectionable residue.

Onion Smut. Onion Smut occurs commonly in the Northern U.S.A. and Canada. The causal organism lives in the soil for several years. This disease is not uncommon in the Winnipeg area in gardens where onions have been grown for several years.

The disease appears soon after the seedlings appear above the ground. Black or brown elongated blisters form within the scales or the leaves, the latter usually being slightly thickened. These blisters later break open, exposing the black powdery spore masses. Most of the diseased plants die in four or five weeks.

The smut fungus can invade the onion plant only in the early seedling stage. If the onion seedling escapes infection until it is about four weeks old it cannot become infected even though placed in badly infested soil. Onion sets are immune to smut. The disease can be spread from infected fields to clean fields by onion sets grown in the infected soil. The disease is not generally introduced by means of the seed.

Seedlings can be protected if a formalin solution is placed in the furrow with the seed. The strength used is 1 pint of formalin to 8 gallons of water. One hundred gallons of this solution are required for an acre. More recently, good results have been obtained by treating the onion seed before seeding with Arasan dust at the rate of 1 pound of Arasan to 10 pounds of seed.

Black Rot of Cabbage. Black rot is a widespread disease of cabbage which occurs not uncommonly in our area.

The plant may be affected at any stage in its development. The disease attacks the above ground parts of the cabbage.

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The bacteria that cause the disease enter the leaves through leaf wounds or through water pores of the margin of the leaves and then enter the leaf veins and spread through the plant. Affected leaves drop prematurely and in extreme cases heading is prevented.

Black rot does not cause soft rot of the heads but it prepares the way for soft rotting organisms and in consequence soft rot symptoms are often associated with this disease.

The bacteria are carried by insects, spattered by rain, spread by drainage water and borne on soil particles and bits of infected debris by wind. It may be carried from year to year on old cabbage tissue, in the soil, and in and on cabbage seed.

Recommended Control Measures:

1. Clean or treated seed.
2. Seed bed sanitation.
3. Crop rotation, at least a 3-year rotation.
4. Control of all insects in cabbage plot.
5. Seed treatment as indicated in Table I.

Blossom-End Rot. Blossom-end rot is caused by unfavorable environmental conditions. This disease is characterized by sunken, brown, leathery spots of varying size which develop at the blossom end of the tomato fruit.

Plants that have been heavily fertilized with nitrogenous fertilizers and have produced soft heavy top growth are especially subject to blossom-end rot. A wide fluctuation in the amount of water that the plants receive seems to be one of the chief causes of this trouble.

Recommended Control Measures:

1. Use nitrogenous fertilizers sparingly.
2. If possible, maintain an even water supply. Mulching helps to achieve this.
3. Avoid deep cultivation to prevent damage to feeding roots.

Leaf Spot of Tomatoes. The leaf spot disease usually is not severe except in rainy seasons. Here under our conditions it normally does not appear in the seed bed and as a rule does not become severe in the field until the fruit is more than half grown. This disease causes numerous spots on the leaves. The lower leaves are attacked first and the disease then spreads upwards until most of the leaves are affected. As the leaves drop off the fruits become exposed and often develop sunscald. Usually, the fruits do not become affected and show no spotting.

Recommended Control Measures:

1. Collect plant remains in the fall and burn them.
2. Plow garden deeply in fall for the leaf-spot fungus will not live over winter if buried deeply in the soil.
3. Crop rotation should be practised.
4. Treat seed with good seed dressing.
5. Spray with a good fungicide when first signs of leaf spots are noticed (Maneb, Fermate or Dithane Z-78).

Lime Induced Chlorosis. In many parts of Manitoba where soils are high in lime plants often become chlorotic (yellowish) due to lack of iron. There usually is sufficient iron in the soil but owing to the presence of a high lime content the iron becomes insoluble and hence unavailable to plants. Lime induced chlorosis is very prevalent in the Winnipeg area. Apples, plums, cherries, raspberries, strawberries, Mountain ash, delphiniums and many other plants are subject to chlorosis.

Recommended Control Measures:

1. Spray plants frequently during the summer with solutions of either ferrous sulphate or ferric citrate at the rate of one ounce of either substance in one gallon of water.
2. Add Sequestrene or Versenol to the soil.
3. Plants may also be sprayed with a solution of Sequestrene 330Fe in water using one ounce of the Sequestrene in five gallons of water.

Fungicides

The fungicides are among the more useful weapons in the struggle against plant diseases. There are many chemicals which can destroy fungi and bacteria, thus protecting plants against the attack of these organisms.

Individual fungicidal chemicals usually appear on the market under several different trade names with the result that there are hundreds of named fungicides on the market. This multiplicity of trade names makes it more difficult for the grower to select appropriate fungicides.

Following is a list of a few good fungicides available locally:

Sulphur fungicides. Sulphur is a very useful fungicide, particularly for the control of powdery mildews and rusts. It is obtainable either as sulphur dust or as wettable sulphur. The wettable sulphur will disperse in water and can be used in spray form. At high temperatures (above 80°F.) sulphur may cause injury to plants.

Sulphur is officially classified as non-poisonous and offers no hazards to humans or animals.

Copper fungicides. At one time, copper compounds were the most widely used and effective fungicides available, and they are still extensively used despite the introduction of many new fungicides. Copper is used as a fungicide in the form of Bordeaux mixture or fixed copper fungicides. The fixed copper fungicides are sold under several trade names. They are normally less injurious to plants than Bordeaux mixture.

Apart from sulphur, the copper fungicides are the least poisonous of the fungicides in use today. In the United States, and likewise in Canada, it has been determined just how much of a poisonous fungicide is permissible on edible crops. This is calculated in parts per million by weight of the fungicide allowed on the product. Since copper fungicides are relatively non-poisonous they are exempt from tolerance requirements. Some of the trade names of fixed copper compounds are: Copper Compound A; Basicop and Spray Csp.

The Carbamate fungicides. The carbamates are a group of organic fungicides that are derived from dithiocarbamic acid. They have come on the market during the past twenty years and at present are the most important, most effective and widely used organic fungicides in use today. Ferbam, Manzate, and Dithane Z-78 are some of the more commonly used carbamate fungicides. For these fungicides the length of time between final spray and harvest is seven days and the allowable tolerance is seven parts per million.

The Mercury fungicides. Both the inorganic and organic Mercury fungicides are extremely poisonous. Their allowable tolerance is zero, that is, no trace of mercury is permitted on any edible product.

The mercury fungicides are used chiefly as seed dressings and as turf fungicides.

(*Concluded on next page*)

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Miscellaneous fungicides. The following materials are here listed as miscellaneous fungicides for convenience because they do not belong to any of the groups of fungicides already discussed.

Captan is a very versatile fungicide and has been found to be effective against many fungi causing diseases of vegetables, fruits and ornamental plants. It is much less toxic to warm blooded animals than any of the fungicides discussed above except sulphur and the copper compounds.

Karathane is even more effective against powdery mildew than sulphur and besides can be used safely on sulphur sensitive plants such as canteloupe and muskmelon. It is also quite effective against the two-spotted mite.

Phaltan, a product closely related to Captan, has been shown to be very effective against blackspot of roses. Its use on vegetables and fruits has not been approved (1960).

Red-Leaf Disease of Rhubarb

by **R. H. ANDERSON, Horticulturist**
Canada Experimental Farm, Melfort, Saskatchewan

Rhubarb is generally the most popular perennial vegetable grown in the prairie regions and its yield is high when compared to that of tree fruits. However, the incidence of the so-called "Red-Leaf" disease is a serious problem which has drastically reduced rhubarb production.

The Red-Leaf disease of rhubarb appears to be widespread and common to most districts in the western provinces. There are conflicting opinions as to the actual cause of the disease. Some workers believe the disease is of the virus type and that it might be spread by insects, also that it may be brought to the rhubarb from some related native plants, for instance, Tall Dock *Rumex Occidentalis.* Others suggest that one of the wilts, perhaps Verticellium, is to blame for the disease.

Judging by the experience at several locations, there is considerable variance between varieties as to their resistance and susceptibility to the disease. The varieties, MacDonald, Early Sunrise and Canada Red have shown the greatest resistance to the disease at the Experimental Farm, Melfort.

The variety Valentine is highly susceptible at all locations where it has been grown. Ruby is placed second to Valentine in susceptibility. Other varieties showing susceptibility to a lesser degree are Sutton's Seedless, Giant, Coulter, Victoria, Linnaeus, Plum Hutt and New Zealand.

Although the cause of Red-Leaf of rhubarb still awaits identification there are several control measures that may be used. The most common control, and one that seems most practical, is the removal and destruction of infested plants as soon as the disease is detected. The rhubarb area should be kept free from weeds, and tools such as spades and knives, used in cutting or digging roots, should be sterilized frequently when working with the roots. Shallow planting, also, has been found helpful in controlling the disease and fall planting has been preferable to spring planting if moisture is not a limiting factor.

Tests at the Experimental Farm, Melfort, suggest that Red-Leaf is not a soil-borne disease and it is safe to replant in areas where rhubarb plants have been destroyed and removed because of the disease.

A New Look in Varieties for the Home Vegetable Garden

by **CHAS. WALKOF**
Canada Experimental Farm, Morden, Manitoba

More vegetables will be grown in home gardens in 1962 than in any one of the previous 4 years according to sales trends of the seed industry. This change applies in particular to rural areas although a greater interest in home-grown vegetables is also noted in urban centers. It appears timely, therefore, to review the list of varieties developed by plant breeders in recent years and which pertain particularly to home vegetable culture.

Before proceeding with a description of these varieties it is pertinent to note some of the possible reasons for the reviving interest in growing vegetables at home. It is logical to assume that economic pressure on the family budget is an important factor. A marked divergence between income and expenditure generally and noted particularly in rural communities may be cause for re-evaluation of the worth of producing food supplies at home. There are other factors, such as the convenience and enjoyment of having garden-fresh produce close to the kitchen. Much can be said also for the pleasure of achievement when growing vegetables that delight the eye. It appears reasonable to assume that the pendulum, which swung to remarkable heights in the Victory Garden era of World War II and then to the other extreme in the late post-war period when interest in gardening lagged, is now returning to a reasonable home production status once more.

The list of available varieties is extensive according to tests conducted at the Experimental Farm, Morden, Man. A number of these were developed specifically for the fresh vegetable market trade and for processing purposes. Regardless, many are well adapted to the small garden and will produce satisfactorily under intensive culture. The descriptive notes of the varieties adapted to gardens on the prairies and mentioned here are necessarily brief but it is hoped that they will be sufficiently adequate to guide the gardener in his choice when making up his seed order this year.

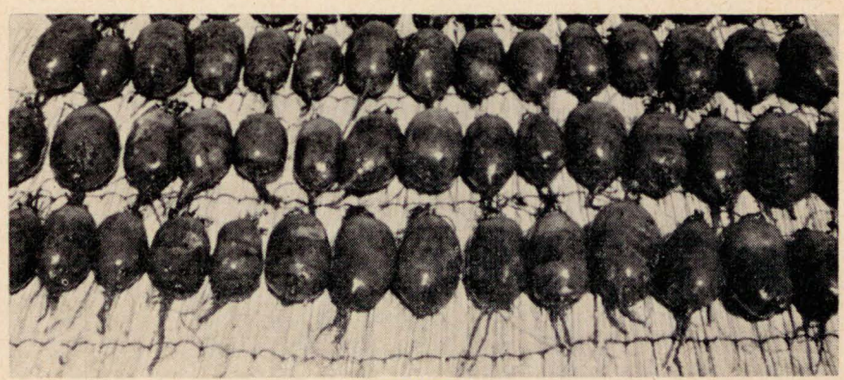

FIGURE 1

The Cylinder beet from Europe. Its flesh color is an attractive deep red.

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Kinghorn Wax is probably the best available variety in yellow-podded beans. It produces an abundance of fleshy and well-flavored pods which are favored by the canners. In the green-podded type of good strain of *Topcrop* is difficult to surpass. This variety has fleshy, firm and long pods.

An interesting variation in garden beets is noted in the *Cylinder* variety which has roots of a cylindrical shape (see Figure 1). It is the first European variety to favorably impress vegetable men in North America. The flesh of this variety is deep red and its quality is good. Where round, red beets are preferred the *Detroit Short Top* variety is recommended.

A number of early cabbage varieties with restricted head size are available or will be very soon. These are especially suitable for the small garden or for the use of people who prefer small-sized cabbages. *Stokes' hybrid* is a good type for western gardens. *Early Marvel* has fine-textured leaves and choice heads. At present several dwarf types that bear heads varying from one-half to 2 pounds in weight are in process of refinement at Morden from crosses developed at the Experimental Farm. It may require 1 or 2 years to make seed of these available generally.

An early cauliflower that grows well in the west is the *Snowdrift* variety which may also be listed as *Super Junior*. It produces firm, white heads of excellent quality and flavor.

For those who are in a position to grow celery at home the *Top Ten* variety is interesting because of its solid stems, crisp texture and nutty flavor. A deep, friable, rich soil and a consistently uniform soil moisture supply are essential for good celery production.

An array of sweet corn hybrids has been developed by American plant breeders in recent years. Some of these are good for the home garden but the majority grow too tall for the confines of a small area. Morden tests favor *Earliking* as an early hybrid. It produces long, 10- to -12rowed ears of good quality. *Dainty Gold* is another promising hybrid which may be used for main season production. Several Morden hybrids look good but seed of these is not yet available for distribution.

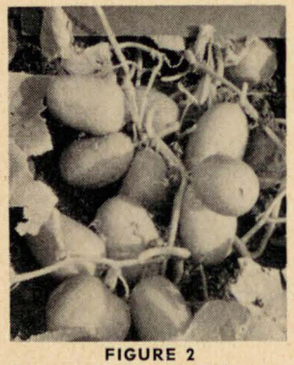

FIGURE 2
Note the productiveness and clustering habit of the fruits of the Morden Early variety.

Among the latest cucumbers to be introduced, two Morden types are valuable. The *Morden Early* variety, see Figure 2, is very early and because of its short vines it can be grown in limited space. It yields well and when partly grown the fruits are excellent for early dill pickles. For slicing or for pickling, the *Morcrop hybrid* is good. It yields many fruits per plant. A new cucumber is *Saticoy hybrid* which is favored because of its deep green fruits and a small seed core in the fruits.

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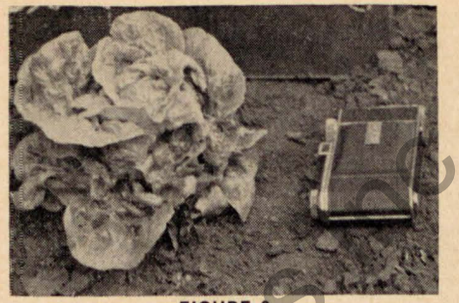

FIGURE 3
Tom Thumb head lettuce produces loosely compact heads of good quality.

Tom Thumb lettuce, see Figure 3, is a good loose-head or butterhead variety. It has excellent quality and a pleasant flavor when grown in a well-drained soil charged with a uniform supply of moisture.

Spanish type onions of good bulb size and with a sweet flavor when used uncooked can be produced in the home garden. Sutton's new special *Ailsa Craig* variety is noteworthy, see Figure 4, when the seed is started indoors in mid-February and the seedlings are transplanted to the garden early in May. The bulbs may attain individual weights up to 2 and 3 pounds. The *Autumn Splendor* hybrid is excellent as a cooking onion and may be seeded in the garden in late April.

Garden pea varieties for western gardens have been enhanced by the addition of the *Earligreen* variety from Morden. This variety is early, short-vined, productive and the bright green peas are highly suited for home freezing purposes. Two other varieties that continue as strong favorites are *Arctic Sweet* and *Progress No. 9*.

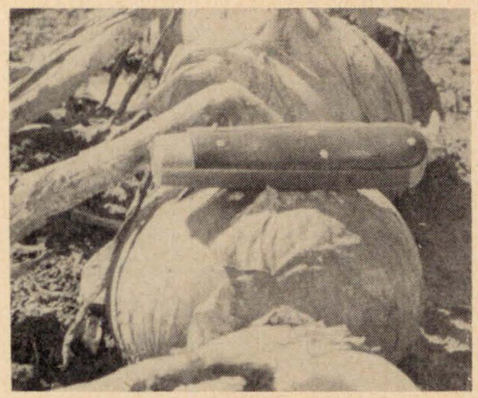

FIGURE 4
The large bulbs of Sutton's special Ailsa Craig are attractive and good for raw use.

The *Champion* radish is adapted to seasons which are marked by high temperatures and drought. The roots remain solid and sweet in spite of these conditions. Don't forget *Cherry Belle* which is still a favorite in many gardens.

Two golden-skinned squash for early fall use are available. The *Faribo R hybrid* is good and has excellent quality for baking purposes. A Japanese

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variety, *Uchiki Early Red* has been exceptionally attractive and delicious when grown at Morden. Seed of it should soon be readily available.

Among bush-type tomatoes the *Mustang* still commands the greatest respect as a productive and early hybrid for western home gardens. A strong contender as a main-season type, producing smooth and deep red fruits is *Manitoba*, Figure 5. Among staking tomatoes *Early Big Boy* is favored for its early, large fruits and *Glamour* looks good with its medium-sized fruits that ripen in mid-season.

Melons for gardens requiring early varieties have had the attention of plant breeders in recent years. The *Wheat City* muskmelon developed by H. Marshall of Brandon will be available soon. This variety has a well-netted rind and thick, sweet flesh. It is a little later in ripening than the standard *Farthest North* variety, Figure 6. The *Golden Midget* watermelon is easily recognized when the fruits are ripe because they turn a golden-yellow. The flesh is brick-red in color and sweet.

Most of the varieties described in this paper are available from seed houses. Several seed catalogs may have to be consulted to find all the varieties mentioned. It will be worth the effort to obtain them and to enjoy their products from your garden next summer.

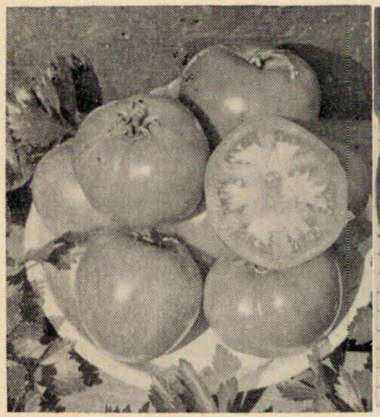

FIGURE 5

The Manitoba tomato is popular in many gardens in the Prairie Provinces.

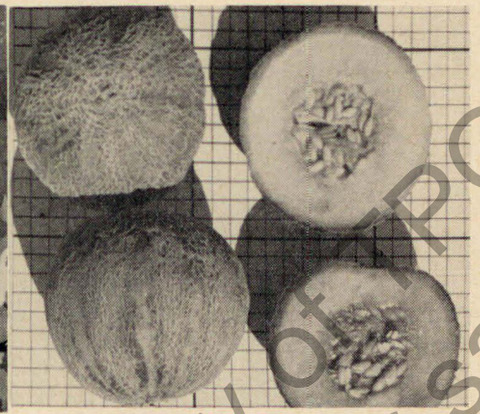

FIGURE 6

A good standard variety, Farthest North, produces thick-fleshed, sweet, early-ripening fruits.

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"Rescue" Crab Apple

by **CHARLES F. CROWE**

Vice-President, Regina Horticultural Society, Regina, Sask.

The fruit of Rescue should in reality be called an apple-crab. This fruit tree has a peculiar and most interesting history. Its history brings into our minds the conscientious work of some of the pioneer fruit growers of the Province of Saskatchewan.

During the early years of Saskatchewan, because of severity of climate the growing of fruit was most difficult. This brings our thoughts to the years 1915-1916 at Scott Experimental Farm in Saskatchewan. A shipment of fruit stock from the Ottawa Experimental Farm including Blushed Calville Seedlings which had been growing for a number of years were almost killed out by the severe winter. However, a few trees survived and one bore some interesting looking crab apples. Mr. John Lloyd took the interest of trying to save it. This quotation from "An Historical Review of the Development of Horticulture on the Prairies, as compiled by the Western Canadian Society for Agriculture in 1956" will show how interesting and how trying fruit raising was:

> "Rescue was named from the manner in which it was saved from extinction. It was one of a block of Blushed Calville seedlings under test at Scott, of which only two or three had shown signs of hardiness. When ripe some local boys broke down the fence and in their haste to pick the tree, broke it into pieces. Mr. Lloyd, on a visit soon after, found a very small specimen of fruit under the soil. Its quality was very good and it was decided that he should take budwood home and attempt to propagate it in some soil around a dam in his nursery. A few caught, and produced some fruit the second year. From this lucky rescue, stock was supplied to experimental stations, the university and other fruit enthusiasts."

Thus the name Rescue was given to this fruit in 1936. Such an appropriate name is of honor to Mr. J. Alloway and Mr. Lloyd, who saved it from perishing.

The Rescue, apple crab, is a crabapple crossed with an apple hybrid.

It may be fitting to relate the growing experience of this marvellous fruit tree.

One should secure a tree from a reliable nursery and preferably in a climatic location similar to that where the tree is to grow. Endeavor to purchase a young plant so you can grow and shape it to your liking. Endeavor to get delivery in April.

After the tree of about 2 years of age arrives, prepare for planting.

The place where you plan on planting it should have been well worked the year previous to its planting. On the arrival of the young tree, dig a hole about 2 feet in diameter deeper than needed, then place some topsoil (good rich loam) in the bottom of the hole. The amount to be placed in the hole is determined by the depth you are planting the tree. A good guide is a little deeper than it was growing at the nursery when purchased (determine by examining the stalk of the plant). Now, fill the hole with water and permit it to soak away. Bring the young tree to the side of the hole in readiness for planting. Pour a pail of water into the hole and then place the roots with earth

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ball into the hole and water. The bottom of the hole should be mounded in the center. The roots are placed out along the bottom and then earth is added to cover in the roots. Do not permit roots to be exposed to air for any length of time. By placing the tree roots in the water and covering with earth air pockets around and under the roots can be avoided. Fill in earth and pack it down tightly until the hole is almost filled. Water to help pack the earth.

The planting is very important to the proper welfare of the tree. Next, where is it located? For good results the tree should be placed in soil that is fertile, and has good drainage and is protected from the weather. My Rescue tree is placed at the lower gradient of the vegetable garden with full exposure from the south but sheltered by a tree belt on the west and north, and by the garage on the east. The tree belt is back about 30 feet and the garage about 20 feet, but does not shelter it from the sun. This location is very important as it protects it from winds, holds snow during winter and retards that too early growth in spring. The drainage from the rich vegetable garden naturally seeps to the fruit tree area but does not lie in pools.

With good planting and location the tree should be well watered frequently the first year, particularly in dry weather. Too, it should be well watered prior to freeze up. It is a good idea to cultivate shallowly around the base of the tree and back for some distance. To be assured of good and large fruit a covering of well rotted manure should be dug in around the base of the tree and back for several feet each fall so the fall rains and spring thaws and rains can carry the fertility deep into the soil and to the roots throughout the year. A commercial fertilizer of high nitrate and potassium content is useful but should not be placed too close to the base of the tree.

The tree should be planted in late April or early May and can be pruned if necessary. Pruning should be done to prevent the young plant from becoming spindly and to encourage branching from the main stock so as to keep the tree in a squat bell shape. You will notice that I speak of a tree. It is true I have but one Apple Crab tree but to assure yourself of fruit one should have several varieties of crab apple trees to be assured of good pollination and sure fruit fix. I am fortunate because within a short distance three neighbors have crab apple trees and this provides the needed pollen when bees are plentiful.

Now that the tree is planted and with reasonable care, after 2 or 3 years, one can look for a sight of beauty in the early spring and late fall. The Rescue blossoms profusely with a large pinkish-white blossom, surrounded with the green leaves, and in my case with several plums and sand cherry trees, the backyard is a mass of bloom for 2 or 3 weeks. The beauty of the blossom is reward enough for the work of growing it, but autumn brings another time of beauty. Hidden among the green leaves of the branches Nature continues to develop and produce fruit. The apple crab at first appears as a velvety green swelling at the base of the flower. This continues to grow in size and takes on cololr from the green to a greenish yellow, and the yellow to a blushed red. Some of the fruit becomes quite red. This is a sight of beauty among the green of the leaves.

The fruit ripens in the latter part of August and early September. It varies in size from one inch to two and one-half inches in diameter. It makes good amber-colored jelly, can be used canned for dessert and can be eaten directly from the tree as fruit or in salads. The fruit is not acidic. The flesh is firm and yellowish with a pleasant sweetish taste. By and large the fruit is quite uniform in size. The tree is hardy and a good producer.

A Few Do's and Don'ts in Raspberry Growing

by **C. R. URE**
Head, Fruit Crops Section, Experimental Farm, Morden, Manitoba

The red raspberry grows naturally in favorable locations across most of the prairie region. It is to be expected, therefore, that the culture of this fruit in home gardens or commercial orchards is not too difficult. Nevertheless maximum success is dependent upon following certain proven practices.

Selection of adapted varieties (cultivars) is one of the first considerations. Among the older cultivars Chief and Latham have been widely tested and found dependable. They make a good companion pair. Both are among the hardiest sorts available, Chief being the hardier. Fruits of Chief ripen first and are followed by Latham toward the end of the Chief season. This provides a long harvest period. Two promising new cultivars, Boyne and Killarney, are now available for general planting. These were developed and recently introduced by the Experimental Farm, Morden. In local tests they are considered superior to Chief and Latham in a number of respects. Their fruits are larger, possess excellent appearance, and are equal or superior in fruit quality. Killarney is considered the better dessert or fresh fruit berry while Boyne is the superior processing berry. Both outyield Chief and Latham with Boyne being by far the most productive. The new varieties appear well adapted to southern Manitoba, and reports indicate they are worthy of trial beyond Manitoba. For the experimentally minded grower, Muskoka, Madawaska, Ottawa and Monroe deserve a trial. Among autumn fruiting sorts September and Durham are the best evaluated at Morden.

Black raspberries in general are less hardy than the reds and are not as widely grown. Honeywood, Bristol and Dundee were the better cultivars in Morden trials.

Site and Soil

If a choice of sites is available it is better to select a gentle slope to the north or east. A slope permits excess water and cold air to drain to lower levels, while the north or east exposure dries out less rapidly and growth commences more slowly in the spring. Above all avoid low spots where free water will stand longer than 24 to 48 hours. Experience has taught that waterlogged soils or high water tables are very injurious to raspberry roots. Good drainage is absolutely essential.

Although raspberries succeed fairly well on a variety of soil types they do best in a rich, deep, friable loam. Sandy soils can be used but should be enriched with organic matter and provided with supplemental water. On the other hand heavy soils produce fair stands as long as water drainage is good. Prepare the soil carefully before the plants are set since the raspberry is long lived and may occupy the same area 10 to 15 years. If it lacks humus be sure to work in liberal amounts of compost, manure, acid peat moss or other forms of organic matter to the depth of a shovel at least. In some instances it may be feasible to grow a green manure corp. Make sure to completely eradicate all weeds that spread by underground root systems, such as couch grass, field bindweed, sow thistle or Canada thistle. Chemical weed killers can be used for this purpose when handled and applied properly.

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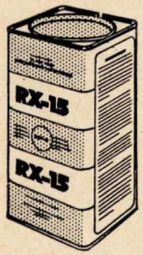

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Planting

Early spring planting is preferred to fall planting under prairie conditions since plant survival is generally greater in case of the former. Fall planting during September can be quite satisfactory where supplemental water is available and protection can be given the newly set canes to prevent winter dessication.

The canes are set 2½ to 3 feet apart in the row and the new shoots are permitted to grow into a continuous or hedge row. This is the more common method of training raspberry in Manitoba. The rows are placed 6 to 10 feet apart, the distance depending on the means of cultivation used. Another system is to maintain the plants in hills at 5 to 7 feet each way.

Training and Pruning

After the canes are planted cut the tops back leaving 6 to 12 inches. They will require very little further pruning for the next two years while the plants are becoming fully established. Pruning from the third year on will consist of keeping the row narrowed to one or two feet wide, cutting out the old fruiting canes after the harvest season is complete or early the next spring, and removal of the smaller, weaker canes to prevent overcrowding and thereby improve yield, berry size and quality. Canes spaced at 6 to 9 inches apart produce maximum yield. Very tall varieties such as Viking or Lathem are occasionally tip pruned in the spring by cutting the top back leaving 5 or 5½ feet of cane. The purpose of tip pruning is to enable the cane to carry the fruit without bending onto the ground. Tip pruning tends to delay ripening since berries at the top of the cane are the first to ripen. The more severe the pruning the greater the delay in harvest. The largest and best quality berries are produced within the 2 to 5 foot section of the cane above ground level.

Support for weak or long canes may be necessary to keep the berries off the ground. The customary method with hedge row plantings is to set stout posts in the row at 12 to 16 foot intervals. Attach to the posts at right angles to the row cross-arms 18 to 20 inches long and at approximately 30 inches above ground level. Wires are strung along both sides of the row and attached to the ends of the cross-arms. In the hill system the top of the canes can be tied to a post placed near the center of the hill. An alternative is to bring the fruiting canes together at the top and tie them firmly in a teepee fashion without the aid of a central post.

Control of Pests

Although raspberries are attacked by several insects and diseases only the more serious will be discussed. Spider mites have been the most injurious insect pest during recent years. They are a very minute insect inhabiting mainly the undersides of the leaves, and their presence is noted by the development of a grayish green cast to the foliage. The leaves may turn brown and dry up under severe infestations. Control is essential since under conditions favorable to the mites a crop can be ruined quickly. In experiments at Morden such chemicals as a 50:50 mixture of Aramite and Ovatran, Ethion, Guthion, and Kelthane have given excellent control. Apply the first spray in early spring when new bud growth is one-half to one inch long. Use at the rates recommend by the manufacturer and indicated on the container. If mite infestation was severe the previous season a second application should be made a week to 10 days after the first. Avoid application 3 to 4 weeks prior to the commencement of fruit harvest.

Leaf curl and mosaic are the two more common virus diseases of raspberry. They are systemic in nature and once infection occurs the plants never

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recover but gradually deteriorate and become unproductive. Control consists of roguing out infected plants, use of certified stock preferably of resistant varieties, and spraying to destroy the aphids which spread the virus from plant to plant. Anthracnose, Spur Blight, and Powdery Mildew occur from time to time. When these appear or are suspected growers are advised to contact a plant pathologist or horticulturist at the nearest University, Experimental Station or Extension Service Office for the latest control measures.

Winter Protection

Low temperatures and dessication during late fall, winter and early spring frequently cause severe injury to raspberry canes. This damage can be partially avoided by bending the canes to the ground before the soil is frozen and cover the tips with earth to hold them down. Generally 3 to 6 canes can be brought together at the top and fastened down in one operation. Snow will often be sufficient to cover the balance of the canes, or in seasons of little snowfall the canes can be completely covered with soil, straw, or other forms of mulch material. The covering should be removed in the spring as soon as bud activity begins.

Shallow, clean cultivation is the customary practice in raspberry growing. In backyard gardens mulching the raspberry planting with straw, peat, sawdust or grass clippings may replace cultivation and prevent weed growth.

Earlier and Better Crops of Heat-Loving Vegetables

by **D. H. DABBS, Horticulturist, Experimental Farm, Scott, Saskatchewan**

In common with many areas of the temperate zones, many of the heat-loving crops are only partially reliable in our area of Saskatchewan. Late spring frosts and/or merely very cool weather in late May and during June are often responsible for extremely slow growth or death of the plants. A slow start in the spring often means no crop harvested, or at best, a light crop. There is usually enough heat during July and August for this class of crop to thrive, providing the plants are in a condition that they can make maximum use of this heat. Lack of sufficient moisture near the soil surface is also often responsible for poor germination of vegetable seeds.

For several years we have directed a considerable amount of effort toward attempts to obtain earlier maturity and an increased harvest of fruit from this class of vegetable; A number of treatments have been used. These include Hotents; soil mulches of black asphalt paper, black polyethylene and clear polyethylene; combinations of these soil mulches with Hotents; patented glass cloches and wooden-framed, polyethylene-covered protectors. Most of the work has been done with cucumbers, muskmelon and tomatoes. Cucumbers have been used as the main indicator plant. Cucumbers have been used both directly seeded and as transplants.

The use of black asphalt paper alone and black polyethylene alone generally gave poor results with this class of crop. Black polyethylene exhibits some interesting possibilities as a soil mulch with some other crops. The black plastic in conjunction with Hotents generally gave good results, but was not

as good as the clear plastic. The clear plastic mulch, with or without Hotents, has been quite outstanding. The inexpensive Hotent can give good results alone when properly handled. The glass cloche and the plastic covered cloche are two of the finest aids when used properly and when given the amount of attention that they require in order to provide the maximum benefits. However, the average gardener can obtain as good, or even better results, with less expense and usually with a lesser degree of care and attention being required, by using a clear plastic soil mulch, with or without added Hotent protection.

Several combination treatments with the clear plastic mulch have been used. These have included the mulch with directly planted seeds, mulch with transplants and mulch in conjunction with Hotents for seeded plants and transplants. The best results have generally been obtained with the plastic mulch, small cucumber transplants and a relatively short period of covering each plant with a Hotent. However, any use of the clear plastic soil mulch has generally given good results. The added protection of the Hotents is particularly important when confronted with a late spring frost.

If the cucumbers are to be grown from seed planted directly in the garden, they can well be planted in much the usual manner and the plastic strip can immediately be laid. When planting the seeds in the trench, place 2 or 3 seeds at 1-foot intervals. A 30- to 36-inch strip of clear plastic (the 2-mil gauge is sufficiently heavy) should be laid the length of the row, with the row centered on the strip. The sides and ends of the plastic should be anchored with a continuous light covering of soil. A small opening should be cut in the plastic above the plants immediately they commence to emerge. After the first true leaves are well developed, a sharp knife may be used to cut off all but one strong plant per foot of row. If frost threatens after the plants have emerged, they may be protected by covering with Hotents. The plastic strip may be left on the soil for the entire season.

If the cucumbers are to be set in the garden as small transplants in Jiffy pots, the plastic strip should be laid first. Small holes should be cut in the plastic at 1-foot intervals and the cucumbers transplanted pot and all. They may also be protected by Hotents if desired.

When Hotents are used it has been found desirable to cut a small ventilating hole (about 1 inch square) on the east side of the enclosure about mid-June. It may be necessary to ventilate earlier, depending upon weather conditions. Before the plants become too crowded under the Hotents, two knife cuts should be made in the top of the structure at right angles to each other, and extending well down the sides. The plants should then be allowed to gradually force their own way out before the Hotents are completely removed. In this manner, the change from the warm, humid atmosphere of the protector, to the rigors of a prairie summer, is made gradually and no damage to tender, succulent growth is likely to occur.

A clear plastic soil mulch has an important effect of almost completely eliminating direct moisture evaporation from the covered soil. In fact, it acts as a self-irrigator for the surface soil. Condensed water vapor drips from the under surface and keeps the surface soil moist. This feature alone often results in excellent germination of small seeds when dry surface soil would otherwise make this impossible. It may be necessary to carefully hand-weed under the clear mulch. It is also desirable to shape the row contour so that rain water will be directed toward the plants instead of away from them.

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The Cultivation of Native Plants

by **DR. R. C. RUSSELL**
Botanist, Canada Agricultural Research Station, Saskatoon, Sask.

Some people in the Prairie Provinces have learned to cultivate native plants in their gardens with considerable success. While some of these plants do not have as showy or abundant flowers as their domesticated relatives, they are winter-hardy if grown in situations similar to those in which they are found in nature. Those who know and love the native flora, may grow certain of these plants under cultivation as a hobby and gain considerable pleasure and satisfaction thereby.

In most instances native plants flourish only in certain definite habitats. In sloughs and streams we find the water-plants; in wet meadows, the plants that flourish under moderately moist conditions. In woods and shady ravines the plants are accustomed to a fair amount of moisture but thrive under more or less shade. At the other extreme are the semi-xerophytic plants that grow on dry plains and ridges, exposed to full sunlight and scanty moisture.

To achieve success in cultivating native plants it is necessary to place them in situations similar to their natural habitats. It may be difficult to do this. However, let us consider the different ways in which we can change the conditions existing on a bare flat plot of ground. We can provide shade by erecting building, fences and trellises, or by growing trees and shrubs. The level topography of the lot may be altered by building terraces or rock gardens and by establishing bogs or pools. When plenty of water is available, the humidity may be greatly increased by irrigation or sprinkling. There are other factors that must be considered, such as the type of soil and its acidity or salinity. These can be modified in small beds by bringing in the soil from places where the plants in question are found in nature.

It may be well to enumerate some of the more suitable plants that may be chosen from the native flora for use in our gardens. Among the trees there are the White Spruce, Birch and Oak. There are quite a number of shrubs from which to choose, including Low Juniper, Pin-cherry, High-bush Cranberry, Red Osier Dogwood and Shrubby Cinquefoil. Several of them produce showy flowers, and berries that attract birds. The Twining Honeysuckle is a shrubby vine that may be trained on trellises. It produces clusters of reddish-yellow, sweet-scented flowers and bright red berries.

The native herbs suitable for use in our gardens may be divided into four groups for the purpose of discussion. Those that require standing water for their culture include Cat-tail, Yellow Pond-lily and Bladderwort. The Arrow-head, Marsh Marigold, Pitcher Plant, Tall Mertensia, and Water Parsnip grow well in bogs. Among the many native plants that flourish in full sunlight, on moderately moist soil, are the Western Red Lily, Yellow Lady's-slipper, Crocus Anemone, Golden Bean, Seneca-root, Indian Paint-brush, Meadow Parsnip, Black-eyed Susan and certain species of sunflowers and asters. Those that are found growing in the open under somewhat drier conditions include the Three-flowered Avens, Prairie Rose, Indian Pink, Silvery Hedysarum, Purple Loco-weed, Indian Bread-root, Wild Flax, Bluebell and Gaillardia.

A rock garden may be so constructed that it has a relatively hot dry slope facing the south, and a cool moist slope facing the north. Artificial watering may be confined largely to the northern slope. In addition, a gravelly clay relatively low in fertility should underlie the south slope while the soil

on the north slope should contain considerable leaf-mold and other humus. On the dry slope of the rock garden we may plant the native species commonly found on hills and ridges in the drier areas of the Prairie Provinces. Examples of these are the Umbrella Plant, Moss Phlox, Cinquefoil, Blue Pentstemon, Stemless Pea, Tufted Fleabane and Broomweed. The northern slope, especially if partly shaded, would be suitable for ferns, wintergreens, Two-leaved Solomon's Seal, the delicate little Twin-flower and their associates in nature.

While the author has had experience in the growing of various species of native trees, shrubs, and herbaceous plant species, he does not pretend to be an expert gardener. Those of my readers who are familiar with the best methods of propagating different kinds of plants can achieve as good or better results than I, in the cultivation of any native species that take their fancy. The people who do take part in this interesting activity will have the satisfaction of knowing that they are helping to perpetuate some of the species that have flourished in this country for thousands of years. These plants played a part in making a vast garden of the Prairie Provinces long before man undertook to carve them up into farms and gardens of his own making.

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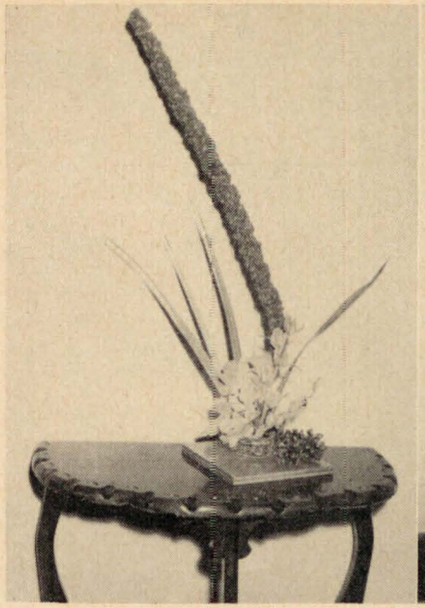

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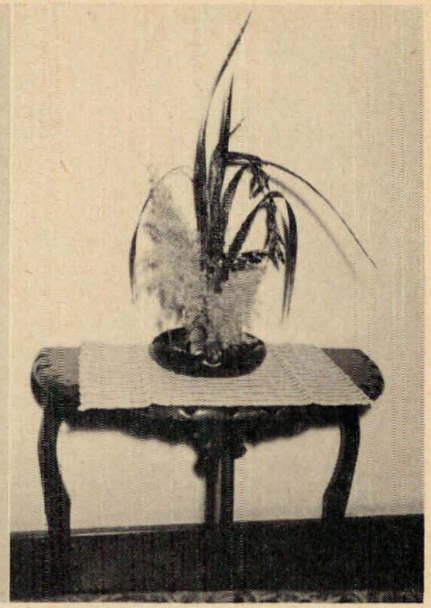


"October."

Dried Material Arrangements

by **MRS. BLANCHE BROWN, Dauphin, Manitoba**
An enthusiast for anything horticultural, and writer of garden column for local paper

The word "dried," what an uninteresting word it is. Reminds one of dried bread, not too palatable, or could be the dried gardens of this past summer of 1961, not too pleasant a thought—but, when we say dried material arrangements, then it takes on a new and different meaning—one of beauty, design, color and line, and most of all a meaning of interest.

"A meaning of interest," interest in what? Could be an interest in our gardens in late fall, in what grows along our roadsides or the water's edge, then again it might be in the woods.

"Beauty," what is more beautiful than nature—just as it is found in all the locations mentioned in the previous paragraph.

"Design," we can learn much from the design in which our Maker has created growth to come from seeds, mature, each plant to an entirely different design, which we humans humbly try to improve upon.

"Color," nature's colors are colors as they are meant to be, in the woods or along the roadside, and the combinations of these colors, no matter what hue, seem to blend.

"Line." All growing things have a line that is intriguing, and challenging, and more often than not a line of beauty.

What is all this leading up to, you may be asking, just this—that fall brings with it a bounty of natural material in all the definitions mentioned—the way the author likes to use it in making dried material arrangements.

How does one get this material? Well, car riding is a pleasant pastime, and may be that much more pleasant by taking to the sideroads instead of the

beaten path of the hard-surfaced roads, that have been stripped of practically all weed growth. Here on the sideroads is a wealth of material that may be had for the picking, but make sure there is always a pair of shears or scissors in the car (as well as a patient driver).

Of course all material for dried arrangements does not need to be wild. In our own back yard there is plenty of material: gladiolus leaves and seed pods, statice, sweet pea vines, straw flowers, lythrum, yarrow, dill, lettuce that has gone to seed, to mention only some.

In making arrangements from dried or live material, some arrangers seem to lean toward the type which take fewer flowers or material. This seems to be the case of the author of this article. This of course does not mean that we do not like mass arrangements, on the contrary, we enjoy looking at them but not making them.

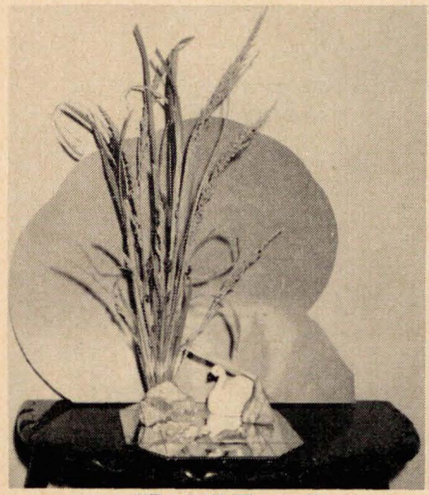
For an example of the type with little material let us make one with a tall naturally bent flower stalk of mullein, several gladiolus leaves, dried oak leaves, gladiolus seed pods and several spruce cones. For a base we will use a small square of plywood that has been sanded and varnished. On it we will place a small dark green basket container, in which a pin holder has been secured with plastite.

You will notice the mullein is bending off to one side of the arrangement, and the three leaves pick up the same lines. To offset the seeming heaviness of the mullein a single gladiolus leaf is placed to the right side running in the opposite direction. The oak leaves at the base, while light in color add width to the base. The seed pods as a point of interest are leaning away from the mullein to help give balance, which is accomplished by the three dark cones being placed on the base to the right.

The height of this composition would seem to break the rule of the height of the arrangement in comparison to the container, but if balance can be achieved by use of material and or accessories, then the extra height is permissible. So much for the arrangement the author has called "Dignity."

Now let us turn to the one that has been aptly named "October," by the arranger, Mrs. L. Haagenson of Dauphin, who has truly captured what happens in our gardens in the fall.

She has used naturally curved gladiolus leaves and a spike of gladiolus seed pods, bent over in the breeze and bitten by frost, which have been shel-



"By Still Waters."

"Bittersweet."

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lacked, and as a note of airyness she has used wild grass that grows in watery ditches. The few dark brown seed pods in the center lead down to the three shellacked milkweed seed pods placed as a point of interest just above the dark brown container, which has been placed on a muted green mat.

Now let's go to the quiet shore of a calm lake. A peaceful thought, so we will try to compose a peaceful picture, "By Still Waters."

For this we will use a many sided table mirror, with a diameter of about ten inches. We will use two or three varieties of wild grasses found near water along with pencil sized cattails. "Oh, yes they are real ones that have dried quite nicely." To give depth once the design has taken shape, we will place bent blades of grass and reeds, bending away from the back of the arrangement, to give the viewer the impression that this is only the beginning of the scene. All material has been placed on a pin holder fastened to the mirror by plastite. To better depict the scene, a few stones have been grouped in front of the pin holder, and another taller one off to the right for balance. In the foreground is a smaller stone with a lazy frog sunning itself. The white swan swimming under a bent piece of reed, adds to the peacefulness of the picture, and to hold the composition together. The background is blue to simulate sky, and to reflect blue in the mirror giving a realistic look of water.

What is more beautiful than the trailing branches of bittersweet, and what colors more lovely and rich, and liking simple designs these three heights of bittersweet used here give a pleasing effect seeming to be growing from a piece of tan brown petrified wood, sitting on a wooden base. One dried glad leaf leans a bit toward the oriental figurine to draw it into the picture.

It has been fun preparing this for the Prairie Garden, and while I enjoy this type of relaxation so very much, I hope I have caused a little interest in one or two of the readers. It's fun!

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Grafting and Budding Fruit Trees

by **J. A. MENZIES** *and* **A. GUDZIAK**

Department of Plant Science, University of Manitoba

Grafting is the art of joining together parts of different plants, the stock and the scion, in such a way that they will unite and continue to grow as one plant. The stock or rootstock is that part of the new plant which is below the union and which develops into the root system. The scion is a short piece of 1-year-old wood, usually containing 3 to 4 buds, which is grafted onto the stock and which forms the top of the new plant. In budding, instead of a scion, a single bud with a small amount of adjacent wood and bark is placed on the stock.

Purpose. Grafting and budding are used, principally, for two reasons: (1) To propagate trees in the nursery and (2) to change part or all of an established tree over to one or more new varieties (topworking). Most home gardeners are interested in grafting and budding for the second reason, that is, having in the backyard a fruit tree which carries a number of different varieties. The remainder of this article will therefore be concerned mainly with topworking.

Methods. There are a great many methods of grafting and budding but only four will be described here: bark grafting, whip or tongue grafting, T-budding and chip-budding.

Time. Bark grafting and whip or tongue grafting are done in the spring from the time growth starts until blossoming. T-budding is done from approximately mid-July to mid-August when buds on the current season's growth are well developed and while the bark of the stock is still easily separated from the wood (slipping). Chip-budding is done when the bark is not slipping, such as during the summer when active growth stops due to lack of water or some other cause.

Selecting and Storing Scion Wood. Although grafting is done in the spring after growth has started the scions must be dormant and so they are collected sometime in the fall or winter, preferably in November, and stored at a low temperature until needed. Shoots (scion wood) of last season's growth, about as thick as a lead pencil and 12 inches or more in length are best. The scion wood, when collected, should be labelled properly and placed in moist sawdust or peat moss at a temperature below freezing.

Collecting Budsticks. At the time of budding, vigorous shoots (budsticks) of current season's growth are collected (Fig. 4a). The leaves are removed, leaving a short piece of the leaf stalk as a handle (Fig. 4b). The budsticks are then wrapped in a moist cloth and kept moist until used. The best buds to use are usually those in the middle and toward the base of the shoot (Fig. 4a between the two points marked "y"). Chip-budding is sometimes done in the spring and in this case dormant buds are used and the budsticks are collected and handled in the same manner as scion wood.

Grafting Waxes. In grafting it is essential to protect all open surfaces by covering them with grafting wax. A suitable melted wax can be made from the following: 1 pound of resin, 3 fluid ounces of linseed oil and 5 pounds of paraffin. Melt the resin and linseed oil together and pour into the melted paraffin. Mix well. Pour into a shallow pan lined with oiled paper, to cool. This makes a cake of wax which can be broken up and melted in a heater as needed. Water-soluble asphalt compounds which can be used cold are also available.

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Essentials of Success. Success in grafting and budding depends on the observance of the following points:

1. The bud or scion and stock should be of the same or closely related species. Apples are grafted or budded on apple or crabapple, not on plum. Plums and sandcherry-plum hybrids are grafted or budded on plum.

2. The cambium layers of stock and scion must be in close contact and must be held firmly together until union occurs. Union takes place in the vicinity of the cambium layers and if they are not matched up the graft or bud will fail. The cambium layer is the thin layer of cells between the bark and the wood.

3. All cuts must be made smooth and level so that the cut surfaces of the stock and the scion or bud are in intimate contact.

4. At the time of grafting in the spring the buds on the scion must be dormant.

5. All wounded surfaces must be protected from drying out, during and after the operation.

6. Proper care must be given the trees for some time after grafting and budding. When grafting it may be necessary to re-wax, when budding to cut the raffia or string if they are girdling the stem. In both operations shoots arising from the scion or from the bud may have to be staked or tied to prevent breakage (Fig. 7).

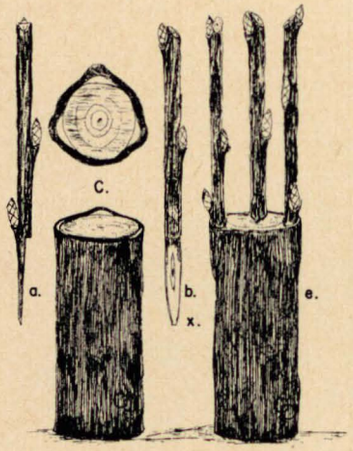

Figure 1.

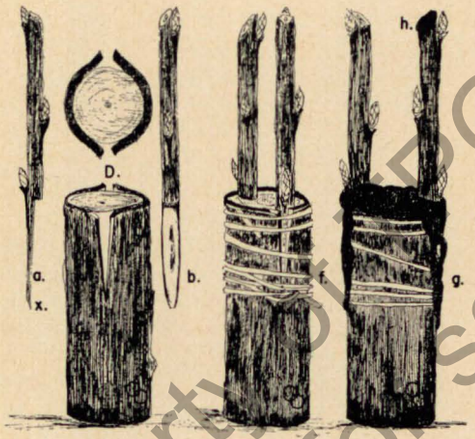

Figure 2.

Bark Grafting (Figs. 1 and 2). Bark grafting is done in the spring when the bark separates readily from the wood. It is simple, easily done and can be performed on branches from 1 inch to 1 foot or more in diameter. The stock is not split as in cleft grafting so there is less danger of decay organisms entering the wood. The scions should be dormant, 4 to 5 inches long and containing three buds. Preparation of the scions is shown in Figs. 1 and 2, a and b. A cut, about 1½ inches long, is made along one side of the scion at the base, opposite the lowest bud. This cut extends one-third to one-half of the way into the scion, leaving a shoulder. This reduces the thickness of the scion and minimizes the separation of the wood and bark of the stock. On the side of the scion opposite the long cut a short cut is made bringing the basal end of the scion to a wedge shape (Figs. 1 and 2, x).

There are two methods of handling the stock. In the first method (Fig. 1, c) no cut is made through the bark. The scions are simply forced down between

the bark and the wood, with the longer cut on the scion facing in, until the shoulder of the scion comes to rest on top of the stub (Fig. 1, e). This method is used where the bark of the stock is quite thick and small scions are used.

In the second method (Fig. 2, d) a vertical cut about 1½ inches long is made through the bark to the wood. The bark is lifted slightly along both sides of the cut and the scion inserted behind the flaps (Fig. 2, f).

The scions are held firmly in place by nailing them into the wood, using flat-headed nails ⅝ to 1 inch long, or by wrapping with string, raffia or electrician's tape (Fig. 2, f). The grafts should be checked periodically to make sure that they are not being girdled. All cut surfaces, including the tips of the scion are waxed (Fig. 2, g). Two or three or more scions can be placed in each stub to facilitate healing, but only one should remain permanently, the others being removed over a period of 2 to 3 years.

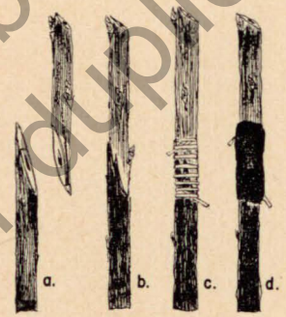

Figure 3.

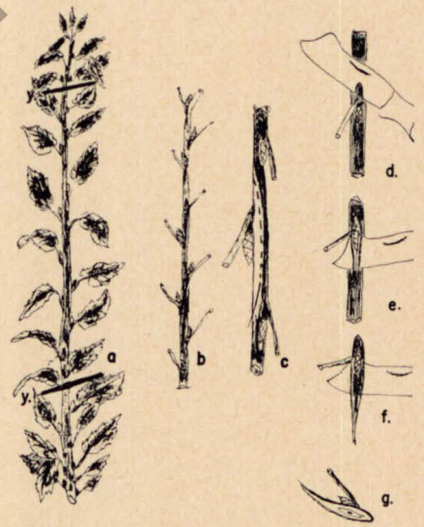

Figure 4.

Whip or Tongue Grafting (Fig. 3). This method is used in grafting relatively small material where the stock and scion are of a similar diameter. The

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scion should contain three buds with the graft made in the smooth internode area below the lowest bud. With a sharp knife sloping cuts, about 1½ inches long, are made at the base of the scion and at the selected place on the stock (Fig. 3, a). These cuts should be made, if possible, with one single stroke of the knife so as to leave very even surfaces which meet over their full length. On each of the cut surfaces, a ½ inch long reverse cut is made, starting about one-third of the way from the tip (Fig. 3, a). Both pieces are fitted together so that the cambium layers match perfectly on at least one side (Fig. 3, b). If the tip of the scion hangs out over the stock, and vice versa, these tips should be removed. The final operation consists of tying the graft with string, raffia or electrician's tape and then waxing (Figs. 3, c and d). The grafts should be checked frequently to make sure they are not being girdled.

T-budding (Fig. 4 and 5). T-budding is used mainly in the propagation of new plants but can also be used in topworking. When used in topworking the buds are inserted in small, vigorously growing branches, from ¼ to 1 inch in diameter, in the upper portion of the tree. T-budding is restricted to actively growing stocks in which the bark readily separates from the wood.

The preparation of the stock is shown in Fig. 5. A vertical cut, about 1 inch long is made and then a horizontal cut is made at the top of the vertical cut (Fig. 5, h). The two flaps of bark are then opened with the knife (Fig. 5, i).

Preparation of the bud is shown in Fig. 4. The budstick is held with the tip pointing toward the operator (Fig. 4, c). A slicing cut is started at a point on the stem ½ inch below the bud, continuing under and about 1 inch above the bud (Fig. 4, d, e and f). The bud should be quite thin, containing only a small amount of wood (Fig. 4, g).

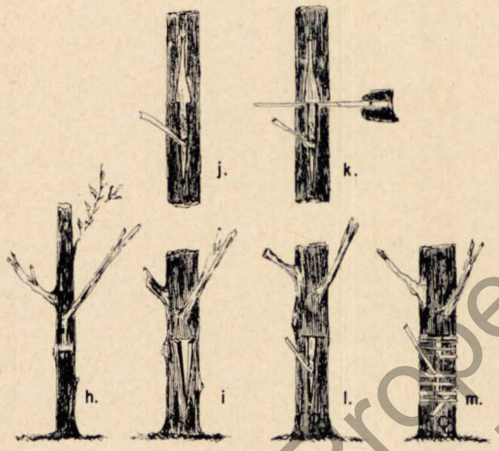

Figure 5.

Figure 6.

The bud is held by the leaf stalk and pushed downward under the two flaps of bark on the stock (Fig. 5, j). The portion of the bud remaining above the horizontal cut is removed with a knife (Fig. 5, k and l). The bud union is then tightly tied with raffia or budding rubber (Fig. 5, m). Budding rubber expands and usually deteriorates and drops off after several weeks. Raffia will not expand or rot off and so buds must be checked about 10 days after budding and raffia cut if it is girdling the branch.

Chip-Budding (Fig. 4). Chip-budding can be done in the spring using dormant buds (Fig. 6, a) or in summer, in place of T-budding, using shoots of current season's growth (Fig. 4, a). A chip of bark is removed from the stock and replaced by another chip of the same size and shape, containing a bud, from the budstick. The budstick is held with the basal end pointing toward the operator (Fig. 6, b). The first cut is made just below the bud, cutting down into the wood at an angle of about 45 degrees. A slicing cut is then started about ½ inch above the bud and continuing under the bud until it intersects the first cut (Fig. 6, c, d and e). The same operation is then carried out on the stock so that there is a bud chip and a spot on the stock to take the bud (Fig. 6, b).

Figure 7.

It is important that the bud piece be so placed that the cambium layers of the stock and the bud coincide on at least one side. The bud is then carefully tied with raffia, string or budding rubber (Fig. 6, f). There are no protective flaps of bark as in T-budding and it is a good idea to apply grafting wax to protect the bud from drying out.

After-Care in Budding (Fig. 7). When budding is done in the summer the bud remains dormant until the following spring. In the spring, when the bud breaks into growth, the branch, on which the bud has been placed, is cut back, leaving a 6 to 8 inch stub (Fig. 7, a). The shoot from the bud is tied to this stub (Fig. 7, b). This will protect the bud from being blown or knocked out since the union is not yet firm and secure. In the second spring, by which time the union is quite strong, the stub can be removed back to the bud (Fig. 7, c).

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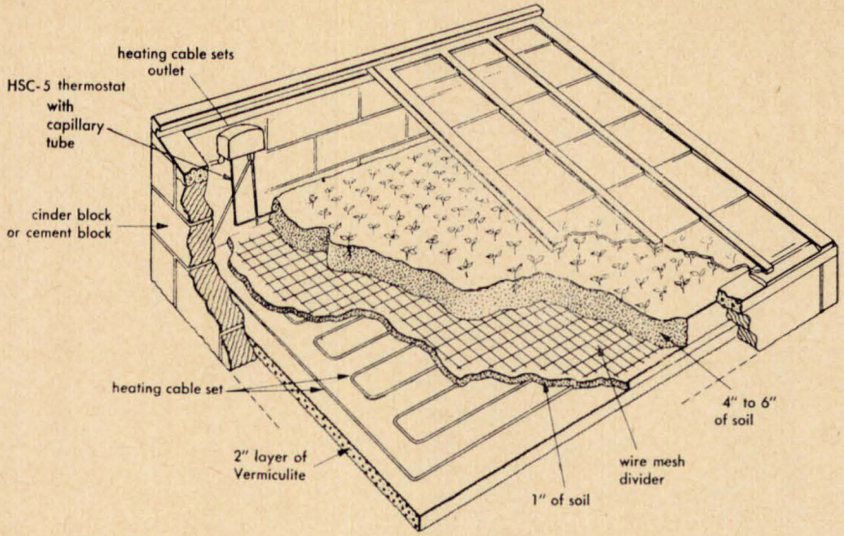


Electrical Heating for Frames and Hotbeds

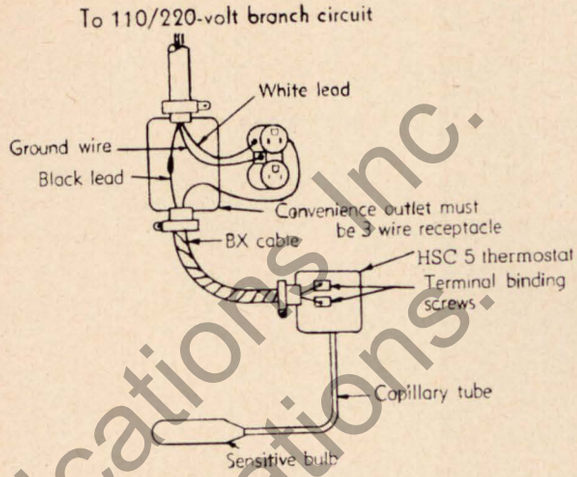
by GUNTER A. SCHOCH, N.L.I.
A well known Winnipeg landscape designer

Commercial growers and home gardeners alike are interested in economical heating methods for starting tender plants. In the days of the horse and buggy, a hotbed made from stable manure was a simple and satisfactory solution. As "Old Dobbin" has practically disappeared, especially in urban areas, we have to look elsewhere for a source of heat for frames and hotbeds.

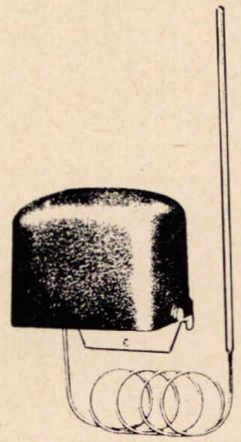
Electricity, generally a rather expensive heating medium for greenhouses and buildings, has proven to be the ideal heat source for this purpose. Since the heating period in spring and fall is comparatively short, a low cost, thermostatically controlled installation is satisfactory. This is especially true for the home owner. It can be accomplished by installation of heating cable, which has been used successfully for many years.

Two types of installation are available. If seed or seedlings are to be planted directly into the frame which require an even temperature for several weeks, then an underground installation of heating cable is advisable. However, if the frame is used to harden off plants in pots or flats, after they have been moved out of the more valuable greenhouse space, the heating cable may be installed inside the frame along the walls, above ground level. In this case the heating arrangement's only purpose is to keep the temperature in the frame above that of freezing.

The heating cable is available in sets consisting of a 60-foot loop (for 110-115 volts operation) and a 120-foot loop (for 220-230 volts operation). The two ends of the cable are assembled in a grounding cap having a "U" shaped grounding blade. The plug is filled with a special compound to keep moisture from entering the cable and preventing possible short circuits. The retail price for a 60-foot set is approximately $12.00. A thermostat to control the installation costs in the region of $23.00. The technical data of the lead sheathed cable are as follows:



Wire and Cable Section.



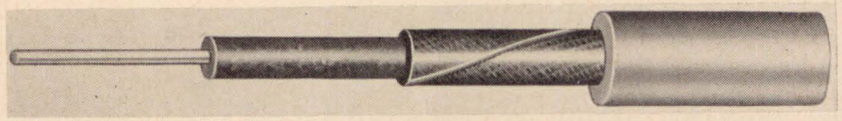
Thermostat.

Overall diameter:	0.24 inches
Maximum bending radius:	1.0 inch
Maximum sheath temperature:	165°F.
Shipping weight for 1,000 feet:	180 lbs.

Ratings:
3.5 amperes, 7 watt per linear foot
60-foot length: 110-115 volts, 420 watt
120-foot length: 220-230 volts, 840 watt.

The accompanying illustrations show the available thermostat and the wiring diagram. The HSC 5 thermostat will control up to five 60-foot or 120-foot sets of heating cable.

The vital question of how much heating capacity will be needed for a



Section of Heating Cable (from left to right): No. 19 AWG nickel-chromium alloy resistance wire, felted asbestos, varnished cambric, 3/64 lead sheath.

certain size frame depends on several other factors, i.e. how low outside temperatures are expected to drop, how well insulated and sheltered the structure is and what minimum temperature must be maintained for certain types of plants to be grown. As a general and obvious rule, it is better to have too much heating capacity than too little. The cost for additional cable sets is slight and electricity is only used when required. For average conditions, however, about 400 watts will be ample for a 2-sash or 6 by 6 foot frame, using underground installation. If above-ground installation is employed, four cables along each wall will supply sufficient heat to prevent plants from freezing at an outside

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temperature as low as zero. The cable should be fastened to the frame walls using porcelain insulators, allowing a 3-inch clearance between wall and cable.

For underground installation the arrangement illustrated is to be recommended. The heating cable set should be placed on a 2-inch layer of vermiculite, in loops, spaced about 7 inches between runs of cable. About 1 inch of soil is then smoothed over the cable set, being careful not to disturb the arrangement of the loops, and a protecting divider of heavy galvanized wire mesh is laid over the entire surface. Four to six inches of good soil should then be spread evenly on top of the divider. The thermostat can be buried at any convenient place in this soil. For the growing of annuals, the soil temperature should be kept between 50°-60°F.

In the prairie climate, the installation of heating cable enables the gardener or home owner to make use of their cold frames usually from early April to end of October.

Acknowledgement: Specific information relating to heating cable published by kind permission of The Canadian General Electric Company Ltd.

My Experience with Trumpet Lilies

by **WALTER SCHOWALTER, Rumsey, Alberta**

Any gardener who wishes to grow trumpet lilies should start out by trying the new Aurelian hybrids. These are crosses of Lilium henryi with the older trumpets, and as one might expect many interesting variations have been produced. Most will grow from 2 to 4 feet tall, though I have read of specimens passing the six foot mark. The typical bloom is a trumpet 4 to 5 inches long, and a little broader than a regal. Of course, a few may be a little too open to be classified as trumpets, but on the other hand one I have grown produced narrower trumpets than a regal. Any I have seen are shades of yellow, though they are said to come also in white, apricot, and pink. All are sweetly and strongly scented—overpoweringly so, according to my wife. I would like to see more blooms per stem, but as well established plants produce many stems this hardly detracts from its effectiveness.

As there seems to be great variety in hardiness as well, it would be best to start with at least three bulbs. The three I planted in 1958 all came through their first winter in good shape. For protection I used three inches of leaves held in place with a few coarse flower stalks. The second winter my narrowest trumpet came through with only one weak stem. It failed to put in an appearance at all during the past season. The other two have done better every year, and I have been able to increase my stock.

Several years ago I bought three regal lily bulbs, with the idea of raising two crops of flowers, whether they were hardy or not. Just before freeze-up I mulched one for an experiment, and dug the others for pot bulbs. These bloomed in the spring, but I found that regals grow too tall and are too strongly scented to make good house plants. My lone outdoor bulb surprised me by coming through in excellent shape, and blooming beautifully. However, during the past season it sent up one lone shoot carrying one weak flower. I expect that will be the last I shall see of it.

My experience with the centifolium lily has been limited to one lone bulb which did not survive the first winter. As even regals do better than that, I suspect this was not a good test, and I intend to try again.

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by R. H. PATMORE
Patmore Nurseries Limited
Brandon, Man.

On the following pages are listed Evergreens recommended "for prairie use." Pertinent information such as general shape, hardiness, expected spread and height and general comments are given on pages 105 and 106.

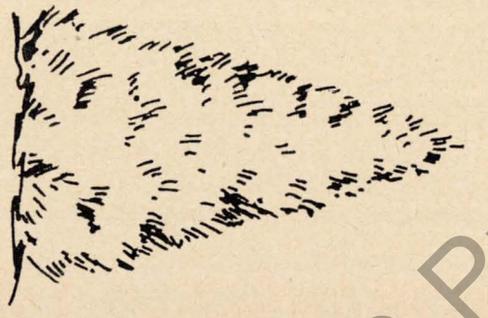
The illustrations on this page explain the shapes or appearance of the various evergreens.

Oval.

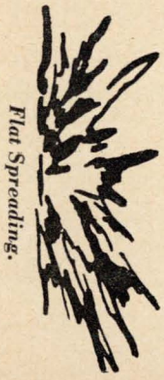
Columnar.

Globe.

Conical.



Pyramidal.



Flat Spreading.

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EVERGREENS FOR THE PRAIRIES

Common Name Botanical Name	Texture	Shape	Growth Rate	Adaptation	Max. Spread in Feet	Max. Height in Feet	Hardiness	Comments
Balsam Fir *Abies Balsamea*	Fine	Conical	Slow	Full Sun	12 - 15	40 - 50	All Zones	Will thrive in all sections of the prairies where average moisture conditions prevail or where water can be applied. The native strain resists sunscald. Imported strains of Wisconsin or Eastern origin will sunscald. Needles are soft and flat, and fragrant. More resistant to mite than spruce.
Douglas Fir *Pseudotsuga taxifolia*	Fine	Long Conical	Moderate	Full Sun	15 - 20	50 - 70	All Zones	Only strains from eastern range of northern Rockies are suitable. Other strains suffer winter injury. Not a good ornamental and not suitable for small lots.
White Spruce *Picea glauca*	Fine	Conical	Slow	Full Sun	12 - 15	40 - 50	All Zones	The native spruce of Southern Prairie wooded areas. Selected specimens make good ornamentals, but most trees grown from seed are not suitable for this purpose.
Varieties								
Dwarf Alberta Spruce			Very Slow		3 - 4	8 - 10	Only in Favored Area	The Dwarf Alberta Spruce although a native of Alberta is very susceptible to sunscald in most prairie areas. It is very compact, finely twigged and attractive.
Black Hill Spruce *Picea glauca densata*	Fine	Conical	Slow	Full Sun	12 - 15	40 - 50	All Zones	This is a geographic form of the white spruce, but produces a larger percentage of dense, attractively formed trees. Particularly desirable forms are grafted.
Black Spruce *Picea mariana*	Fine	Conical	Slow	Full Sun	12 - 15	40 - 50	All Zones	This is the swamp spruce of the northern woods. Needles are short. Very attractive forms such as Doumet are grafted.
Variety								
Doumet		Columnar	Very Slow		8 - 10	25 - 30		
Norway Spruce *Picea abies*	Fine	Conical	Slow	Full Sun	15 - 20	50 - 70	Limited Adaptability	This is a European species, which grows well in Eastern Canada, but of limited usefulness on the prairies. Nest and Ohlendorff spruce have been reported as standing up under prairie conditions, although in some areas they have sunscalded. Sharpleaf stands up well in central Manitoba, and is a formal, attractive dwarf spruce.
Varieties (Dwarf)								
Nest Spruce		Flat	Very Slow		4 - 6	2 - 4		
Ohlendorff		Flat Oval	Very Slow		4 - 6	2 - 4		
Sharpleaf (mucronata)		Broad Conical	Very Slow		3 - 4	4 - 5		

EVERGREENS FOR THE PRAIRIES

Common Name Botanical Name	Texture	Shape	Growth Rate	Adaptation	Max. Spread in Feet	Max. Height in Feet	Hardiness	Comments
Rocky Mountain Juniper *Juniperus scopulorum* Varieties	Fine	Conical	Slow	Full Sun	5 - 10	15 - 25	All Zones	This species is native to the badlands of Montana, and surrounding areas. Very drought resistant, but develops better form with sufficient moisture. May scald after first planting, but seems resistant as roots penetrate subsoil. Grafted specimens make better ornamentals, and are improved by annual shearing. Mite may give a rusty color in some seasons but is controlled by Tedion or Kelthane spray. This species is the best adapted to the prairies of all junipers, especially Grizzly Bear.
Grizzly Bear		Columnar	Slow	Full Sun or Shade	4 - 8	15 - 20	All Zones	
Welch Silver Spire								
Silver Globe		Flattened Globe	Very Slow		4 - 6	5 - 6	All Zones	
Pfitzer Juniper *Juniperus chinensis* Variety Golden Pfitzer	Fine	Low Spreading	Slow	Sun or Shade	6 - 15	3 - 6	Doubtful	This species does not stand up well under prairie conditions. Golden Pfitzer has done better when grown as a low ground cover. It is green with golden tips. Mountbatten is a variety of this species.
Savin Juniper *Juniperus sabina* Varieties	Fine	Low Spreading	Slow	Sun or Shade	6 - 8	3 - 5	All Zones	Useful for base planting or accent points. Sabina, Arcadia and Skandia are low growing, particularly the latter two varieties, and they can be used as ground covers. For greater height they can be staked upright. Hoar Frost juniper has sparkling white scales among the green. Column is an upright columnar form. Both are scarce and still under trial.
Arcadia Skandia Hoar Frost								
Column		Columnar						
Creeping Juniper *Juniperus horizontalis*	Fine	Flat	Slow	Sun or Shade	4 - 5	6 inches	All Zones	One of the best ground covers. Blue selections are propagated by cuttings.
Eastern Red Cedar *Juniperus virginiana*	Fine	Columnar	Slow	Full Sun	5 - 8	15 - 25	Doubtful	This species includes several varieties such as Hill, Dundee, Canaerti, Glauca, Pyramidalis, all of doubtful hardiness on the prairies.
American Arbor Vitae (Cedar) *Thuja occidentalis* Varieties	Fine to Medium	Conical	Slow	Sun or Shade	5 - 10	20 - 50	All Zones	This species is temperamental and its behaviour not always predictable. It is often found thriving in unlikely situations and dying out in favored locations. Care is the determining factor. It is shallow rooted and must have adequate moisture, which means consistently heavy watering at ten day or two week intervals in dry summer weather, but should not be watered after mid-August except for a good watering in late October. Shearing can vary the form of all varieties. One of the most attractive ornamentals when properly cared for, Pyramidal is the most compact and columnar of them all. The Prairie developed strain is most likely to give best results. Imported strains are of doubtful value.
Pyramidal		Columnar						
Dark Green		Conical						
Lake St. John		Conical						
Hovey		Globe				15 - 20		
Ware		Broad Cone				20 - 25		
Globe		Dwarf Globe				4 - 6		

EVERGREENS FOR THE PRAIRIES

Common Name Botanical Name	Texture	Shape	Growth Rate	Adaptation	Max. Spread in Feet	Max. Height in Feet	Hardiness	Comments
Bristlecone Pine *Pinus aristata*	Medium	Conical	Very Slow	Full Sun	10 - 15	25 - 35	Range uncertain	Native to the high Sierra Mountain ranges of California where temperatures range from 50 degrees below zero to well above 100 degrees. This species includes what are probably the oldest living things, specimens showing an age of 2,500 years. Under cultivation makes a good dwarf ornamental. Small trees have so far stood up under prairie conditions.
Dwarf Mountain Pine *Pinus mugo mughus*	Medium	Rounded Globe	Very Slow	Full Sun or Shade	6 - 10	6 - 10	All Zones	May show occasional sunscald in unfavorable winters, but usually recovers. Grafted selections make better shaped trees than many seedlings, some of which may grow loose and straggly.
Pinus mugo pumilio Variety Slavin	Medium	Flat Globe	Extremely Slow	Full Sun or Shade	4 - 6	3 - 5	All Zones	A dwarf compact type, especially the grafted Slavin variety. Both mugo mughus and mugo pumilio make much better ornamentals if sheared annually or every second year to a uniform formal globe. This must be done *only* in early June and sheared *only* through the new soft growth. Cutting in the older wood may damage the tree.
Jack Pine *Pinus Banksiana*	Coarse	Conical	Moderate	Full Sun	20 - 25	40 - 50	All Zones	A coarse growing tree of no ornamental value. This is native to Western Canadian woods. Has some value as timber only.
Lodgepole Pine *Pinus contorta latifolia*	Medium	Conical	Moderate	Full Sun	20 - 25	50 - 60	All Zones	Foliage has a fresh green color. Selected well shaped specimens are useful as ornamentals.
Red Pine (Norway Pine) *Pinus resinosa*	Coarse	Conical	Moderately Fast	Full Sun	20 - 25	60 - 80	Range uncertain	Very long needles of a dull green color. Growth tends to be open and picturesque rather than ornamental.

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Common Name Botanical Name	Texture	Shape	Growth Rate	Adaptation	Max. Spread in Feet	Max. Height in Feet	Hardiness	Comments
Colorado Spruce *Picea pungens* Varieties Baker Koster Morden Endtzi Hoopsi Golden	Fine	Conical	Slow	Full Sun	12 - 15	50 - 70	All Zones	This species has longer needles than the other spruces. It occasionally produces intensely blue specimens which are grafted to perpetuate the color. These include the named varieties. The blue color is given the needles by a blue powder, which seems to give these selected blue specimens resistance to pine leaf scale. The Dwarf Montgomery spruce, an intensely blue variety, can be propagated from cuttings.
Montgomery (dwarf)		Flat Oval	Very Slow		3 - 4	4 - 5		
Scotch Pine *Pinus sylvestris* Varieties Plumosa	Medium	Broad Conical	Moderate	Full Sun	15 - 20	50 - 70	All Zones	Many strains of Scotch Pine grown on the prairies are subject to winter sunscald, including those of Swedish origin and from Eastern Europe. Strains grown from seed of Finnish origin have proved resistant to this.
Waterer		Oval	Very Slow		5 - 6	5 - 6	Very Limited Range	Trees grown from seed are often open and of poor shape. Grafted selections usually avoid this drawback. Waterer and particularly Pyrmidal are subject to sunscald in most prairie areas.
Pyramidal		Columnar			2 - 3	15 - 25		
White Pine *Pinus strobus*	Fine	Conical	Moderate	Full Sun	15 - 20	50 - 70	Limited Range	Only strains originating in the forested areas north and west of the Lakehead are hardy on the Prairies. A very attractive evergreen with long soft needles.
Swiss Stone Pine *Pinus cembra*	Medium	Conical	Slow	Full Sun	12 - 15	40 - 50	All Zones	Very attractive with long needles showing in some cases a bluish shading. Slow growth with pronounced conical form gives it a compact appearance. Strains which are not the true Swiss Stone Pine have been grown, and they are not as attractive as the authentic species.
Limber Pine *Pinus flexilis*	Medium	Conical	Slow	Full Sun	20	40 - 50	All Zones	A five needle pine not as ornamental as Swiss Stone Pine nor the White Pine.
Rocky Mountain Ponderosa Pine *Pinus Pondorosa Scopulorum*	Coarse	Rounded Conical	Moderately Fast	Full Sun	20 - 25	50 - 70	Range uncertain	The Western Yellow or Bull Pine. Only Scopulorum resists sunscald on Canadian prairies and its range may be limited. Very long needles of grayish green color.

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General Information on Evergreens

Maximum height and spread given are in many cases smaller than would be expected of the species in their natural habitat. It has been found that many will not reach the same size on the prairies that they would under more favored conditions. Under cultivated conditions they are not usually permitted to exceed desirable proportions. For example, Pfitzer's juniper has been known to spread out as much as thirty feet but no one would ever let it reach this size in a home planting.

Requirements in ornamentals are considerably different to what would be required in the same species as forest trees. A compact formal shape is usually desired in ornamentals, whereas tall trees with few branches is the ideal in a forest tree. Since any species grown from seed will show infinite variation in form, the best ornamentals are usually those that have been selected for their desirable characteristics and propagated vegetatively, in some cases from cuttings, as with Thuja, some junipers and certain spruce, but mostly by grafting as with many junipers such as Grizzly Bear, spruce, including the blue spruce, and pines. Such grafted specimens are given variety names such as Morden Blue Spruce, Slavin Pine, etc., and is the only means of avoiding the wide, inferior variation in form and color found in such trees grown from seed.

Only flourishing trees give satisfaction as ornamentals. This means adequate moisture, which usually means watering, and occasional fertilizing. If evergreens do not get sufficient water, they attempt to adjust moisture loss through their foliage by shedding their needles or limiting growth. In either case a thin poor looking tree results. Such unthrifty trees are susceptible to disease and insect infestation. Reliance on the lawn sprinkler will never give trees sufficient moisture. Their roots are down where such sprinkling never reaches them. The hose should be run around their base for five or ten minutes to get adequate moisture down to their roots. Watering should not, of course, be overdone. If soil or subsoil is heavy and rainfall abundant overwatering may be harmful. In prolonged dry spells or in periods of light rainfall it is usually essential.

Pruning or shearing is also desirable to produce the best shaped trees. In some cases such as Juniper Scopulorum and Dwarf Mountain Pine this is essential. In others it will always improve the appearance of the tree. If in doubt how to go about this consult any evergreen authority, as improper pruning can damage an evergreen. Pine in particular require care. They can be pruned only in the succulent new growth and only in early June. If pruned in old wood or at any other time, injury will result. The Dwarf Mountain Pine should be sheared through the new growth early in June every year or every second year, forming a neat rounded compact globe. If not done it may become open and straggly, especially the non-grafted varieties. Spruce must be pruned only in the new growth, leaving one or more fresh buds on the remaining portion. If cut in older wood injury will result.

Insects most frequently met with in evergreens are the mite which attacks all species and pine leaf scale which attacks spruce and pine (except the intensely blue spruce, which appear resistant). Pine weevil has been noticeable in some prairie areas attacking spruce and some pine.

Mite shows as a dull or rusty discoloration of the foliage and webbing will show as infestation develops. The mite itself is almost too small to be seen with the naked eye. Infestation is worse during dry periods and may disappear in wet seasons. The discolored needles will eventually drop, but new growth

can be protected by spraying in late May and once or twice again during the summer. Tedion is most effective and Kelthane is also good. Unthrifty trees show greater damage than healthy trees. Pine leaf scale shows as small white spots on the needles. Malathion spray in early June and again in early August is used to control it. The June spray must be timed right and Provincial Horticultural authorities should be consulted for the best spray date. Pine weevil shows as a wilting and dying back of the top shoots of trees in mid and late summer. Only the top shoots are affected and it affects only smaller trees up to about 15 feet in height. The tree is never killed by it, but it can spoil the shape. The damaged shoots should be cut off into healthy wood and a new leader staked up to take its place. This should be sprayed with a 25 per cent emulsion (horticultural) of DDT late in April or early May every spring, covering the top portion of the tree only, as they will not affect anything older than 2-or-3-year-old growth at the top.

Close wrapping of evergreens with burlap, paper or anything similar in winter is not desirable, as such wrapping excludes air and causes suffocation and winter damage. If it is felt that protection from the wind is desirable, a screen not touching the tree with open top would be satisfactory, as this permits circulation of air. Cedar and Juniper in particular will be killed by close wrapping.

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1962 Certificate of Merit Awards

MRS. OLIVE J. RADKE
Ethelton, Sask.

MR. R. S. HALL
Earl Grey, Sask.

by D. R. ROBINSON, University of Saskatchewan, Saskatoon

In 1957 the Certificate of Merit was made available by the Saskatchewan Horticultural Societies' Association. This certificate is awarded to amateur or non-professional gardeners who have made a distinct contribution to horticulture at the community or provincial level. To date eight awards have been made,—two of them going to women. In 1961 Mrs. Olive J. Radke of Ethelton and Mr. R. S. Hall of Earl Grey received this certificate. A brief review of their horticultural activities is given below.

Mrs. Radke was born in Toronto, Ont., in 1899 and is of Irish ancestry. She came to Saskatchewan with her parents in 1908 and spent her childhood on a farm near Indian Head. In a letter she writes as follows, "as far back as I can remember I have been very fond of flowers and many happy hours have been spent at the ornamental grounds of the Indian Head Experimental Farm." In 1929 a farm was purchased near Ethelton and ornamental plantings were started in 1930. Over the years this farmstead has been developed into one of the beauty spots of the Carrot River Valley and today her daughter-in-law is continuing the work which Mrs. Radke started. On more than one occasion these grounds have taken first prize in the rural competition sponsored by the Melfort Horticultural Society. The ornamental shrubs and flower borders are surrounded by shelterbelts made up of Colorado Spruce, Manchurian Elm, maple, ash, poplar and caragana. Adjacent to the house are attractive plantings of Koster Blue Spruce, Morden Blue Spruce, Cut-leaved Weeping Birch, Paper Birch and other trees. A variety of shrubs may be seen, including the following: Golden Elder, Mountain Ash, Flowering Plum, Ural False Spirea, Bridal Wreath and Three-lobed Spirea, Rosy Bloom Crabapples, lilacs and honeysuckles.

The annual and perennial borders contain a wide selection of flowers, and a well-kept lawn provides an attractive setting for the flowers. Here one may see a fine collection of peonies and 12 or more varieties of hardy lilies. Columbines, bleeding-heart, delphinium, pyrethrum, monkshood, balloonflower, lythrum, pansies and other perennials provide an array of color throughout the summer. Petunias, salvia, snapdragons, marigolds, zinnias and other annuals add to the display. The tuberous begonias and dahlias should also be mentioned. A small fruit garden has been established. Chief raspberries, and Dunlop, Red Rich and Porter's Pride strawberries produce abundantly under irrigation. Mrs. Radke was a member of the Melfort Horticultural Society for several years and was secretary-treasurer of the local school board at Ethelton for 10 years or more. Mrs. Radke now lives in Melfort.

Mr. Hall was born in England in 1890. Emigrating to Canada in 1903 he moved to Saskatchewan one year later. He developed an interest in horticulture at an early age and recalls having a small garden in his boyhood days in the old land. The greater part of his life has been spent on the farm near Earl Grey and the first plantings of shelterbelt trees were established in 1916. Some small fruits and tree fruits were set out in 1919. One apple tree, a Heyer No. 12 planted about 40 years ago, is still fruiting. This must be something of a record for that variety. What was originally intended as a small

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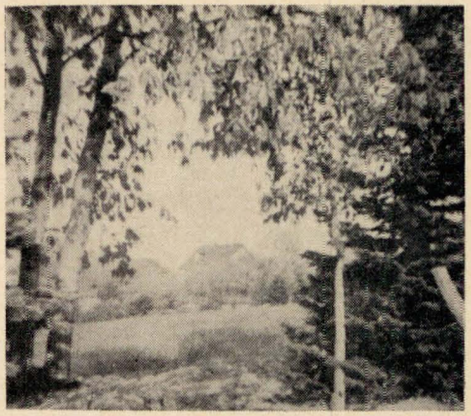
home fruit garden has expanded year by year until now Mr. Hall has an orchard of approximately 3 acres. Relatively little was known about fruit growing in Saskatchewan in the early '20's and those who experimented in this field can rightly be called "pioneers." Quoting a letter from Mr. Hall, "some fruit trees have been added each year since about 1930,—we wanted to show just what can be grown in Saskatchewan. In recent years we have had an abundance of standard apples, crabapples, plums, cherries and strawberries." In this orchard apples are represented by the following varieties: Haralson, Trail, Heyer No. 12, Reward, Renown, Rescue, Breakey Erickson, Rosilda, Mount, and also several seedlings under number. Crabapples include, Anaros, Saska, Osman, Kerr, Printosh, Dolgo, and some good seedlings grown by Mr. Hall. Several varieties of plums and plum cherry hybrids are grown as follows: Pembina, Mina, Mansan, Skinner's Favorite, Wine Red, Opata and Sapa. In addition to the fruits above-mentioned apricots, raspberries, strawberries, currants and gooseberries are included in the orchard.



Mr. Hall's attractive farmstead at Earl Grey, originally open prairie.

Mr. Hall's efforts have not been limited to fruit growing. The home grounds have been made attractive with plantings of trees, shrubs and perennials. In particular Colorado Spruce, White Spruce and Scots Pine have done well on a rather dry gravelly soil. Other plants to be found here include Manitoba Maple, Sugar Maple, Cut-leaved Birch, Paper Birch, Mountain Ash, caragana, elm, lilac, honeysuckle, roses, lilies, iris and peonies. Mr. Hall has been a registered seed grower for 30 years. For a number of years he exhibited garden produce, grains and sheaves at the Regina exhibition. He has also been an active church worker for many years and has served his community as school trustee and in various other activities.

Mrs. Radke and Mr. Hall have clearly demonstrated over a long period of years what can be grown in the fields of ornamentals and hardy fruits. Without doubt they are worthy recipients of the Certificate of Merit.

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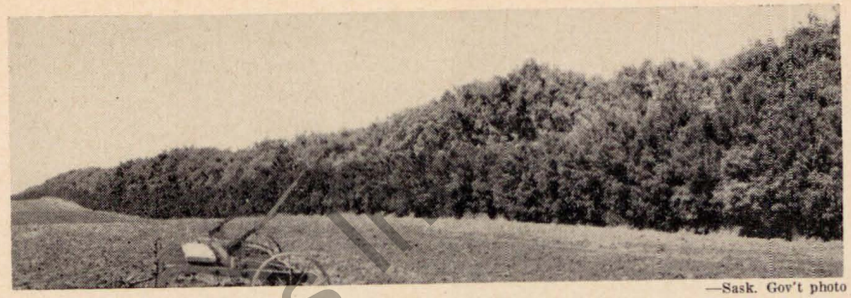

—Sask. Gov't photo

A field shelterbelt of caragana and maple in the Conquest area.

Of Trees and Wind

by **S. SHEARD**

Horticultural Specialist, Saskatchewan Department of Agriculture

Saskatchewan, long famous for the quality of its wheat and the quantity of its grasshoppers, can now lay claim to distinction in yet another field, the planting of trees. Prairie wheat fields, the birthplace of violent dust storms, are being criss-crossed with field shelterbelts which reduce wind velocity and help to prevent soil drifting. Roadside hedges are being established in all parts of the province to lessen the problem of snow blocked roads and thereby facilitate winter travel. And more and more farmsteads are being protected by shelterbelts to add to the comforts of farm living. Since the turn of the century, Saskatchewan farmers have planted in excess of 175,000,000 trees, and are presently adding to this total at a rate of about 5,000,000 trees per year.

The fundamental purpose of tree planting is to give protection from wind. Protection to fields and crops, protection to country roads, and protection to people, buildings, livestock, gardens and ornamental plants. Just as important, though, is the fact that trees accumulate snow for extra spring moisture, provide beauty to the countryside, and are a source of food and shelter for birds.

Field and roadside shelterbelts, as we know them today, had their beginning during the drought and dust of the mid-nineteen-thirties, when the P.F.R.A., in co-operation with farmers and the Forest Nursery Stations at Indian Head and Sutherland, established trial plantings at Conquest and Aneroid, Saskatchewan, Lyleton, Manitoba and Porter Lake in Alberta. The purpose of these plantings was to determine, if possible, the economic and practical value of field and roadside hedges. So successful were these early plantings that today large scale field and roadside hedge plantings are being carried out in each of the three prairie provinces. Free trees are provided by the Federal Forest Nursery Stations and the program has both the blessing and financial support of the three Provincial Departments of Agriculture. Saskatchewan farmers alone have planted over 3,000 miles of field and roadside hedges in the last 10 years and if the present trend continues they will add 1,000 miles a year to this total for the next several years.

It is important to note here that the tree planting program has virtually sold *itself* to western farmers. It is a program which has received a minimum of publicity and those who have worked closely with it have wisely refrained from making fantastic claims about the benefits which might occur. Nevertheless, farmers have been quick to realize the value of shelterbelts to reduce soil drifting and lessen the problem of snow blocked roads. They have accepted tree planting as just another good farming practice, as one additional insurance measure against the hazards that annually make farming a risky business.

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—Sask. Gov't photo

Roadside hedges help keep this municipal road clear of snow late in February.

Early in 1950 the Saskatchewan Department of Agriculture noted the increasing importance of trees on the farm, and included tree planting under its Earned Assistance Policy. Since that time one hundred and two Rural Municipalities and thirteen tree planting co-operatives have taken advantage of the financial assistance available under this policy to promote tree planting programs in their areas. Up to the present time the Department has paid out approximately $100,000 to the R.M.'s and co-operatives participating in the program, and these groups have in turn distributed the money to farmers on a mileage basis to help cover the costs of planting and maintaining the trees. There are now eighty-four tree planting machines in the province owned by the municipalities and tree planting co-ops and these, too, have been partly financed under the Earned Assistance Policy.

Tree planting is thus a truly co-operative effort, with the farmers, municipalities, federal and provincial Departments of Agriculture, all participating in a program destined to change the face of the prairie west, and provide western farmers with at least a partial victory over one of their worst enemies, the wind.

Lawn Hints

by **G. S. REYCRAFT, Winnipeg, Manitoba**

1. Your Lawn:

(a) Feed your lawn early with a complete plant food. It will go to work immediately, revitalizing your old grass and allowing it to re-establish itself.

(b) When your lawn has dried out, rake it, but not hard at present.

(c) By early May you can detect the open spots on your lawn. Dig them up lightly, make a good seedbed and plant fresh seed. Cover lightly, tramp down, and keep moist until germination.

(d) Water deeply—make your roots go down. A light sprinkling can actually be harmful.

(e) Do not cut your grass too short. Set your mower 1¼" to 1½" high—while in warm weather set it up to 2".

2. To Hasten Germination of Your Grass Seed:

Grass seeds such as Kentucky Blue Grass which usually takes up to 3 weeks to germinate can be speeded up to sprout within a week. Simply put the seeds in a muslin bag and soak for 4 hours or overnight (never longer). Then allow water from the faucet to run over the bag until it runs clear—with no brown color. This brown color apparently comes from a growth retardant which when removed allows the seeds to germinate much faster.

Dry seeds by spreading them on paper or cardboard in a place out of the wind. Never hasten drying by putting seeds in an oven. Sow the seeds as soon as they are reasonably dry. Seeds may even be planted when still damp if they are thoroughly mixed with dry sand. Soaked seeds should never be applied with the plant food.

Controlling Rabbit Damage

by **D. STELFON**

Officer-in-Charge, Crop Clinic, Alberta Department of Agriculture, Edmonton

Everyone who has grown trees or shrubs on the Prairies for a number of years is familiar with the damage caused by either the Varying Hare (Snowshoe Rabbit), the Prairie Hare (Whitetail Jack Rabbit) or, to a lesser degree, the Cottontail Rabbit. Fewer people are familiar with the differences between these species and their habits. The Cottontail is a true rabbit (its young are born blind and hairless, and its color does not change in winter). Their numbers are not numerous, and their distribution is spotty being confined mainly to river brakes in the south-central region. The Whitetail Jack Rabbit is widely distributed over the southern Canadian prairies. Their wide-ranging habits often brings them in contact with valuable tree plantings. Damage may, and often does, occur. It is the Varying Hare or Snowshoe rabbit which becomes so noticeable, with a great deal of regularity, every 8-10 years. Records of early fur traders have established peak rabbit population years are 1913-14, 1925-26, 1934-35, 1942-43, 1951-52, 1961-62. Their numbers reach unbelievable proportions and large scale damage is inevitable over huge acreages of bush and timber land. Damage is not inevitable in the orchard, the farmstead and the shelterbelt, because there are practical means to counteract it.

Individual small trees can be wrapped in burlap to a height beyond which the rabbits can reach even when snow drifting occurs. Fencing using small-mesh chicken wire will keep rabbits out of small areas, provided that the wire is trenched at least 6 inches below ground and extends well above anticipated snow drifting levels. Newer long lasting repellents offer, perhaps, the best answer for protection of the orchard or windbreak. Most repellents can be sprayed or painted on the tree trunk during the dormant period. Evergreens can be completely sprayed without injury. Substances containing *oils, greases* or *tars* are toxic to plants and should *never be used.*

When supplies of commercial repellent are not readily available, several effective home remedies can be quickly prepared. One is a mixture of 1 part nicotine sulphate (Blackleaf 40) by volume to 10 parts water emulsifiable black asphalt to which 1 part household detergent is added. The asphalt acts as a carrier-sticker. The nicotine sulphate is the repellent and the detergent prevents the acid repellent from breaking down the emulsion of the carrier. Arasan (Thiram), a fungicide, is also an excellent taste repellent and, when added to the asphalt requires no stabilizer such as detergent. These mixtures can be readily painted on trees, where small numbers are to be treated. For numerous trees, or where considerable low branching occurs, spraying is perhaps the fastest and most effective though not the least wasteful method of application. To do this the mixture should be thinned to a suitable consistency with water. It is advisable to strain the mixture before it enters the sprayer, otherwise clogging of the nozzle will occur. One quart of spray mix will usually treat 15-20 young fruit trees. A thorough flushing with warm water will quickly clean the sprayer following use. Where cleaning is not done immediately after spraying, it may be necessary to apply a solvent such as varsol, kerosene, etc. Water emulsifiable asphalt can usually be obtained from the building and construction trade in 1 and 5 gallon cans. Small containers, can be found in most seed stores, labelled as dressings for tree wounds. One

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disadvantage of the asphalt mix is the fact that it is very subject to freezing before the surface layer dries. For this reason it must be applied early in the fall or later when temperatures are well above freezing. Once applied, no amount of cold weather will alter its effect which may last up to 12 months. Some recent work indicates that, perhaps, a more satisfactory mix could be obtained by substituting for asphalt one of the plastic sprays used in counteracting transpiration lose. This would have the same long-lasting properties without the objectional color, as well as having the advantage of application regardless of temperature. Practically all long-lasting preparations are taste repellents and, therefore, cannot be expected to protect parts of the tree not coated.

By the time this issue of "The Prairie Garden" is circularized barking damage by rabbits, in most areas, will be negligible. Damage by the Snowshoe rabbit probably will not be general again until 1969 or 1970. However, small pockets in scattered locations, may cause trouble. Jack Rabbit and Cottontail populations do not vary as greatly or with such regularity as do the Snowshoes. In most areas some damage may be expected every year, unless prompt preventive action is taken. On the Snowshoe rabbit ranges a good deal of possible damage can be prevented by the foresight of avoiding planting of new orchards and ornamentals close to the native bush cover. Experience has shown that trees planted 100 yards from native woods are subject to far less damage than are those planted closer. In any event, whether choice of planting site or use of protective devices is a main concern, most growers will agree that an ounce of prevention is worth a pound of cure.

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Some Farm Woodlot Improvement Techniques

by **MR. M. A. OPPER, Extension Forester, Saskatchewan Department of Natural Resources, Forestry Branch, Prince Albert**

The techniques of forest stand improvement are usually more closely associated with the management of relatively small holdings of forested land, where the ultimate aim is for greater wood production from limited land acreages. Trees, like other crops, must be subjected to various treatments in order to produce wood at their highest capacity. The following remarks will therefore he oriented along the lines of managing small woodlots where forest stand improvements can be economically feasible.

There are several ways and methods by which small forests can be materially improved and the rate of growth increased considerably.

To manage a forest efficiently one must understand what it is and only through such understanding can one attain the best results from his forest with the least possible effort.

The forest is not merely a number of trees that grow together; it is a community of trees, of other plants and of many different creatures most of which are too small to be noticed. Trees and other inhabitants of the forest greatly influence each other's lives.

With sufficient understanding of this struggle man can, through proper cutting, direct the forces of nature so that the forest will yield him a maximum of good wood continuously.

WEEDING

Weeding is cutting, while still very young, the trees that can never be of value. This saves the potentially valuable trees from being suppressed or killed by the competition of weed trees. A machete, a long and heavy brush knife, can be used for weeding trees that are only up to one or two inches in diameter. A light ax is preferable for somewhat larger trees. The work is not heavy as most stems can be cut with a single stroke. Simple as this operation may sound, it should not be entrusted to men who do not know the relative value of different trees and cannot visualize the effect of this work on the future of this forest or who lack interest in this matter. Actually this is a time-consuming and relatively costly operation, and as you are dealing with small timber with no commercial value whatsoever it is impossible to cover costs of your operation. However, it should be borne in mind that this is an improvement technique which will render the stand in a good condition with financial dividends being reaped at a future date. The weeding will eventually pay for itself in the improved quality of material and in the rapidly accelerated rate of growth.

RELEASE CUTTING

Sometimes young growth of valuable species starts between or under weed trees of larger size, but its growth becomes stagnated and its life endangered when these weed trees grow and spread (e.g., poplar over spruce). Then at least some of these overtopping weed trees should be cut or girdled for the benefit of good trees below their crowns. This is known as "release cutting."

SPACING

The spread of roots of a forest tree usually is approximately the same as that of its branches, so that when the crowns of adjoining trees get too crowded,

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their roots also are in conflict and tree growth greatly suffers for both these reasons. Trees, therefore, should not be too close together. Yet too much space between them also is undesirable, not only because the ground would be wasted but because the trees would be very branchy and would produce knotty wood.

Proper spacing between the trees, or the room trees require for best results, increases greatly with their age and size. "Light demanding" trees need more room than those which are "tolerant of shade." Trees of even the same species and diameter may differ considerably in the shape and size of their crown and in space requirements for good growth. However, the following approximate rule-of-thumb for proper spacing of normal trees from about 3 inches thick at breast height should be of some help. To explain we will use an example: One tree is 6 inches and another 4 inches thick. Proper spacing between them is 6 + 4 ÷ 2 or 5 feet – the sum of the diameters of both trees divided by 2 and taken in feet. If the trees are all about 7 inches thick, the right spacing between them should be 7 feet. This applies to "tolerant" trees such as spruce and fir. For "light demanding" trees the spacing should be 20 to 30 per cent greater.

THINNING

As trees cannot be shifted in order to provide for increasing space requirements as they grow, the only practical method to provide proper spacing is to cut some of the trees where their crowding becomes too great – "to thin" the forest.

The proper time for first thinning depends on the individual case, but usually it is needed when the trees are between 15-25 years old. By then the trunks of the trees grown in close proximity should be tall and the lower portions free from branches. Wood from such trees is generally of the size that could be used for cordwood; and the need for a thinning to speed up the growth is increasing. The usual indications of overcrowding are: interlocking of tree crowns, abnormally slender stems, little increase in growth, a large number of dead and dying trees.

When the main or the only object of thinning is the maximum future benefit, it is best to thin "from below," that is, while providing for proper spacing, to cut the inferior, smaller or defective trees, and to leave the best and most vigorous trees to grow. Such thinnings often result in developing the best trees into log sizes 20 or 30 years sooner than would be possible without this treatment. Thinning "from above" is the name applied to a cutting which removes many of the larger trees, with the object of their use and of encouraging growth on the smaller ones. Under this type of thinning the future development of the stand is secondary to immediate returns. It is usually less desirable from the forestry standpoint, but often an economic necessity.

It is best for the final result to thin lightly but more frequently. Not more than a quarter of the trees should be cut at one time, unless overcrowding is very bad, and cutting repeated at from 5 to 10 year intervals – whenever the crowns are again crowded. Too severe a thinning results in much "windthrow." If properly done in too dense a forest, thinnings greatly increase the rate of growth and give high returns on the labor spent. A larger volume of larger and better wood is harvested at maturity, in addition to all the wood taken earlier in the course of repeated thinnings.

WOLF TREES AND WHIP TREES

"Wolf trees" are very branchy, with exceptionally wide crowns and often with comparatively short, crooked, forked or otherwise badly shaped trunks.

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Although they often are large, their value tends to be low or nil as their wood may be suitable only for cordwood but is so knotty or twisted that an excessive amount of work would be needed for working it up. Wolf trees are so called because they occupy a lot of room and by crown or root competition kill the younger trees that attempt to grow under or immediately near them. It is well to weed out wolf trees while they are still young. If large and so defective that they are not worth cutting, they may be girdled to reclaim the ground they occupy for good forest growth.

"Whip trees" are in form just the opposite of wolf trees. They are very thin for their height, usually are clear of branches and have very short crowns. While the volume and value of such trees are very small, they may cause considerable damage to their neighbours of greater value by whipping their foliage in the wind. It is well to cut such "whips" down at an early age. This applies particularly to young hardwoods of weed species (poplars) that are whipped against the tender top shoots of valuable softwood trees, causing deformities and sometimes even killing them.

UNEVEN-AGED STANDS

For uneven-aged stands, cut to maintain a range of size classes made up of the best trees in each class, ranging progressively from many trees in the small size classes to a few trees in the large ones. With this objective in mind, make up the annual cut estimate by taking out in the order given, the following classes of trees:

1. Dead, dying and defective trees.
2. Trees of undesirable species (weed trees) or of poor quality.
3. Large mature and overmature trees.
4. Small trees that are too crowded for good growth.

One cannot apply the "low-thinning" crown classes to this type of stand since a "suppressed" tree may not be weak, but only much younger than its neighbours. This has to be kept in mind and, consequently, it is often better to do a "high thinning," in which the larger trees are removed, thus allowing the younger ones to develop.

White spruce may be considered to be mature when it is 110 years of age. Now, while a tree should theoretically be cut when it is mature, care should be taken to ensure seedling growth, either naturally or artificially, before gaps are created in the stand.

MARKING TREES FOR IMPROVEMENT CUTTING

The best way to start an improvement cut is to go through the forest with a paint brush and pail or a paint gun (better) and mark the trees that are to be felled. Then, after marking is finished, cutting can begin. Choosing the trees and cutting them at the *same* time causes too many mistakes. Trees can be blazed with an ax or hatchet, but paint works better. It is quicker, easier to see and to erase in case of error and does not injure the tree—an ax may let in insects or rot.

White and yellow are good colours for marking and so is medium blue. Paint should be worked into the crevices of the bark so that it will not wash off or be lost if the outer bark peels. If used in a sprayer, paint should be thinned (alcohol, kerosene or gasoline).

For the best marking trees should be painted twice – once at about breast height and once below stump height. Both marks should be on the same side of the tree from which buyers and cutters are most likely to see them.

Have Fun with Glads

by **W. J. SINCLAIR, President, Winnipeg Gladiolus Society**

A lot of people who grow gladiolus for the first time, begin by buying a few bulbs at the corner store or from some advertisement in the local paper offering a 100 bulbs for 2 or 3 dollars. While they may get a few satisfactory blooms, more often than not they are disappointed and lose interest, never realizing how close they have come to discovering the pleasure of really growing this most popular of all flowers.

When I was asked to write for a publication with the large circulation enjoyed by the Prairie Garden I thought my best contribution would be an article directed to the new grower of gladiolus, which would at least point the way to success with this great flower. So this article will present some thoughts from my own experience which I would pass on to someone just starting.

First I intend to present an outline of the best sources of information on the subject of growing gladiolus. I'll then say something about the basic secret of success with glads, and I'll end up by describing some of the extra pleasures I enjoy from this hobby.

The best short publication I have seen to this date is the Manitoba Department of Agriculture and Conservation bulletin No. 334 written by Mr. F. J. Weir, the Provincial horticulturist. If you haven't seen this, I suggest you write to Publications Branch, Department of Agriculture, Norquay Bldg., Winnipeg 1, for a copy right away. It is clear, concise and accurate. Now if you want a book on the subject, the best one I know is "The Complete Book of the Gladiolus" by Rev. Lee M. Fairchild. This covers everything in detail and is an excellent book.

The Canadian Gladiolus Society publishes an annual which gives a complete rating of all the varieties, all the show reports, a symposium of winning varieties and many fine articles by the leading growers. The North American Gladiolus Council publishes four magazines a year and they are full of information. Then there are the New England Gladiolus Society year book and magazines which are most informative. You can save money on all these publications by joining your local Gladiolus Society, whose members enjoy reduced rates owing to their Society's affiliation. These people are specialists and I'm sure you will find their meetings and friendship your most valuable source of knowledge and help.

Now for the big Secret! It is so important and yet is so often unknown to new growers. You can read everything you can get your hands on and follow all the growing instructions and use the best soil combinations and watering and spraying programs and still end up with mediocre specimens. The main thing is the bulb (I should say corm, but nearly everybody calls them bulbs, even the commercial growers). If you don't start with good bulbs you'll end up with nothing, so the big secret is to buy good clean bulbs of the best varieties from reputable growers. Nothing else you do will mean so much. Buy named varieties, not mixtures, and keep the varieties separate. It is a simple matter to plant the varieties separately and label them with a small stake. You'll have twice the pleasure and much more success if you do this.

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An example of a modern glad Spic and Span (deep pink). Bulbs of this and other comparable varieties may be purchased from reliable growers for less than $1.00 per dozen.

Glads have only one real enemy, the Gladiolus thrip. You must spray the plants every 10 days with a flower spray containing either Malathion or DDT, or both, to control this insect.

Once you get your feet wet and get bitten by the "glad bug" you'll find there are many other pleasures besides cutting those beautiful spikes.

One of the first you'll find is when you start cleaning the bulbs in the fall and see the clean shining satiny paper husks and glistening bases of white, cream, yellow and red. They are a sight to behold! And of course if they are healthy they'll have anywhere from 2 or 3 to 200 or 300 bulblets (cormels) around them, each of which is capable of growing into a plant exactly like the parent. If you plant all these you'll soon have so many glads you'll run out of land to grow them in.

I just save or buy the bulblets of the new expensive varieties and grow them. This way you keep your cost down and it is really a pleasure to harvest the small or medium bulbs you get from them. Quite a few varieties will bloom from bulblets if you start them early. I sometimes start these in April in peat pots—4 or 5 to a 2-inch pot and plant them out when it warms up. Or you can just plant them in the ground in late April or May. First you should either peel them or at least crack the shell. Another way I start bulblets is to germinate them in a mixture of damp peat moss in a plastic bag; when they sprout you can dump the whole mixture into a shallow trench and they keep right on growing. Glads do not transplant well, so you must watch the bulblets and plant them as soon as they start sprouting roots. You don't have to worry about the little bulblets being right side up when you put them in the trench; they'll right themselves.

Now of course, there is another means of having fun with glads, and that is by hybridizing your own varieties. Glads do not come true from seed. Every seed is a completely new variety, so when you make your own crosses and plant the seed, you'll have your own varieties. These can be increased from their bulblets, because bulblets come true to variety. Most of your own crosses will be very ordinary, but you may be lucky and hit a real winner. The first time you see them bloom you'll think they all have possibilities but after a while you'll become more cynical (and practical) and pull out all but a few. Try it anyway. Glads are so easy to cross and most set seed freely. Just take the anthers out of a flower on one plant and rub the pollen on to the stigma of the flower on the other plant. Pollen always ripens at least a day earlier than the day the stigma is receptive, so guide yourself accordingly. Actually it's a little more technical

than this, but not much, as you'll find out when you read the books. Plant the seed in a similar manner to the bulblets. They bloom the second year.

Finally I recommend to any new grower that he be a showman. Even if you only have one or two good spikes at showtime, take them in to the show. There are always classes for new growers and you may be surprised how well you'll do on your first attempt. Only by showing do you become aware of the fine points, and what to look for in a good spike.

Well this has been quite a ramble, but if you've stayed with me to this point, maybe I've aroused your interest in a hobby that's lots of fun and gives pleasure not only to yourself and family but to your friends and neighbors as well.

Good luck — and see you at the shows.

How We Grew

by **MRS. BOWSFIELD, Secretary, Fort Garry Horticultural Society**

Over 40 years ago the Fort Garry Horticultural Society was in the budding stage. A small group of enthusiastic men got together to plan a society, "The Seeds of a Society," which today has blossomed out to be the second largest horticultural society in Manitoba.

Looking back over its history we find the first directors' meeting was held in a place called the "Cabbage Patch"; surely an appropriate location.

The first show was held in August 1925. Mrs. A. L. Dickson, an interested and active honorary life member, exhibited at the first show and Mrs. Alec Baird won first prize in the 1925 Home Grounds Competition. Lady members served tea at the early shows, helping to defray expenses.

In 1943, plans got under way for Victory Gardens, and some 50 people applied for plots, while the land was provided by the municipality.

The first challenge cup for Home Grounds competition was won by Mr. S. E. Steen in 1941. Dr. B. Peturson and Dr. W. J. Cherewick are most interested in the Waugh Shield Competition for children's gardens; in 1944 they first distributed packets of seeds through the schools for children entering this competition.

With the co-operation of all members we can look forward to greater achievements in the years ahead. There is still much to be done toward beautifying our Municipality of Fort Garry.

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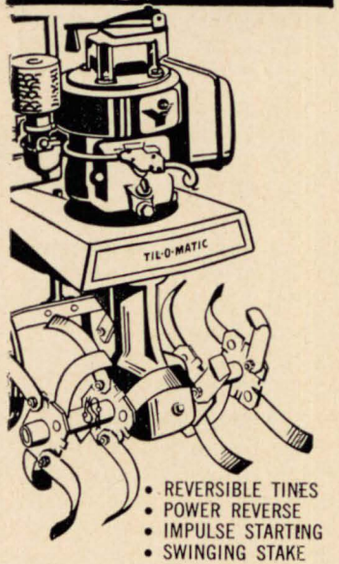

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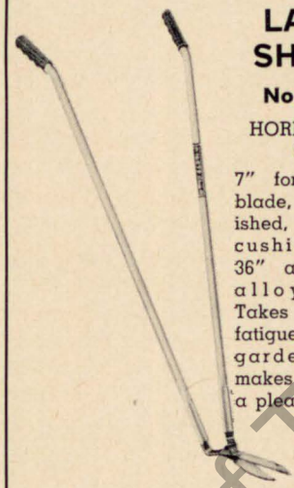

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Edging Plants for Flower Beds

by **W. H. GRAY**

Florist, Winnipeg Board of Parks and Recreation

Past President, Winnipeg Horticultural Society

It is amazing the amount of time and money, many people will spend on their selection of plants for their flower beds, and never give much consideration, or so it seems, to their selection of their edging plants. The effect on a bed of flowers where the edging plants are not carefully selected, planted and cared for, is the same as a man in a new suit who has neglected to shine his shoes, a total loss. I realize that the selection is up to the individual as all our tastes in colors are not the same, but the main things to be taken into consideration are size, suitability of the plants to location and the amount of time to be spent in their watering and care.

Most of these plants are used in what we commonly call "Formal Planting," and with this in mind they should be planted the same distance from the edge of the bed, this gives a clear outline of the shape of the bed; they should also be planted the same distance apart. It is dependent on the size or depth of the bed whether or not a straight or staggered row is used; in a larger bed a staggered row, that is a second row planted behind and in between the plants in the first row, looks quite good, it not only gives a nice wide line but also allows two colors or even two varieties to be used.

Size and color are very important to add to the beauty of our grounds. It is only natural that we would not use a short plant to edge a tall flower bed or a tall plant to edge a short flower bed, if we are in doubt about the size of the plants, most seed catalogues will supply the information. Color is a matter of individual taste but always use colors that will compliment each other, and the best effects are achieved when the edging plant is not the predominant color. In using Alyssum, Marigolds, Lobelia or Ageratum, two colors of the same variety are often used and prove very satisfactory, and in some cases, even two varieties used together look very attractive.

Some of the more popular annual edging plants used around the Winnipeg area are listed below, they are by no means the only ones used but have caught this writer's eye.

Alyssum is still very popular. The plants are 3 to 6 inches tall and bloom profusely throughout the summer in round, carpet-like plants. They make a very attractive edging for Geranium and Petunias. They stand up well in hot weather, once they are established, and like a well drained location. The plants should be planted 10-12 inches apart. The best white varieties are Carpet of Snow and Little Dorrit. Royal Carpet is a very good purple and does well planted with Carpet of Snow. Rosie O'Day is a new pink, much the same style as Royal Carpet, this is a 1961 All-American winner.

Ageratum is becoming more popular all the time, it is a tender plant with small heads of fluffy lavender-blue or pink flowers. Grows very well in sun or semi-shade, stands hot weather, but needs good drainage, spreads about 10-12 inches across and grows about 6 inches tall. The best variety is Blue Mink, which is good for edging most short growing plants. To keep the plants looking smart the dead or faded blooms should be removed regularly.

Lobelia is another old, popular favorite. These plants can be obtained in a wide range of colors of bloom and foliage. They grow from 4 to 6 inches tall and should be planted about 9 inches apart, they can be clipped to

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produce a nice even edging. They stand the hot weather but are a moisture loving plant and cannot be allowed to become too dry. Good edging for most short plants, does well in sun or semi-shade. Good varieties are White Lady, Bluestone, Rosamond, Mrs. Clibran and Crystal Palace (dark foliage).

Marigolds are a most useful edging plant, they come in a wide range of colors, heights and size of blooms. They do not require rich soil and can stand the hot weather very well but do not like too much water. These plants can be used to edge most beds as there are varieties from 6 inches tall up to 3 feet. Some like to use the short varieties in front then a row of taller in the size most suitable. The Petite Strain are 6 inches tall, Double Dwarf 8 inches Dwarf Chrysanthemum Flowered 8 inches, French Single 18 inches.

Geranium, there are several dwarf varieties used for edging, the most popular being Madam Saleroi. These plants grow from 4 to 6 inches tall, they have gray and green foliage. They are excellent for edging Geranium beds. Madam Saleroi is very effective when used with Iresine, which has a rich bronze-red foliage.

Penesetum, this tender grass is grown as an Annual and is used as an edging for tall flower beds. It grows 1 to 2 feet tall and should be planted 18 inches apart. It is very graceful and produces graceful blooms much like a head of wheat. Good for edging Canna, Tall Nicotiana or Cleome beds. Likes lots of sun and water.

Cineraria maritima, commonly called Dusty Miller, is grown for its silver foliage, makes an excellent edging for tall flower beds. Stands hot weather very well, very attractive when inter-planted with Perilla nankinensis, which has dark purplish coloring, and grows 2 to 3 feet tall.

Roses from Cuttings

We wish to credit this idea both to MRS. W. M. MacDONALD, Winnipeg, and MRS. M. W. DONOVAN, Blackie, Alberta

To root cuttings successfully, try using flowering shoots which should be about 5 or 6 inches long; they should be cut just below a bud. Remove bloom and all but the upper leaf.

The cuttings should be placed 3 or 4 inches deep in damp vermiculite or sand; some people use loose soil. It is a good idea to dip the cut ends in a rooting compound before planting. From now on you have a choice of two procedures.

1. The cuttings may be started in the garden and covered with a glass jar until new shoots appear. The jar is then adjusted to allow the passage of some air; after 1 or 2 weeks the jar is removed entirely. A certain amount of moisture and shade is necessary during the rooting period.

2. It may be even simpler to place the cuttings in a flower-pot filled with either the vermiculite or sand. The pot is then covered with a plastic bag, and this is held closed by a rubber band around the pot; a support should first be put into the pot so that the plastic covering does not collapse closely around the cuttings. The material in the pot will rarely dry out; if it is exposed to the sun at intervals enough moisture will form on the inside of the cover. Should additional moisture be required later on, this can be added at the bottom of the pot. The plastic is removed when new shoots have developed.

Cuttings will usually root in 4 to 6 weeks.

Newer Deciduous Shrubs Worthy of Consideration

by **P. J. MORAN, Saskatchewan Department of Public Works, Regina**

Many of the shrubs which have proven hardy over the years in Western Canada should continue to form the basis for our present day considerations. Although the original list of hardy material for the prairies was relatively small in comparison to our present lists of hardy material, there is much to be gained from reviewing it and determining if and where improvements and additions have been made. Let me express my own personal opinions.

There are few who will disagree that over the years the lilac has proven to be the most widely planted flowering shrubs and the one with the most public appeal. *Syringa vulgaris* or the Common Lilac has been widely disseminated and its French Hybrids continue to dominate most of the trade catalogues. The suckering habit of the Common Lilac has never been too well received by urban home owners on their relatively small lots and the beautiful French Hybrids, suffering from the same fate, have been able to sustain primarily due to their popularity abroad. The hardiness of *Syringa villosa* (Late Lilac) its non suckering habit, coarse texture and mid green color have been well known, yet it leaves much to be desired from the standpoint of flower color. The same can be said about *Syringa Josikaea* (Hungarian Lilac). More recently two new groups of lilacs have made their presence known. Dr. Skinner's American Lilacs or dilitata hybrids appear to have overcome some of the undesirable qualities of the common lilac and its French Hybrids. He has brought about the introduction of new varieties which have little if any apparent suckering qualities, appear hardier and easier to establish, and in some varieties larger trusses of flowers and individual florets. In Regina they flower slightly earlier than the common types. In my opinion, and this does not include any new introductions, Pocahontas, a deep purple, is the best variety. Gertrude Leslie, an attractive white which has appealed to me, appears destined to take a back seat to some of Dr. Skinner's newer introductions. Variations in the degree of dark foliage color following fall frosts is to be found with the increasing number of varieties.

The other groups of lilacs, generally referred to as the Preston Hybrids, have all the strong characteristics of either *Syringa villosa* or *Syringa Josikaea* but with a wider range in flower color. All of the later flowering, non suckering, coarse textured characteristics have persisted making them ideally suited for our Western Canadian climate. These flower after the Common and French Hybrid varieties and extend the flowering period of lilacs into late spring or early summer. The varieties having the greatest appeal to me are Coral, Royalty, Guinevere and Nocturne. I should caution readers that the variety Redwine has been subject to considerable winter injury in Regina and its purchase should be viewed with some reservations. To say that these two groups of lilacs will replace the common lilac and its French Hybrids would be an overstatement but they should be worthy of everyone's consideration when selecting lilacs.

It is difficult to consider the form of the lilac without likewise considering that of the honeysuckle. *Lonicera tatarica* or the Tatarian honeysuckle, with its forms of pink and white flowers and red or yellow berried fruit, can be found

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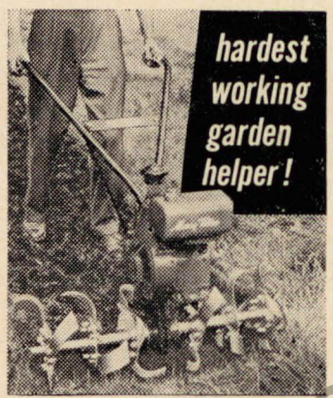

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amongst the earliest plantings and continue to be quite popular. Recently deep pink or red flowering honeysuckles have been introduced and thrown into the trade with reckless abandon and usually proclaiming the reddest flowering honeysuckle of all. I have tried to obtain as many red flowering honeysuckle as possible and quite frankly I haven't been able to observe very much difference between them. Until there is a superior variety recognized I would suggest you consider *Lonicera Zabelii* (*Zabel's Honeysuckle*) which has dark pink flowers and dark green foliage. In the light pink flowering class, Carleton is superior with its relatively larger florets. Dr. Skinner's Bella Dropmore Honeysuckle is covered with a profusion of white blossoms at flowering time but its most attractive feature is its inclination toward an arching effect of the branches in contrast to the erect and stiff stems of most other honeysuckles.

Numerous are the shrub rose varieties that have been introduced to Western Canada and my preference is for Therese Bugnet, with Haidee and Prairie Youth not far behind.

Spiraea pikovienses (*Pikow Spirea*) is an old variety that is very hardy but I have never been too impressed with its upright form. My preference is for *Spiraea media sericea* (*Oriental Spirea*) which appears just as hardy but not as stiff. My original enthusiasm for *Spiraea trilobata* (*Three-lobed Spirea*) has diminished somewhat because of its lack of complete hardiness in this area.

Cotoneaster acutifolia (*Peking Cotoneaster*) and *Cotoneaster integerrima* (European Cotoneaster) are extremely popular plants, however, I have had *Cotoneaster submultiflora* for a few years and I am impressed with the significant white flowers and rosy fruits resembling the fruit of some of our rosy-bloom crabs. The fruit is produced in considerable abundance on arching branches with the foliage not unlike that of *Cotoneaster integerrima*. I am told that the flowers of *Cotoneaster multiflora* have an unpleasant odor but I have not found this to be the case in *submultiflora*. I don't believe this is readily available, however it would be worth watching for.

Early plantings in the west were usually complemented with a small flowering dwarf plant called *Prunus tenella* (*Synonymus with Prunus nana*) or Russian Almond. Whereas the plant is quite hardy, its popularity diminished when its suckering habit became an objectionable feature. *Prunus tenella* (var. Redbird) is now being offered in its place because it has less tendency to sucker but you can expect it to grow somewhat taller than the old Prunus nana. The Prairie Almond is certainly a welcome addition to our list of plants and although the flowers are somewhat smaller than *Prunus triloba multiplex* or the Double Flowering Plum, I find they are borne in greater profusion. The hardiness of this shrub is greater than *Prunus triloba multiplex* and the purchase of it from Western Canadian Nurseryman should assure you of it being propagated on a hardy understock. The Muckle Plum has so far proven hardy here in Regina and the last two years it has been a most attractive flowering shrub. It has dark green foliage and flowers of greater brilliance than the Russian Almond. I understand that those people who were late in ordering the Shubert Chokecherry last spring found most available stock depleted. This is not too difficult to understand because here is a good ornamental with dark red foliage by midsummer and unlike the common chokecherry is free of objectionable suckers.

There are various species and clones of Caragana which are always the subject of pros and cons amongst the gardening public, however, their chief value lies in the various forms and textures they possess and of course their suitability to hot dry conditions. Two Caragana of recent vintage that you may find of some appeal are *Caragana frutex var. globosa*, the Globe Caragana, a

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small compact globe shaped shrub, and *Caragana arborescens var Sutherland*, the Sutherland Caragana which is a tall columnar shrub or small tree.

Sambucus canadensis aurea or the Golden Elder has had its limitations in the west where severe winter injury has occurred in exposed locations. *Sambucus racemosa plumosa-aurea*, or the Golden Plume Elder, whereas not as pronounced in gold color as the former in full sun, has not been subject to the same amount of winter injury in Regina.

Although the name Barberry has had its undesirable connotations and the very mention of any shrub with barbs or prickles is looked upon by many with disfavour, there are two barberry worthy of everyone's consideration. Both *Berberis Poreti* or Poret Barberry and *Berberis koreana* or Korean Barberry have attractive yellow flowers, red fruit and attractive fall color.

I would like to mention three ground covers that would be a welcome change in some features of home landscaping and where a reasonable amount of snow cover can be expected. *Daphne cneorum* (Rose Daphne) is complimented with its attractive pink blossoms in the spring, *Pachistima canbyi* (Canby Pachistima) has dark green foliage retained through winter and *Euonymus obovata* (Running Euonymous) is slightly taller than the preceding two and has an attractive light green open textured appearance.

Without being accused of deviating from the original topic I would like to make mention of two deciduous plants that are not shrubs but are worthy of mention. The birch tree has never thrived on our heavy soils in Regina although there are some very fine specimens. *Betula albo-sinensis septentrionalis* or the Brown China Paper Birch has performed exceedingly well here to date and has an attractive form and what appears to be ease of culture. It has so far retained its shape well and has made good growth without much special attention.

There has been a considerable amount of publicity respecting rosybloom crabapples and the varieties are numerous. Many are very attractive and commendable, however, I consider Sutherland to have the edge primarily because of its dark red foliage. Almey is one of the leaders in flower color and although I have heard reports of it lacking hardiness in some areas this has not been the experience here to date.

Malus baccata var. pyramidalis or Pyramidal Crabapple may be considered by some to be too susceptible to fire blight to merit propagation but it is one of the few columnar trees we have and if you are looking for something tall for a narrow space this is the plant that may best suit your needs.

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The Fascinating Variegateds

by **MRS. PETER PROCTOR**
Winnipeg African Violet Society

My first impression of a variegated foliage violet plant was one of interest, and yet I wondered what was wrong with it, as it looked "chlorotic." After asking some questions, I was informed it was the habit of the variety. The plant in question was "Wintergreen." Since that day, several years ago, I have grown many of this variety. "Wintergreen's" flat tailored cream and green leaves, and double white and blue blossoms made an eye-catching plant.

These plants with their variegated foliage are usually a must in a grower's collection. The variegation runs into a rainbow of colors. Some leaves are creamy along the edges, some in the center, and others mottled white with red undersides peeping through. Besides containing all shades of green, they are sometimes flecked with tones of pink, copper, and tan, even somewhat a paprika sprinkled effect.

Recently while visiting a local commercial grower, I was fascinated to see the trays filled with these variegated beauties. The little plantlets surrounding their parent leaves gave an illusion of small pink and creamy roses.

Many of you wonder as I have, how these variegateds were discovered. In reading several articles, I learned the X-ray laboratories of plant science and research, have been experimenting with the idea in the United States. When a leaf cutting is X-rayed, only the petiole is exposed to radiation, thus making the plastids defective in that they do not have sufficient chlorophyll to produce a normal green leaf.

The growing and cultural conditions have much to do with keeping your foliage variegated. If you are growing under fluorescent lights, you must keep your plants to the outer edge and nearer the floor where the temperature is much lower. I find a temperature of 55°-65° suitable, and of course humidity is important and can easily be provided by setting your plants on pans which contain about one-half inch of crushed granite, and enough water to keep them moistened. A north or east window is ideal, if growing in natural daylight. The variegateds do not require the feeding program given your ordinary violets, but only one-third the strength and feeding only one-third normally. e.g., If you fertilize once every 2 weeks, then only once every 6 weeks for the variegateds. Vitamin B_1 may be substituted for a normal feeding. Much success has been derived by growing the plants in only Zonolite, which is a coarse form of Vermiculite. If you prefer to grow in soil, it must be very low

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in nitrogen, but high in potash and calcium. The pH. factor should be 7.5 or 8.0. When a plant is losing all its green color, and tends to produce only white and creamy leaves, it will eventually die. There must be enough chlorophyll present in the plant, and the fertilizing program mentioned previously would take care of this.

During the hot summer months the foliage has a tendency to turn green, but with the cooler weather in the fall, they take on the new center growth with much variegation, thus making an attractive plant against the darker foliage, so with the changing of seasons, the violets take on a panorama of color.

Many violet fanciers have become discouraged, when through propagating some plants do not reproduce true. I am inclined to believe that the present strains of variegateds produce true about the same rate as our green varieties. To name only a few varieties like Prairie Afire, Sky over Italy, and Pink 'n Sno were developed and continued from original sports, and propagate true in every case. They have the same lovely blooms of the original plant. These variegates remain variegated regardless of season, light intensity, heat or fertilizer, while some of the X-rayed plants do revert.

Yes, I believe there is new excitement in growing variegated foliage violets, and I hope I have interested you in some way too.

Mint Marble: Very creamy and green leaves, double white blossoms, with orchid cast.

Sky over Italy: Deep pink cream and green sprinkled, flat girl foliage, double blue blossoms.

Sissy Britches: A semi-double bicolored orchid frilled bloom, with chartreuse ruching on dark variegated holly type foliage.

African Violets . . . *The Old and the New*

by **MRS. ROY MUNT, Winnipeg African Violet Society**

I belong to the cult of African Violet growers. We are becoming more numerous every year. My greatest joy is to watch a new voilet unfold its first flowers. Will it be what I expected or something even more beautiful?

Today the trend is toward the new reds. The best by far is Frosted Red. It should be grown by everyone. It has almost everything that is expected in a show plant.

In the pinks, I would pick Fair Elain, with my second choice, Tall Tales, a lovely large pink speckled with blue.

My choice of the blues is Hy Hopes, then Delft Imperial, a ruffled medium blue, while Big Blue with two inch star flowers should be in every collection.

Among the whites, Snow Ballet is an excellent double as well as a prolific bloomer, while White Trumpet, a single, is well worth growing.

You also might try Young Love, an orchid.

Finally, I suggest that, as well as the old and tried, you add to your collection now and then, and experience the joy of getting something a little different to love and to grow.

* * *

WINNIPEG AFRICAN VIOLET SOCIETY

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Some Neglected Perennials

by **H. F. HARP**

Head Gardener, Experimental Farm, Morden, Man.

There is a far wider choice of hardy perennial plants suitable for the prairies than most gardeners are aware of. While most of these less common plants are not as showy as the more popular Paeonies, Iris, Delphiniums, etc., they are notable for other desirable features such as interesting foliage, or season of bloom either very early or very late when the mainstay varieties have come and gone. A most accommodating plant is the *Hosta* or *Plantain Lily* native of Japan and China and long esteemed in old-world gardens. *Hosta plantaginea* has white flowers and large pointed leaves with prominent parallel veins. *H. sieboldiana* usually turns out to be *H. fortunei* which has smaller leaves and pale mauve flowers on slender stems. The form robusta is the most vigorous of the plantain lilies grown at Morden. *H. undulata aurea* has handsome golden variegated leaves.

Pulmonaria or *Lungworts* were once thought to have properties to cure lung diseases; they do have boldly blotched leaves on neat plants a foot high and pale blue, violet or white, rather inconspicuous flowers. *V. officinalis* and *angustifolius* are recommended. All the lungworts are at home in either sun or shade.

Lamium maculatum makes a good ground cover. The most permanent feature of the plant is its distinctive foliage. The flowers are rosy purple and like in shape to the dead nettle. After flowering the plant may be cut back to improve its freshness as a foliage plant.

Ajuga or *Bugle-weed* makes an excellent purple-leaved ground cover with blue flowers and glossy-foliage.

Salvia argentea—Silver Sage is a native of the sunny Mediterranean region but able to survive a Manitoba winter providing it is planted in well-drained, poor soil. The handsome silver white foliage is attractive throughout the summer season. Another gray-leafed plant, easily grown and quite hardy is *Artemisia stellariana* commonly called Beach Wormwood although it shares the name Dusty Miller with a half-dozen other plants. It does best in open sunny borders.

Veronica incana shouldn't be overlooked as a good, gray-leafed border plant that will make a neat mat of pretty foliage with purple spikes of bloom in July.

Primula auricula is quite hardy and tolerant of much drier conditions than considered comfortable for primulas. If only for the old world associations of this plant that enjoyed enormous popularity at one time, a place for a few specimens should be found. Porous soil, a little shade and provision to hold a covering of snow are requisites.

Plants with aromatic foliage are always interesting and despite its cumbersome name *Nepeter Souvenir de Andre Chardron* is one of the best border plants for prairie gardens. It revels in hot dry soils, blooms all summer long with masses of real blue flowers. A change of name would be a good thing for this plant, 'Blue Peter' might do.

There are a number of hardy perennial plants that flower so early in the season that few gardeners know anything about them—*Adonis vernalis* comes first to mind. It flowers in May with bright yellow buttercups among ferny, lively green foliage.

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Bloodroot (*Sanguinaria canadensis*)—a rare native, is a gem for the rock garden. It likes a sheltered, half-shaded spot and deep woodsy soil. The pristine loveliness of its white, cup-shaped flowers is a joy in early May.

Bright Orange-Scarlet is a color not often met with among the early flowering perennials. *Geum sibericum* provides it, however, at the latter part of May. It is fully hardy and should be grown in place of the unreliable Mrs. Bradshaw or Lady Stratheden.

Several hardy *Fritillarias* deserve to be more popular than they are and would become so if they were better known. These charming, bulbous plants come from widely separated countries. *F. pudica*, a foot high plant with nodding yellow bells, is native of northwest America. *F. pallidiflora*, a stronger grower with pale sulphur yellow flowers, comes from Siberia and another with flowers of a livid purple, *F. ruthenica*, is from the Caucasus. Early autumn is the best time to plant, giving them the same care as true lilies. The strikingly handsome foliage of *Bergenia* and its bold, violet heads of bloom in May gives early interest to rock garden or perennial border. *B. cordifolia*, the Heartleaf Bergenia, is one of the best.

At the end of the season there is often little of interest in the perennial border unless we have included Asters and Hardy chrysanthemums. Besides these there are a few late flowering perennials worthy of a place among the best of the asters and mums.

The Azure Monkshood (*Aconitum fischeri*) is a tall plant with deep blue flowers in late September.

The tall plume poppy (*Macleaya cordata*) gives late interest where sufficient room is available to display its large leaves and plumey heads.

Helenium Copper Fountain is a new variety of this showy autumn flower. It grows about four feet in height and bears masses of bronze flowers in September.

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Introduction to Mist Propagation

by **S. H. NELSON**

Head, Department of Horticulture, University of Saskatchewan, Saskatoon, Sask.

Plant propagation, whether by sexual or asexual means is the basis of all horticultural industries. Seeds, that is, sexual propagation, have been used by mankind over the ages as a method of raising food, but in later years, as he became interested in perpetuating items of quality and beauty, other methods of plant propagation had to be adopted to avoid the almost inevitable segregation of seedling populations.

Although we may consider grafts and cuttings as relatively modern methods of asexual propagation, it is obvious, from biblical and other references, that these were known arts prior to the birth of Christ. In fact, our ancestors of the eighteenth and nineteenth centuries were only rediscovering principles lost during the Dark Ages.

It should be remembered that a cutting is a detached portion of a plant and, as such, has been separated from its normal water supply. It has no adequate means of compensating for transpirational losses until a new root system forms. Thus, it is logical that the maintenance of a high relative humidity around the cuttings ranks in importance second only to the inherent ability of the plant material to produce new roots on the cuttings. If transpirational losses are not controlled, such a moisture deficit can only lead to wilting and the ultimate destruction of the cuttings.

Hardwood cuttings, although the first type tested, have not proved too successful, especially in regions where the rapid onset of spring is detrimental to this type of cutting. With hardwood cuttings, the tops have completed dormancy and soon make rapid top growth, while the basal portions of the cuttings lack a root system. Unless root development is very rapid, the expanding top soon dissipates the food reserves and the high transpiration losses cause the cuttings to wither and die.

The developments, folklore and one time closely guarded secrets will be left untouched and we will merely accept that the propagation of softwood cuttings in glazed propagation frames was an accepted commercial form of multiplying selected horticultural forms of plant materials in 1940. With the use of softwood cuttings, that is, detached portions from actively growing plant materials with expanded foliage, the maintenance of a very high relative humidity becomes more important. This was accomplished in the glazed propagation frames by making them as air-tight as possible and syringing the cuttings often. Although this method is quite satisfactory and still used by many commercial propagators, a terrific amount of labor and meticulous care must be used. Accordingly, it was only natural that some forms of controlling the relative humidity by mechanical means would be adopted. This took the form of what has come to be known as mist propagation; essentially an automatic mechanical form of syringing.

The first attempt to use mist on cuttings was made in Trinidad in 1936. Although also tested in United States in 1940 and in Canada in 1942, very little was known of this technique until 1950 and it did not gain impetus until the formation of the Plant Propagators Society. The early researches involved the use of continuous mist but it soon became apparent that this usage of water was unnecessary and even detrimental in some instances.

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Methods of interrupting the mist were tested and a number of controls have been suggested. The two methods most used, however, are the electric timers and the electronic leaf. The timing system consists of a day-night time switch which activates a second clock of much shorter cycle during the daylight hours. By adjusting the points of contact on the second clock, periods of mist can be given at different intervals during the cycle. A 30-minute cycle is a popular type of clock used for this purpose and 8 to 10 seconds of mist every 5 minutes is often employed. Misting is accomplished when the electrical circuit closes and a magnetic valve or solenoid is activated on the water line.

The electronic leaf is a strip of plastic with two electrodes imbedded in it. The control is placed directly into the bed and as long as a film of moisture is maintained on the surface of the plastic leaf the electric current flows between the electrodes. However, when evaporation breaks the film, the current ceases to flow and a solenoid valve is activated. Mist is applied until the moisture film on the electronic leaf is restored. Although this control more closely approximates the needs of the foliage, they are placed directly in the beds and some trouble such as shorting and salt accumulation can be expected.

The mist is produced through nozzles mounted on the supply pipes and spaced according to the specifications of the nozzle and water pressure available. Good coverage is essential and the fine mist must be protected from even a slight breeze or poor coverage will result. Wind barriers were first used but more recently some operators have completely enclosed the mist beds within polyethylene tents. This has an added advantage of heat accumulation which usually aids rooting.

By using mist, the commercial operator can take better advantage of the sunlight which hastens rooting, transplant his cuttings earlier which gives a saleable plant faster, and expend a minimum of labor during the rooting period. In fact, mist propagation is a close approach to "automation" in plant production.

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The Saskatoon Berry

by **R. E. HARRIS**
Horticulturist, Experimental Farm, Beaverlodge, Alta.

The name Saskatoon was derived from the Indian name Mis-sask-quah-too-min and refers to the berry known botanically as *Amelanchier alnifolia*. Other species of *Amelanchier* are found elsewhere in North America and in parts of Europe and Asia where they are better known as serviceberry, shadbush or juneberry.

Saskatoons are found throughout the Prairie Provinces, in the northern States, and the Yukon and Northwest Territories. They were used by the Indians and early settlers as a constituent of pemmican and are still eaten extensively in many areas, particularly where the common small fruits are not sufficiently hardy.

The wild saskatoons are extremely variable. In color they range from white, or cream, through pink and purple to almost black. Other characteristics, such as fruit flavor and size, and bush size and shape, are almost as variable.

Realizing this variability the late Dr. W. D. Albright, Superintendent of the Beavrlodge Experimental Farm from 1916 to 1946, initiated a program to produce improved saskatoons. In 1928, from a hedge planted in 1916, Dr. W. T. Macoun, Dominion Horticulturist, on a visit to Beaverlodge selected several bushes which appeared to produce better fruit than the others. These were planted, together with selections from other parts of the Peace River region, in the field for further study. Selections from other parts of the prairies and species from Canada and Europe were added later.

In 1952 two of the selections were named Smoky and Pembina. Smoky came from Dr. Albright's hedge, while Pembina was collected by Mr. John Wallace near Barrhead. Both varieties have relatively large, sweet berries, with good flavor, and make a good fresh dessert and pie filler. Because of the low pectin content saskatoons do not make good jelly unless pectin is added.

Other people besides Dr. Albright have contributed to saskatoon improvement. Mr. Robert Simonet is carrying out an interesting study of a Mountain Ash-Saskatoon hybrid he found in 1950. The flowers of the hybrid are borne in clusters like the mountain ash and although it flowers freely does not produce much fruit. Seedlings from the hybrid vary considerably in rate of growth, appearance and hardiness. Only one bush has fruited. The flowers of this bush are similar to mountain ash but the flavor of the berries is intermediate between saskatoon and mountain ash, and is quite edible.

The saskatoon improvement studies have recently been extended at Beaverlodge with the object of increasing the pectin content, improving flavor and reducing the hard skins and calyx.

The collecting of superior bushes from the prairies and northern points is being continued and species are being brought in from other parts of Canada and Europe. These are being crossed to produce hybrids. In addition, seeds and young plants are being treated with chemicals to try and produce polyploids and mutations. Later, crosses between closely related genera such as mountain ash, quince and hawthorne will be attempted.

Saskatoons are not particular as to soil type but do not like excessively wet soils. They respond well to cultivation and make attractive ornamentals and hedges, and in many areas a reliable source of fruit. As ornamentals they

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are valued primarily for the mass of white flowers in the spring but the foliage of some selections, particularly the Brooks white-fruited selection turns a brilliant orange-red in the autumn. As hedges they provide a haven and an excellent source of food for birds.

Better fruit size and quality will be obtained from plants spaced 8 feet apart than from plants which are forced to compete with others for available water and nutrients.

For hedges the plants can be grown from root sprouts or from seed which has been kept in damp peat or sand at 35° to 45°F. until the seeds begin to sprout. This usually takes 3 to 6 months. If the plants are to be grown for their fruit, bushes of Smoky and Pembina can be obtained from many prairie nurseries, or selections can be made from the wild bushes growing in your vicinity. Root sprouts can be taken at any time of the year, but better establishment will be obtained if root sprouts, or 3- to 6-inch long root cuttings are taken in early spring. Softwood cuttings can also be used if the cuttings are taken when the new growth is 3 to 6 inches long and placed in a moist propagating bed.

Once the plants are established, except for weeding and cultivating, the saskatoons require very little attention. Pruning should be restricted to keeping the bushes in shape and removing very old wood and excess root sprouts. Occasionally, root aphids, beetles, mildew and rust are troublesome. The root aphids, which damage the bark just below the soil surface, can be destroyed with Malathion and the beetles, which eat the fruit, with DDT. Mildew can be controlled with the copper sprays used for mildew control in currants and the rust by destroying junipers in the immediate vicinity, or dusting with sulphur at 10-day intervals throughout the growing season.

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Friends on My Windowsill

by **RUBY W. ALMBERG, Czar, Alta.**

I could call them Mrs. Brown, Mrs. Swanson and Aunt Ethel for that is what my plants are to me: my friends on my windowsill. This ivy means Mrs. Brown to me because she cared for that plant, enjoyed it and gave me a piece of it to grow and enjoy. Each plant is an evergreen bond of friendship between me and those I love and call my friends. Each time I water and pluck off dry leaves I have a little mental visit with the person each plant represents to me.

Watering my red geranium, I have a double vision. . . . I see the fat clumps of bloom and in my memory's eye I see again my dear mother-in-law who gave these plants as slips before she left us years ago. Gay, friendly and vigorous these blooms are just like she was herself. Over here this delicate pink geranium typifies to me the fastidious, charming woman who gave me this plant. My geraniums really thrive in my sunny kitchen with its corner windows. I cherish a red-rose geranium from a little old, blind woman, its florets are like tiny roses like her little, floral self. So it is with each of my plants.

How cheery African Violets are when they are covered with blooms, cheery like the friends who gave me mine, one a young widow and the other a cripple. Like friends they need gentle care and like watering with melted snow or rain water. Our softened water just made them curl in disgust.

This pot of Wandering Jew brings memories of Mom and Dad. A trailing Jew in a brass pot stood on the newel post of the stairs at home. Pansies too, bring dear Dad to mind since pansies are his favorites. The purple variety of Wandering Jew brings a different picture to mind. One year we each took a house plant to school on the prairies. The first purple Jew I ever saw was carried in by Ann, a thin girl with large bare feet, one of them splotched with a birth-mark red as the Wandering Jew. You can't do anything about memories . . . they come unbidden.

Gardening indoors has its advantages. There are no battering winds, no weeds, no stray dogs and the recurring droughts yield to human intervention. I like plenty of leaf mold in my potting mixture, about half, with good loam, sand and rotted manure. The leaf mold keeps pliable, quickly soaks up water and plants seem to thrive in it. An easy source is to gather it along the side of the road where it passes through a stand of trees. There should be a good layer of leaf mold on the bank by the ditch. Rain water or snow water is better than well water as we have so much alkalki on the prairies.

Success with house plants does not depend on a green thumb. It depends on loving care. Someone said that green thumbs are not a matter of luck, they belong to those whose gardens are a part of their lives. So it is with me. My garden and my plants and my friends are a blessed part of my life.

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Are We Doing Everything We Can?

Reducing Winter Injury of Horticultural Plants

by **J. WILNER, Frost Resistance Section, Plant Research Institute Research Branch, Canada Dept. of Agriculture, Ottawa, Ont.**

(From a talk given to the annual meeting of the Western Canadian Society for Horticulture in February, 1961).

It is well known to most Canadian growers that recurring winter injury is a serious problem in growing horticultural plants. What perhaps is not as well known to these growers is that many of the costly injuries, both in money and time, could have been greatly reduced if not avoided altogether.

Thus, although the natural processes involved in frost hardiness of woody plants are at present not fully understood, nevertheless certain phases are accepted by the majority of growers as important factors in increasing such hardiness. These are seasonal maturity, winter rest and cold hardening. Maturity is considered to be one of the most important factors affecting the hardiness of plant tissues. Maturity begins after growth stops in summer, and is usually characterized by a decline in moisture content of tissues, increased rigidity of shoots, etc. During the rest period all growth activities of the plant are further diminished, and frost hardening is developed in tissues when these are exposed to light frosts. The degree of hardening of tissues against winter injuries appears to be influenced by the extent and earliness of development of seasonal maturity and rest. Immature tissues appear to require a longer time for hardening.

Severe winter injury is usually associated with unusually severe weather conditions, which occasionally occur before certain plants have developed sufficent maturity and ability to harden against such conditions. Thus the 1933-34 winter injury of apple trees in Ontario and Quebec resulted from a rapid drop of temperature on Nov. 11 and 12, which at Ottawa were recorded as 9 and 2 degrees F., before the trees had shed their foliage. The 1955-56 injury of fruit trees in B.C. was again due to an unusually early cold spell on Nov. 12 to 16. Thus at Summerland, B.C., there was a sudden drop in temperature to -2 degrees F., whereas at Saanichton, B.C., the temperature dropped to 10.5 degrees F. Throughout the Okanagan Valley low temperatures ranged from 0 degree F. to -10 degree F. During this period many apple orchards were in almost full foliage. Lack of maturity or hardening are usually responsible for the recurring winter injuries such as those experienced in 1895-1896, 1903-1904, 1917-1918, etc.

Over the years growers have found that there are really no effective means of controlling the weather which causes winter injury. Occasionally certain cultural practices have for some unknown reason helped to limit the amount of winter injury. Among such practices may be named the following: use of whitewash, boards, sacking, etc., to counteract extreme temperatures and other unfavorable conditions involved in winter sun-scald; low heading of trees to take maximum advantage of snow cover; cover cropping of orchard soil to encourage early maturity and hardening of fruit trees; fall irrigating

of trees to prevent winter desiccation; planting orchards on northern slopes to prolong the rest period of buds, and to prevent their early blossoming; etc. Unfortunately however, such cultural practices alone are not constantly effective against all forms of adverse conditions. At best these can only help occasionally, and the real answer lies in the development through breeding and selection of hardier varieties that are likely to succeed in a particular region.

The importance of breeding and selecting horticultural plants for hardiness is thus fully realized. It is also fully realized that a reliable test for hardiness of the progenies from such crosses would greatly facilitate and hasten the work of developing hardy horticultural plants. Such tests must recognize the natural processes in plants such as early seasonal maturity; ability to gain and retain hardiness against freezing, etc., so that these plants can survive certain unfavorable fall, winter and spring weather conditions.

The main objective of our hardiness research here is to devise such tests, and we believe that we have made progress. We have tests on hand that are sufficiently reliable to select the early maturing and hardy varieties of apples. The methods were sufficiently sensitive and consistent to warrant their use in studies of the effect of actual winter weather, in contrast to artificial freezing on various plant parts. Space here will not permit us to discuss fully the merits of these tests, which were reported in detail in the 1961 Proceeding of W.C.S.H.

Here I will close, with a somewhat provocative statement from my last year's report to the W.C.S.H. "A common sense approach is somehow not being used by the growers to reduce the enormous losses from winter injury of plants although many such preventive measures are presently known. In my opinion the winter injury problem of plants like any other pathological problem will not be solved by the scientist alone in the laboratory. The usefulness of his findings will be finally determined by the growers who can best utilize the given information."

Are you, as the grower, doing that?

Flower Arrangement

by **MRS. E. CAMPBELL, Edmonton, Alberta**

Flowers, people, furniture if huddled together do not show to the best advantage and lose the attractiveness peculiar to each. In order to display and appreciate the full beauty of a flower it must stand out by itself, that is, have no contact with another flower whether or not it be its own kind. Take, for instance, the unattractiveness of a tight bunch of sweetpeas or nasturtiums forced into a small-mouthed holder, as compared with half the quantity of blooms on long, graceful stems loosely arranged.

Points for Effective Flower Arrangements

1. Strive to keep the blooms from touching each other.
2. Have long stems for central or background setting and use the shorter stemmed flowers for lower part of bouquet.
3. Whether the outline of your display is to be circular, semi-circular, oblong, triangular, or just casually straggling, keep the blooms well apart allowing room for foliage; the soft greens of which are a complement to the finished work.
4. Avoid placing too many flowers in one container. An arrangement of six perfect blooms is more eye-appealing than an overcrowded vase.
5. For a small room, one should limit the display as to size, variety and color; save the massive floral artistry for very large rooms or spacious hall entries.

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by **G. S. REYCRAFT, Winnipeg, Man.**

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The advantages of fluorescents are that they throw their light from a large area; they have a color temperature very near to actual skylight and are comparatively inexpensive to operate. They are unfortunately rather expensive to buy, although second-hand ones from new store installations are sometimes available. The four double units the writer has were obtained in this manner.

FLUORESCENT SETUPS

One of the simplest arrangements consists of a reflector with two 40 watt daylight or fluorescents mounted on metal or wooden legs and set over any table of plants. I have one of these, which I use in our dining room all winter to give a boost to the many foliage plants we have around the house during the dark winter months.

A more permanent structure would be a double fluorescent setup, preferably with reflectors mounted on a white painted or foil-covered section of plywood. Always suspend the light horizontally over the plants. This will effectively light an area about 2 feet wide when hung 14 to 20 inches above the foliage of the plants. It is well to have the fluorescents on chains or other methods of adjustment so you can regulate their height to the height and type of plants being grown. For instance, I like to have my lights about 8 to 10 inches above the foliage of my African Violets. I like about the same height for my young seedlings which I start each year, to be transplanted later into the garden. If your floor space is limited and you need more shelf space, simply build one shelf above the other, spaced about 24 inches apart with the upper shelf supporting the light fixture for the lower shelf.

Fluorescent lamps give off approximately two and one-half times as much light per watt as incandescent bulbs. Daylight fluorescent lamps abound in blue light although they also shed red rays. On the other hand incandescent lights emit more red rays than blue and are not too satisfactory alone. They, however, can be used effectively in conjunction with fluorescents.

Humidity is important as well as temperature in any successful fluorescent setup. Trays filled with vermiculite, peat moss or other medium and kept damp to hold your plants, does this very effectively.

Your plants also like a rest. Your plants do best with from 12 to 14 hours of light. An automatic timer on your light circuit is a great convenience. I seemed to be always forgetting to turn off my lights before I got one.

I enjoy indoor gardening. My African Violets thrive all winter, my foliage plants get their periodic boosts and then during March I start my seed flats.

There are numerous books available that will give you a fund of information on this subject. Inquire at your public library. I particularly recommend "Gardening Indoors Under Light" and "Growing Plants Under Artificial Light," both by Peggie Schulz. Have fun. I am.

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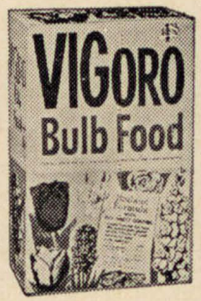

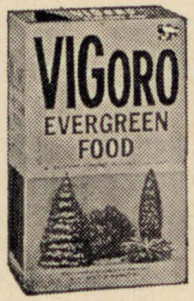

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Horticultural Specialists

by **NEIL McLAREN, Winnipeg, Man.**

As you know there are many kinds of pests which attack and help to destroy a flower garden. No doubt you have heard or read many talks and articles, by eminent professional horticulturists, in the appearance and control of insects, diseases and weeds. I believe you are well acquainted with the methods of their control. Therefore this article deals with the identification and control of the almost forgotten, but equally as damaging pest which plague many flower gardens. He is the psuedo-expert.

In some cases he causes physical damage to the flower garden by his over enthusiasm in his speciality. But mainly the damage he inflicts is indirect through the mental anguish he causes the gardener to suffer. This in turn causes the gardener to be negligent. The following list represents the most common types of the psuedo experts. This is by no means a complete list for I am sure you have identified other types and variations of my listings.

THE PLANT PATHOLOGIST

Appearance: His general appearance is quite normal, therefore very deceiving, but he always has a characteristic glint in his eye, like that of a snake before he traps a bird. His approach is friendly. He will stop and talk about the weather, etc. This is just a red herring. Then out of the blue he will ask you a very specific question about a specific disease of a specific plant, usually a plant that can not be grown within a thousand mile radius.

Example. What causes gray specks on the stems of heather? What disease causes cocoanuts to fall before they are ripe?

Cause: He has read an article about that particular disease and is testing your knowledge.

Control: There are two satisfactory controls of this type of pest: (a) admit your ignorance of the subject and let him gloat or;

(b) call his bluff and reel off a long, impressive list of scientific names; this will completely baffle him and leave him speechless. The second method is best because it has both an immediate effect, it stops him in his tracks and it has a residual effect, he will not likely ask you any more questions.

THE PHOTOGRAPHER

Appearance: He is the most easily distinguishable of all the "experts," because of rounded shoulders, caused by carrying his cameras, two light meters, measuring tape, flood lights, flash bulbs, batteries, extra film and tripod. He may also run around holding up his hands and framing pictures.

Cause: His only reason for existing is his mania for snapping the shutter.

Control: Since his main damage is caused by his trampling down your flowers, the best control is prevention. Build a tall fence or plant a thorny hedge around your garden. An alternative method is not to allow your garden to become too picturesque.

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THE SNIFFER

Appearance: This pest is usually of the female gender and can be easily identified by the flared and quivering nostrils. She has the uncontrollable urge to smell each individual flower within eye sight. This urge to sniff causes her to step on any plant in her way. She just can not be stopped if she spies a rose.

Cause: An over active olfactory organ.

Control: Carry a large stick and let her have it every time she bends to sniff. Or build a tall fence or some other type of barricade.

THE ARCHITECT

Appearance: He is very conspicuous in his ultra modern dress. Like the pathologist he will put you off guard, by complimenting the general appearance of your garden. If you accept his flattering remarks, he will then offer you some "helpful advice." And within a half hour he will have completely re-arranged your whole garden and left you standing totally confused.

Cause: Because he can put blocks of cement together effectively he believes he can build a flower garden.

Control: Avoid him at any cost or carry a set of ear plugs.

THE SPECIALIST'S SPECIALIST

Appearance: He has no characteristic appearance except he looks like a retired businessman, which he usually is.

Cause: He has grown a half dozen petunias in his window box or flower border for the last 45 years. Therefore he must be an expert. His theory has come from the Reader's Digest and from friends of his with the same amount of knowledge and practice. He will, without the slightest hesitation relate to you all his worthwhile knowledge. He just wants someone to talk to.

Control: Listen if you have time but do not take him seriously.

THE MOROPHOLOGIST

Appearance: This type is most commonly older, but there are exceptions. He is usually characterized by a booming voice which he uses to full advantage as he announces the identity of each flower.

Example: Dwarf morning glory as petunias, lavatera as hollyhocks, weeping birch as weeping willow.

Cause: There could be one of two reasons he is an "expert": (1) he is trying to impress others who have less knowledge then he or;

(2) his limited horticultural education was obtained 20-30 years ago by wandering through his grandmother's garden.

Control: The best control is to humor him if he asks you to verify his identification of a particular flower. This will not only make him feel good but will also save you a great deal of argument. You should realize that his meager knowledge has been engraved upon his mind and can not be removed because it has become too automatic.

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