Reference Guide for Prairie Gardeners

$1.00

Expert Answers to Your Gardening Problems

The 1964 PRAIRIE GARDEN

WESTERN CANADA'S FOREMOST HORTICULTURAL ANNUAL

Published by
Winnipeg Horticultural Society

THE PRAIRIE GARDEN ... 1964

What People Are Saying . . .

"Truly a western prairie guide and inspiration to good gardening."

"Most practical book written for Western Canada."

"Have had a copy every year since 1958. You will always find one on my bedside table."

" This will be the fifth consecutive Prairie Garden to add to my library, all of which have been most helpful to a beginner in gardening. Thank you!"

—Mrs. John A. Newman, Fort Vermilion, Alta.

" We look forward each year to receiving a copy of this very worthwhile garden magazine and always keep back copies. The material applies to problems locally so it is worth so much more. We like to try new things too but it is helpful to know if they are worth trying in Manitoba."

—Mrs. E. A. Dixon, Hamiota, Man.

" I received a lot of useful information from last year's Prairie Garden, and found it an excellent publication. Please forward me a copy of the Prairie Garden for 1964."

—Mr. G. Gostick, Winnipeg, Man.

" I have the 1963 Prairie Garden and am more than delighted with the contents. It is truly a western prairie guide and inspiration to good gardening."

—Mr. J. H. Illingworth, Atwater, Sask.

" Dr. G. Hard, of the University of Minnesota, introduced me to your outstanding publication only this afternoon. I have found more information between its covers than the many, many garden books I read each year. The articles give up to date information that I have been puzzled about. I would like to subscribe to the Prairie Garden as long as you continue to publish it."

—Susan Harich, St. Paul, Minn.

" I have had a copy of the Prairie Garden every year since 1958 and enjoy the very helpful hints. You will always find one on my bedside table."

—Mrs. E. Fearn, Edmonton, Alta.

" I have all the Prairie Garden annuals up to date and refer to them often—the most practical book written for Western Canada."

—Mrs. John Atkinson, Lashburn, Sask.

" Just received a copy of the 1963 Prairie Garden and found it wonderful. I would like a copy of the 1962 edition. Too bad I discovered this magazine so late as I sure would have appreciated all those other back issues too. Anyway I am happy that I will from now on be able to share in this mine of invaluable information."

—Mr. W. Benoit, Willow Bunch, Sask.

BUILD UP YOUR PRAIRIE GARDEN "LIBRARY"

There is still a supply of 1963 editions as well as a limited number of our 1962 book as well. All other previous issues are now sold out. The back issues available are selling at 50 cents each postpaid.

Each new edition of The Prairie Garden, although complete in itself, also complements previous issues. For example, Mr. Dick Patmore, Brandon, one of the most eminent authorities on evergreens, trees and shrubs in Western Canada, has given us in tabulated reference form complete information for the last three years as follows: 1962—Evergreens For The Prairies (6½ pages); 1963—Deciduous Trees For The Prairies (8 pages); 1964—Deciduous Shrubs For The Prairies (8 pages).

The Prairie Garden

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WINNIPEG HORTICULTURAL SOCIETY

(Established 1931)

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

21st Annual Edition Winnipeg, Manitoba February 1964

Fellow gardeners of the Canadian Great Plains, here is your 1964 issue of THE PRAIRIE GARDEN. It is the twenty-first. That means we have become of mature age, qualified to vote, yes, even by the oldtime standards.

With the passing of time our judgment has become more sound and, blessed by the co-operation of dozens of successful gardeners, both amateur and professional, the subject matter and the illustrations have become increasingly satisfying. At this time we express thanks and pay enthusiastic homage to the noble contributors who furnish the grist for the annual book. It is written by prairie gardeners to share their knowledge and happy experiences with all the rest of us.

"To the improvement of plants there is no end," and it is very important that the public be kept abreast of garden progress. THE PRAIRIE GARDEN is the only garden book incubated annually for the Canadian Prairie Region. It is gratifying to have it received so well and so widely. This volume will be 16,000 copies; 10 years ago the number was a slim 1,500. Its acceptance in Saskatchewan and Alberta as well as in the province of its birth and publication, Manitoba, is pleasing indeed. We also have numerous readers in the neighboring border states.

The objective of THE PRAIRIE GARDEN is to supply a useful reference book for the home gardeners with least possible cost. Our aim is to have every person on these one-time old buffalo pastures able to obtain a copy each succeeding year.

CONTENTS

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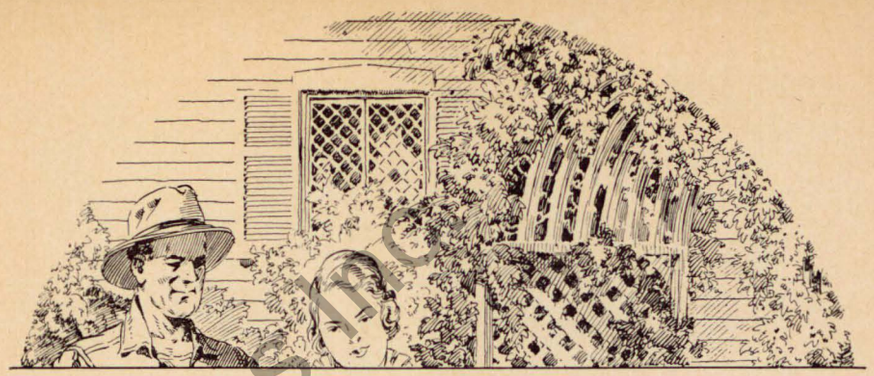


Takes Two to Garden

by J. M. McPHERSON, Winnipeg, Man.

When the pine scent of the Christmas tree has finally faded from our house, and the January snows pirouette outside our picture window, my wife and I begin planning how we can turn a flat piece of prairie into a property worthy of being called a garden. We have accepted the challenge presented to thousands of new suburban dwellers—that of transforming a pasture into a picturesque community—and we are finding it a most rewarding occupation.

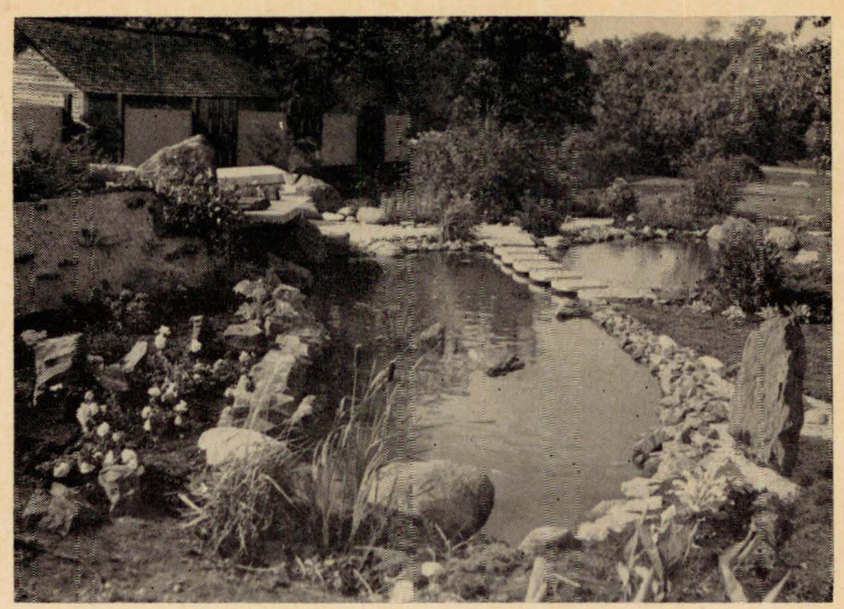
By the time the curling Brier has been decided, and the cheers of the Stanley cup crowds have died away, we already have reaped part of the reward of gardening. There is a thrill of expectation when we start browsing through nursery and seed catalogues in search of a specific shrub or plant. We enjoy evenings with gardening friends when future plans and new methods are discussed. Radio and television take on a new interest when The Prairie Gardener and Stan Westaway become part of our board of strategy.

In preparing the soil and in the subsequent sowing of the seeds we find a different kind of pleasure. We notice, for example, that the mental sludge accumulated through a rough day at the office can often be washed away through the simple act of getting our hands dirty. We rediscover the divine power when we witness the miracle of seed germination. If nature decides to boycott us, we still have benefitted from the refreshment of mind and spirit.

The third stage of our reward, of course, is sharing in the beauty of the various plants, and in the bounty of the fruit trees. We also derive enjoyment from using our yard for barbecuing and entertaining. We are no different from other gardeners except that all of the reading of the nursery folders and the sowing of the seeds, and the culling of the plants, is done by one person; for we are one of a number of gardening teams who share benefit from only one pair of eyes.

We borrow the methods and receive inspiration from such gardening partners as visually handicapped Alex Campbell and the ageless Mrs. Campbell who operate a gladiolus farm in Fort Garry, Man., and the totally blind Paul Vandenbosch and his remarkable wife, the well known market gardeners of Regina.

We, of necessity, employ a few different methods from those of the four-eyed gardening teams, but we feel we get the same results. We, also, know the pride that comes with an attractive homesite, and the satisfaction of being part of a garden-conscious community. Mrs. McPherson and I realize that it doesn't require both members of a man and wife team to make things grow in a garden, but we submit that it does take two to reap the full reward which gardening offers.



Speaking of Pools and Water Gardens

by **KEN FEGOL, M.Sc.,**
Chemist, Grain Research Laboratory, Winnipeg, Man.

The creative use of water with its unique charm of being irresistible to grownups, children and birds can work wonders in your garden. Even the smallest pool with its quiet waters and cool reflection of the sky has a special appeal. The serenity of still water is enhanced by a constant suspense of potential movement of its surface. A falling leaf, a fish or a breeze will cause ripples, temporarily erasing all that is reflected. Soon everything is calm and the ever changing mood of the surroundings and sky is captured over again.

Or the trickle of water cascading over rocks sounding out the music of a small mountain stream may be the effect we want. Whether it is a fountain, stream or waterfall, recent developments and inventions during the past decade make the challenge of putting our ideas to work a reality. The display of water may be in the outdoor living area or in a quiet corner waiting to be discovered beneath a lush green cover. Yes, if there is a corner available in your garden, you can enjoy the peaceful tranquility of a pool, the color reflections in the water and the beautiful restful water lilies may crown your own back yard.

Before going into any construction details, perhaps a brief description of the pool I have been working on for two summers would be in order. I decided to give the pool a modern look, experimenting with as many new developments as possible. In our colder climate where temperatures drop to 40 degrees below zero and the ground freezes to 6 ft., nothing could be skimped on if a maintenance-free structure was desired.

The pool is of an irregular shape closely resembling a boomerang 60 ft. long and 10 to 15 ft. wide. The depth varies from 6 inches in the bog area to 18 inches at the deepest part which is at the outside bend. It holds over

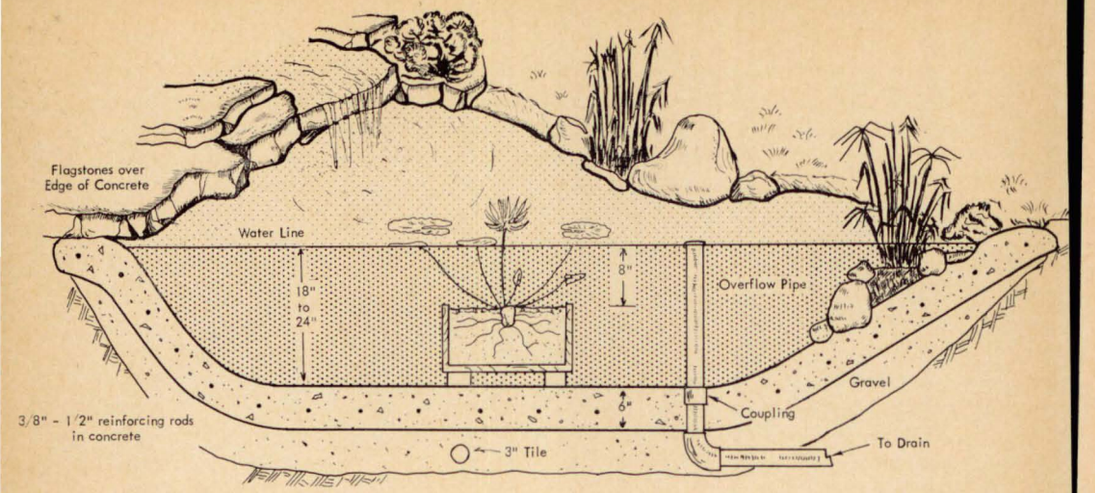
4,000 gal. water. Five stepping stones lead to a simulated redwood bench in the sitting area where one can forget the trials of everyday life. Eighteen cubic yards of concrete formed the 6-inch bottom reinforced by over a ton of steel. Retaining walls provide for a small raised pool and rockery. Over the deepest part is an overhang of polished granite giving a cave-like effect. Water is recirculated by means of a submerged pump through underground lines to the top of the 6 ft. "mountain," into the small pool and is metered through five aluminum channels over the granite slab to the water below. Night lighting includes lights on each stepping stone and glowing quartz rock along the water's edge.

A variety of stone in addition to the plant material added to the color pattern and texture of the pool. Smooth stones of varying shapes were found locally in fields and ditches. Charcoal gray irregular rock originated in the Whiteshell area along with the gray and black granite chips from an old gold mine. White translucent quartz came from another mine 300 ft. deep. Crushed limestone, slabs, and Tyndall limestone blocks were obtained closer to home. The banks of the Red River yielded smooth flat stones for the patio. Except for a few polished black pebbles from Vancouver, most of the stone came from within a 100 mile radius. Although smaller rocks were easily handled, mechanical help was required for those weighing several hundred pounds each. This stone work coupled with strategic plantings of evergreens, perennials and aquatic plants helped to provide the setting shown in the photograph.

Although my pool is somewhat larger than a tub garden, many points considered in its construction can be applied to whatever variation your imagination or pocket book will dictate. Whether you work with a landscape architect, a garden designer or do the work yourself, your local hardware store and garden centre may be able to supply most of the materials. A water garden will repay itself over and over again if properly constructed and nothing is skimped on. Here is a resumé of things you will likely encounter before your work is completed.

Location and size of the pool

A water garden like any other garden requires light, therefore it should be located where it receives the greatest amount of direct sunlight. Water lilies will no doubt be of top importance and a minimum of 3 or 4 hours sunlight is necessary. By planning the pool away from overhanging trees, less cleaning of fallen leaves, twigs, etc., will be necessary. The ground level pool is best placed away from run-off areas in your yard as it will interfere with the natural drainage. It should also have a large screened overflow to cope with possible flooding due to long or severe rain storms. Any type of pool could be started well in advance of the actual construction. If the sod is replaced with crushed rock to simulate water, the stones can then be set in the appropriate place along the edge or jutting out from the middle. In this way the best arrangement can be found at your leisure. A few plastic water lilies set on the crushed material, stepping stones or a bridge set in place, or the sitting area can be planned in advance. Even without water, the Japanese garden effect will be pleasant to look at. Changes and improvements can be made quite easily. The size can be increased to accommodate an extra lily or two or the sitting area enlarged so that visitors won't trip over themselves. If you have the space, spread out your plan as you can be sure that no water garden can ever be too large. Certain expenses are fixed, such as the drain and overflow, sitting area, pump, etc. The additional expense resulting from enlarging the pool to the size you would really like is very small in proportion to the total cost.



Excavation

Now that you have lived with your rock pool for some time all you need is a spade and a strong back. However, it may be best to call in a local contractor specializing in installing drains for septic fields, etc., especially if a deep drain is required. A back-hoe and loader on a small tractor is ideal for this job as it is so versatile. The excavated material can readily be used to fill low areas in the yard or as a base for a rock garden. Just before the excavation, the level pegs should be set in place. This can be done with a level set on a straight board or a hose filled with water. A transit, however, is ideal especially for a large pool with an underground drain.

The actual size of the hole should be larger than the intended water area, allowing for a 6-inch concrete on a 6-inch gravel base. The depth of the water in the pool should be about 18 inches as the deeper the pool the more dangerous it is if someone accidentally fell in. Just remember that water lilies require 6 to 8 inches of water over the crown. Drain tile can be placed in the gravel along the entire length and lead to the lowest end connecting to the sewer or underground drain. Adequate drainage is a must as any seepage around or through cracks in the pool would otherwise cause a water-logged condition in our heavy clay subsoil. If any amount of water is trapped beneath the concrete structure there is a greater tendency for heaving and cracking during our severe winters.

Because of the great exterior pressure caused by frost, heavy reinforcement should be also used in the concrete. In warmer climates, one notes that chicken wire or stucco wire is recommended. This, however, is inadequate protection in our area. It would be advisable to use ⅜-inch or ½-inch steel bars spaced 6 to 12 inches apart both ways. I had ready access to ⅝-inch steel bars so spaced them about 1-1½ ft. each way. These are more difficult to bend but are quite suitable in a large pond. Adequate steel reinforcement is a relatively cheap insurance against drastic cracking and opening of the concrete, helping to provide trouble-free maintenance.

Concrete

Although concrete is a wonderfully flexible material to work with, lead, copper, and fiberglass are also suitable. Heavy polyethylene films retain water but their life span is much shorter. The advantages of concrete are innumerable. Children are always tempted to climb every possible rock, therefore no loose stones should be present along the edge. Concrete provides the easiest method of firmly anchoring these to the base. The size of the pool will

determine the amount of concrete needed. If machine mixing on the site is carried out the mix should be at least 1 sack of Portland cement to 2 cu. ft. of sand to 3 cu. ft. of stone (less than 1 inch in size). This mix should not be confused with the term of 1:5 as when sand and stone are mixed together a volume of about 3½ cu. ft. will result (as in pit run gravel) instead of 5 cu. ft. About 4 Imperial gallons of water added to each batch will give a workable mix as a trial only. If a relatively heavy consistency concrete is required for fairly steep sides then less water is used. Approximately 8 sacks of cement are required for 1 cu. yd. of concrete.

If any large scale improvement is planned, then ready mixed concrete delivered to your yard will save a lot of work. It is not too much more expensive if a mixing plant is nearby. The pool will be exposed to severe frost action of freezing and thawing and the use of an air-entraining agent in the mixture is very highly recommended. With a volume of 5-6 per cent of air entrained, millions of minute, well distributed and totally separated air-bubbles are present in a cubic foot of concrete. This also reduces the weight of fresh concrete and makes the mix more workable. The recommended air entraining agent, a vinsol resin, can only be used with ready-mixed concrete and the amounts added (only a few ounces per truckload) are so small and critical that the risk of spoiling the mix is too great in inexperienced hands.

When the concrete is poured, enough workers should be on hand so that the operation will be carried out smoothly. It is advisable to have someone familiar with concrete as the very stiff mix dries extremely rapidly. The rocks along the edge are placed before the concrete hardens, the drain pipe set in place and the level checked. Pockets can be left along the edges for shallow plants in containers. The finish should be as smooth and dense as possible to facilitate painting later on. To harden properly, new concrete should be kept moist for at least 7 days with wet burlap, clean straw, etc. It is best to fill the pool as soon as the concrete has set.

Conditioning the Pool

The first water in the pool will be very alkaline and is unsuitable for fish or plants. Some recommend three or four changes of water but when 4,000 or 5,000 gallons of water are required this is not too practical. Another method is to fill the pool, let it stand one day then add 1 qt. of vinegar to each 100 gallons of water. Vinegar is a weak solution of acetic acid (approx. 3-5 per cent). If acetic acid is obtained from a drug supply house it is much cheaper and 1 quart may be enough for as much as 2,000 gallons. This water is drained and replaced with fresh water, preferably soft water or ordinary tap water if you live in a city. Well water in our area is quite alkaline but surprisingly enough, it does not seem to affect the gold fish. I noticed that the leaves of the water lilies decayed more rapidly but whether this was due to the alkalinity or some other factor is hard to say. If the concrete is to be painted the first year then no conditioning is necessary.

Paint

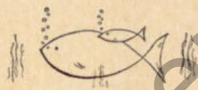
What color should you paint the pool? Nine out of ten will suggest blue or aqua. Why not try black? When the bottom gets a bit dirty (and it will) it will look dark gray and natural and would not be as noticeable as with a blue color. If reflections are of prime interest, just a few inches of water over a black bottom would be very effective. My opinion is that blue is too imitation-like for a pool bottom (a naturalized one that is) but may be fitting for a formal one. If a coat of paint is applied in the second year, it will also seal up any tiny cracks. "Poly Aqua," an epoxy paint generally used for swimming pools, boats, etc., is probably one of the best and most durable on the market.

It is a relatively recent development and can be purchased at leading lumber yards or marine shops. It is available in a variety of colors, including aqua and black, and comes in two separate containers which are mixed just before using. The price is slightly more than $20 per U.S. gallon but will withstand years of service without having to be repainted. One U.S. gallon will cover about 300 sq. ft. of concrete surface.

Water Lilies

Now that the pool is filled with water, it can be dressed up with plants. The inexperienced water gardener may have a temptation to over-plant. Both the pool and water lilies are at their greatest charm if there is a background of water reflecting the sky. Our cool Canadian summers are quite suitable for both hardy and tropical water lilies. Hardy varieties are perennials and will bloom year after year with little attention. They bloom early but go dormant early in the fall. The flowers float on the surface and the leaves are usually small. Tropicals on the other hand are best renewed each year. They are planted later than hardy varieties but bloom later in the autumn. The leaves of tropicals are much larger and produce a luxuriant effect if frilled at the edges. The flowers embrace all the colors from purest white, delicate pinks to rich reds, yellow and combinations of reds and yellows. The blue and purple color is found in tropical varieties only. In addition to the day blooming tropicals there are the night-bloomers or "the business man's Water Lilies." These are in flower in the morning and during the delightful evening hours while hardy lilies are closed. Tropicals will also do better if the amount of sunlight is limited. All three types should be tried if sufficient space permits. However, personal preference may choose one or the other. We are fortunate in having a large water lily grower in eastern Canada (More Water Gardens, Port Stanley, Ont.) who carries many of the best varieties grown by our good friends south of the border.

Shallow water and bog plants obtained from a creek, pond or purchased from the catalog give a naturalistic effect when placed along the waters edge. Cattails with their thin long cylindrical flower spikes add an artistic touch in one corner. A few oxygenating plants provide a hiding place for fish, especially if young ones are raised.



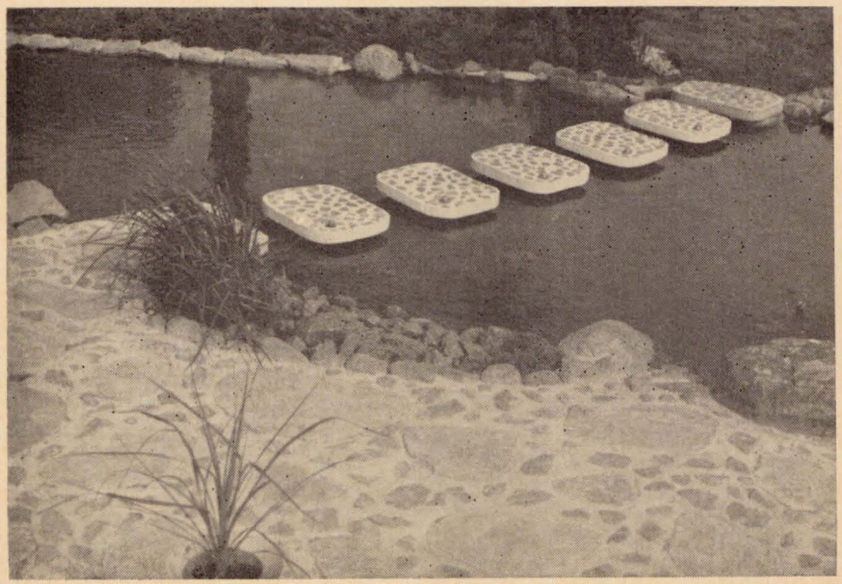
Fish

Anyone visiting your pool will search for goldfish so don't disappoint them. Goldfish eat mosquito and other insect larvae and these lively entertaining housekeepers should be present. About 5 to 10 common goldfish 4 inches in length or over are all that are needed as they tend to stay together. The fish will look smaller in the pool than in an aquarium. A daily feeding of a breeders size fish food will keep them happy. If your supply runs out, crushed dog food can safely be used but should be confined to short periods. By keeping the water level several inches below the surface, our feline friends will be prevented from having a happy fish supper. I prefer the level near the top but just low enough so that water does not flow over the edge with wave movements. Cats can be kept away by applying a cat and dog repellent along the edge. A large screened overflow (2¼ inches in mine) prevents any loss of fish during long or severe rainstorms.

Cleanliness in the Pool

If the water is left alone, it would soon have green algae growing on everything. It can be controlled quite easily with chemicals but most of these are harmful to fish and plants. Many people recommend scavengers, the most common one being the snail. However, these would almost have to line the pool to be effective. The best way to control these tiny green organisms is by recirculating the water and passing it through a filter which can be washed easily. By this method, a "Little Giant" circulating pump costing about $30 can pump 225 gal. per hour. Smaller ones will pump 180 gal. per hour to a height of 5 ft. A pool vacuum cleaner, if available, would remove fallen leaves, twigs, etc., with little effort keeping your housekeeping chores at a minimum.

Now your pool can be as elaborate as you wish but another necessity is an area where one can sit and relax. The sitting area may only consist of a bench set on the grass or may be an all-weather area such as a patio. This can consist of flat stones set on sand or concrete. A good firm non-slipping footing can be obtained with patio blocks but if the space is not square or rectangular, these may not be too suitable. My sitting area consists of a bench of redwood stained 2 x 4 boards. This is placed over a patio of smooth flat natural stone set in concrete with chips of gray and black granite 2-5 inches in size set around the stones. After the stones are placed at the correct level, the complete surface should be sprayed with a cement retarding agent. This will retard the setting of cement at the surface. The concrete can then be scrubbed with a broom or steel brush or scraped and washed with a hose so that the stones will be set slightly above the concrete base. This will result in an exposed finish which is easy to walk on and is not slippery. The retarder is only temporary, that is the setting is only slowed down for a time. If this retardant cannot be obtained, equally good results can be obtained with a sugar solution. Trial runs with a sugar syrup sprayed lightly over the concrete are in order before any large job is undertaken. The effect of sugar is permanent—thus if too much is applied and it acts to a greater depth, especially around the stones, the surface will not set and the work may be ruined. Both retardants can be applied and left overnight before any further work is done.



If stepping stones or a bridge are desired, they should be planned well in advance as the height is governed by the level of the water. The closer the water is to the stones, the more they will appear to float on the surface. If the pillars are painted black it is surprising how invisible they become. About the easiest pillar to construct is with square-cornered concrete blocks. I found the size 12 x 16 x 8 inches deep satisfactory. When placed one above the other and filled with concrete, a firm footing for the top is assured. The steps may be large, flat, natural stones or they may be pre-cast. Natural ones may be more difficult to fasten to the pillars. Pre-cast steps can be made with a strong concrete of white cement and white sand. A strip of 20 gauge metal is suitable for framing the sides. The concrete should be reinforced with a heavy wire mesh. Rock chips are set into the surface to provide a non-skid area. Lights can also be used in the corner of each stone.

Winter Care

The pool should be drained and all plants removed to your cellar or discarded. The pool can be refilled with water and a few logs set in place. This will prevent any undue damage when the water freezes solid. The fish would naturally be removed in our area and can be overwintered in an aquarium. A good-sized aquarium of about 30-40 gallons will hold up to 10 large goldfish without making it look overcrowded.

An infinite variety of shapes and textures can be obtained in your pool just by using your own creative imagination. It is best to get as much help as possible beforehand as well as checking over all the literature on this subject that you are able to find.

Pruning Ornamental Trees

by **J. A. MENZIES and A. GUDZIAK**
Department of Plant Science, University of Manitoba

Ornamental trees are pruned primarily to preserve their health, to maintain or improve their appearance and for the safety of people and property. Correct pruning involves removing branches without damaging the tree, leaving the wounds in the best condition for healing and treating the wounds to speed up healing and prevent disease infection.

Each kind of tree has its own characteristic shape or habit of growth. In general, when pruning, you should attempt to follow and retain that shape. At the same time, if a tree is poorly shaped you should try to improve the appearance of that particular tree.

REASONS FOR PRUNING

Generally speaking a tree, once it has developed a permanent framework, may be left more or less alone. Apart from training in the early years and an occasional thinning in later years, little pruning will be needed with the majority of trees, However there are always exceptions and from time to time one or more of your trees will need to be pruned. The specific reasons for pruning trees are:

1. **Pruning at planting time.** The first few years are the most important for this is when the tree is shaped and the first permanent scaffold limbs are selected. Before planting all damaged roots should be removed and any extra long roots shortened. Severe pruning back of the root system should, however, be avoided.

Before or just after planting about one-half of the top must be removed to compensate for the loss of roots. This should be done in the following way. Select a few strong limbs as your main scaffold limbs. These should be spaced well apart, up and down and around the trunk, and should come away from the trunk at a fairly wide angle. Do not save branches that form a narrow or V-shaped crotch with the trunk (Fig. 3), branches that are crossing and rubbing other branches, or a number of branches which arise from close to the same spot. All these will lead to weak trees and future problems.

Cut back to short stubs all branches which are not going to be saved. The reason for cutting back to stubs instead of removing the branches entirely is so they can act as sap drawers. If all undesirable branches and small twigs are removed entirely from the trunk and inside of the tree there will be little foliage left to produce food or draw up water and minerals. The short stubs will put out leafy shoots which will manufacture food and draw up water and minerals for the trunk and scaffold limbs. The result will be stronger branches and a stouter, stronger trunk. These stubbed branches must be kept pruned back and can be removed completely, when the tree is well established.

The permanent scaffold limbs should be pruned back by one-third to one-half. Cut back to a bud or lateral twig so as not to leave a stub (Fig. 1, b). Do not cut too close to the bud (Fig. 1, a). The proper cut is shown in Fig. 1, c. The future shape of the tree can be established at this time. If you want the tree to assume an upright form cut back to buds or twigs on the upper side of the branch (Fig. 2, a and c). If you want the tree to assume a more spreading habit cut back to buds or twigs on the under side (Fig. 2, b and d).

In general, unless a low-headed tree is desired, leave the leader unpruned, especially in those species, like the Paper Birch, which have a definite leader.

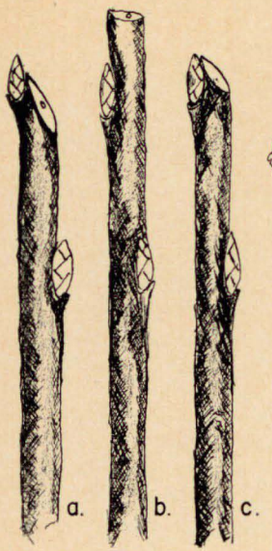


Figure 1.

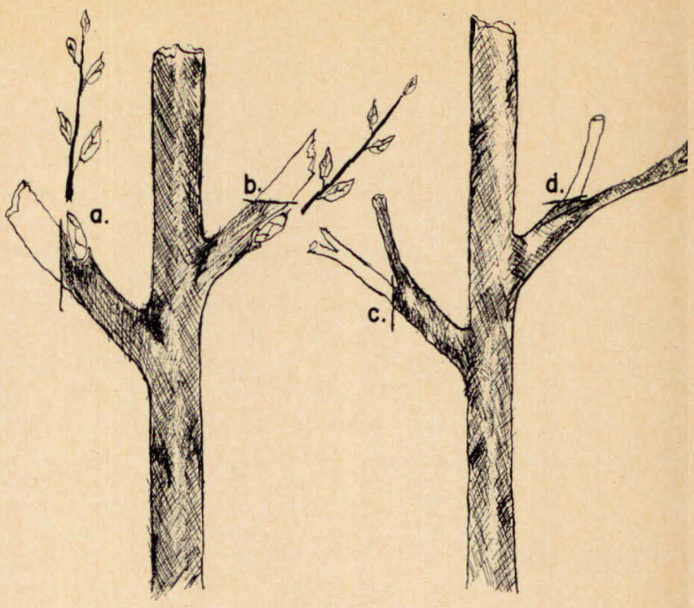


Figure 2.

Pruning back the leader can ruin the shape of the tree, result in the dominance of the lateral limbs over the shortened leader and a weak scaffold structure.

In many cases, with the larger tree species, we want the trunk free of side limbs to a height of about 7 feet. Do not remove these lower limbs in the first year or two because this will result in a weak, spindly trunk. Instead, head these limbs back somewhat each spring until a system of permanent branches has been established above 7 feet. The lower limbs can then be removed over a 2- or 3-year period.

2. **Removal of dead, diseased and broken branches** to improve the appearance of the tree and prevent the entrance and spread of disease organisms. These branches should be removed as soon as they are spotted.

3. **Remove one of two branches which are crossing and rubbing.** Remove branches which are growing in the wrong direction, in towards the centre of the tree, downwards, etc. Removal of these branches will prevent future problems. Such branches should be removed when small because the wound will then be small and wound healing more rapid.

4. **Remove one member of a narrow angled or V-shaped crotch.** These crotches are weak and split readily especially when bark is caught in the crotch (Fig. 3, a). When this happens the annual rings of wood cannot continue through the upper side of the crotch and a mechanically weak point develops. Also, snow tends to catch in these crotches and when the snow thaws, runs down the side of the crotch and then freezes again, killing of the crotch tissue may occur (Fig. 3, c).

Care must be used in removing one of the branches at a V crotch in older trees because the real point of juncture will be some distance away from the apparent point. If the branch is removed too high a stub is left and proper healing will not take place. Fig. 3, b shows the proper point at which you should remove a V crotch.

5. **Safety.** Dead, weak, low-hanging branches, etc., which might be a hazard to pedestrians, children, vehicles or buildings should be removed.

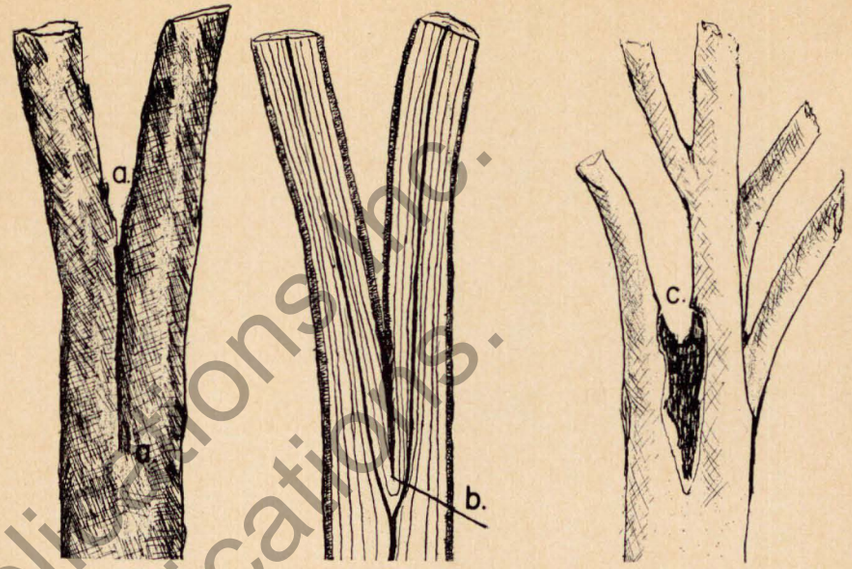


Figure 3.

TIME TO PRUNE

From the standpoint of the tree itself, the best time to prune is in the early spring because wound healing is most rapid at this time, but pruning after the leaves are well out has the advantage that you can readily see dead or weakened branches. Perhaps the ideal way is to do any heavy pruning in the early spring and after the leaves are out to prune again to remove branches which were missed the first time.

AMOUNT TO PRUNE

Regardless of the time you prune, severe pruning should be avoided if at all possible. Severe pruning results in excessive watersprouts and many large wounds which heal slowly. Also, many species, like the apple and mountainash, if suddenly opened up may be seriously injured by sunscald. When a large portion of the top must be removed it is best to spread the work over 2 or 3 years. New wood and foliage can then be produced to provide shade while the tree is being pruned.

Large wounds heal slowly and can always serve as a point of entry for disease organisms. It is always better to remove unwanted branches while they are small. If the trees are carefully examined every spring branches that are going to create problems in the future can be detected and removed while still small.

HOW TO PRUNE

All cuts should be made flush with the main limb or trunk. Do not leave a stub because the callus tissue cannot heal over it and the stub decays (Fig. 4, b). The decay may work back into the main limb or trunk permanently injuring the tree. Do not cut too close because then you leave an unnecessarily large wound (Fig. 4, a). The correct position for the cut is shown in Fig. 4, c.

With smaller branches a single cut will do the job but with larger branches a single cut may strip the bark and wood below the cut. These larger branches should be removed in three steps as shown in Fig. 5. Make the first cut on

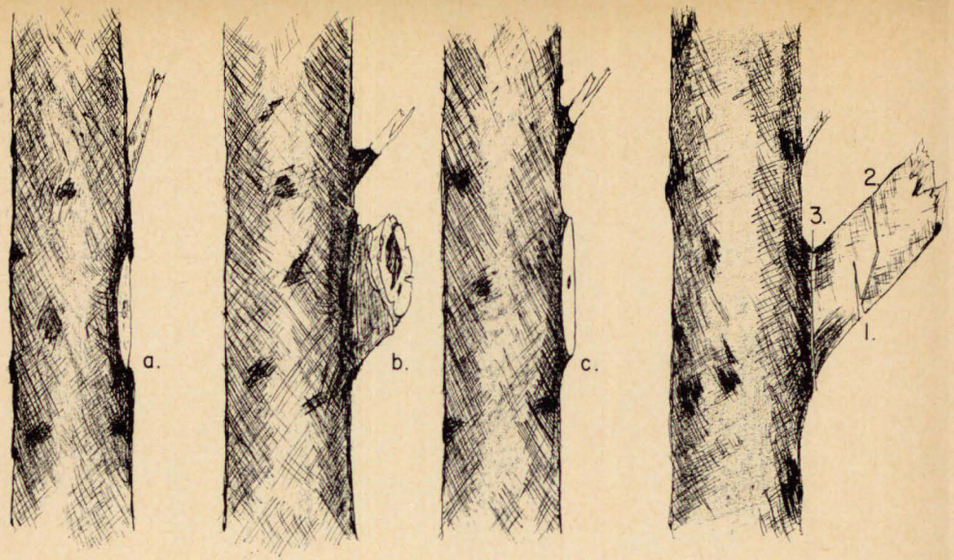


Figure 4.

Figure 5.

the underside of the branch, about 1 foot from the main limb or trunk and saw about one-third of the way through. Make the second cut on top of the branch about an inch or so beyond the bottom cut, sawing until the branch splits off. With the third cut remove the stub flush with the main limb or trunk.

TREATMENT OF WOUNDS

All cut surfaces should be levelled with a sharp knife to remove stubs or lips of wood and bark and smooth the ragged cut which is left by a saw. Wounds, especially large ones, should be shaped into an oval parallel to the limb or trunk. Wounds of this shape will heal more quickly and more uniformly than wounds which are circular or somewhat flattened at the top or bottom of the cut.

A wound dressing must be applied to all wounds more than 1 inch in diameter. There are a number of compounds which can be used; orange shellac, asphalt paint, rubber base paints, grafting wax, etc. The wounds should be completely covered and in the case of large wounds it will be necessary to apply a new covering from time to time until the wounds have completely healed over.

Celebrates Golden Anniversary

The St. James Horticultural Society, second oldest in Manitoba, will celebrate its Golden Anniversary at its 50th annual show in the Linwood school on August 25 and 26. A Golden Section will be a feature event at the show.

This Society was organized in November, 1914, by 13 St. James gardeners and has held a show in every year of its half-century of life, a record that its members are notably proud of.

During the bad years of the depression of the 1930's, the Society's funds were so low that paid-up memberships for the year were given in place of prize money at its shows. Today its show prize list runs to over $900.00.

Around 1938, the St. James municipal council allowed the Society the use of a tract of land in the north part of the city which was divided into parcels of 30 feet by 60 feet for annual competition by members. This tract has been under cultivation right up to the present time.

Gladiolus—a flower 'portrait' with natural outdoor setting.

A Color Record of Your Flowers

by **ANGUS H. SHORTT, Winnipeg, Man.**
Naturalist, Artist and Keen Color Photographer

During winter months, memories of our flower garden captured on color slides provide many hours of pleasure and give fresh impetus to plans for next summer.

A well kept diary or notebook with notes on the performance of various plantings, is a valuable aid in planning, but what about a color-slide record also? With this you can build up a virtual treasure trove of pictorial beauty from year to year. Beginning with early spring blooms and continuing through the kaleidoscope of summer to the rich palette of fall, such a slide record tells better than a thousand words the story of your garden.

For convenient filing, slides can be divided into a number of categories. For example, a series of wide-angle views encompassing the entire flower garden can be taken at intervals during the season. Next, we can take a series in which clumps of flowers such as gladiolus, dahlias, roses, petunias, etc., are featured. A third set can be built up of 'portraits,' or close-up studies capturing the beauty of form, color and texture of prized specimens. Such color slides carefully captioned are a wonderful source of comparison with succeeding years and a gauge for designing new plantings.

Incidentally, recording data is an important item in the preparation of a slide collection. For this purpose we carry a pocket-size, stiff-cover notebook in which the following information is entered: type of film, with the numbers 1 to 20 or 1 to 36 (depending on the number of exposures on the roll) listed down a ruled column on the left side of the page; date; locality and name of

subject (when entering flower names both the common and the scientific names are given where possible). Two narrow ruled columns at the extreme right of the page are for camera data, shutter speeds and stop openings used.

We also make notes on the page opposite (which is kept for that purpose) concerning light conditions, weather, or remarks on the plants or flowers. Keeping records of this kind enables you to caption correctly all slides when the roll of film has been exposed and processed, which in some cases may require several weeks by which time reliance on memory can be risky.

Slides retain their color and quality indefinitely if kept in dustproof file boxes and stored in a cool place. When carefully handled they may be left in their original cardboard mounts which are excellent for captioning purposes.

There is now available a wide range of color film for 35 mm. cameras with speed ratings from 24 to 200. The final choice of the best color film for flower photography rests of course with the photographer. It has been our experience that all color films we have experimented with give their best results when exposed under good sunlight conditions. This is particularly true of the slower films. The increased speed of the new films greatly extends the time limits in which good pictures can be taken. Evidence of this is shown in their ability to catch the softness of early morning light and the richness of the evening sunlight.

Light meters are an indispensable aid in flower photography and they are available in an almost unlimited variety to suit every need. (Some cameras have built-in light meters.) Light readings should be carefully taken. It is a good plan for the beginner to keep a record of his first attempts and check these against the results to arrive at the correct system of using the meter. It may be of interest to mention that we have found that readings taken off grass or low foliage surrounding the flowers, have been consistently reliable. The meter is held at about waist level over an area receiving sunlight in corresponding intensity to the flowers, and the resulting reading is transferred to the camera settings and the picture taken.

Glacier Lily—A telephoto shot with the flower spikes in sunlight, the background dappled with deep shadows.

Lily—Bright Cloud—an example of pattern and texture against a blue sky.

In flower 'portraits' where the lens is close to the subject, care should be taken to allow for reflected light from white or pale-colored flowers. There is a tendency to over-exposure in such cases and it may be necessary to close down one full stop (the next smaller lens opening to that indicated on the meter) for good results.

One more item that is part and parcel of good picture taking is a sturdy, tilt-head tripod, capable of a wide field of movement both vertically and horizontally. With the camera mounted on the tripod, select the most likely spot for a good picture, set up your tripod and then compose your picture carefully, using to full advantage the freedom of movement afforded by the tilting device.

Some flowers such as dahlias, lilies, delphiniums, etc., are ideally suited to low-level shots. The camera is placed at a low angle and aimed upward to catch the deep blue of the sky or some fleecy clouds. Shooting against the light also produces some dramatic effects (shade the lens carefully in such instances). The sunlight filtering through the petals and leaves brings out translucent qualities and highlights details of form and texture.

Backgrounds add greatly to picture interest and composition. Look for something that will improve the setting either in color harmony or in arrangement. The fact that most background material will be out of focus detracts nothing from the picture. The graceful patterns of spruce boughs, the cascading foliage of a weeping birch, the contrasting mass of a clump of tall amaranthus or the mistlike effect of the bushy sea lavender or statice make truly breathtaking backdrops.

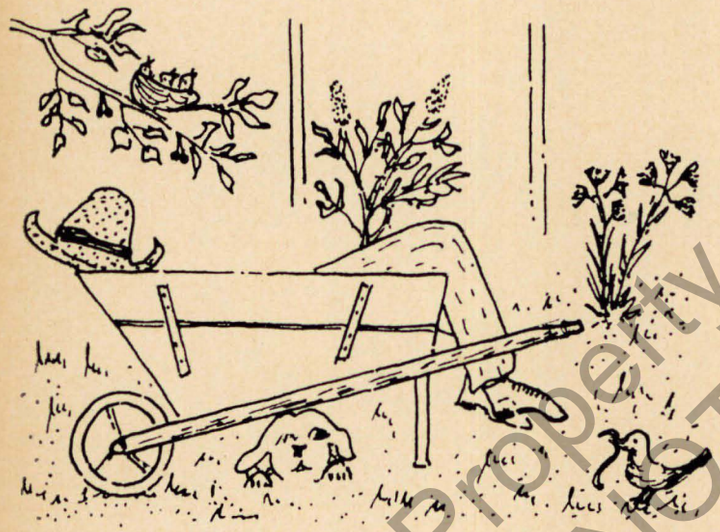
On the other hand, be equally thorough in eliminating (where possible) any objectionable item in your picture, such as a broken branch, a withered leaf or flower, unsightly stake, fence pickets, power lines, etc.

One annoying problem in flower photography is that caused by wind, especially in flowers with slender stalks or light flimsy petals; these constantly sway and vibrate even in a faint breeze. A sheet of light cardboard that can be easily rolled up for carrying is a handy item, though in most instances its use requires the help of an assistant. Held in a curved position at an angle that protects the flower from the wind and at the same time does not intrude into the picture, it can be a great help.

Another trick which we have found invaluable in wildflower photography in open fields is the use of a few small branches or twigs, trimmed to suit requirements. One end is pointed and shoved into the ground and the forked ends of the branch or twig are placed against the flower stalks to give support. Care is taken to insure that these props are concealed by the foliage or surrounding grasses. Used in conjunction with the cardboard, a picture can be obtained that otherwise would have to be passed up.

Opening the camera lens wide and shooting at higher speeds is another remedy now available with the new speedy films, but in all cases patience and a watchful eye are essential to catch that often fleeting moment when the flower is motionless.

Take your camera along wherever you go and especially on holiday trips, for there will be opportunities everywhere to bring back pictures of gardens and flowers. One has but to spend an afternoon in the Old English Garden at Assiniboine Park to realize the interest in this hobby, and we doubt if there is a finer selection of flowers anywhere to delight camera enthusiasts.



My Place

by
HECTOR MACDONALD
F.R.H.S.,
Supervisor,
Assiniboine Park,
Winnipeg, Man.

There are some dandy gardeners in our town, folks who spend lots of time and money on their pet plants. Like the doctor's wife with her high tea roses, hold it, *hybrid tea.* Then there is Alfie Smith and his sweet peas, "Seeds imported from England, old chap." Dwight B. Soilslinger grows glads, "The tallest and biggest in the world, son." Mrs. Fuzzit has everything under control for her African violets, light, temperature, humidity and husband.

Me, I like a bit of spare time and pocket money, for a round of golf or

a trip to the lake with the wife and kids, and then in our vacation in midsummer, two or three weeks, I have no problems, I can leave my garden without a worry. I figured it all out before I planted it. Yes sir, I made good and sure the stuff I planted would need no pampering and could stick out a dry spell without watering when we were away from home. It looks neat and tidy with not too much work and the wife can get herself some flowers for the house or salad greens most anytime in summer.

My foundation planting on the south side is potentilla, pygmy caragana, and 2 or 3 peonies. On the north I have common juniper, I prune it a little once a year; with a border of Funkia catalogued sometimes as Hosta, common name plantain lily.

Along the sides of our lot I planted the odd honeysuckle, highbush cranberry, nannyberry and Redosier dogwood, that's the red willow, you can find all over the prairies. They are a thrifty lot, nearly all hardy Canadians. I especially like the red willow for its bright red bark all the year round; to keep it looking its best I chop out most of the old wood when the snow goes and in no time it produces a new crop of shoots. My row of shrubs marks my boundaries, gives a bit of shelter, looks better and is less work than a hedge.

Haven't much planted on the front lawn, just one elm at the southwest corner of the lot. Round the back though I've got my space pretty well used up, just left enough room for a patch of grass to sit around on. In a corner there's a couple of rhubarb roots; is it ever tasty when it's young and fresh pulled, a tonic too. Have a little two by four bit of ground where we plant a few early vegetable seeds, radish, lettuce, some onion sets, swiss chard for summer greens and stuff like that, nothing that needs to be fussed over.

There are flowers along the back fence where the women folk can see them through the window. Sweet Rocket, watch it doesn't spread; day lilies, lythrum, for background; candlestick and tiger lilies, white and mauve phlox, and cluster bell flower. That lot needs little attention and can take the weather, anything short of a hailstorm. These are the perennials, the ones that come up every year, they are spaced far enough between the clumps to sow some hardy annual seed.

Annuals live only 1 year and I like the ones that can be seeded where they are to bloom, no pots of seedlings in the kitchen window or flats on the verandah for me. Mignonette and night-scented stock for perfume, calendulas, portulaca, California poppy, batchelor's buttons and things like that, they will give a lot of color from mid-summer on.

We have a Dolgo crabapple over in a corner of the backyard, sure blooms pretty, the fruit is real bright red, and makes wonderful jelly. Nothing seems to bother Dolgo much except once in a while the neighbors' kids.

I nearly forgot the most important part of our estate, the lawn. It's grass, native grass, the most common plant that grows, how come we have to fuss with it when we make it into a lawn, I figure we mow it too close and often. A good farmer doesn't overgraze his pasture, too many animals mean thin beasts and poor grass, the proper amount means sleek cattle and green grass. So with a lawn I never cut mine shorter than 2 inches, it looks tidy and there is enough length of blade left to keep it strong when the traffic is heavy and the weather dry.

It is cold outdoors tonight, 20 below with a wind and hardly a couple of inches of snow yet. Our gardening is over till the robins come back next spring, but as sure as the robins return the plants we have in *our* yard will all be there ready to add their bit to the glory of a prairie summer.

Favorite Shrubs

by **MILDRED TRUDGEON, Weyburn, Sask.**

My aim in writing this article is to help some amateur gardener who is trying to do his own landscaping from making the same mistakes I made when I decided to landscape our grounds 12 years ago.

I learned the hard way, that reading glowing descriptions of the plants in the nursery catalogue does not always tell you the habits some plants have of suckering and taking over more space than you allow them; also some plants make quite a display for a short time while in bloom, and the rest of the season look drab and unattractive.

I like shrubs that have a long flowering period, showy ornamental foliage the rest of the season and hold their leaves till late fall.

The following are shrubs that have performed very satisfactorily for me over a period of several years and at the top of the list several non-sucking varieties. Zabelli Honeysuckle: with deep red blossoms is very attractive, holds its leaves till late fall, height 6 to 8 feet. Bella Dropmore Honeysuckle: a hybrid with graceful pendulous habit, blooms freely, a real hardy shrub, also 6 to 8 feet.

The next three shrubs hold their leaves till late: Siberian Dogwood: makes a fine ornamental shrub, its colorful red bark is invaluable for winter effect, height 5 feet. Cutleaf Red Elder: fast growing attractive shrub, height 7 feet. Russianolive: with its silvery foliage makes a fine contrast against a background of evergreens, it is very drought resistant, can be grown as a tree or pruned into a shrub. Will tolerate a certain amount of alkali.

Non-suckering shrub roses include: Therese Bugnet: large double pink flowers and deep red bark, blooms from mid-June till fall, has very few thorns, leaves turn purple and cling till late fall, height 7 feet. Blanc Double De Coubert: has large white flowers, very vigorous, very thorny, everblooming, height 3 feet. Wasagaming: double, clear pink, everblooming, thorny, height 3 feet. Grootendorst Supreme (crimson) and Grootendorst Pink: very similar, flowers in clusters throughout summer and autumn, very thorny, height 3 feet.

Next, two bush roses, sucker: Betty Bland: has double pink flowers from mid-June to mid-July, deep red bark gives decorative effect in winter, very few thorns, height 7 feet. Hansa: (hybrid Rugosa) a double deep red, blooms all summer, very thorny, height 4 to 5 feet. Two shrubs that are best grafted: Dilitata Lilac: has large glossy green leaves which hang on till very late fall.

As a contrast: Redleafed Plum (*Prunus cistena*): it has dark reddish purple leaves that stay on it till November. Height 4 to 6 feet.

Two Spireas: Spirea Froebelli: with deep red flowers and purplish leaves is very ornamental, everblooming, its leaves hang on till late fall, height 2 feet. Sorbifolia Spirea: has very ornamental foliage, resembling mountainash, large spikes of white bloom in July, sheds leaves early and suckers freely, height 5 feet.

These are just a few of my favorites.

Sentinel-like elms guard the driveway to the Paterson home and give way to lawns and gardens that reflect colorful use of such favorite flowers as snapdragons, verbena, and starred petunias.

Perry Park . . . One Man's Gift

Perry Park is a private park with a public welcome where majestic elms reign over evergreen plantings and native trees and shrubs.

by W. R. LESLIE, LL.D.,
Landscape Consultant, Winnipeg, Man.

It is a very fine situation where a landowner decides to develop a piece of his property for the enjoyment of the whole community. There is a noble example at the edge of Westbourne, Man.

David J. Paterson, an imported Scotsman and one of the first students at the Manitoba Agricultural College, decided in 1942 to devote about 12 acres of his well treed, rich, river land to the making of a community park. It soon became an alluring beauty spot. Year after year new features were added.

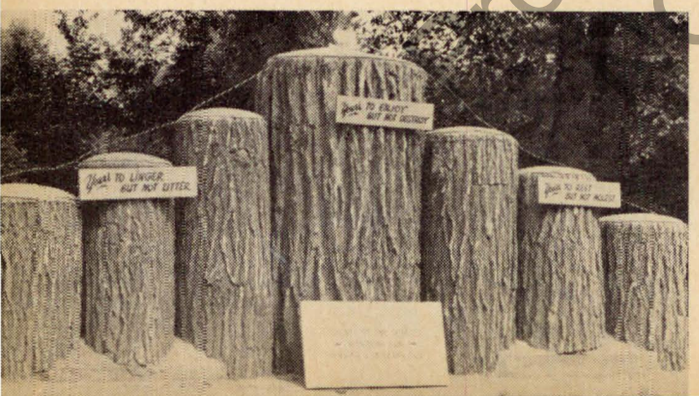
The pictures shown are a contribution of the **Country Guide** and the comments are those of Elva Fletcher, associate editor, when her article "Perry Park . . . One Man's Gift" appeared in that journal, December 1961. Like other visitors, Mrs. Fletcher was charmed with the lordly trees, the winding White Mud river, and the beauty and diversity that Mr. and Mrs. Paterson have wrought on a generous piece of ground which already was impressive in its primeval state.

The inspired project is a very substantial service to prairie people. Perry Park has become widely famous and attracts visitors from near and far. There are always a supply of wood for camp cooking and good drinking water. The bathing facilities are much used. Everything is free to the public. Mr. Paterson engages two workmen to groom the stretches of lawn and keep the flower borders trim and thriving.

Some assistance was given when the Prairie Farm Rehabilitation Administration built a dam on the White Mud downstream. H. G. Riesen, regional engineer, went further and in 1963 complemented Perry Park by planting a 2-acre plot across the river to colorful trees, shrubs and vines. It is adjacent to the dam and imparts an added interest and has the effect of lengthening the area of man-made beauty.

Perry Park was named by Mr. Paterson as a tribute to his wife, Elsie Perry Paterson. Both are skilled gardeners. The grounds about their fine home are an inspiration to all who come. It is not surprising that their son is specializing in landscape architecture at the University of Manitoba.

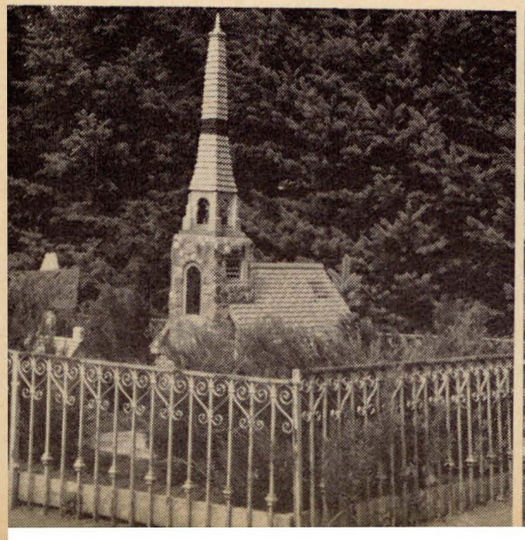
Patersons of Perry Park, we of the prairies salute you gratefully!



These Manitoba elm tree trunks, preserved because they were giants of the forest, become a bulletin board for the park's simple rules.

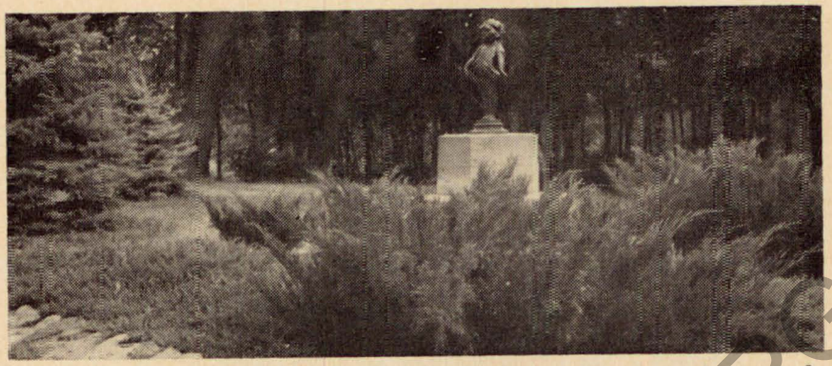
Shown below at left—An evergreen planting forms an appropriate back drop for the miniature of the little old church in the wildwood of Sunday school days.

Donations come freely to the wishing well shown at the right. The Patersons double the amount and bank it in a special Wishing Well account. So far it has provided over $4,000 to help crippled and handicapped children.



PERRY PARK

Mr. Paterson gives the park a gift each year. Cumulatively these add up to homemade benches, picnic tables and fireplace; merry-go-round, swings and slides; rest rooms and water supply. Some families come to picnic; others enjoy the overnight camping privileges.



Above—From her pedestal the bashful girl—a bronze figure—watches over the children who make the park a year round playground.

Below—Indians no longer cross the White Mud River here. Instead a model lighthouse looks out over a dam to regulate water flow.

"No Rain in Sight"

by **J. H. MARTEN, Medora, Man.**

A farmer once said to me that he listened to all available advice, but then ignored it. He really believed what he said, but probably Lady Luck was his guardian angel.

What I am getting at is that all my gardening has been done here in a small southwest Manitoba town, where we see thunder storms gather to the west of us, hear a lot of noise only to see them split with half following the Souris river valley, and the other half the Turtle mountain, then dumping a measly two-tenths of rain on us, with up to an inch or more within a few miles to the north and the south of us. Does this stop us Greenthumbs from growing flowers? Well! that's a silly question.

All last summer, I seldom looked at my two rain gauges, but just counted the drops as they fell on the roof. We still grow scads of flowers though.

We are told to mulch everything, but anyone with wild grass on two sides of the plot, as some of us have, would only be inviting a convention of those blankity-blankity short-tailed field mice that have the ability to pick out a specimen French lilac from a whole hedge of the common kind, and girdle the first 4 inches of bark.

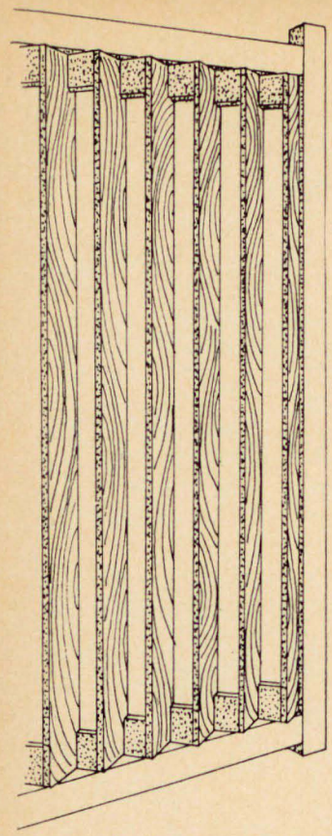
Here are a few of my methods to overcome lack of moisture. Firstly, I shy away from late-flowering marsh plants, using only early-flowering ones like the native irises. I leave a depression around each plant, and bury stones instead of picking them for below every stone is a cool, moist area. When running the little cultivator, I raise it every few feet, so as not to form a natural run-off for the little rain we do get. I contour the rows as much as possible for the same reason. In the fall, I leave everything but diseased growth to catch snow, helping out with all available branches of trees by placing them on the ground.

As most of us know though, diseases, especially viruses, lurk around diseased plants, so as soon as the snow melts in the spring, and the stalks are dry enough, and so long as the ground is still moist, burn this trash carefully, using a fork to lift the burning material before it can hurt the young shoots below the ground, for plants like the peony and early lilies are there, almost as soon as the snow melts.

I might add too, that in the fall, with only a few inches of snow on the level, a drift can be easily started by roughing up the snow in the places you need drifts. If branches are used, get a few empty soup cans, wash clean so as not to attract cats or dogs, place a small quantity of mouse seed in each, and lay under the branches to serve as a nice little warm meal for the field mice.

At the first sign of spring run-off, take a hoe or a shovel, and block those little rivulets of running water so that it can sink into the soil, for that water is charged with all the life-giving elements collected from the atmosphere, and with none of those harmful hardening elements found in the ditch water a few months later.

We have one more little irrigation project, perhaps unknown to city dwellers, and that is conservation of surplus house water, so don't be alarmed any time you are visiting the country friends if you meet them with a wash basin of water; they are not going to throw it at you but will give some favorite plant a drink. You should never sneak around the house quietly, but cough or whistle, for the container being emptied might not always be the hand basin. (Note: I mean it could be a larger container that they washed their feet in.)



Vertical louvre—1" x 8" boards are set on 45 degree angles, using uniform 2" x 4" spacing blocks at top and bottom.

A Wooden Fence For Every Yard

by **GUNTER A. SCHOCH**

Landscape Assistant, Parks and Protection Division, Metropolitan Corporation of Greater Winnipeg

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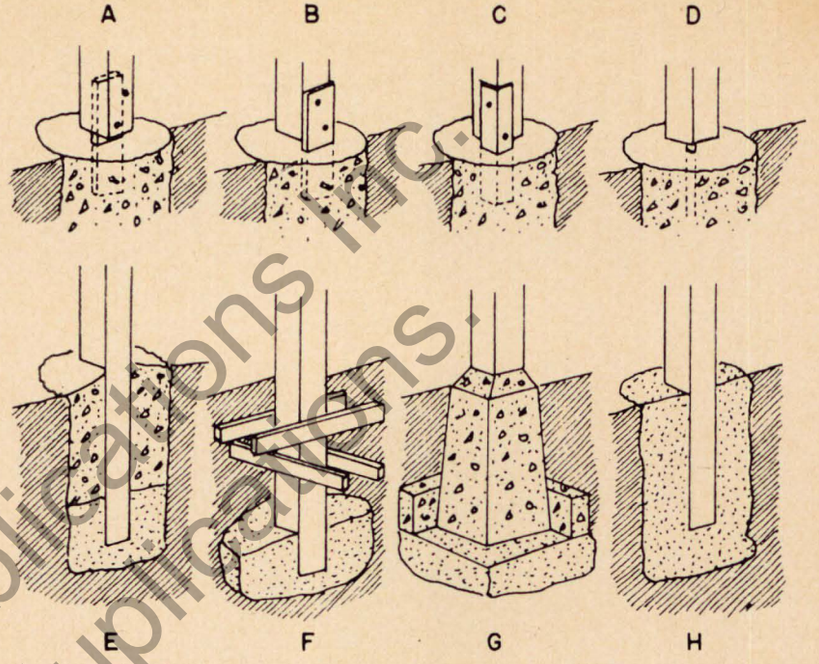
Ever since man started to grow his own fruits and vegetables, the first garden structure came into existence—a fence. In the early days it was only a simple barrier against wild animals or to indicate the property boundary.

Since that time the fence has gone through many developments. It has been an important factor in adding to the beauty of a garden. It has frequently provided its owner with a means of conspicuous display of wealth. Today, its most important purpose is the provision of privacy. Nothing is better suited to fulfill this purpose than a wooden fence.

There are many reasons for the sustained popularity of wooden fences. They give an effect of sturdiness, appropriately associated with the garden and its inhabitants. If it is tall and solid in type, a wooden fence gives the garden immediate seclusion. Low or medium in height or more open, it may merely mark boundaries and give definition to the garden's shape.

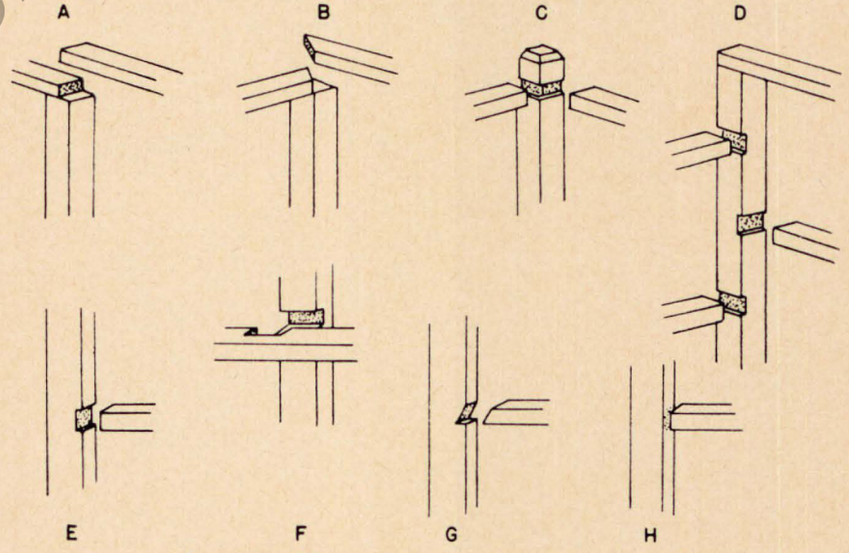
The wooden fence provides a pleasing background for flowers, shrubs, lawns, and other features. It screens out objectionable views, both on or off the property. It may be employed effectively to extend the architectural lines of the house. It is frequently used as support for climbing plants and may become an effective barrier against stray dogs and other trespassers, or to keep children and pets inside the yard. A wooden fence may also be of value as a windbreak and thus create a micro-climate in the yard which should be of advantage to man and plant. Last, but not least, most wooden fences can be easily constructed by the home handyman.

The kind of fence chosen will, of course, be limited by the degree of privacy desired and by the factor of wind control and ventilation. Tight board fences, or those made of plywood, asbestos board, outdoor hardboard, and other complete coverings, will give the most privacy and protection. Wire fencing, post-and-rail, picket, and lattice fences naturally give the least privacy and wind control. Between these two extremes will be found various other fence designs, some of which are shown on the accompanying illustrations.



Post base setting—

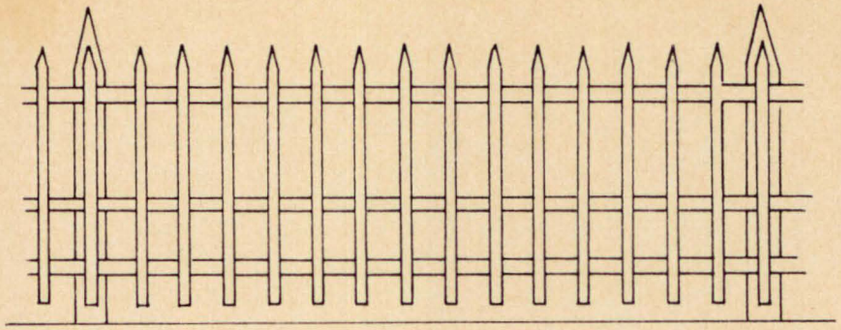
(a) centre plate
(b) side plate
(c) angle iron plate
(d) centre pipe
(e) concrete setting
(f) wooden cleats
(g) corner concrete setting
(h) gravel setting

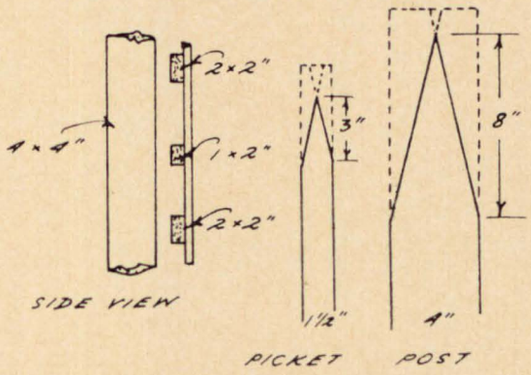


Fence post joints—

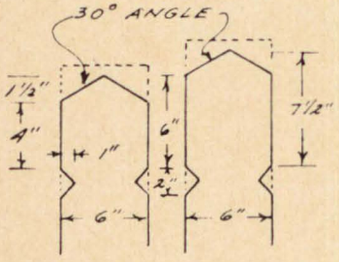
(a) overlapping joint
(b) bias miter joint
(c) double dado joint
(d) step-down fence joint
(e) dado joint
(f) double dado
(g) angle groove
(h) butt joint

(Continued on next page)

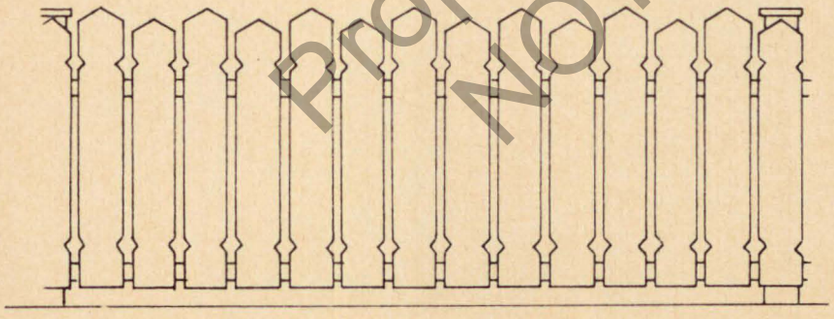




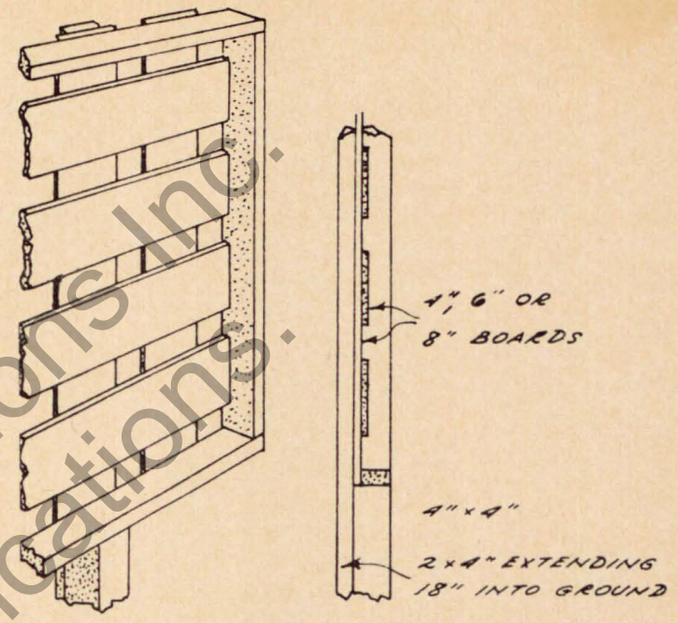
Pickets—Light-weight fences give an effect of airy charm. They protect but do not interfere with the garden view. The wide spacing of pickets gives plenty of ventilation. The 2" x 2" frame is dadoed into the post. Joinings of the rails on the posts are hidden by pickets on the posts.



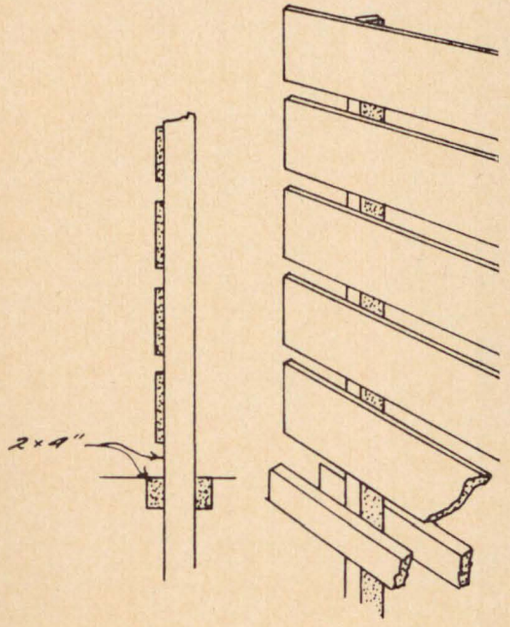
Wide pickets with cutouts—A simple but effective pattern is achieved with little work, the pickets being 1" x 6" boards on a 2" x 4" frame-work, and the posts being 4" x 4". Cut all boards for the two sizes needed, allowing about ½" extra in length for each; by clamping several boards together and sawing them simultaneously, the work can be cut down and precision maintained.



Cross pattern — Where the view includes some undesirable features, but where ventilation is needed, this up-and-down-and-across pattern may be the answer.



Before going ahead even with the planning of the fence, it is advisable to check with the local authorities. There might be by-laws or regulations concerning the height, location, or materials to be used for fencing. New zoning laws also may have a bearing on fence construction. It is wise also to have the property surveyed, if one is not absolutely sure of the boundaries. A great deal of unpleasantness in the future can be avoided by checking and double-checking the property line. If the neighbor wants to share in the cost of the fence, it is advisable to have a lawyer draw up an agreement in writing

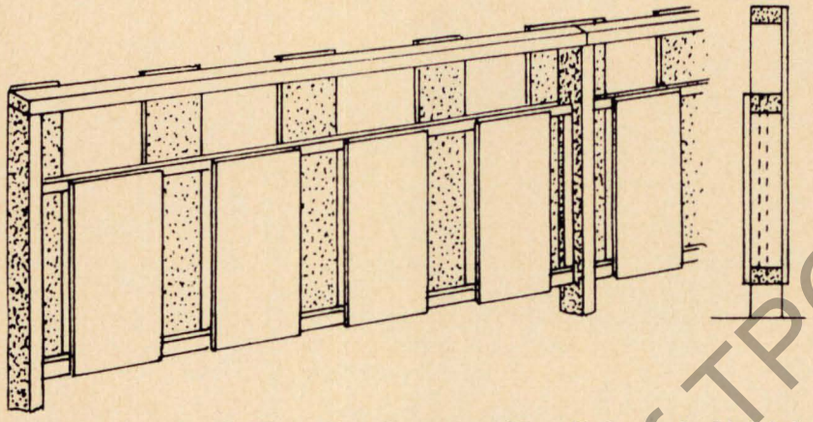


Horizontal stripe pattern — Boards may be spaced more closely or further apart. To obtain a perfect horizontal pattern, the posts may be painted dark while the board may be painted in a light color.

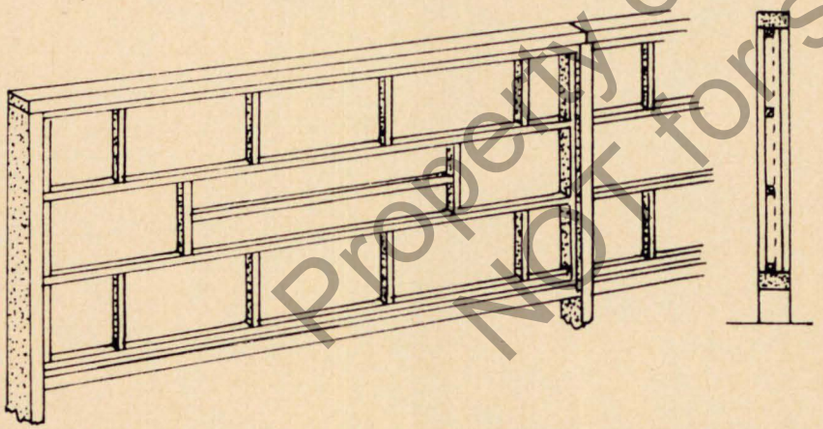
and to have this recorded locally so that it will be legally binding on future owners of the property. If the fence is an effort of only one property owner, it might best be constructed 6 inches within the property line.

After these items have been checked into and resolved, the planning of the fence can begin. It is always a good idea to draw a scale plan first of the fence layout. It is easier to make revisions on a piece of paper than on the ground. One might find that in the sketch a better way can be found to place the fence for greater privacy or for better traffic flow than when working outdoors, where many features may be confusing.

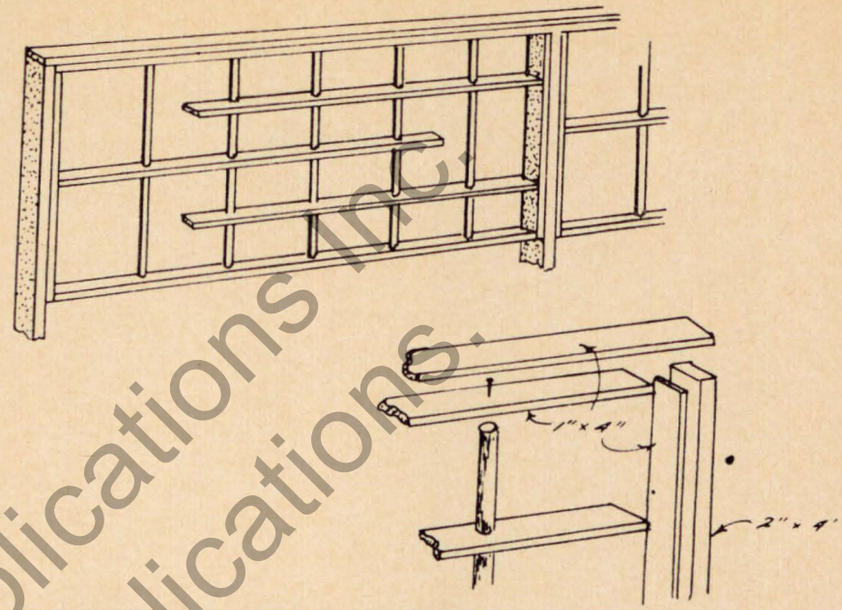
When all details have been planned, the lumber required can easily be calculated from the plan and the construction can begin. It must be emphasized that anyone is free to improvise, to adapt and revamp any fence design to his own taste and location. However, it must be borne in mind that a good fence is a simple fence. A good, simple, architectural pattern is always tasteful and pleasant.



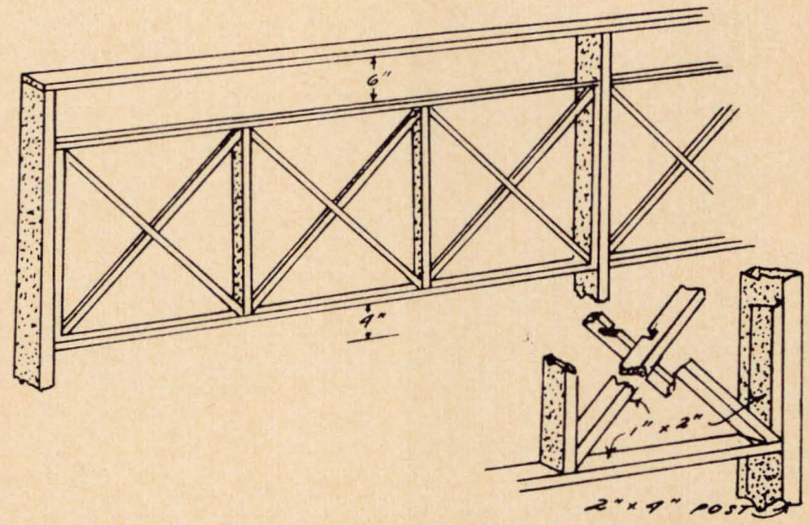
Double board and rail—Top rail and posts are 2" x 4" (posts doubled below ground) and the intermediate rails either 2" x 2" or 2" x 4". Twelve-inch boards on front alternate with 6" boards on back of fence.



Alternating oblongs—Use 1" x 1", 5/4" x 5/4" or other stock for the cross bar and intermediate rails set into 1" x 2" or 1" x 3" used for the framework to be fastened to posts. Use 2" x 4" for top, bottom rails and posts. Heavier materials may be adapted if desired.



Ribbons and bars—Somewhat modern in effect, this fence nevertheless is simple enough to be used with any simple traditional home. The top rail is a 1" x 4", as is the framework between posts. Heavy dowel sticks or clothes poles are cut to the proper lengths to form uprights, the three horizontal 1" x 4" in the centre have holes bored to receive poles.



Squares with diagonals—The lines of this fence are strong and simple and although it is of light construction it has considerable strength due to the use of the diagonal strips. The diagonals are fitted together with double groove joints and all cuts are simple 45 degree angles at the ends.

Pollination

by **J. C. RITCHIE, Ph.D.**
Associate Professor of Botany, University of Manitoba

Although men have cultivated plants for their ornamental value for more than three millennia, it is only in the last 200 years that this activity has been transformed from a haphazard, accidental procedure to a systematic method.

The modern plant breeder working with cultivated ornamentals, as with crops, is harnessing an intricate and beautiful natural process to yield the infinite variety of types which decorate our homes and community landscapes. This process, simply, is evolution. The essence of natural evolution is change —the production of new forms in natural populations, some to survive and propagate, others to be eliminated because their very novelty ill-adapted them to the environment.

The horticulturist, wittingly or otherwise, is deeply involved with this fascinating process. One of his most intimate moments of involvement is when he carefully transfers the pollen of one flower to the receptive stigma of another—when he initiates an act of hybridization whose outcome he hopes will bring novelty and beauty.

In the flowering plants this hybridization or cross-breeding, whether by the hand of nature or by the horticulturist, is a prime source of novelty and therefore an integral part of evolution. After transferring the pollen, gathering the seed and raising the new generation, the breeder copies nature again in selecting and perhaps acclimatizing his new forms. Indeed, the cultivation of ornamentals is so well documented and so detailed, that it has given us a clearer view of the principles of natural evolution in plants.

But what exactly is the significance of the act of cross pollination? What is this yellow dust called pollen that it has the power to initiate change?

The individual pollen grain of most plants is too small to be seen without a microscope, and in the spring of the year when sunny weather fills the air with pollen, only the hay fever sufferer is conscious of this perennial event. At this time, the wind carries pollen from the male flowers of the willows and aspens, birches and hazel, oaks and elm, to the respective female flowers, thus setting in motion a series of changes which result in the setting of seed. Other plants, generally those with showy flowers, depend on insects to transfer the pollen.

To appreciate the significance of pollination we must understand a little about the heredity of plants. Most plants, like man, have a double set of chromosomes in each cell of the body, and it is the particular make-up and arrangement of these minute units which determine the nature of the whole plant. Pollination brings a single set of these chromosomes together with a single set from the egg cell embedded in the female part of the flower. As the product of this union divides to form the embryo, the seedling, and finally the adult plant, the double set of chromosomes duplicates itself by division at each cell division.

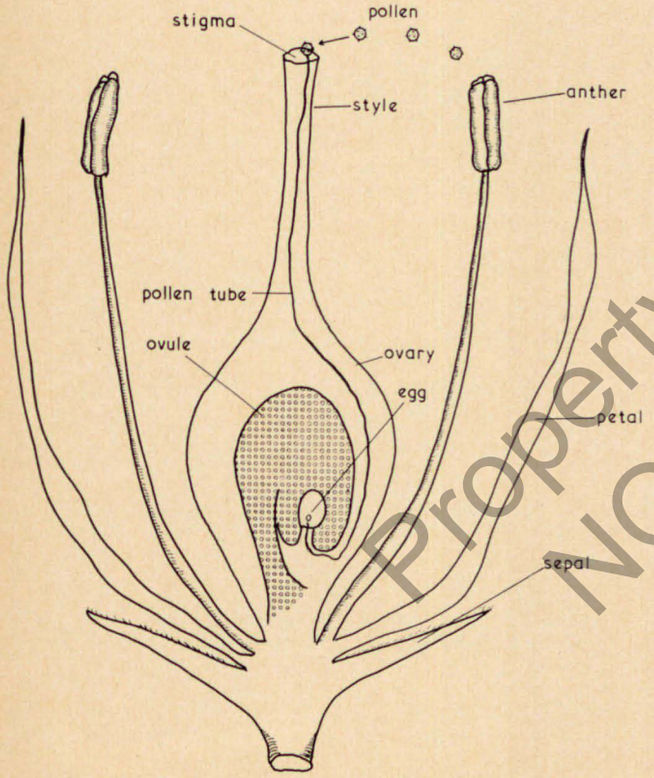
In other words, each pollen grain carries from the male part of the flower, the stamen, a single set of chromosomes with a particular set and order of ultimate determining units. These units, genes, determine the nature of the

next generation—flower size and color, rate of growth, hardiness, shade tolerance, and so on.

Each egg cell has a set of chromosomes with a set of determiners, or genes, derived from the maternal parent, the female flower. The pollen grains are brought by a chance gust of wind, or by a methodical nectar-seeking insect, to the sticky tip of the flower style. There they germinate—the walls separate and the long slender tube grows rapidly down the style, penetrating the tissue of the ovary and carrying the male germ plasm to the egg cell. The cell contents unite, the moment of fertilization, and the particular combination of genes in the now double set of chromosomes determines the nature of this new individual.

Normal sexual reproduction in plants, set in motion by cross-pollination, results in variation or novelty of offspring, determined by the particular combination established at fertilization. This variation is the raw material for the horticulturist from which he can select the most desirable types, propagate them, test them, and cross them again in the hope that he can combine these features with yet further characteristics from other strains.

A diagrammatic summary of pollination might clarify the situation. The illustration shows a generalized flower as a thin slice cut through the middle. From below, it has sepals, the showy, colorful petals, and then the essential organs for reproduction, the stamens and in the centre the ovary. The pollen is produced in large amounts in the terminal sacs of the stamen, the anthers, and it is transferred by wind, gravity, insect or other means to the receptive terminal part of the ovary, the stigma.



In our illustration we show self-pollination, with the pollen (its relative size is greatly exaggerated in the diagram for the sake of clarity) passing to the stigma, germinating and sending a long, fine tube down through the ovary to the egg cell embedded in the ovule which becomes the seed after fertilization. The act of pollination is complete when the pollen grains have reached the stigma; the moment of fertilization, which seals the hereditary fate of the new plant, arrives when the pollen tube delivers the male plasm to the egg cell. In cross-pollination of course the pollen comes from a different individual plant.

Rich Field for Would-Be Plant Breeders

by **PERCY H. WRIGHT, Saskatoon, Sask.**

EDITORIAL NOTE—

It is gratifying to have this stimulating article from Percy H. Wright. Mr. Wright has been the most prolific of prairie writers on garden subjects. His articles have appeared in many publications, some being top-rating journals in the United States.

Here on the Canadian prairies he is esteemed greatly for the many fine new varieties of hardy and beautiful plants he has bred at Wilkie, at Moose Range where he had his Carrot Valley Nursery, and at Sutherland where he now lives while serving as associate editor of the Star-Phoenix. His specialties have been roses, lilies, and honeysuckles. Aylsham Rose, a hybrid produced by crossing 'Hansa' *with* Rosa nitida, *is one example of his distinguished success in garden plant improvement.*

The pleasures of gardening can be enriched immensely if the gardener, in addition to beautifying his grounds, undertakes a modest plant-breeding project.

The landscape designer is a craftsman, using the materials at hand to make a pleasing prospect, but the plant breeder is a creative artist. It could even be contended that his art is the highest form of art of all, for instead of creating a lifeless picture, or an imposing but static building, he creates a new form of life. There is something Godlike about creation, which is undoubtedly why so many imaginative persons are attracted to art and the life of the artist. But the person who synthesizes new systems of genes, the principles of life, surely is most creative of all.

The old story of Genesis depicts "the Lord" creating species after species, plant and animal. How many people realize today that the plant breeder is able to create, not merely new varieties, but new species.

This became possible with the discovery of the use of the drug colchicine in doubling the chromosome number of plants. Cross the horse and the donkey and you get a hybrid, the sterile or nearly sterile mule. Some day, perhaps, science will progress to the point that the cell contents of the mule will be doubled. If and when that happens, the horse chromosomes will mate, inside the cell, with a duplicate set, and likewise with the donkey chromosomes. The result will be a new beast, all horse plus all donkey, not a hybrid, but a synthesis, and undoubtedly a new species.

Research workers at the East Malling station in England have followed exactly this pattern in telescoping together the black currant and the gooseberry. Hybrids between these two species have been known for many years, but they were sterile, and hence good for nothing except perhaps for making a dwarf hedge. The second step was to take such a sterile hybrid and restore its fertility and fruitfulness by doubling the cell contents and hence the chromosome number, through the agency of colchicine.

I have a few plants of this new species not yet grown to the fruiting stage, and so cannot describe the fruit first hand. The fruits are said to be goose-

berrylike, but small. This word 'small,' as used by the English for gooseberries, which grow to impressive sizes in Europe, can probably be 'taken with a grain of salt' on this side of the water. The fruits of the new species may be small by English standards, and yet as large as the pure gooseberries that we now grow in Canada.

In addition, the new species is completely thornless. It probably inherits too the immunity of the black currant to being eaten by the gooseberry leaf worm. The question is, will it be hardy here in Canada? If not, we shall have to retrace all the steps over again, using hardy gooseberries and hardy currants as ingredients. The possibilities are exciting.

But the possibilities for using this technique in plant-breeding in general are much greater still, in fact practically limitless. There are undoubtedly dozens of other syntheses among related plants awaiting creation. The discovery of colchicine opens the door of an immense new world of plant-breeding, and even the amateur can open the door if he wants to.

The beginner in plant-breeding, however, need not be quite so ambitious. He will find a rewarding enterprise in growing seed of any one of a score of hybrid plant forms. The more hybrid a plant is, so long as fertility is maintained, the greater the variation in the progeny.

Preservation of Wild Flowers

by **H. H. MARSHALL**

Head Gardener, Canada Experimental Farm, Brandon, Man.

The Manitoba Horticultural Association has recently taken an interest in the preservation of wild flowers because of concern over the disappearance of several species in a large part of the province. Their only action was to pass a resolution asking the Province of Manitoba to prohibit the picking of wild flowers. Such a law would be most difficult to enforce.

Another and probably better method would be to establish a park for the preservation of these and other prairie species. Unfortunately, areas of relatively undisturbed prairie are no longer plentiful but one of 20 or more acres and 2 smaller areas are known to the writer. If such a park is ever to be established in this area, it must be done within a very short time.

Adequate parks have been established to preserve the native plants and animals in the northern coniferous zone and in the hills and mountains but none of the prairie that has been so important in the development of western Canada has been retained. It would be impossible now to find 640 acres of undisturbed, moderately fertile prairie but it is just possible to find a few small areas that are relatively undisturbed. A small area might form a nucleus for an area of approximately one section which would be encouraged to revert to natural vegetation.

By preserving native vegetation and soil conditions, such a park could in time become a valuable link with the early development of Manitoba. It could become a valuable relic area for future scientific studies of native plants and soils and, in addition, preserve for future generations another beautiful facet of western Canada.

Some Flowering Shrubs for Prairie Gardens

by **H. F. HARP**

Head Gardener, Canada Experimental Farm, Morden, Man.

The first feature of the permanent plantings around a home is the show put on by the flowering shrubs during the latter part of May and through the month of June.

Many are showy only when they bloom, having no colorful fruit or leaves later on in the season. Modern homes with carports and planters are rather difficult to set off with flowering shrubs, and quite often I see that they are laid out to a standard pattern with little evidence of good planning.

We see whole streets of houses of uniform design and the same plant material repeated all up and down the street. I find it depressing to walk along a street where all the houses and gardens look alike.

Most home owners buy their nursery stock either from a catalogue or a garden centre, and flowering shrubs in their dormant state all look alike to the novice gardener. If he knows the names of any shrubs they are likely to be lilacs, spireas and double-flowering plums.

All are splendid shrubs, but once they are over the big flare-up in late May or in June they have had their innings until another year. The French lilacs have only green leaves after the blooms are done. The flowering plum is uninteresting all through the summer, and in the fall is downright dull.

In some seasons, when the weather is cool and damp in late May the flowers of the Trilobata spirea are rich pink and fairly long lasting, but all too frequently we run into a spell of hot, windy weather, bleaching the petals a sickly pink and scattering them hither and yon like confetti.

The Van Houtte spirea, however, will provide sprays of dainty leaves which can be used effectively for decorating; and in the fall its colored foliage has some merit.

There is an attractive new shrub, something like the Trilobata spirea, in fact closely related to it, called the Prairie Almond. It is not as tall as the double-flowering plum, but is more graceful and its leaves are smaller. The blooms are profuse but paler and not as fully double; but they are followed by tawny-colored fruits which have interest after the blooms have faded although they have no edible value.

The forsythias which make such a show on the Pacific Coast are not for us, but we can content ourselves with a hardier though less attractive species, the Early Golden Bell shrub sometimes listed as the Korean forsythia. The botanical name is *Forsythia ovata.*

The flowers are pale primrose-yellow, closely attached to the stems, and make their appearance very early in the spring before the leaves develop. It is worth a place in the garden if only on account of its extreme hardiness, but requires shelter from the northwest or the tip growths will be harmed by the winter.

The best protection for this forsythia is lots of snow so it should be planted where the snow lies deep. The branches at ground level will bloom soon after the snow goes.

The English may or hawthorn is not hardy here but the variety called Toba is. Toba is a hybrid between the English hawthorn and our native haw-

thorn called *Succulenta* or the Fleshy hawthorn. It was developed about 15 years ago at the Canada Experimental Farm, Morden, Man., and is obtainable from most prairie nurseries.

Toba makes a fine shrub with pale pink, fully double flowers, followed by crimson fruits. The flowers deepen with age and last in good condition for a long time. The leaves are glossy, dark green and finely cut. It needs room to express itself properly and careful pruning to keep it in good shape. It is worth a choice spot in the garden where it gets a bit of shelter but not too much shade. If this can be provided, it is the next best thing to the English hawthorn.

The eastern Canada nursery catalogues show several varieties of weigela, but they are not hardy for our gardens. However, there is a weigela, called the Manchurian Pink Weigela, that is hardy all across the prairies if given half a chance. That is to say that it should be given a choice location in the shrub border where it is not in competition with more vigorous shrubs, and where it will get the best chance of good snow cover.

The Manchurian weigela grows about 4 or 5 feet high, making a fairly neat, roundish bush. It flowers profusely in early June, if the weather has not been too unkind; and its tubular, soft-pink blossoms will last for a long time, unless the weather is hot and very dry. If you are looking for something different from the run-of-the-mill shrubs, I suggest that you plant a Manchurian weigela.

One of the choicest and best known of the Mock Orange varieties is called Virginal, with double flowers of the purest white. It is not fully hardy and injury can be so severe in some winters that a major job of pruning has to be done in the spring. It is worth growing in a well sheltered garden, but must be protected from the northwest blast and have a good blanket of snow or the tip-growths will kill back severely.

If the garden is exposed and windswept, you had best try one of the hardier sorts, such as Purity and Waterton Lake, and even with these you should scatter some boughs around them in the fall to hold the snow.

The Mock Orange cannot qualify among the shrubs that have a long season of interest; the bloom is the whole show and after it has ended you have seen it all for another year. Virginal, for instance, is not particularly interesting as a fall or winter shrub; the leaves remain a rather dull shade of green and the stems and branches are as grey as a day in November. But when June comes we forget all this and are beguiled with its sweet fragance.

The Spireas are a large, mixed-up family that can be divided roughly into two groups, namely, those that flower in the spring or early summer, and those that flower later. The early sorts all flower on the old wood and usually have a profusion of white flowers. The later ones are mostly pink, and some bloom on the young wood.

Not all spireas are fully hardy in prairie gardens, but we have a good choice of varieties if we include a few that need a bit of extra care to bring them through the winter in good shape.

If you have grown tired of your Van Houtte killing back in the winter and the amount of pruning to put it right in the spring again, try the Threelobe spirea, listed by most of the nurseries as *Spirea trilobata*. It is much like the Van Houtte in general appearance except that it does not grow as tall.

The Threelobe is well clothed with leaves right down to the ground, whereas some spireas are inclined to get a bit leggy, especially as they grow

older. It is fully hardy and resembles the Van Houtte with its many-flowered umbels of white blossoms.

Another fully hardy spirea and one that blooms later is the Korean or *trichocarpa*. It grows to 5 or 6 feet and is inclined to become a bit untidy unless kept in shape by careful pruning.

Frobel's and Anthony Waterer are two of the best known in the later-flowering group, and both flower on the young wood. They are horticultural varieties of *Spirea bumalda* which is itself a special hybrid.

Both bloom more or less continuously from July until fall. The flower heads are dense and flattish, and the color is a rosy-pink. Froebel's is a little taller and more vigorous than Anthony Waterer but otherwise they are much alike.

I recommend an annual spring pruning for these two spireas regardless of the amount of winter injury as this treatment encourages vigorous basal shoots which give the best flowers. These new growths are quite handsome with their tips tinged with red.

Both these reddish-flowered dwarf shrubs make excellent material for foundation planting and they bloom all summer long if given the right care. I like to give them a top dressing in the spring after I have pruned them, and this works wonders.

There are several kinds of pink-flowered spireas that have spikes of bloom instead of flattish heads. The best known in prairie gardens are Billardi and Douglas. Both are somewhat susceptible to chlorosis if planted in alkaline soil.

From my own experience I have found that the Menzies spirea is the best adapted of this type of spirea as it appears to be a little more tolerant of alkaline soil. The Menzies has large, handsome spikes of rosy blooms that last over a long period, and I suggest that you give it a trial especially if you have had trouble with Billardi and Douglas.

Rose Daphne, or *Daphne cneorum*, is worth a special place in the perennial border where it should be left undisturbed and where it is not going to be troubled by the roots of more vigorous plants. It is a dwarf, woody plant which has been in cultivation in old-world gardens for a long time. In prairie gardens it likes to spend the winter under the snow and this is the best place for it; otherwise there is likely to be some injury to its leaves. It is an evergreen.

Rose Daphne likes a well drained soil and plenty of sun; plants in shade will flower less freely than those in full sunlight. The leaves are quite narrow, grayish-green, and not more than half an inch long.

A few boughs placed over it in October will ensure its winter comfort and preserve the top growth intact. In May these growths will terminate in tiny clustered heads of sweet-scented, rose-pink flowers. At the end of the summer there will be another flush of bloom which I have known to last well into October.

Daphne mezereum, or the February Daphne, is a neat, compact shrub growing to about 2 feet high, with rather small leaves. It prefers a neutral soil and needs some protection from the northwest winds. I recommend that you add a pailful of peat to the soil at planting time.

In the southern prairies it flowers in early May, its rosy-purple blooms studding the bare branches. The leaves soon follow and later on there are scarlet fruits, so we have an interesting shrub all through the season.

Hedges – Ornamental Trees and Evergreens

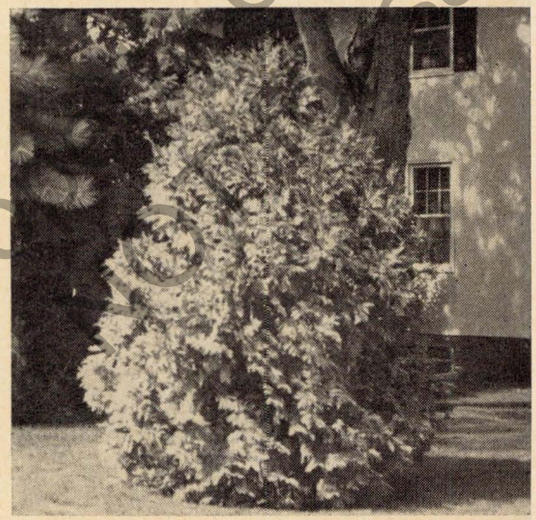
by G. S. REYCRAFT, F.R.H.S., *and* W. R. LESLIE, LL.D.

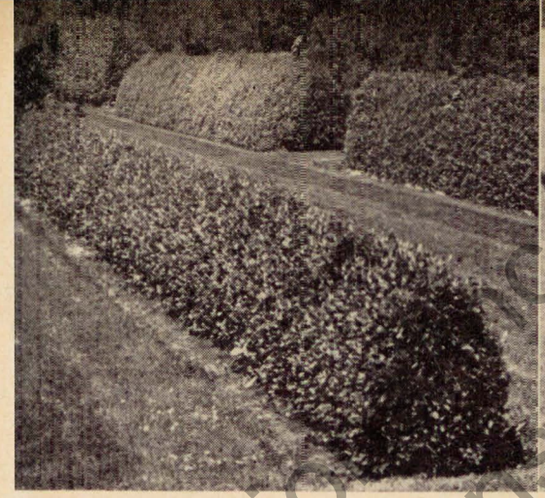
Editor's Note: The accompanying pictures, with the exception of the Morden hedges, were taken by the Editor, THE PRAIRIE GARDEN, within three blocks of his home. It is hoped that they will give readers a better appreciation of the effectiveness of hedge placement as well as proper trimming, and of the many small specimen ornamentals, trees and evergreens available for home landscaping.

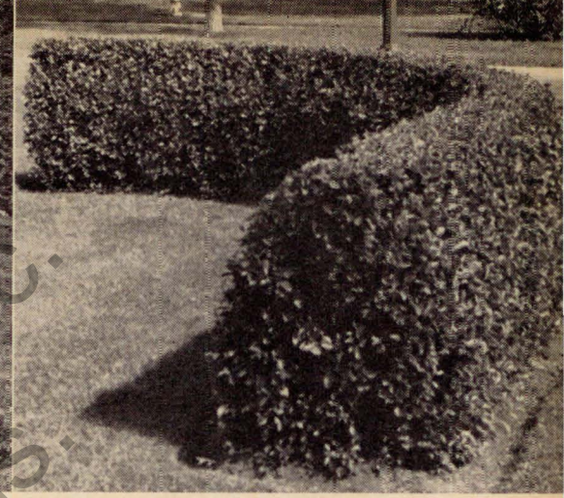
WEEPING CARAGANA, or Weeping Siberian Peashrub (*Caragana arborescens pendula*) is an oddity, obtained by grafting a prostrate form of the ordinary caragana on the stem of a normal plant at height of about 4 feet. Like other caraganas it wants dry feet. In wet spots the roots are prone to rot. Use as a specimen. One only is used except where employed to flank a doorway or path through a shrubbery or border.

WARE WHITE-CEDAR (*Thuja occidentalis wareana*) sometimes is given the species names *robusta* and *sibirica*. It is considered the most reliable of all the shrub forms of American Arborvitae or White-cedar. The scalelike leaves on frond-like branchlets make the dense bush much admired. Foliage is bluish green.

In nature, these plants are found in moist woods, and so should have humusy, moist soil for their home. Water them well about mid-October. It is favorable to have them sheltered on the southwest side.







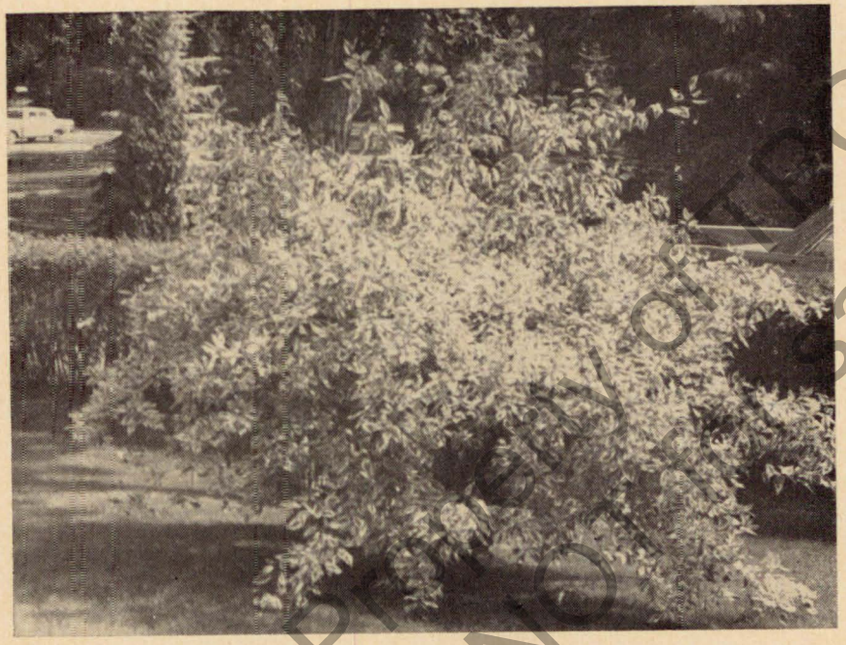
The two pictures illustrate the neat effectiveness of Peking Cotoneaster (*C. acutifolia*) when clipped. That shrub grows dense and stands clipping very well. The texture is fine, with slender branchlets and small leaves. This makes it suitable for small grounds and in proximity to buildings.

The picture to the left was taken in the Hedge Garden, Canada Experimental Farm, Morden, Man. The picture on the right, as well as showing the advantages of proper hedge trimming, shows the effective use of a hedge to tie in your property, in this case on a corner lot. Note the conic shape maintained in the trimming. That is important. Sunlight gets into the whole bush and keeps the lower branches in good vigor. A wide top, with square shoulders, means not only that there are three sides to clip but that there is a tendency for the bottom branches to become shaded and starved. That often results in openness near the ground and that is the most important part of the hedge.

Canada Department of Agriculture Publication 1153, Hedges for the Prairies; 30 pages; is an excellent reference for planting and maintaining hedges.

RUSSIAN OLIVE is one of the many valuable woody plants that have come to our prairies from inland Eurasia. It is strictly a dryland plant, doing well on well drained rather lean soil. It tolerates rather high-lime and saline conditions and hence is useful in many situations found across the northern plains where most trees and shrubs prove unthrifty. It is employed for accent points and to impart silvery foliage as color masses in shrubberies. Height may reach to around 20 feet. The silvered fruits sometimes cling to the twigs until well on in the new year. The Cheyenne strain is noted for its hardiness and is preferred to the earlier importations.

PYRAMIDAL WHITE-CEDAR or Arborvitae has a stiff columnar or narrow pyramidal outline. This makes it a distinctive plant for accent points, in association with columns, and as a marker to entranceways. The fernlike foliage is rich green. It is favored by northern and eastern exposures. Place in rich, woodsy soil and keep in fairly moist condition. Water thoroughly in late autumn. If open to the southwest sun, erect a screen to supply shade and protection from drying westerly winds during late winter and early spring.



CREAMEDGE TATARIAN DOGWOOD (*Cornus alba argenteo-marginata*) or in some references, *C.a.elegantissima variegata*, is notable for the white edges of its green leaves. The variegated green and white leaves make it an arresting sight. Plant in any good garden soil. Propagate from layers or cuttings. More appropriate in the private rear garden than in front of the house. A novelty that adds unusualness to a shrubbery or the fringe of a pool. Grows less vigorously than the parent all-green foliaged type.

(Courtesy North American Lily Society)

by MRS. E. J. STANSFIELD

Fort Garry Horticultural Society, Fort Garry, Man.

I grow hardy lilies because of their beauty, their varied form and color, their versatility and dependability. There is also great variety in their foliage, length of stem, the number of blooms on a stem, and the way the flowers face or hang. Once at home in a garden, they come up year after year, multiplying generously so that bulbs can be shared with other gardeners.

Compared with many other garden favorites, they require little attention. As a rule they do not need watering or constant spraying, and they are relatively trouble-free. I don't even cover mine in winter. In fact, lilies are a lazy gardener's joy. By planting varieties that bloom at different times, it is possible to enjoy them from June to September, the high point being in July.

And yet, according to experts, we are merely on the threshold of tremendous advances in the culture of lilies. For centuries, lilies of superlative beauty have grown wild in many parts of the world, under widely differing conditions, often separated by oceans and continents. In Canada only a limited number of species are hardy enough to endure the harsh climate.

About a century ago, scientists began hybridizing some of the wild species and showing that the crosses could be grown successfully under garden conditions. The breath-taking beauty of the hybrids captivated the hearts of gardeners and spurred scientists to develop further strains and types.

During the last 30 or 40 years there has been a tremendous up-surge of interest in the lily family among experts and amateurs. Countless new types and strains have been made available to the public in many parts of the world, each year adding to the sum of possibilities.

It is interesting to note some of the factors responsible for this trend:

1. New techniques developed by botanists, geneticists and biologists have made it possible to originate an amazing array of new garden forms. Experts all over the world began studying and developing entirely new types of lilies.

2. Naturally, this concentration of scientific effort led to new methods of

hybridization. An important break-through was the discovery that pollen could be stored in dry, cool conditions, thus enabling experts to cross varieties that flower at different seasons in their natural habitat.

3. The commercial production of plastic film was another tremendous advance. Lilies wrapped in polyethylene bags can now be shipped across continents and oceans in perfect condition.

4. Commercial growers have developed merchandising methods that have made mass production of lilies a profitable venture. Growers like de Graaff of Oregon are in the forefront of this work and in originating many new types of lilies.

5. The invention of specialized machines for planting and harvesting lilies has facilitated production on a scale undreamed of years ago.

6. Improved methods of sanitation and controlling lily diseases have been made possible by the production of new chemicals and insecticides.

7. Speedy transportation has brought the beauties of the lily world within reach of ordinary gardeners, regardless of distance.

These are some of the factors that have led to increased interest in lily culture the world over. Everyone who grows lilies feels the benefit of modern advances, even here in this rigorous climate.

In Canada, we owe much to Miss Isabella Preston of Ottawa for her life-long work in breeding lilies suitable for Canadian conditions. Her originations and scientific discoveries have been acclaimed the world over. Many of her lilies grow well in the western provinces.

There still remained the knotty problems peculiar to the harsh climate of the prairie regions where temperatures, soils and rainfall are different from the east and the far west. Overcoming these obstacles presented a challenge to Dr. F. L. Skinner of Dropmore, Man., and to the late Dr. C. F. Patterson of the University of Saskatchewan, who have spent many years in developing hardy lilies for prairie gardens. Their productions have won recognition the world over. Others like A. J. Porter of Parkside, Sask., and Percy Wright of Sutherland, Sask., have introduced new hardy types of great beauty. Experimental stations and public gardens have done valuable work in testing lilies under local conditions, and in showing their value in perennial borders.

For myself, I invest only in lilies that have been produced in this area, and this gives plenty of choice. Looking at Dr. Skinner's catalog, I find that he lists 37 varieties of lilies that he is ready to stand behind. Many are his own originations, others are varieties that have wintered year after year at Dropmore. Mr. Porter's catalog shows many other varieties.

In our garden on Riverwood Avenue, Fort Garry, we have about 20 varieties of hardy lilies, ranging from white trumpets to cream, yellow, apricot, pink, red, crimson and orange. Yes, I have grown Regal lilies and Madonna lilies and loved them, but they are comparatively short-lived and therefore not a good investment when more reliable white trumpets are available.

While hardy lilies suitable for prairie conditions are now so reliable that anyone can grow them, they do respond to good treatment. Here are some suggestions for their culture.

1. Start by ordering from local plantsmen who restrict their wares to home-grown bulbs. Early fall planting usually is the most satisfactory, unless the grower advises otherwise. Do not make the mistake of buying bargain lots of lilies displayed on store counters. They are likely to be in poor condition and may be infected with disease.

2. Look over your garden and choose a spot where there are plenty of sunshine and sufficient circulation of air to discourage spider webs, insects and

fungus growths. Protection from strong winds is an advantage, but do not put lilies where they will have to compete for food and moisture with the hungry roots of trees, shrubs and hedges.

3. Make sure the ground is well drained, because lilies will not tolerate wet feet or water lying on the surface. If necessary, build up the level of the bed with extra soil.

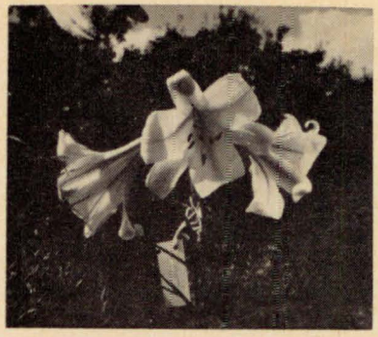
4. If the soil is heavy, work in plenty of coarse sand and peat, and add a handful of fertilizer. Dig a hole to the depth of say 10 to 12 inches and at least a foot wide. Place a layer of coarse sand or gravel in the bottom and set the bulb on a cone of sand, spreading the roots out gently. Fill in with good soil, leaving no air spaces. A simple rule for depth to plant is: cover the bulb with twice its own depth of soil, i.e. a bulb 2 inches high should be covered with 4 inches of soil. Plant lilies in small groups, if possible 12 to 15 inches apart in the groups to allow room for multiplying.

5. Mark the spot with stakes and attach a label so that you will know the exact location in the spring. When cleaning up after the winter take great care not to damage the tips of young shoots. If they are cut with a hoe there will be no blooms until the following summer. Avoid standing on a lily bed as this tends to compact the soil.

6. Watering during the season usually is not necessary unless the soil shows signs of cracking. Let the hose dribble gently at the base of the plants rather than apply water from above in a spray. To provide a cool root-run, plant annuals or perennials with shallow root stems around the base of lilies.

Hardiness in lilies is not solely a matter of resistance to winter cold. It is affected also by the duration and the penetration of low temperatures, the depth of the snow cover, alternate freezing and thawing, the length of the frost-free period, and by strong, cold winds. An excellent article on hardiness in lilies is to be found in THE PRAIRIE GARDEN for 1961. In the issue of 1958 Dr. Patterson described the varieties he had originated. In the 1959 issue there are two good articles on hardy lilies, one by Dr. Patterson, and the other by J. P. de Wet who has grown many interesting lilies.

A few years ago, I joined the North American Lily Society and have learned a great deal from the literature of the society. The membership is made up of ordinary gardeners, as well as some of the world's authorities on lilies, scientists and people engaged in growing lilies commercially. Membership is open to anyone.



Trumpet lily seedling.

Trumpet Lilies for the Prairies

by **F. L. SKINNER, M.B.E., LL.D.**
Skinners Nursery, Dropmore, Man.

About 25 years ago I was building up stocks of *L.L. regale, henryi* and a strain of Centifolium grown from seed sent me by Wm. Saunders, a son of the founder of our Canada Experimental Farm System. Then came the test winter of 1941-42 when my entire stock of *L. regale* went out while Centifolium and Henryi came through safely.

I have never bothered to grow *L. regale* again but have done a lot of breeding work with both the other two and also have used pollen brought back from the shows of the North American Lily Society, of which I am a charter member. I attended the show at Boston at which Dr. Norma Pffier first staged her hybrids between *L. auratum* and *L. japonicum*, and she kindly allowed me to bring back home pollen of her hybrids. The effect of this pollen is seen in some of the pink Centifolium hybrids that are proving as hardy at Dropmore as such lilies as the Stenographer varieties and Maxwill. Since 1958 these Centifolium hybrids have had some very severe tests of their hardiness.

I am in the habit of setting out these hybrids as small seedlings in June and though they get no artificial protection they came through the winter of 1958-59 in good condition even though no snow lay on the ground until March. On June 20, 1959, we had 12 degrees of frost and fully 90 per cent of our lilies had their flowers destroyed by frost; still Cupid, one of my Centifolium hybrids, flowered beautifully while a trial planting of the variety Bright Cloud killed to the ground and never came up again.

During the winter of 1962-63 we again had a very light snow covering but all my Centifolium hybrids came through safely without any artificial protection and I had the finest show of *Lilium centifolium* hybrids that I have seen, many new hybrids flowering for the first time. The colors ranged from pure white to pink and deep rich yellow and all were extremely fragrant.

The sizes of the flowers of these hybrids also varied a great deal, one selection having white trumpets barely 3 inches long while some had buds a good 6 inches long and 2 *centifolium-henryi* hybrids had pure white, shallow trumpets with a green star in the centre; these were about 5 inches across.

About a dozen of the most striking types have been selected for naming and are being increased from scales while strains of both yellow and pink types will be propagated also from hand-pollinated seeds. The summer of 1963 was a very good one for lilies setting seed and many new crosses were made with pollen brought back from the lily show at Washington as well as new combinations among our own hybrids.

So I feel quite safe in saying that truly *hardy* trumpet lilies are here to stay if the right varieties are planted. We do feel, however, that it is safer to plant these new lilies in the spring so that they may be well established before having to face the rigors of our prairie winters.

Colorado Blue Spruce on A. Heyer Farm, Southwest Saskatchewan

Spruce and Pine

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

In the prairie provinces, where the summers are all too short and the winters are relatively long, there is need for the more extensive use of evergreens. This is true not only for the open plains region but also for the adjacent parklands where the aspen poplar and other deciduous species predominate.

A review of literature indicates that several species of spruce and pine (also certain varieties and strains thereof) have been under test in western Canada for at least 50 years. Under normal conditions as regards precipitation, a majority of these evergreens have given a good account of themselves. However, in Saskatchewan the extremely dry summer of 1961 provided a rather severe test and certain species and varieties appear to have survived the drought better than others.

In 1962 and 1963 plantations of Colorado spruce (*Picea pungens*) and White spruce (*Picea glauca*) were observed in a number of communities in the province, from Kerrobert, near the Alberta boundary, to Esterhazy near the east boundary. The trees making up these plantations were of fair size, ranging from 25 feet to 40 feet in height.

In general, the groves of White spruce had suffered rather severely with from 30 to 50 per cent of the trees either dead or in poor condition. In contrast, the Colorado spruce groves were in reasonably good condition, with perhaps less than 20 per cent of the trees dead or partially defoliated. Reports from Swift Current and elsewhere in the southern part of the province bear out these observations.

It would probably be erroneous to attribute these relative losses entirely to drought. There is some evidence to suggest that the White spruce is more susceptible to attacks of the pine needle scale (*Phenacaspis pinifoliae*) and the spruce spider mite (*Paratetranychus ununguis*) than is the Colorado spruce.

On the other hand, it could be argued that trees in a weakened condition, from whatever cause, are more prone to injury caused by certain insect pests than are healthy trees.

In comparing these two species of spruce, it is of interest to note that the White spruce has been 'moved south' from its natural habitat a distance of roughly 150 miles, and with only partial success. In contrast the Colorado spruce has been 'moved northeast' (probably from Idaho or Wyoming) a distance of roughly 500 miles, and here it seems able to grow without too much difficulty. One would expect the reverse to be true. It is indeed fortunate that such a beautiful tree, with its various color forms, is so widely adapted.

With reference to the pines, two species are native to certain areas of Saskatchewan. These are the Lodgepole pine (*Pinus contorta latifolia*) and the Jackpine (*Pinus banksiana*). In addition several other species have been grown at one or more of the federal stations for approximately 50 years or longer. This latter group include the Scotch pine (*Pinus sylvestris*), Swiss Stone pine (*Pinus cembra*) and Limber pine (*Pinus flexilis*).

Over the years the Scotch pine has been widely planted, and certain races or strains of this species appear to be widely adapted. Probably the superiority of the Scotch pine relates to a combination of drought-tolerance, vigor and winter hardiness. At any rate plantations of the Scotch pine, in different districts, came through the drought of 1961 with comparatively few losses, and there can be little doubt that it is one of the best species of evergreens for the parklands and the open plains of Saskatchewan. Relatively pyramidal in shape when young, the Scotch pine opens up somewhat with age and becomes quite picturesque in appearance.

With the present growth of urban centres and the development of rural recreation areas, tall-growing evergreens (and also the lower-growing forms) will be needed in ever increasing numbers. For proper landscaping variety in color, form and height are essential. If the Colorado spruce and the Scotch pine merit top rating, and keeping in mind the importance of drought-tolerance and hardiness, what other trees might be considered as 'second choice' in a short list of evergreens? The number is not large and opinions differ.

The Swiss Stone pine is attractive and relatively hardy. However, because of its slow rate of growth, it is not too popular with the nursery firms. The Lodgepole pine is a moderately rapid grower and while not as widely adapted as the Scotch pine, it is one that merits consideration for ornamental plantings. Mature trees of this species survived the drought of 1961 at Lloydminster and Saskatoon without irrigation. The Lodgepole pine prefers rather porous upland soils and will not thrive in areas where 'alkali' is present. (A review of literature relating to the growing of evergreens on the prairie reveals a lack of information as to their suitability to different soils. Some research in this field would appear to be desirable.)

Quite recently a variety or sub-species of the White spruce has attracted some attention. The evergreen referred to is the Black Hills spruce (*Picea glauca densata*). In Bulletin 399, Woody Ornamentals for North Dakota, 1955, by D. T. Hoag and J. H. Schultz, this spruce is described as having a compact, narrow, pyramidal habit of growth and possessing more drought-tolerance than the ordinary White spruce. Information on the performance of the Black Hills spruce (as described above) in Saskatchewan is rather limited, but information from sources outside the province is generally favorable. For ornamental plantings, and because of the relatively limited choice of suitable evergreen trees, the Black Hills spruce should be rather widely planted to see how it will perform under Saskatchewan conditions.

Two Important Pests of Planted Spruce Trees

by **LLOYD O. T. PETERSON, Entomologist**
Tree Nursery, P.F.R.A., Indian Head, Sask.

Spruce trees have many insect pests, but two species, the spruce spider mite and the pine needle scale, are of particular importance in urban communities and on farmsteads in the prairie provinces.

Frequently they become very numerous on spruce trees grown as ornamentals and shade trees, and on spruce planted in shelterbelts. Rarely are they noticeable in the natural forests. Both pests have piercing mouth parts and suck the plant sap out of the needles. Despite the presence of natural enemies, artificial control measures are frequently necessary if serious damage to infested trees is to be prevented.

The spruce spider mite is a miniature spider and can be seen clearly only with the aid of a magnifying glass. It passes through several developmental stages, and completes its life cycle in about 15 days during the summer. This short period permits several generations in a season. For this reason a light infestation in the spring can become a very serious one by mid-summer if weather conditions favor the pest. The spruce spider mite over-winters in the egg stage. Hatching commences in late April or early May. By the third week in May adults of the first generation are present. Successive generations appear throughout the season. The winter eggs are laid from September to the onset of severe frost. Most of them are placed under the old bud scales but some are found in the angles at the base of the needles.

Feeding by the spruce spider mite, if the pest is abundant, causes the needles to become dingy yellow or dull mottled brown. Many die and drop from the twigs, giving to the affected trees an unhealthy appearance.

The mite also spins large amounts of fine webbing which is most easily seen if the branches are viewed from the under surface. The webbing appears as fine strands criss-crossed between the needles, and often forms a dense mass that fills up the spaces between the needles almost to their tips. The presence of this webbing, along with a dull, unhealthy appearance of the foliage, usually is certain evidence that trees are infested. If further proof is needed, sharply tapping twigs on a sheet of white paper to dislodge some of the mites will show them as moving pinpoint specks of brown or red on the white paper.

The spruce spider mite thrives in warm dry weather. Consequently, if several seasons with above average temperatures and below average rainfall follow each other, large populations are likely to develop and damage to spruce will be severe unless artificial control measures are used to prevent it.

The pine needle scale also is minute, but its presence on spruce can be detected by the occurrence of small, white, oval specks on the needles. These

white specks are coverings or scales secreted by the insect during the course of its development. They are inert material and remain on the foliage for some time after the insects that formed them have died.

Unlike the spruce spider mite, the pine needle scale has but one generation a year. The pest over-winters in the egg stage, underneath the white scale coverings of the parent females. Hatching usually begins in early June. The newly hatched nymphs are reddish in color and pinpoint in size. They crawl out from under the scale coverings and disperse over the foliage. In a day or two they settle down, with their styletlike mouth parts permanently inserted into the needle tissues. By late July the males and females have become mature adults and mating takes place. By early August the females have formed their white scale coverings and egg-laying begins. Oviposition is completed by late October when the females will have shrunken to a very small size and the spaces formerly occupied by them under the scale coverings will have been filled with numerous eggs.

Pine needle scale damage shows up first as a mottled yellowish discoloration on the foliage. As it grows in severity the needles weaken and many may dry up and drop off. The defoliation thus caused is frequently so severe that only the current year's growth of needles is left on the branches. Many trees in this condition will die and those that do survive will have their vigor seriously impaired, and their value as ornamental trees or shade trees will be greatly reduced.

Suitable chemicals applied as sprays at the appropriate times are still the best method to combat these spruce pests. For the spruce spider mite several effective chemicals have been developed. Some that are readily available in the prairie provinces are kelthane, tedion, ovex and aramite. Their formulations and recommended spray concentrations are as follows:

	Amount of chemical for 20 gallons of water
Kelthane emulsion (1.785 lb. active per gallon)	½ pint
Tedion emulsion (1 lb. active per gallon)	½ pint
Kelthane wettable powder (18.5%)	10 ounces
Tedion wettable powder (50%)	2 ounces
Ovex wettable powder (50%)	7 ounces
Aramite wettable powder (15%)	16 ounces

Usually two applications of a spray are necessary. The first one should be applied during the third week in May after the winter eggs have hatched, and the second during late June or early July. If chemical sprays are not used and a supply of water under pressure is available, it is a good practice to drench infested trees thoroughly at weekly intervals with a strong stream from a garden hose. The force of the water will break up the webbing on the trees and wash away many of the spider mites.

Several chemicals also are effective against pine needle scale, but malathion is the one that has been used quite widely and perhaps is the most readily available. The rate recommended is 4/5 pint of 50 per cent malathion emulsion in 20 gallons of water. Two applications are desirable. Both should be thorough enough to wet all parts of the foliage without drenching the trees. The first application should be about the end of the first week in June to kill the newly hatched nymphs. The second application should be no later than the second week in August to kill the insects that escaped the June treatment.

Pinus ponderosa.

Growing Trees from Seed

by **JOHN ALPAR, Manager**
North Dakota Forest Service Nursery, Towner, North Dakota

Many years ago as a child, I would take a spruce cone, maybe *Picea abies*, in my hand, force it open, and place the winged seed on a plain sheet of paper. What I saw was a small, brown, flat seed, rounded at the top and acute at the base. It had a diameter of 1/16 inch and was about 3/16 inch in length. The wing measured 1/2 by 1/4 inch, was straw-colored and thin enough to enable a man to see through it. There were approximately 40,000 to 80,000 seeds to the pound.

Carefully I would open the seed coat and could see the cream- or white-colored endosperm. By splitting that, I revealed the embryo, ready to burst into action if given a chance. I would close my eyes and visualize a tiny plant emerging through the forest floor, doubtlessly unnoticed by the common observer. It stretches its fine needles toward the sky, clasping sunbeams filtering through the dark canopy for support. Unwavering, it grows to a stately giant to shadow history or to be taken by man for progress.

This to me was a challenge worth consideration and extensive study. To stand and ponder over the magnificent transformations of nature gives me a thrill now, and even then when I was very young.

After maturing its seeds, the cone bursts open. The winged seeds (in the case of spruce) fall in great numbers to the ground below or are borne away by the wind. A large portion of this seed will be eaten by rodents and birds. Just a small amount of this seed may come in contact with the soil in a favorable way. After it receives a sufficient amount of moisture it will have a chance to germinate and start to grow.

But just how many of them will reach maturity and again how many will develop into a well formed, vigorous tree of commercial value? Not very

Juniperus virginiana.

many. Generally speaking, only the stronger will survive. But which one will it be and where does it come from? This is our problem. To grow the trees so badly needed for wood fibres, ornamental or protective plantings we must start at the right place.

The seed is the beginning of all. It will not suffice any more to get a sack filled up with seed, plant it and sit back and wait for it for a half century or more to see what will happen. As we approach this problem we find the seed source is the most important factor. To support this factor, one must find a healthy source, possessing all the characteristics of a perfect mature specimen. The establishing of a seed orchard is the best reliable source of good seed. Select the trees with the best features of natural range, geologically and climatically corresponding with the planting site. After careful testing, remove the undesirables. This could be native stand or introduced strain with proved adaptability.

For the time being we should improve our seed collecting and handling practices. Select the proper trees and follow the maturing cycle of the seed with a close check. We cannot trust our luck to the activity of squirrels. Caches of these 4-legged collectors are filled with seed of unknown heredity (parent tree) and perhaps some from a previous year; besides the ripeness of seed is questionable also.

If conducting cutting tests, check for color changes, special gravity test and others. Then act fast with a relatively large and trained crew to capture dispersal. But safety first. Select the proper collecting methods you want to use, without injury to man or trees. Ripeness of seed is very important. *Juniperus scopulorum* has a rather abundant seeding habit and many of these specimens carry immature and mature seed on the same trees. It will affect the germination later.

Handle collected seed with care. Avoid heating, excessive drying or seed-coat injury. Perform extraction as soon as possible. Store seed with the recommended moisture content. The container we use will have to be sealed completely airtight to prevent deterioration. Good grade polyethelene bags with

Picea purgeus.

a protective outer shell probably are the best. Store seed at the recommended temperature range, generally 0 to 40 degrees F. Freezing does not harm most of our seed but drastic changes do.

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Editorial Note: It is gratifying to have this article written by John Alpar, a civil servant of our neighbor state, North Dakota. Mr. Alpar is not only manager of the North Dakota Forest Service Nursery at Towner but is also one of the most active members of the Planning Committee of the International Peace Garden, that remarkable beauty spot situated along the border in North Dakota and Manitoba. Towner lies about 45 miles south and 19 miles west of the Peace Garden and readers will realize that woody plants thriving in its state nursery can be planted with confidence over much of the Canadian prairie region.

Three of the conifers being grown by the hundreds of thousands at Towner are found in the nearby woodlands. One, the Colorado Spruce, is finding its way into our shelterbelts in increasing quantity. The other two are yet to be adopted here in significant amount. They are the Rocky Mountain Ponderosa Pine, or Western Yellow Pine (*Pinus ponderosa*) from the Black Hills, South Dakota; and the Rocky Mountain Juniper (*Juniperus scopulorum*) from the Badlands of North Dakota and nearby Montana. As time goes on, all three of these drought-tolerant trees may become prominent locally. The pine is a luxuriant tree with long, dark green needles and large ornamental cones. The juniper is used as border row in shelterbelts and as attractive specimen plants.

The importance of Mr. Alpar's nursery to North Dakota, fortunately, is duplicated in the prairie provinces. There are the two Canada Department of Agriculture stations in Saskatchewan: the Prairie Farm Rehabilitation Administration Tree Nurseries at Indian Head and Saskatoon; and the provincial nurseries in Alberta and at Hadashville, Manitoba. Their output of millions of tree seedlings each year is bringing added beauty and comfort to what used to be known as the "bare prairies."

Gladland Explorers Guide

by **THOS. KILDUFF, Assistant Superintendent**
Provincial Horticultural Station, Brooks, Alta.

Since promising your editor some time ago a listing of gladiolus varieties I have been debating just what angle to take. Should it be for the show addict or the household hobbyist? Should it be the large type or the miniature, the new introductions or the old standbys? Should earliness be emphasized, and should the full color class range be included? Any of these angles, if pursued, could provide quite an extended listing. So I have decided to let you do it yourself.

Now, any do-it-yourself project requires a kit and directions on how to use same. You get the kit I have found most useful by subscribing a $3.00 membership in the Canadian Gladiolus Society (Secretary—W. V. Doe, R.R. 3, Grandby, Que.). With the C.G.S. Annual, which you receive in due course, in hand, you turn to the symposium section to find the names of currently available varieties listed with the ratings of growers from coast to coast. Size and color class are indicated by 3 numerals. A little study will indicate the significance of these numerals, and the value of the ratings. Name of the originator and year of introduction also are given.

Other tools in the kit are of exceptional value in arriving at a satisfactory personal variety list. The Show Reports indicate those varieties which are currently winning honors in various areas across the country. And personal reports of growing conditions and varietal performance are further aids in evaluating local adaptability.

Okay! You've spotted several names with good ratings in the size and the color you like. Now—where to get them? Growers advertising in the C.G.S. Annual are the best source I know and their catalogues or price lists contain descriptive information of considerable value—usually including length of season to flowering. You will learn to discount raves, usually honestly given, by checking against the symposium.

The Alberta Horticultural Station (at Brooks) has a glad collection of over 1,100 named varieties, built up by following the above directions over a period of 20 years. With assists from the information published annually by the New England Gladiolus Society and the North American Gladiolus Council it was not difficult to conclude which were the top fifty being currently grown. Getting these top fifty imposed a financial strain until it was realized that as a variety climbed the ladder of public acceptance, and as its numbers grew, the asking price declined to a reasonable figure. Will not define the term "reasonable figure," but will say that a top notch variety will stay near the top long enough to become reasonable to the most frugal buyer.

Now—lest I be accused of chickening-out entirely on providing a list of varieties—I will name one that you are not likely to get from any other source. It is distinctly biased and is compiled from those which qualifed as my personal finds-of-the-year. My own idea of that nebulous thing called Beauty was the principal choice factor. Here are the top 25 of my favorite hundred beauties:

Antarctic; Burma; Carmen Corliss; Dieppe; Elf; Elizabeth the Queen; Evangeline; Forsythia; Francesca; Friendship; Goldruff; Hearts Desire; Little Sweetheart; Painted Lady; Picardy; Radiance; Redcoat; Roseneath; Sans Souci; Susannah; Taj Mahal; Wax Canary; Wedding March; Wedgewood and White Lace.—Happy expectations and good glad hunting!

Grow Modern Glads

by **WM. J. SINCLAIR, Winnipeg, Man.**

The modern gladiolus is a far cry from the glads of 10 or 15 years ago. The purpose of this article is to try to encourage you to grow modern glads.

Anyone can grow them successfully. You don't need a green thumb—you don't even need special soil or fertilizer (maybe as a glad "addict" you'll have to do more things to them, but not if you are only after sheer beauty).

The main thing you need is a reliable catalogue which lists named varieties, and a supply of small stakes to mark the varieties and keep them separate when you plant them and when you store them. This way you'll always know what you have. If you like a variety you can increase it from the bulblets, and if a variety doesn't please you you can get rid of it.

Another thing—I guarantee that if you mark them and keep them separate they'll never change color! If a bulblet blooms a different color from the color of the mother bulb, you have a "sport," and it may be valuable providing it is an improvement on its parent. There is a standing offer of $1,000.00 for a white sport of *Landmark*. But this "sporting" or mutation is a really rare event, and most of us will never see it happen.

So please, please don't buy any more "Exhibition Mixtures." You wouldn't buy roses that way, or dahlias, or peonies, or even corn or beets. Buy some glads you know the name of and can be proud to own.

The following is a list, by color, of the best modern varieties. Generally these are exhibition types but they may be used also for decorative purposes. Please buy some of them from a reliable catalogue and keep them separate by name. Just plant them in your vegetable garden or any sunny location. Spray them every 10 days to control thrip. If you cannot locate these varieties in your catalogue join a glad society and get on the mailing lists of the good growers. Or get your local horticultural society or garden club to affiliate with the Canadian Gladiolus Society or the North American Gladiolus Council.

LARGE GLADS

White

‡ANTARCTIC '57, a tall, pure white, slightly ruffled, with about 21 to 25 buds.
‡SNOW VELVET '56, beautifully ruffled, pure white with many buds.
‡WHITE SAILS '54, tall, white with small red throat blotch, probably the best blotched white.
‡REPARTEE '61, a new medium size white with bright red blotches.
ANGEL EYES '63, very pretty medium size white with blue blotch.

Green

‡GREEN ICE '57, greenish-cream, shading darker towards the centre, ruffled and formal.

Cream

§LANDMARK '60, a huge exhibition cream with lightly ruffled florets, opening up to 10 blooms at once on tall spikes.
FRESH '62, medium size, cream with yellow throat, beautiful crisp ruffling.
‡ARES '54, medium size, cream with scarlet throat blotches.

Light Yellow

‡PROSPECTOR '53, light yellow with beautiful amber lip, heavily ruffled, a good cut flower for vases.
YELLOW SPIRE '58, formal yellow, sport of PATROL.
GOLDEN MIRACLE '59, ruffled, medium yellow.

Deep Yellow

GOLDEN ROSETTE '61, deep yellow, heavy substance and ruffling.
REWARD '59, heavily ruffled, formal rich yellow.

Buff

‡PATROL '46, nothing has come up to displace this old champion; a clear buff color, very formal and can hold 10 or more open.
‡BORNHOLM '57, light buff with apricot throat.

Orange

PETER PEARS, a light orange with faint cream rib and light scarlet throat.
‡ATLANTIC '47, very large exhibition-type orange.
CRONUS '58, medium size, true orange, very good color.

Light Salmon

SPRING SONG '63, beautiful ruffled light salmon-pink with white throat.
‡POLYNESIA '50, light orange-salmon with many open florets.

Deep Salmon

‡SALMON QUEEN '55, medium salmon with creamy throat, a big show winner.
§THUNDERBIRD '62, deep persimmon shade with heavy ruffling and substance.

Scarlet

‡DIEPPE '45, this old timer is still the best show scarlet, ruffled and beautiful.
‡SANS SOUCI '51, for color the best scarlet, beautiful in a white vase.
§VICTORY '63, lightly ruffled, round blooms, a promising new scarlet.

Light Pink

PINK PROSPECTOR '60, beautiful light pink with light yellow throat, heavily frilled, and above all very consistent.
TEMPTRESS '57, very pale but formal ruffled beauty.

Medium Pink

PINK SENSATION '59, rose-pink, white throat, excellent show glad.
BAKER'S DOZEN '62, medium pink with light yellow throat, opens 13 florets at once.

Deep Pink

‡SPIC AND SPAN '46, one of the all-time great glads, tall, deep pink, lightly ruffled.

Light Red

CHRISTMAS RED '63, a beautiful formal clear red with many open florets.
§ROYAL STEWART '56, has a health problem, but a good one can be grand champion of any show.
BANDWAGON '60, tall, light red with small white throat feather—many open and often a champion.

Dark Red

WINNEBAGO CHIEF '59, huge deep red with many open.
OSCAR '58, a giant, deep velvety red, but only about 6 or 7 open.
‡RED PEPPER '54, good large red which opens well and lasts when cut.

Light Rose

‡INNOCENCE '57, tall, ruffled, pale rose.
‡TRAVELLER '52, medium height, rose-pink, very formal and opens well.

Medium Rose

‡ROSITA '52, beautiful rose with silvery edge around the petals, easily holds 8 open florets.
§BEN HUR '62, medium size florets, very ruffled and opens well.

Deep Rose

‡DIRECTOR '56, beautiful ruffled deep rose, but quite late to bloom.
CONCERTO '60, deep rose-red, deeper throat, many open.

Black Red

‡DARK BRILLIANCE '56, velvety wine-red, ruffled sport of KING DAVID.
LAST ROSE '61, clean deep rose-red, opens best outside.
JACK OF SPADES '59, ruffled, tall, black-red with white anthers.

Lavender

SHOWPIECE '63, formal clean lavender with small ivory throat mark, opens 10 florets.
LAVANESQUE '60, blueish-lavender, medium size, with a ribbon of bloom.
FLORAL DANCE '58, formal, ruffled, darker lavender, one of the best Australian glads.

Purple

‡KING DAVID '51, wonderful ruffled rich purple.

SYDNEY'S CHOICE '60, deep purple with white line on lower petals, opens many on formal heads.
PURPLE SPLENDOR '61, ruffled, heavy textured, formal blueish-purple.

Violet

‡VIOLET CHARM '53, light violet, cream throat with broad deep violet arrow, one of the best glads.
§CHINA BLUE '61, better ruffling and color than Violet Charm, but holds only about 7 open.
‡SALMAN'S SENSATION '53, tall, dark violet, huge florets.

Rose and Violet Smokies

‡TAN GLO '54, formal, light rose-smoky.
‡BLUE SMOKE '57, ruffled, mulberry smoky-lavender with rose throat, very pretty.
SANDSTORM '60, rose-smoky, ruffled and fluted.

Tan and Brown

DAMASCUS '61, ruffled, mulberry-tan smoky with white throat.
AUTUMN SENSATION '61, giant, rose mahogany with bright red throat mark.

MINIATURE GLADS

DOMINO '59, ruffled, cream-white with small lavender blotch.
TOWHEAD '60, lightly ruffled, clean light yellow.
‡STATUETTE '50, yellow with red throat blotch.
PARFAIT '58, light salmon, cream throat with pale red blotch.
CAMELOT '59, deep pink, yellow throat.
RED RIBBON '60, ruffled, light rosy-red, looks like a green buggy whip with red bows, but it wins at the shows.
§FRISKY '63, ruffled, deep velvety scarlet, a beauty, may be re-classified as a medium size glad.
LITTLE FAWN '60, little tan.

Varieties marked ‡ may be purchased for about 10 cents each or less; those marked § are all American Gladiolus Selections and may be bought 3 for a dollar or less for quantity; and the others range from 15 cents each up to about 50 cents each. The numbers following each variety name signify the year of introduction.

While there are many beautiful and worthwhile glads, the above in my opinion are some of the very best. You can see that the difference in price of these good modern varieties is very little from the price of the so-called "Exhibition Mixtures."

Aphids on Roses

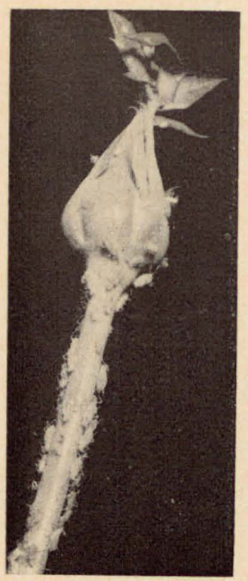
by **A. G. ROBINSON, Associate Professor**
Department of Entomology, University of Manitoba

A recent scientific paper in the Canadian Entomologist by W. R. Richards lists 15 different species of aphids (plant lice) known to occur on roses in North America. Most of them are found in Canada, either on wild or cultivated roses. In the prairie provinces, four species of aphids are pests on cultivated roses, namely, the rose aphid (*Macrosiphum rosae, L.*); the potato aphid (*Macrosiphum euphorbiae*, Thomas); the strawberry aphid (*Chaetosiphon fragaefolii*, Cockerell); and the rose grass aphid (*Metopolophium dirhodum*, Walker).

The life histories of aphids are unlike those of most other insects. Some species spend all their lives on one kind of host plant; others may feed on a group of plants closely related to one another (usually members of one plant genus or family). Still other species of aphids spend part of the year on a perennial tree, shrub or herbaceous plant, and the remainder of the year on another kind of plant (usually plants which are unrelated to each other).

Male and egg-laying female aphids occur only in autumn, and produce fertilized over-wintering eggs. During spring and summer all generations consist only of female aphids which give birth parthenogenetically to living young which in turn are all females. Thus all our local species over-winter on roses in the egg stage. Incidentally, aphid eggs may be found on the many packaged roses which are imported from British Columbia and elsewhere, and sold each spring through the various retail outlets.

The wingless female aphid which hatches from the egg is called the "stem mother." She may produce one or two generations which remain on rose plants, which in turn produce a winged generation which can fly to a summer host. In some cases generations succeed one another, remaining on rose plants. If the aphids become too crowded, some will have wings and fly to other roses nearby. Otherwise they remain wingless.



Rose Aphids on Rose.

The rose grass aphid spends the winter on roses and the summer on grains and grasses, and a subsequent generation returns to the rose plants again for the winter. The other three species mentioned above can be collected on roses in Winnipeg during the entire growing season, although the potato aphid feeds on very many other species of plants as well.

Colonies of aphids cluster on the tender terminal growth, or on the flower buds, of roses. The colonies contain one mother and her numerous progeny. When one considers that a young female can begin producing other female aphids when she is only 8 days old and produce about 100 young before she dies of old age (about 30 days old), the number of aphids present after 2 or 3 weeks soon defies easy mathematical calculation!

How can one control these little creatures that are so interesting to the entomologist but so devastating to the roses? Sprays or dusts of malathion or nicotine sulphate are still the most widely used in-

secticides for aphid control in the home garden. Most rose growers now use one of the "complete" sprays or dusts, containing mixtures of insecticides and fungicides, for both insect and disease control on roses. These so-called "rose dusts" or sprays are very useful and will take care of most insect and disease problems on roses.

The large colonies of aphids are subject to many natural controls in the form of other insect predators and parasites. A very intensive advertising campaign in 1963 has claimed that "the only good bug is a dead bug." There are in fact many more "good bugs" than bad ones, and advertising claims such as this are absurd and misleading. Indiscriminate use of insecticides often causes more harm than good, especially when large numbers of beneficial predators and parasites are killed needlessly. The rose grower should apply the first spray or dust as soon as the leaves have unfolded in order to kill the "stem mother" aphids, and later during the season whenever colonies of aphids appear.

There may be some varieties of cultivated roses that are partly resistant to aphids, and other varieties that are more susceptible than normal. Here is an opportunity for rose growers to make their own personal observations on varietal differences, especially when several varieties are grown in one planting.

Horticulture in the Yukon

by **G. H. GUBBELS, Horticulturist**
Experimental Farm, Mile 1019, Alaska Highway, Yukon

The Yukon has a short, cool, growing season. Our killing frost-free season is 53 days. Yet many annual vegetables and flowers thrive when early-maturing varieties are used, are cultivated properly, and the tender plants are protected. Perennial vegetables, fruits and ornamentals also grow well when wisely chosen and properly cared for.

The soils in the Yukon usually are cool, low in organic matter and relatively infertile. However, satisfactory growth of many crops may be obtained by using chemical fertilizers and proper cultural techniques. In most years, garden plants benefit from irrigation as rainfall during the growing season usually is low, approximately 4 to 6 inches.

Warm-season crops such as tomatoes, cucumbers, beans and corn generally do not do well in the open field in the Yukon. The growing season is too short and the temperatures are too low for them to thrive. In some areas, frosts may occur during the summer. To grow these crops successfully, some type of shelter must be given using glass or plastic-covered structures.

For some vegetables, plastic mulches help to hasten maturity and improve yields. They conserve moisture, raise soil temperature, and keep the soil from packing after rain or irrigation.

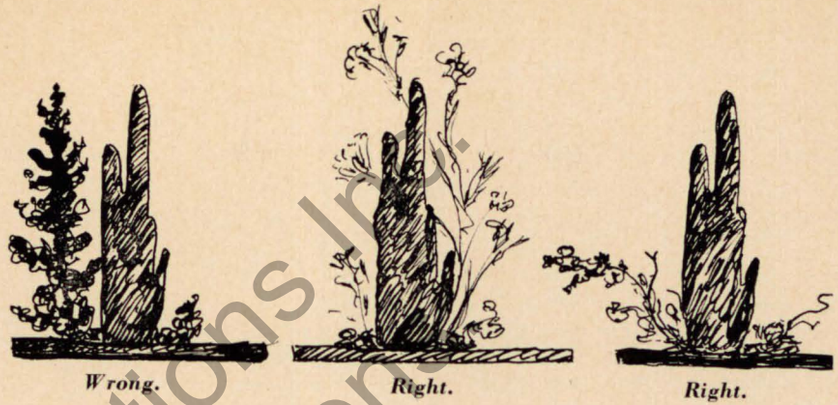
Some garden plants often yield much more if they are protected from frost. Among these are peas, broad beans, potatoes, and some annual flowers. By protecting them during 3 or 4 frosty nights in August and early September their seasons may be considerably extended. Sprinkler irrigation can be used for this purpose. Water sprinkled on the plants continuously while the temperature is below 32°F. protects the plants from injury.

Although most of the cool-season annual vegetables and flowers may be grown successfully without protection, the choice of perennial plants is limited

by the severe winter conditions. Many commercial varieties and strains of strawberry have been tried but none are consistently winter-hardy. A breeding program at the Experimental Farm, Mile 1019, has produced some promising strawberry seedlings. Gooseberries, raspberries and saskatoons are the only bush fruits that have survived the winters. All of the plums, crabs and pears tried died down to the snow level each winter. Sandcherries formed fruit in some years but the seasons were too short for the fruit to mature.

Very few ornamental shrubs and trees are hardy enough for the area. Oriental spirea, Altai Scotch rose, Hedge cotoneaster and golden clematis are the only imported ornamental shrubs found to be adapted to the climate. Native shrubs such as bush cinquefoil, two native junipers and buffaloberry are among those useful for landscaping. The only imported ornamental tree that appears winter-hardy in this areas is Mugho pine. There are several native trees that can be transplanted easily for use in landscaping. They are Lodgepole pine, paper birch, white spruce, dwarf birch and willow.

In the Yukon, a well tended vegetable garden can supply a great variety of fresh, tasty vegetables during the summer and, with proper storage, well into the winter. The home grounds can be brightened up with attractive, colorful displays of annual and perennial flowers, trim lawns, and well placed trees and shrubs.



Wrong. *Right.* *Right.*

Dried Arrangements

by PROF. LILLIAN B. ALLEN
Head, Arts Department, Home Economics, University of Manitoba

One of the pleasures of late summer or autumn is the planning of winter bouquets. A motor trip at this time exploring the by-ways can provide us with material.

Around Winnipeg there are fragile wild mustard, stinkweed and dock. The latter has a wide color range from green through mahogany to deep brown. I believe a special decorative variety is found near Carberry. One weed has masses of thin reddish branches. In some areas there are the curly remains of fireweed, milkweed pods and several types of grasses with feathery tops.

The evergreen woods provide various-sized cones, fascinating windfalls of grey branches with dried bumps of cones on them as well as bark with lichen. By the edges of water areas is driftwood.

Trips out of the province might produce teazles, huge cones from mountain evergreens, cypress knees, curious roots, sea-smoothed driftwood, branches with Spanish moss and innumerable other treasures. And we mustn't forget stalks of grains or the unusual seed pods that come from our flower and vegetable gardens—bittersweet, Japanese lanterns, silver money, feathery dill, and even a branch of lilac with a forgotten blossom on it.

In the Whiteshell I found a ground vine with bits of a sort of fern which remains green indefinitely and makes an excellent cover-up for the holding mechanisms, instead of the green artificial material.

If we can't travel to pick up exotic weeds, some florists sell such lovely items from Hawaii and other tropical localities. On hand we should always have a stock of pebbles and chunks of rock.

One of the best helps for creating dried arrangements is the inexpensive book, The Art of Driftwood and Dried Arrangements, by Tatsuo Ishimoto, published by the Crown Company. Since so many books suggest "arty" ideas, this book, with its many illustrations of everything to work with and the resulting sensitive simple and effective ideas, is a real joy to look at.

Once we have a collection of wayside and garden treasures, we have to decide on a place or places to use them. The place, I feel, is the most important early decision, as for instance a mantel which is seen above eye level, a bookcase on eye level, and a coffee table much below eye level. Then comes the

question, will it be seen from 180 degrees or all around? Scale is important, too. The arrangement should not dwarf its surroundings nor be dwarfed by them. And it must suit the surroundings. Personally I prefer to use dried material for the most part as nature colored it. This I feel fits best into a contemporary or colonial scheme of decoration. Painted material, or that sprayed with metal, makes it a bit more elegant and it may then suit a more traditional décor.

Now comes the choice of container and mechanical aids for setting this material in place. Our containers can be as varied as our material so long as they suit both the material and place. We can use metals or simple pottery — the latter may be strange contemporary shapes with two or three openings or may hang against the wall. Since water is not required, wooden or painted masonite platforms, with or without "legs," are excellent. These we can shape and cut to the exact scale of the arrangement, round, free form, oval, square or rectangular. Perhaps a bamboo mat is just the thing.

Needle holders plugged with plastic clay and fixed solidly to a base are useful. Styrofoam, which can be cut into any shape and attached to the container either with plastic clay or with a new plastic tape for this purpose, is very good. Driftwood can be held by both of the above, anchored by chunks of rock, or leveled off and fixed to a stand of plaster of paris or a similar medium.

Next comes the composition. I feel there are two main choices, a simple arrangement where every line and form count, or a mass arrangement which results in a play of color and texture. The first is by far the most difficult to achieve. Just as in any successful flower arrangement, majors and minors play their role. For instance, a piece of driftwood and dock must not be of equal height or importance. Only one major is possible. Something has to be subordinated. If we want something taller than the solid driftwood perhaps something with thin lines would do. If the driftwood is to suggest the total height, minor bits of linear form, small bits of dock, things much less noticeable and built around the base, would be best.

Rarely do we find weeds and branches exactly right for our purposes, so careful selection and pruning are necessary. A leaf here or a twig there must be removed to stop interference with the general movement of line or rhythm. This is difficult to explain. But if we are using the first type of arrangement, we proceed on the premise that every line or shape plays its part in the composition. We may put in more than we need at first. Then we keep eliminating until we have just enough and no more. The result is simple and looks easy to do, but there have been a lot of decisions along the way.

The mass type is much easier to do. It should have, of course, an over-all movement or shape, and all its parts should be arranged so that our eye is always held in the composition. The larger and more noticeable features should be centred and low, and the perimeter line should have varied spaces. It can be rich, effective and satisfying, and maybe suit the interior better than the simple arrangement.

But for whatever we acquire in the way of dried foliage or flowers, there is a way to use it effectively and only practice and study—both of which make a quiet and fascinating hobby—can help us achieve a satisfying result.

There's Big Fun in Flower Arrangements

by **J. P. DE WET, Winnipeg, Man.**

With us gardeners, the local flower show has always been looked on as a part of our way of life. Annually, we have brought out for competition with others, the best that we have been able to grow since the previous spring.

Like all things in life, there never is any halt. The urge of progress is always with us; next time we surely will do better. And so it has been with our flower shows. We started with individual specimens, and progressed to groupings in vases and baskets.

But that was not the end of our showings—not by any means. From there we went to arrangement classes or, as some societies have it, the Decorative classes. We began with arrangements for dinner tables, buffets, coffee tables, etc.

Even here the brighter flower arrangers were far from satisfied. They knew well that still better arrangements could be devised—with the application of originality and imagination. Time has shown how right they were. You will find evidence of that in any flower show you care to mention.

So from there the I-can-do-better exhibitors stepped out with arrangements with a predominating color; arrangements stressing line, for example, crescent, horizontal, triangular and vertical; and arrangements in color harmony, such as: one-color, using tints, tones and shades of a specified color; neighbor-color, using specified neighbor groups of say yellow, yellow-orange, and orange; and colors opposite each other on the color wheel, such as red and green.

These are a few recommendations from the Minnesota State Horticultural Society, whose booklet, The Flower Show*, should be possessed by every flower show committee.

But still there are wider fields of challenge, originality and imagination. Themes are popular, and so are interpretive arrangements. The Saskatoon Horticultural Society's 1963 flower show called for The Gardener's Calendar, interpreting any month; Sweet and Lovely, debutant's party, using sweet peas; The Golden Hours, composition, the exhibitor's interpretation of his or her golden hours; and many others.

The society's definitions governing decoratives and arrangements are: An Arrangement is limited to one unit of plant material plus container, with accessories. A Composition may consist of one or more units of plant material, plus container. However, the accessory or accessories must not dominate in any way the flowers or foliage featured in the composition. Accessories must be kept to a minimum.

Other governing definitions of this society are: Foreign Foliage means foliage other than plant's own; Filler is to be restricted to non-specimen flowers, such as baby's breath, statice, fern, etc.; Free Standing means that it

*The Minnesota State Horticultural Society, St. Paul Campus, University of Minnesota, St. Paul, Minn. 55101, U.S.A. 75 cents.

must be viewed from all sides; and no tying to handles of baskets, etc. Cut materials grown locally must be used.

The North Toronto Horticultural Society members are especially prolific in smart ideas. The theme The Five Phases of Eve brightened their 1963 show. The Five Phases were:

Eve the Teenager: Her First Formal—a corsage, material from any source; Patio Party—flowers, fruit and/or vegetables, material from any source; The Twist—stressing rhythm.

Eve the Bride: Kitchen Shower—in a kitchen utensil; Here Comes the Bride—an arrangement with formal balance for church, material from any source; With This Ring—a crescent or circular arrangement.

Eve the Mother: Blessed Event—a miniature arrangement; Mother and Daughter—two related arrangements; Wedding Anniversary—an arrangement for the centre of the table, card to specify which anniversary, material from any source.

Eve the Homemaker: Busy days—foliage (no flowers, but may include seed pods, berries, etc.); Blue Monday—an arrangement with darker colors predominating, gray allowed, no white; Thrift—a line arrangement stressing economy.

Eve the Community Builder: The Arts—an arrangement interpreting one of the Arts, card with details to accompany exhibit; Recreation Centre—an arrangement to suggest a hobby or craft, accessory or card to accompany exhibit; Travelogue—an arrangement inspired by far-away places; material from any source for these three classes.

That society's governing rules are:

An arrangement will be classified as fresh, cut plant material in a container of water, and/or base, and must follow a definite design. An accessory may be used, if desired, with any arrangement and may be placed inside or outside the container.

Unless otherwise stated, all flowers for decorative classes must be grown by exhibitor. Natural materials, such as decorative foliage, twigs, driftwood, evergreens, moss, rocks, grasses and flowering shrubs, etc., may be used as an adjunct and may be obtained from any source. Discreet use of painted branches and treated material will be permitted. All arrangements to be the work of the exhibitor.

In decorative classes, a front view is indicated unless otherwise stated. Wiring or tying of flowers is permitted if it does not show; otherwise, points will be deducted.

As standards of decorative arrangements found new heights, the question of judging grew more and more difficult. Where all are good, how do you determine A is better than B? You don't find the answer by looking over the entries and pontificating "I like this, or that!" Fair and competent judging is a most exhausting task. Judges are human. Though a judge may have had broad experience and training, each judging decision depends finally on "how he sees it."

"Interpretive arrangements may add interest to the show and give opportunity for expression of talent. However, they must be considered 'experimental.' First, an experiment to see if the exhibitor can express an interesting idea. Next, to see if his expression of the idea is understood and appreciated by the judge. Even though the exhibitor may be highly pleased with his 'creation,' he must not be surprised or too greatly disappointed if the judges (or the viewers) do not catch the idea."

Judging artistic flower arrangements is difficult at any time; but judging interpretive compositions is very, very much harder.

Miss Julia Clements, the English arranger, in her book Show Pieces,† gives the following six main principles used in judging flower arrangements.

1. *Interpretation of the Schedule*—The exhibit must interpret the wording of the schedule, exemplifying by its shape, color, plant material or any other factor what is demanded of it.

2. *Design*—A good design has a pattern, is well scaled, and has balance and rhythm. The flowers in the arrangement should be in scale with each other, the arrangement in scale with the vase, and the whole composition in scale with the background, space or niche which the exhibitor is allowed.

Balance means that if you draw an imaginary line down through the centre of the arrangement, each side should appear visually equal. Balance can be symmetric or asymmetric. In the former, the material each side of the axis can be equally distributed; in the latter, one side can be longer, but providing that this long swerve is made with *fine* material and is opposed with shorter and bigger or *heavier* material, it could still appear visually balanced. Balance can be obtained also with color.

3. *Color*—The color of plant material used in the design must interpret fully what is required by the schedule; e.g., yellow is cheerful and gay, blue and violet are subdued, red is exciting, green is tranquil, reddish purple is royal. Certain colors are contrasting, such as orange and blue, red and green; others are analogous; some clash, some harmonize. Color can express a mood, a situation or an emotion.

4. *Suitability of Container to Plant Material*—Both in color, texture and harmony the container should suit the material it holds. A base is considered part of the container, and it also can be the main container providing that it holds a water-retaining receptacle above it.

5. *Condition of Plant Material*—Plants should be in good condition although the stems, blooms and shapes need not be perfect by horticultural standards. Material not fresh immediately loses points.

6. *Distinction and Originality*—This is a factor in judging that is hard to define. Distinction comes with some original thought, some unusual placement or combination of material. It can be the verve with which some unusual item, color or container is handled. Whilst originality enters into it, the term must not be used to disguise freakishness.

Judging is the comparing of exhibits and designating those which most nearly approach perfection. It is obvious that the exhibitor and the judge must be guided by the same standards of perfection and show rules. It is unfair to the exhibitors and the judges, as well as confusing to the public, if the standards and the rules of the show are not known in advance and uniformly followed.

A system of points helps judges to make their awards, and two systems are quoted, as much for the exhibitor as for the judge. The exhibitor will know what the judge will look for, and thus will be helped to finer arrangements. Also, the exhibitor will gain a better idea of how a judge makes his decisions—and consequently will appreciate better the value of a decision against his own arrangement.

†C. Arthur Pearson Ltd., Tower House, Southampton Street, London, W.C.2, England. By post, 22 shillings 3 pence.

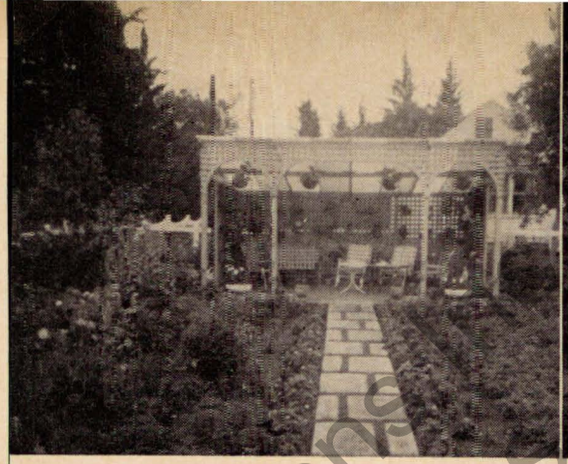
The Minnesota State Horticultural Society recommends the following scale for scoring a table arrangement:

Distinction and originality	20
Color harmony	20
Perfection of centrepiece or decoration	20
Relation of accessories (textures)	10
Proportion and balance of accessories	10
Condition of material	10
Suitability to occasion or how well it conforms to schedule	10

The North Toronto Horticultural Society judges decorative classes with the following scale:

Color combination	25
Design	25
Distinction and originality	20
Suitability of combination of material	10
Condition	10
Suitability to occasion	10

The field for flower arrangements is as wide as all mankind, and the foregoing notes have skimmed only lightly the ideas that some societies work up. There must be many, many more. The writer has hoped to spur the imagination of readers to greater achievement.



Our Begonia House

by **DR. R. SWISZCZOWSKI, Pilot Mound, Man.**

Our garden evolved in the last 6 years, starting from scratch, to a fairly decent looking spot in our town and some kindly judges have decreed it to be the best in Manitoba once in a while. It took us a few years of planning and planting, removing, adding or altering something every year to get it to its present appearance.

Along with planting trees, shrubs, annuals and perennials, we kept adding every year some garden structure, mostly functional and practical, and ornamental at the same time. At first came an arbor covered in a hurry by a fast-growing Virginia creeper that gave us a shady spot to sit in, as we didn't have a shade tree. Then we made some walks.

Another spring our addition was a lily pond in one corner of the lawn in the backyard. We were very proud of our project and fascinated by its construction. We engineered it ourselves, my wife and I, and executed it with some help from friendly neighbors. It is a circular pool, 6 feet in diameter and 24 inches deep, made of reinforced cement and finished at the top with white sand bricks. In the middle of it is a fountain connected with an underground plastic hose to the tap on the wall of the house. When turned on, it ejects a spray of water that falls on sleepy frogs on lily pads and surprises the lazy goldfish. The fountain at the same time is a bird bath. The pond is a source of constant fascination to our little daughters and their neighborly friends. I should confess that my wife and I enjoy it just as much.

In the next 2 years we added a crescent-shaped planter around our weeping birch tree, and window boxes and trellises on the south walls of our house. But a focal point of attraction in the backyard was always the pond with a young weeping willow contributing to its charm by graceful reflection in the water.

But our latest construction eclipsed the glamor of the lily pond—it is our begonia house. It captured the attention of our numerous visitors and very likely judging from their comments, will be the point of interest in our garden for some time.

Begonias are our favored flowers and we had a perfect spot for them in front of our house facing north-northeast. They were getting direct sunshine until 10 a.m. and then shade the rest of the day. Foundation plantings, mainly evergreens, gave them a nice background. Most of the time they put up quite

a show of eye-catching, gorgeous bloom but wind and rain were hard on them. It took a few days before they recuperated after a storm and, because of permanent injuries of the leaves, we never could enter any begonias in the flower shows.

To remedy this situation my wife and I decided to build a special house for our favorites. We had a whole summer to think and, late in the fall, when the flowers were gone and some delphiniums could be moved from the site we picked for the begonia house, we started to build. Winter caught up with us so we had to wait for spring to finish it. The result seems to us very satisfactory. It consists of a lattice construction enclosed on 3 sides, standing on a concrete slab 10 feet by 16 feet. Some red dye had been added to the cement and gives it a pinkish color.

The front is 8 feet high and the house slopes to 6 feet at the back. It has a roof of white corrugated plexiglass that lets the light in all day. The open side facing north-northeast allows the plants to enjoy the morning sun. The plants are suspended on 3 walls, and get some sunshine through the day. Additional shade is provided by scarlet runners climbing on the lattice work We were right, I think, to paint the wood turquoise blue. It is a more relaxing color to look at in bright sun, and gives a less contrasting background to the flowers than white.

An eavestrough catches rain in a wooden barrel for daily watering. We found that suspended plants dry out very fast due to everchanging air moved by the slightest breeze. Begonias are planted in plastic pots that keep moisture a little longer than clay pots. The begonia house gave us some gratifying experience with hanging-type begonias in baskets and with fuchsias.

Our begonia house is our most rewarding garden addition. It was fun planning it and building it. Begonias look magnificent in their own home. We can entertain our friends in the privacy it provides all summer long. We even could use it on rainy days as it is connected with the lawn by a walk so we don't have to cross wet garden soil to get to it. The walk is made of concrete slabs with grass growing between them and they are colored pink like the floor of the begonia house. A flood light on a 12-foot pole above the roof lights it in the evening and the roof keeps most of the bugs buzzing away around the lamp. And for the first time this year we won a first prize with a hanging-basket begonia and a tuberous begonia at the flower show.

It is a perfect spot to relax in in the summer after a day's work. In the serenity of a calm evening surrounded by an array of gorgeous blooms, breathing cool air scented by evening stocks and mignonette is a rare and rewarding experience in our life. It induces meditation and appreciation of what has been given to you. You feel that you would be committing a sin if you asked for more. You feel also then that the land you live on has been blessed, and the awareness of your perfect wellbeing proves to you that you were included in the blessing.

Editorial note: Dr. Swiszczowski, a veterinarian, educated in Paris, is one of the most imaginative and successful of prairie gardeners. His home is a horticultural and an artistic accomplishment of distinction. On a large lot he has fruits, roses, conifers, vines, a pool with water lilies, extensive flower borders, hedges, and a cottage vegetable garden. His home grounds have won the Shaughnessy Cup, annual award in open grounds competition for the best landscaped home grounds in the province. He is a leader in horticultural progress in southern Manitoba. The article he has kindly written at our request will prove helpful to thousands of readers.

Feeding Winter Birds

by **HAROLD MOSSOP, Editor, Chickadee Notes, Winnipeg Free Press**

"Why feed the birds?" "Indeed," you might say, "Why feed wild birds? Aren't they able to take care of themselves?"

The answer is both yes and no. On the whole they do a most excellent job of fending for themselves. But there are times when that extra hand-out on a feeding tray or even just scattered on the snow means the difference between life and death. To feathered travellers caught in an October blizzard or an unseasonable cold snap in April, that scrap of heat-producing suet or whole grain may well be a life saver.

There are also a few summer birds which, for various reasons, were unable to migrate. Without artificial feeding most of these would perish.

Then there are those little rascals, the house sparrows that many say shouldn't be here just because they were imported from Europe. We know now that bringing them here was a mistake but here they are and it's not their fault. The scientist's cold calculations may pass sentence upon them, but through the eyes of a bird lover they are living creatures that most of us bear no ill will to. They feel hunger; so we feed them.

However, it is not always with such humanitarian ideals that we go to the trouble to place a board on a pole or against a window sill on which to scatter crumbs. Our motive more than likely is quite selfish. We want entertainment, amusement, and birds are well able to furnish these. We are fascinated by their beauty of plumage and motion. The little unrehearsed acts they perform help to shorten the day for many a busy housewife or cheer the life of countless shut-ins.

Feeding birds in summer is of little value to the birds themselves. To let them forage their own insects and seeds is preferable, especially for their young. Even the young of seed eaters require high-protein insects during their first weeks of extra rapid growth. Much of the bread and cookies offered them by well meaning people lacks the food value they require. Actually most of our white-flour cooking may be doing birds harm by teaching them to depend on this type of easy-to-get food rather than to search for their own. Birds have been known to develop paralytic symptoms, loss of movement of wings and legs, on a white bread, cake and doughnut diet. Why then should we inflict our deficiency diseases on unsuspecting birds?

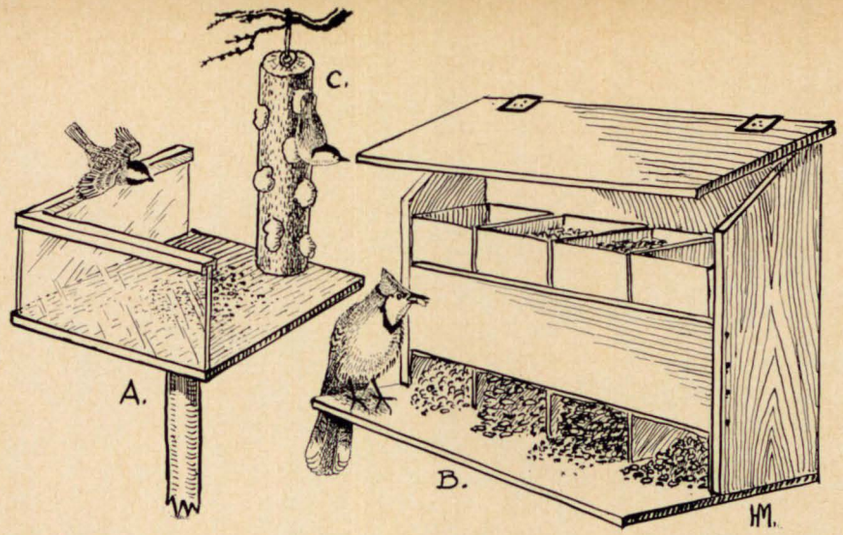
This leads to the question of what to offer birds on our feeders.

Natural foods is the simplest answer, the less devitalized the better. This means whole uncooked grains, raw fruit and fresh, uncooked meat and fats. Whole grains contain the germ—that vital part so necessary to good health.

The grains include wheat, cracked or whole, oats or groats, millet (budgie seed, one of the finest of grains), screenings which are weed seeds separated in threshing, corn and barley. Then there are sunflower seeds, one of the best foods consumed by man or beast, peanuts and peanut hearts, and other kinds of nuts (if we can afford them). The fruits include raisins, currants, apples and the wild berries we may gather ourselves during autumn outings. Raw and cooked meat and fats (suet) supply body heat.

To describe feeding trays seems superfluous so many are now in use. So, as a picture is said to be worth a thousand words, we'll let the illustration on the following page speak for itself with a few words of explanation.

The feeder A is the simplest kind but involves the use of glass. As birds usually are afraid to eat in a position where they cannot see all around them,



they have the annoying habit of hurriedly grabbing a morsel and rushing off elsewhere, often out of sight, to eat it. The idea of sides to a feeding tray is twofold, to protect feeding birds from cold wind and to prevent food from blowing away. Glass serves this purpose, at the same time allowing birds to keep watch for enemies. It may be on two sides pointing toward prevailing winds, or better still on all four sides. A wooden rim on the top edge gives the birds a better perch and helps to prevent them from striking the glass as they fly to the feeder. A pattern painted on the glass also may be of value in this respect. Heavy, ¼-inch glass is suitable but don't ask for plate glass; crystal is just as good for this purpose and about half as expensive.

The design B is the J. J. Mott milk carton feeder. Cut the tops off milk cartons and about 1½ inches from one side at the bottom. Put one kind of feed in each. The feeder may be made just as long as the number of cartons desired. Used cartons may be discarded and new ones conveniently filled in the house as required. The top is hinged for easy access. This feeder may be placed atop a post or stand, or be hung on the side of the garage.

C is the popular suet log, suspended from a branch to attract woodpeckers, chickadees and nuthatches. Just bore holes in the log and fill with suet.

Wood is preferable to metal to construct feeders for use in northern latitudes. A bird's tongue may adhere to a metal surface in below zero weather. A string mesh bag for suet is preferable to a wire one.

Gardeners worry about weed seeds being scattered from feeding trays. There is no doubt that birds often are careless; they don't eat it all and scatter some of it. But seeds cracked by sparrows, grosbeaks, finches—seed eaters—are digested and made harmless. Wind is the major cause of seed scattering, hence the need for sides on a tray. However, seeds from fruit eaten by robins, waxwings, etc., are passed through the birds and thereby planted far and wide, one of nature's ways of propagation. This is the reason for the profusion of berry bushes springing up along country fences.

Feeding winter birds may be made more interesting by keeping records. First arrivals in the fall and dates of departure in the spring should be noted, also any rare or unusual species. A notebook, a pencil and a good bird guide are the requirements, plus binoculars if your feeder is far from the window.

Report anything unusual, rare, or of special interest to the writer of the bird column in your local newspaper. He's always interested and can pass on the information so that others may share your observations.

The Certificate of Merit, 1963

Mr. and Mrs. A. Fitch
Balcarres, Sask.

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

The Certificate of Merit has been mentioned briefly in recent editions of THE PRAIRIE GARDEN. This certificate, made available by the Saskatchewan Horticultural Societies' Association, is awarded to nonprofessional gardeners who have achieved distinction in the horticultural field at either the provincial or the community level. In 1963, the certificate was awarded jointly to Mr. and Mrs. A. Fitch of Balcarres. A review of their gardening activities is given in the following paragraphs.

Mr. Fitch was born at Bethany, Ont., and came west and settled at Dunkirk, Sask., in 1910. In 1916, the future Mrs. Fitch came to Dunkirk from Cheshire, England. Following their marriage in 1925, Mr. and Mrs. Fitch continued to reside at Dunkirk until 1934, and here their first horticultural activities were begun with the planting of plums, plum x sandcherry hybrids, currants, gooseberries and raspberries.

In 1934 they moved to a farm in the Balcarres district not far from the well known Qu'Appelle valley. For a time their efforts were directed mainly to the clearing and breaking of land but as soon as possible a start was made with the planning and planting of the new farmstead. Some perennial flowers were obtained from relatives in Ontario and these plants thrived in their new location. Trees, shrubs and flowers were planted year by year and the home grounds and gardens were expanded gradually until today they occupy an area of about 2½ acres.

Careful records have been kept and the list of plants to be found there reads almost like a nursery catalogue or a government bulletin. Undoubtedly, both sources of information have been referred to frequently. We might wish that our readers could see the complete list of plants grown by these enthusiastic gardeners but space will not permit. A review of the information provided indicates a total of 314 species and varieties of woody plants, flowers and fruits grown by Mr. and Mrs. Fitch. These plants may be grouped approximately as follows; tree fruits, 29; small fruits, 20; shelterbelt trees, 6; ornamental shrubs, 46; perennial flowers, 165; and annual flowers, 48.

Over the years a goodly number of fruits were planted in the orchard, the first ones in 1945, and others as recently as 1961. Certain varieties have been quite fruitful, in particular the Heyer No. 12 apple, the Rescue applecrab, Florence, Calros and Columbia crabapples, and the Opata and Tom Thumb cherry hybrids. Cherries planted at one time or another include Nanking, Ruby and Champa. In addition to the well known Heyer No. 12, standard apples are represented by Wealthy, Haralson, Battleford and Goodlands. Likewise, the plum varieties include Bounty, Ojibwa, Grenville, Pembina and Patterson's Pride. Rounding out the list of tree fruits are apricot seedlings and three varieties of pears.

The small fruits are represented by red, white and black currants and also red raspberries and strawberries (6 varieties of the latter). Of particular

interest are certain varieties of rather uncommon fruits. These include purple raspberries, Bristol black raspberries, dewberries, boysenberries and the Mersereau blackberry. The Bristol black raspberry fruits quite abundantly.

Undoubtedly Mr. and Mrs. Fitch deserve credit for the way in which they have landscaped their home grounds. The choice and variety of shrubs and flowers to be found here are remarkable. The shrubbery borders include many of the well known plants such as honeysuckle, hawthorn, lilacs, Rosybloom crabapples and cotoneaster. The shrub roses are represented by such old favorites as Hansa, Dr. Merkeley, Persian Yellow and Betty Bland. Several varieties of Hybrid Tea roses are grown with fair success. Once again, as was indicated in the fruit plantation, we find a number of relatively uncommon shrubs represented in the ornamental plantings. Japan quince and Jackman clematis have done quite well. Recent additions include Manchurian walnut, coralberry, hydrangea, forsythia, weigela and deutzia.

By way of variety, the Fitch home grounds include a lily pond with at least a dozen different kinds of water plants. The perennial borders present an array of color from spring until fall. Squills, anemones and grape hyacinths are among the first to bloom. Darwin tulips, Cottage tulips and a half dozen other classes and varieties display their colors in late May and June. Several varieties of peonies are grown, including the early-flowering fernleaf peony. Siberian iris, German iris and other forms brighten the scene. The list could be extended almost indefinitely,—daylilies, lupins, lythrum, phlox, chrysanthemums, Oriental poppies, yarrow, bellflowers, columbine, pinks, monkshood, coralbells and perennial asters, to mention only a few.

Perhaps two groups of perennials deserve special mention. Mr. and Mrs. Fitch have transplanted the following wild flowers to their perennial borders: violets, harebell, columbine, cactus, lady slipper, crocus, coneflower and the prairie lily. Secondly, the Fitches have a very good collection of cultivated lilies, at least 22 species and varieties are represented. These include Golden Fleece, Apricot Glow, Rose Queen, Royal Gold, Edna Kean, David's lily and others.

One might suppose that the numerous flowers and shrubs already referred to would be sufficient to provide all the color and variety needed. However, for good measure, the Fitches have included in their flower borders many of the common annuals and a few uncommon ones. Gladiolus, snapdragons, marigolds, petunias, salvia, sweet peas and a score of other flowers brighten up the scene. (It should be added that the vegetable garden is not overlooked.) How they find time to look after all these plantings is hard to say but they undoubtedly enjoy the flowers, fruits and shrubs that they have planted over the years.

Mr. and Mrs. Fitch also have taken an active part in community work. They have been members of the Balcarres Horticultural Society since it was organized in 1948 and have won many prizes at the annual shows. Their children have had gardens of their own and have exhibited the produce therefrom. Mrs. Fitch has served as secretary of the local horticultural society for 5 years and Mr. Fitch was a member of the Fertile Field school board at Dunkirk for 6 years.

Much has been accomplished in the past quarter of a century in the origination and introduction of horticultural plants suitable for prairie gardens. In the growing and testing of these new plants the amateur gardener has an important part to play. In this regard Mr. and Mrs. Fitch have set a very fine example for other prairie gardeners to emulate.

Gooseberries and Currants

by **H. F. HARP, Head Gardener**
Canada Experimental Farm, Morden, Man.

Gooseberries and currants are small fruits with qualities of their own which commend them to prairie gardeners, both for their edible crops and for their attractiveness as shrubbery. They are useful and highly nutritious fruit.

Both thrive best in a cool, heavy loam, with plenty of humus and a high water-holding capacity. A light, sandy soil that warms up quickly in the spring will not suit, because they will start into growth too soon and when that happens the flowers often get frozen.

They can be grown in a partly shaded part of the garden, and good yields of gooseberries have been seen on the north side of a hedge. To avoid competition for soil moisture from the hedge they should not be planted closer than 6 feet from the hedge, and 8 feet will be good.

Early blooming can be delayed by planting on the north side of a fence, and by keeping a mulch of straw or strawy manure on the plants until the weather warms up in early May.

If the right varieties are selected and good cultural practices are followed, satisfactory crops of fine quality gooseberries and currants can be expected in either rural or urban gardens.

Two of the best known gooseberry varieties which have been found dependable on the prairies are Pixwell and Abundance. Both were developed at the North Dakota State Experimental Station about 30 years ago. Both have as one parent the native wild gooseberry and thus can be expected to be well adapted to the cold weather and the dry soil of the prairies.

Abundance is a vigorous plant with plenty of sharp thorns. It produces enormous quantities of fruit hanging on the branches like grapes. In fact, it is one of the most productive varieties that we have. The berries in the green state make excellent preserve, and a sweet and juicy dessert in the raw state when they have turned red-purple.

Pixwell is a sister to Abundance, and also makes a strong plant with long, arching stems which are not so thorny as Abundance. Because of this and because the fruits have long stems, Pixwell, as one gathers from its name, is a variety that is easy to pick. This easy-picking feature and the plant's hardiness make it one of the most popular varieties in prairie gardens.

Two other gooseberries recommended for trial are Clark and Ross. They are larger-fruited but are not so well adapted as Pixwell and Abundance. Clark is grown widely in Ontario, and seems to do quite well in some parts of the prairies. The fruit is large, of good quality when preserved, and pleasant to eat out of the hand when ripe. Ross is much like Clark but somewhat more vigorous.

Gooseberries need plenty of room if they are to develop properly and yield good crops. Each bush should be not less than 4 feet from its neighbour; 5 feet and even farther apart if mechanical means of cultivation are employed.

The best kind of plant is a 1-year-old with lots of fibrous roots. The plant should be set well down in the ground to encourage it to make lots of low branches. Regular pruning will be needed to maintain a vigorous plant with good fruit size. The pruning is done in the autumn by removing all the dead wood, and shortening the long growths to keep the bush shapely.

Currants

There are two types of currants, the Black and the Red. There are also White currants which belong to the Red group.

Both types require rich soil, cool growing conditions, and shelter from the hot sun and drying winds. The soil should be enriched with plenty of barnyard manure as currants are heavy feeders. Like gooseberries, the currants flower early in the spring and often the blossoms are damaged by late frosts. A good place to plant currants is a site with a north exposure.

Poor, sandy soils will not produce good crops, so the soil must be well prepared. Currants will continue to produce profitable crops for 20 years or longer if given a rich soil and the bushes are properly cared for. Good pruning is necessary to keep the plants healthy and productive. The pruning is best done in the late fall after the leaves have dropped.

Black currants produce their fruit on young wood; in other words, on stems made the previous year. Thus the aim is to encourage the plant to make lots of young wood by cutting out most of the stems that have borne a crop of fruit.

Red and white currants fruit on small branchlets or spurs produced on wood 2 or 3 years old; consequently, only wood 3 years old should be removed. The bushes can be kept in good shape by tipping back the longest shoots, and this practice will induce them to send out more fruiting spurs.

Two of the most popular varieties of black currant are Kerry and Boskoop Giant. Kerry is a Canadian variety which was developed at the Central Experimental Farm, Ottawa, and probably is the most reliable for the prairie garden. It is very productive of medium-sized fruit of good quality.

Boskoop Giant is a European variety that seems to be fairly well adapted to the prairie region. It makes a vigorous plant with large berries of excellent quality. The yield is not so high as with some other kinds; and for some reason the flowers do not set fruit as freely as the Canadian varieties.

There are several reliable red currants from which to choose. Red Lake, originated in 1933 at the Minnesota Fruit Farm, is one of the most popular. It is a hardy bush, yielding heavy crops of good fruit. Prince Albert, a late kind developed in Europe, has large berries of excellent quality and the bush seems to be vigorous and healthy.

Steven's No. 9 and Cascade are reliably hardy and will bear good crops if conditions are favorable. There are many other varieties of currants available to prairie gardeners, and if the local nurserymen do not have the varieties mentioned the varieties offered will do well in their district.

Both gooseberries and currants are relatively hardy, and if the right varieties have been chosen and planted in a well sheltered spot they will need little in the way of winter protection. A few strands of binder twine wound around the bushes in the fall will prevent the breaking of branches by a heavy fall of snow.

There are many good insecticides these days for the control of damage by currant fruit flies.

The Sandcherry

by **A. J. PORTER, Honeywood Nursery, Parkside, Sask.**

During the 1930s sandcherries were planted widely over the prairies. Since that time they have more or less faded out of the hardy fruit picture in this area. The reason, I think, was that they were so easily and cheaply propagated from seed that people were not prepared to pay for the extra cost of budded or grafted stock.

The average seedling produces small fruit of inferior quality, sometimes so bitter and astringent that it is worthless. It is no wonder that people who got fruit like this dug them out and did not plant sandcherries again. This was a pity, as the better selections are good-quality fruits, running up to ¾ inch in diameter, sweet and pleasant to eat and very good for pies, jam, etc.

The late Dr. Hansen, at Brookings, South Dakota, raised over 30,000 seedlings and from these selected three superior sorts, the best known of which was the Sioux. (This will give some indication of the chance of getting good sandcherries from odd lots of seedlings.) Morden and Brooks did further work and introduced Mando and Brooks cherries respectively. More recently Robert Erskine, of Carlos, Alta., and Percy Wright, of Saskatoon, have introduced Leafland and Manorette. Of all these we find here that Manorette is the sweetest and best for eating out of hand. We have not been able to make comparative tests of the cooked fruit but all are satisfactory for this purpose.

There was one other drawback to these sandcherries in the moister parts of the region. All were quite susceptible to mildew, which would ruin the appearance of the foliage and in some seasons would infect the fruit and make it worthless. About 20 years ago we raised a lot of seedlings of the Sapa sandcherry hybrid. Some of these showed hybrid characteristics, but many went back to the pure sandcherry type.

Among the latter was one that appeared to be quite immune to mildew. It was a typical sandcherry in every way, except that it was more vigorous than most, forming a spreading semi-erect bush 3 feet high and almost 10 feet across when mature. Fortunately the fruit was large and ranked with the other named sorts for quality. This was named Honeywood. It is a very productive bush and has remained free of any signs of mildew up to now. As with the grain rusts, though, there always is the chance that somewhere there may be a form of mildew to which it will not be resistant. In the meantime, we are hoping to breed its resistance into the sandcherry hybrids which also are susceptible to this disease.

The original parent of all these selections is the Western Sandcherry, *Prunus besseyi*, of the western half of the Great Plains region. Although called a cherry, it actually is more closely related to the plums and will hybridize quite readily with a number of plum species. It is a very hardy, drought-resistant shrub, and is valuable as an ornamental in landscaping, etc., where it does not suffer from mildew.

Some selections have brilliant coloring in the fall. Manorette, for instance, colors to a bright red and holds its leaves for some time after they have colored. Honeywood colors up to lovely bronzy-red tones. Others turn to vivid yellows and golds. Where fruit is not important, the seedlings can be used for ornamental purposes. Where fruit is wanted, then more than one variety must be grown, or one named sort and 3 or 4 seedlings for pollinating.

As mentioned above, sandcherries cross quite readily with some of the plums. They have been crossed also with the peach, the apricot, the almond,

and the Nanking cherry, though not all these crosses produced fertile offspring. All these hybrids are interesting and some are valuable.

Following is a list of plum-cherry hybrids that are available at this time. Fruit varies in size up to 1¼ inch under ideal conditions. In a dry season fruit is smaller. These are available at most nurseries on the prairies, with the possible exception of the new Patterson varieties. Two nurseries propagating some of these new ones are Lake Shore Nurseries, Saskatoon, and Honeywood Nursery, Parkside, Sask. There may be others that will have them.

OPATA. The only one of the Hansen hybrids still being grown. Plant is vigorous and more treelike than most. Not fully hardy in northern areas so should be grown in bush form to allow snow to cover as many branches as possible (this applies to nearly all of these hybrids.) Fruit is round, good size, purplish skin with green flesh. Good to eat out of hand and cooks well except that it goes to pieces when canned.

MANOR. One of the Morden introductions. Excellent quality, bronzy-purple fruit with a deep red flesh. Bush spreading and moderately hardy here. Crops well on branches under the snow line.

DURA. Another Morden hybrid. Greenish to purple skin, deep purple flesh. Not as good to eat fresh as Manor but equally good for all cooking purposes, perhaps better. Fruit keeps in good condition on the bush until late October, hence its name. Bush is spreading and perhaps is the hardiest of these purple-fleshed ones, but fruit is nearly all borne under the snow line here.

WESSEX. Mordel plum x sandcherry. This was originated by Percy Wright. Tree is fully hardy, vigorous and upright, resembling the plum parent. Fruit is a red yellow-fleshed plum a little over an inch in size. Skin is thin and free from acerbity. This fruit, while not rich in flavor, is sweet and pleasant and has none of the astringency of either the sandcherry or the native plum.

THE PATTERSON HYBRIDS are mostly descended from Dr. Hansen's purple-fleshed hybrids such as Sapa and Oka. Like them, the flesh is deep red to almost black. The fruit quality is excellent. We do not yet have these fruiting here so will not give individual descriptions at this time. Eight varieties were named and introduced in 1960.

Due to the drought in 1961 and 1962 most nurserymen who obtained bud wood failed to get a catch. A limited number of several of these varieties probably will be available this spring. Greek letters were used for names, such as Epsilon, Gamma, Kappa, etc. Judging from their origin, and not from experience, it will be a pleasant surprise if they have much greater winter hardiness than their predecessors. Providing they do not suffer winter damage, we should have several of these fruiting this summer, and will be glad to show them to any visitors.

Potting Plants for Indoor Use

by **W. H. GRAY, Supervisor-Florist**
Assiniboine Park Conservatory, Winnipeg, Man.

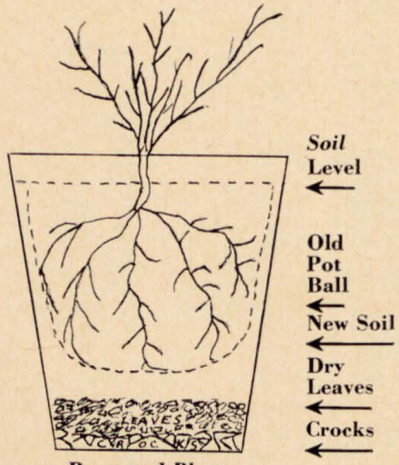
In raising plants, in the home or in buildings, there are several important requirements, of which good drainage and proper soil mixtures are the most important.

From the number of telephone calls and enquiries we receive at the Conservatory regarding "sick" plants, nearly all the problems are caused from the root system of the plants. There are several other requirements to raise healthy plants, but without the above two our plants won't live long enough to bother us about the many other requirements.

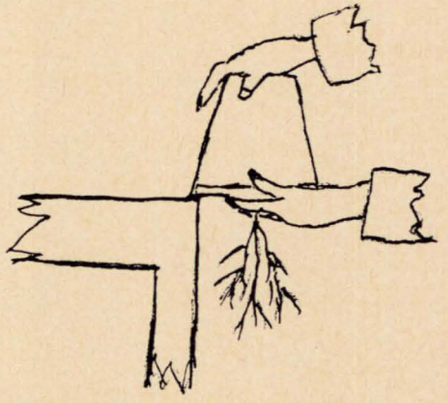
I am sure that we all realize that when potting or re-potting we must use the proper size of pot and that the pot must be clean. Old pots must be thoroughly washed to remove all danger of infected soil from previous use; and all new pots should be soaked before using, otherwise they will absorb the moisture from the soil causing possible harm to the root system.

Good drainage is of the utmost importance, especially in larger pots. By good drainage we mean that when we water our plants the root system is allowed to take in enough water for its growing needs but is not allowed to stand in water. In other words, the water should be able to flow down through the soil and out the drainage hole at the bottom of the pot or container. To enable this we place a crock (a piece of broken pot) over the drainage hole. In larger pots add some smaller crocks, and cover with leaves to keep the soil from plugging up the hole. The number of crocks used is governed by the size of the pots. Care should be taken in watering but good drainage will prove a great help.

We have found that the most useful soil mixture for general potting consists of three parts rotted sod or good loam, one part well rotted manure, one part leaf mold or peat moss, and one-half part sand. In most of our potting we add about one pound of bone meal to a bushel of soil. I am sure other slow-working fertilizers might work as well as the bone meal.



Re-potted Plant.



To remove plant from old pot one hand holds pot, other hand supports plant. Tap on edge of table or bench.

The rotted sod should be chopped up and we have found that the fibrous part is the most valuable, especially when used for vigorous-growing plants. During the last 2 years, we have been using more and more of the new product called Turface instead of sand, and find it to be superior. In fact, a mixture of one-half Turface and one-half peat moss has proved an excellent rooting medium for cuttings of all types. It must be remembered that this is a "general" mixture and suits many varieties, but some plants such as ferns, begonias, gloxinias, etc., like more leaf soil, peat moss and sand. A little charcoal (chicken feed size) added to the soil for plants that do not require much soil renovation tends to keep the soil from turning sour.

Some plants such as aspidestras, palms, dracaenas, sanseverias and rubber plants, do better if their roots are not disturbed too much and require only to be top-dressed. To do this, great care must be taken to see that the plant is knocked out of the pot, the drainage checked, the pot brushed or washed inside, the plant replaced and the top soil loosened and replaced with new soil. As long as plants of this type are doing well, and can be fertilized occasionally, re-potting is unnecessary.

Most established plants are re-potted once a year and are given this attention at the beginning of their growing season. If a plant is suffering from a soil condition, it should be re-potted immediately and care taken in the amount of water given until it responds. Potting methods vary slightly for different types of plants, and even for young and old plants of the same kinds. If a plant is in full leaf, as much soil as possible is retained about the roots and it should be potted with great care. A good time to prune is when the plant is in the dormant state. The soil may be removed from the roots and in some cases the roots may even be pruned.

It is a general rule that woody plants, those with a tough or treelike stem, should be planted more firmly than the soft-wooded plants. In all cases, the soil should "give" when pressed with the tip of the finger, but the finger should not sink in the soil. All plants should be well watered a few hours before they are re-potted and then watered with a spray afterwards. Too much watering after potting may sour the soil and cause the roots to rot. Potting soil should be damp but not wet, and all mixtures should be well mixed before using.

Growing Plants in a Fluorescent Light Case

by **MRS. ARNOLD HEMSING, South Edmonton, Alta.**

Two years ago my husband built this case for me out of plywood, 2 sheets of glass and 2 48-inch fluorescent lights. An aluminum tray was made to fit inside the bottom, filled with pebbles, and water was kept in it to provide the plants with constant humidity.

The glass sheets by-pass each other in tracks cut in a 2 x 4. I keep the glass open about an inch to ensure some air circulation. The lights are on from 7 a.m. to 10 p.m. each day. The case is 49 inches long, 16 inches wide and 26 inches in depth. The inside was painted with several coats of high-gloss white paint; the outside was stained with walnut and finished with clear varnish. We put on furniture legs and now have a nice piece of furniture with an ever-changing scene.

The plants I have grown with success to the present time are: African violets, Rex and Iron Cross begonias, Wax begonia, small Boston fern, Pteris fern, Bird's Nest fern, Maidenhair fern, gloxinia, Baby Tears (Helxine), small dieffenbachia, Chinese evergreen, pilea, fittonia, maranta, grevillea, croton, small anthurium, syngonium, peperomias in variety, saxifraga and philodendron.

At the moment I am experimenting with a Bromelaid species, *Cryptanthus zonatus zebrina* and a tiny plant known as *Sinningia pusilla*, which is growing well and of which I have high hopes of tiny flowers in the spring. This by no means ends the list of possible choices. It would seem that most plants which require filtered light, warm temperatures and high humidity could be grown successfully in this atmosphere.

My case has proved invaluable for starting tomato and flower seeds in the early spring, rooting cuttings of plants, and establishing newly potted plants. The only problem I have is there comes a time when there is not enough room for "just one more plant."

Poinsettia – Bloom or No Bloom!

by **JOHN WALKER**
University of Manitoba, Winnipeg, Man.

Many homeowners experience disappointment when poinsettia plants which they have nursed along all season fail to bloom; with this plant the red (or white) bracts are more important than the actual flowers. If poinsettia plants are kept under conditions in the home normally provided for coleus and other common house plants, that is, no restriction on natural and/or artificial light, they remain in a vegetative condition and all leaves stay green.

If attractive colored bracts are wished plants must be regularly given complete darkness for 16 hours and daylight for 8 hours *daily* beginning around September 20, recognized as short-day treatment or photoperiod.

Satisfactory results have been obtained at the University of Manitoba by applying the following schedule to poinsettia plants:

Detail	1961	1962
Period when plants were dried off in pots	April 13 to May 27	April 14 to June 1
Date when growth was revived by watering (plants pruned)	May 27	June 1
Date when cuttings were taken[1]	June 10	July 5
Period when plants were given short-day treatment	Sept. 27	Sept. 17
Date when colored bracts were more or less fully developed and plants exposed to normal light	Dec. 13	Dec. 9

[1]Heel cuttings prepared when about 4 to 6 inches long develop into ideal young plants. They are best rooted in a well drained, open-rooting medium (sand, sand and peat, or vermiculite). After they are well rooted in about 21 days a very attractive display for the Christmas festive period can be planned by placing three young plants in a 5- or 7-inch three-quarter clay pot.

Old plants from which cuttings have been obtained produce additional shoots which also will produce colored bracts if given the short-day treatment. Usually, however, such plants are taller than "new" ones and make less attractive gift plants.

Our African Violet Age

by **MRS. THOMAS BALL, Winnipeg, Man.**
Winnipeg African Violet Society

We should consider ourselves fortunate indeed to be living at a time when our favorite house plant has been hybridized to the extent that we now have thousands of varieties from which to choose. I think that not many of us realize that of the thousands of seedlings which are grown only a few are outstanding, the surplus being discarded.

We owe the hybridizers a debt of gratitude for their unceasing endeavors to bring us more new varieties every season. The flowers generally are larger, and come in many different color combinations and patterns, including banded, edged, fringed, frilled, fused, speckled, splashed, spotted and striped.

The colors range from pastel pink through salmon and rose to almost red, all shades of blue to almost black, lavender and violet to purple, lilac to orchid, fuschia to dark wine, and of course white. We still do not have yellow, orange, bronze or a true cardinal red, but I am sure that is a treat in store.

Many African violet plant leaves make an attractive plant without bloom. They can be girl-type with a light green to cream area at the base, or boy-type or tailored and often quilted. Then again some are "holly" type and are more or less wavy or frilled; others have a heavy ruching and are light green to almost black, shiny, dull or fuzzy. The undersides vary too from light green to pink to red and wine.

Then there are the variegateds, some cream and green with their pink undersides showing through giving the effect of pink spots, or lime and green with bronze, or just cream and green. These plants also have different colors and types of flowers.

The star-shaped varieties are pleasing with their 5-pointed petals sometimes fringed or with a dip at the end of the petals. The latest of these from a well-known hybridizer, called Violet N'Gold, is violet with a heavy chartreuse fringe, and is a beauty. There are some gorgeous pinks with a chartreuse fringe, so I think the term "shrinking violet" does not apply to our modern version of the species.

Finally, our favorite plant, a tropical, can flourish in our normal home environment. ° ° ° ° °

Novice or expert, you are cordially invited to attend the meetings of the Winnipeg African Violet Society, a section of the Winnipeg Horticultural Society. Meetings usually are held on the first Wednesday evening of each month, in the auditorium of the Norquay Building, 401 York Avenue, Winnipeg, Man. For confirmation of time and place, phone Mrs. N. Calder, GLobe 2-6794.

Rose Review

by **MRS. W. A. MacDONALD, President and Chairman of Rose Section Winnipeg Horticultural Society, and Regional Director, Canadian Rose Society**

One writer who claims to have given up rose culture—we do not believe that he *could* give up such a fascinating hobby—has said that all that most gardeners get from roses are 'bugs, sneezes, and bloody thumbs.' Our prairie gardeners evidently do not feel that way, and the Winnipeg Horticultural Society Rose section has received many requests for advice on the varieties most suitable for this region.

Following are lists of popular roses, both old and new. Of the latter group it should be remembered that most of these have been introduced within the last 5 or 6 years, so we cannot assert positively that all will flourish here. We can say, however, that many are being grown locally and have given satisfaction; and all have found favor in the different climatic regions across Canada.

To concentrate as much information as possible about each variety we have used distinguishing letters. Thus, F indicates noticeable fragrance. The height is indicated by T for tall; M for medium; and L for low. These are approximate because, of course, heights will vary according to soil and weather conditions.

In addition to those listed, there are many other suitable varieties; but we trust that these lists will be useful as reference material. If further information is required, the Winnipeg Horticultural Society Rose section will always answer any queries on the subject of roses.

Variety	Height	Fragrance	Color
Hybrid Teas			
Comtesse Vandal	M	F	Pink blend
Crimson Glory	T	F	Dark red
Ena Harkness	T	F	Red
First Love	T	—	Light pink
Frau Karl Druschki	T	—	White
Golden Sceptre (Spek's Yellow)	T	F	Clear yellow
Grand'mère Jenny	M	F	Yellow, suffused pink
Karl Herbst	M	F	Scarlet to deep pink
Kordes' Perfacta	M	F	Cream/deep pink
Michele Meilland	M	—	Light pink, tinged coral
Peace	T	—	Yellow, edged pink
Picture	M	—	Light pink
Show Girl	M	F	Deep rose-pink
Sultane	M	—	Pinkish red/saffron yellow
Sutter's Gold	T	F	Gold, shaded orange-red
Floribundas			
Betty Prior	T	F	Carmine pink
Circus	M	F	Yellow, orange, pink, red
Dagmar Spaeth	M	F	White

Variety	Height	Fragrance	Color
Floribundas (Cont.)			
Donald Prior	M	F	Scarlet-crimson
Else Poulsen	M	–	Rose-pink
Frensham	M	–	Dark red
Fusilier	M	–	Orange/cherry-red
Independence	M	F	Cinnabar-red
Jiminy Cricket	M	F	Orange blend
Lilibet	M	F	Pink
Masquerade	T	–	Yellow/pink/red
Mrs. R. M. Finch	L	–	Pink to white
Orange Triumph	T	–	Orange-red
Pinocchio	M	F	Pink blend
Vogue	M	F	Coral/cherry
Hybrid Perpetuals			
Captain Hayward	T	F	Red
George Dickson	T	F	Deep red
Mrs. John Laing	T	F	Clear pink
Henry Nevard	T	F	Crimson scarlet
Paul Neyron	T	F	Rose pink
Grandifloras			
Buccaneer	T	F	Yellow
Carrousel	T	F	Red
June Bride	T	–	White to cream
Montezuma	T	–	Orange/salmon
Queen Elizabeth	T	F	Clear pink
Roundelay	T	F	Dark red
New Hybrid Teas			
Americana	M	F	Rich red
Avon	M	F	Bright red
Hawaii	M	F	Orange-coral
High Time	M	F	Flame to gold
King's Ransom	T	F	Yellow
Lady Zia	T	F	Orange-red to cherry
My Choice	M	F	Pale yellow, scarlet reverse
Piccadilly	M	F	Red shading to yellow base
Tropicana (Super Star)	T	F	Vermilion
Wendy Cussons	M	F	Deep cerise
New Floribundas			
Anna Wheatcroft	M	F	Vermilion
Daily Sketch	M	F	Pink and silver bi-color
Dickson's Flame	M	F	Scarlet-flame
Fire King	T	F	Vermilion
Lilli Marlene	M	–	Bright scarlet
Miracle	M	F	Salmon
Orangeade	L	–	Bright orange
Saratoga	M	F	White
Tambourine	M	–	Carmine, red, orange, yellow
Woburn Abbey	M	F	Orange/tangerine
New Grandifloras			
El Capitan	T	–	Cherry red
John S. Armstrong	T	–	Dark red
Mt. Shasta	T	–	White

Variety	Height	Fragrance	Color
New Grandifloras (Cont.)			
Pink Parfait	T	F	Pink blend
Starfire	T	F	Currant red
Shrub Roses			
Butterball		–	Cream
Blanc Double de Coubert		–	White
F. J. Grootendorst		–	Crimson (continual bloom)
Grootendorst Supreme		–	Dark red (continual bloom)
Gruss an Teplitz		F	Crimson (recurrent bloom)
Harison's Yellow		F	Medium yellow
Persian Yellow		–	Yellow
Prestige		–	Clear deep red (continual bloom)
Sparrieshoop (sweet-brier)		F	Pink (continual bloom)
Therese Bugnet		–	Pink

What's in a Name?

by **MRS. W. A. MacDONALD**

President, Winnipeg Horticultural Society

We are not going to dwell on the classical quotation, but we would like you to listen to this converation:

Q. "That's a lovely rose; I'd like to get one next Spring. What's its name?"

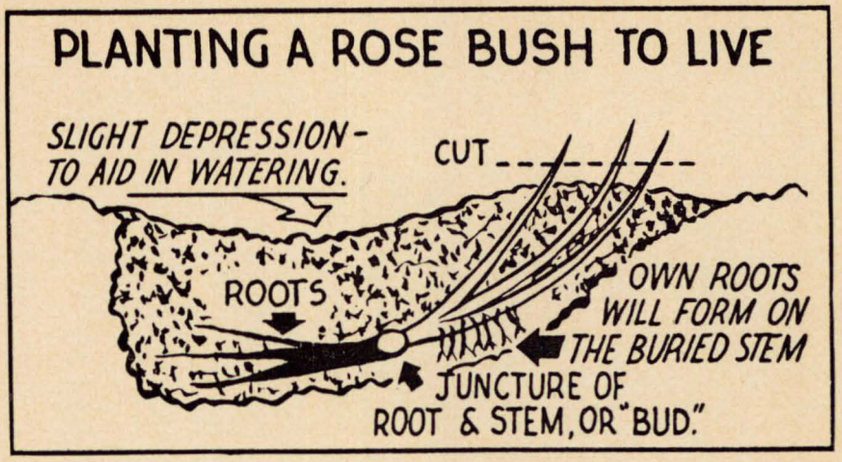
A. "Well-l, it could be Crimson Glory, or is it Mirandy? I'm not quite sure. I don't think it's nocturne; it's not dark enough. There *were* tags on the bushes once but . . ."

Is that, sometimes, your reply to a similar question? There is more than one reason why your roses should be labelled. There is the obvious one—you wish to be able to answer questions intelligently.

Then, for your own satisfaction, you should know the name of your roses. Each variety has its own characteristics, and knowing the name helps you to decide whether any particular rose is growing and producing as it should; this is a check on your method of cultivation.

Another reason has to do with rose shows. In many of the smaller shows there is, at present, no insistence that specimens be named; but entries for rose classes are now greatly increased and changes in regulations can be expected. In any large show on this continent a rose without a name is disqualified. The name of the exhibit is important to the judges. It is also important to the many spectators who will want to know the name of a bloom which particularly appeals to them; many people have taken to growing roses because of what they saw and learned at a rose show. We should mention here that variety names must be placed on all entries for the Canadian Rose Society's Bronze Medal class at the Winnipeg International Flower Show. This is in accordance with CRS Show Rules.

We wish to follow up the advice re tagging with one more suggestion. It is that you make a chart of your rose garden. It need not be an elaborate work of art; it need not even be drawn to scale, unless you are one of those people who dote on mathematical precision. You need just to mark the location and names of your roses. Doubtless we can all think of a few reasons why! so, if sometime you find that one of your roses is unidentified, you have only to refer to your chart to obtain the necessary information for another tag.



by **PERCY H. WRIGHT, Saskatoon, Sask.**

The bark of rose bushes is very different from the bark of some trees. If the green bark of an apple, for instance, is covered by moist soil, there is grave danger of the soil decaying the bark. This does not occur with a rose. Rose stems are benefitted, not endangered, by contact with the soil.

This is a lucky circumstance, for rose bark very often dries out before the roots of a just-planted bush are functioning well enough to supply it with moisture. If a rose bush, then, is planted in the ordinary way, as one would plant a honeysuckle, for instance, it is likely to die back to the ground, or even to die out entirely. When a rose bush has been properly planted, we should see nothing above the soil at all, except an inch or so of each protruding stem. Saskatoon-berry bushes are planted similarly, and, as a matter of fact, the method I shall outline is a good one for most plants which are difficult to transplant. There are, of course, exceptions.

The bush may be set in the ground upright, in the usual way, and in this case the exposed stems are mounded up with moist earth to a distance of 5 or 6 inches, and the remaining length, except for an inch or so, is pruned off. After new shoots have come up and the plant is well established, the mound may be taken down gradually.

Another way is to plant the plant partly recumbent, in a long hole not too deep. The bush is placed in the bottom of this trenchlike hole, with the tips just coming out of the ground at one end.

This method allows one to place a great deal of wood of the stems under ground and yet avoids getting the roots too deep into the cold and sterile subsoil. There is no mound to be taken down later, or perhaps only a small one which will lower itself in the course of time. With this method, the job is done in the one operation, which is a consideration. It is often advisable to leave a slight depression over the spot where the roots are, so that water can be given with some chance of it reaching the right spot.

The second principle of planting concerns the proper depth. If the "recumbent" method is used, the juncture of wood and root tissue can be as deep as 6 inches. I am speaking at the moment of the hardy, own-root bushes which are commonly sold by prairie nurseries.

Prairie nurseries also sell tender rose bushes, of sorts so tender that it could not conceivably pay to try to propagate them here in our prairie climate.

These tender roses are always on tender roots—wild rose roots, but of tender species from Japan or the milder parts of Europe. In a few cases, hardy roses are sometimes propagated on tender roots, notably the two hardy yellow roses, Harison's Yellow and Persian Yellow. In their case, the bud, or point-of-union between wild rose understock and named top, should be at least 6 inches under the ground so that frost will not penetrate deep enough to kill them in some snowless week during early winter, or, perhaps, in the spring after the snow has departed. It is a pity when a hardy rose must die because the tender root that supports it has been killed by cold.

When both the named rose and its understock are tender, it is more of a problem to know the proper depth. There is considerable controversy on the topic. However, my personal experience is all in favor of setting the bud or point-of-union 6 inches deep in their case also. If any accident should happen to the top, if it should be killed by winter to the ground level, say, it will come up again from the buried portion of the named variety, and the valuable part of the plant, though reduced, will not be lost.

If the bud has been set at the surface of the ground, or so shallow that frost penetrates deeply enough to kill it, the wild rose underneath may send up sprouts, and when these grow enough to make flowers, the gardener is likely to say, "My rose plant has reverted to the wild." It has, of course, done no such thing. What has happened is merely that the wild portion of the composite plant has been the only part to survive.

On my own place, all rose bushes are planted in the same way, whether they are hardy or tender, whether they are own-root or budded. They are all planted partly recumbent, and with the juncture of root and stem tissue at least 4 inches below the ground. I have used this method with complete success for more than 25 years, and it has proved its value.

The "Manitoba-Minnesota" Method of Wintering Roses

by **MRS. H. A. BIDDULPH, Rose Section Committee**
Winnipeg Horticultural Society

In 1962, during the third week in June, I was touring a number of rose gardens in Minneapolis and was impressed by the luxuriant growth and abundant bloom everywhere. Even allowing for an earlier spring in Minnesota, the growth in Manitoba was not comparable. It was obvious that the canes had been safely wintered, so I obtained details of the winter protection method from my hosts and decided to experiment in my own garden. The method is quite simple, and the result is very rewarding.

Before starting, I checked my Rose Chart to verify the names and the positions of the varieties, and made notes on their condition and size. This saves confusion when the rose bed is uncovered in the spring. Roses must never go into winter in a dried-out state so, if they have not had sufficient moisture, they are now watered well, preferably at soil level.

A dormant spray* is next applied liberally to the bushes and surrounding soil, after which the canes on each rose are tied together and the whole plant is tipped over. This can be done very easily by grasping the canes about 6 inches above the ground and bending them gently until they lie on, or as close as possible to, the surface. Large bushes, such as the Hybrid Perpetuals, may need to have the root on one side loosened with a fork before they are tilted. Small bags of sand or some other type of weight can be used to hold the bundles down; wire stakes are good and can be left in position. As I did not have wire stakes, I used old wire coat hangers. (One of these will make two stakes. The hook and twisted portion is cut and discarded, and the long bottom bar is cut in half to provide the two stakes.)

The next step is to pile dry soil to a depth of 8 inches to 10 inches over the canes and the base of the bushes. There should be no air space beneath the canes. The placing and covering are made easier if the plants are grown from 2 feet to 3 feet apart; the bundles can be bent to lie in pairs, thus economizing on the amount of soil needed. A further covering of oak leaves, about 8 inches to 10 inches in depth, is added next and, if the supply of these permits, the whole of the rose bed can be filled in right to the outer edges.

Finally, chicken wire, sacking or other medium is laid down to hold the leaves in position. I used large sheets of burlap with water-proofed backing; this sheds any late freezing rains. This covering should be weighted or pinned down with the wire stakes, but care must be taken that some of the edges are left free to allow adequate circulation of air.

I covered my roses on November 10 in 1962, and uncovered them on April 25, 1963. This is not to infer that I work by the calendar; that would be unwise. I watch the weather, and it happened to be suitable on that day in April. The roses were raised, firmed into position and dusted with sulphur; but mounds of soil were left around the base of each bush for a little longer. These mounds were later removed to leave about 1 inch of earth over the bud union. A few canes were seen to be already leafing and needed protection against late frosts; so perhaps the coverings should have been removed a little earlier. Some of the bushes were moved to a new site after the uncovering and they fared well, but did not bloom as early as those which were left in position. I noted, too, that the bushes growing in open beds looked much better than those close to the foundation of the house.

Of the 20 canes thus wintered only one, a weakling in 1962, was lost. Peace came through with 30 inches of cane; the green wood on some of the other Hybrid Teas and Perpetuals was slightly shorter. Six weeks after the bushes were raised they were all producing buds on the old canes, and they bloomed well before mid-June. During the warmer growing weather the soil was pulled back to expose the bud union, and this encouraged new basal breaks. I should add that the roses bloomed freely all summer and late into the fall.

After seeing what happened to other people's rose gardens as the result of the severe weather in the winter of 1962-63, I am sold on my new method and I used it again last fall (1963). It is not a long job. Even my husband, who is no garden enthusiast, conceded that and was keen to lend a hand. Working together, it took us less than 2 hours this time to cover 30 roses.

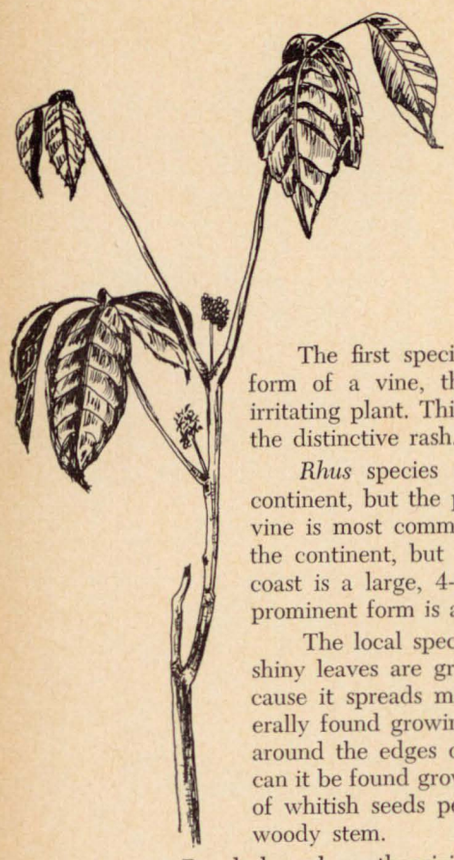
* * *

Insecticides

In spite of Rachel Carson's "Silent Spring," we the gardening public must be truly thankful for the excellent insecticides now available to us for the effective control of the many garden pests that attack our crops. Government regulations covering the release of insecticides are extremely strict. Those insecticides available in your garden store present no acute hazards under conditions of general garden use. However, for the most effective use and safety to all concerned we strongly suggest you read the directions and cautions thoroughly.

We might add that there is an interesting new approach to insect control now on the market—a systemic insecticide. Unlike the contact type insecticide, it is taken into the plant and is carried to all growing tips. Once inside the plant, it does not harm other insects, but only those which feed on the foliage of the treated plant.

*A lime sulphur solution is normally used.



Poison Ivy

by **NEIL McLAREN**
Winnipeg, Man.

The first species of *Rhus* to be identified in 1609 had the form of a vine, thus the name 'poison ivy' was given to this irritating plant. This name has been given to all plants that cause the distinctive rash.

Rhus species are common throughout the North American continent, but the plant form differs with the different areas. The vine is most common along the eastern and southern portions of the continent, but the most common 'poison ivy' along the west coast is a large, 4-foot shrub; in the Great Plains area the most prominent form is a small shrub.

The local species grows to a height of 12 to 18 inches. The shiny leaves are grouped in three's and appear very smooth. Because it spreads most readily by its creeping rootstock it is generally found growing in groups. Poison ivy is concentrated mainly around the edges of the native bush or within it but very rarely can it be found growing away from this type of habitat. The cluster of whitish seeds persists throughout the winter at the tip of the woody stem.

People have been theorizing about its method of poisoning ever since its early identification. These theories have predicated everything from the production of toxic bacteria to the emitting of poisonous gases; the latter theory is partially correct. Scientific studies have concluded that *Rhus* poisoning is due to the presence of an essential oil in roots, stem and leaves of the plant. This oil does have biological activity whcih causes the skin infection when absorbed into the body.

Everyone reacts differently to poison ivy. Some people are so sensitive that they can develop a rash by the mere inhalation of the minute quantities of this oil that evaporates from the growing plant, but the majority of people are just moderately susceptible and must touch the plant to be infected. The smoke from burning poison ivy plants can be very dangerous because the oil is volatilized and can penetrate the skin, causing the well known rash. Since the oil is not soluble in water a very sensitive person can be infected by handling a cloth article that has been washed several times if it had the infectious oil present before being washed.

There are also individuals who are very resistant to the poison and can handle the poison ivy without having an infection develop. But because personal resistance varies from season to season and from day to day, only the foolhardy tempt fate by being careless with this troublesome plant.

During the summer of 1962 I was engaged in the testing of several commercial herbicides recommended to kill poison ivy. The remaining portion of this article is devoted to a review of the findings from this test.

The chemicals used in the test were applied as recommended by the directions on the label. The selected sites were chosen for their similarity, to keep the environmental conditions equal during the duration of the test; this is necessary if the conclusions to be drawn are to be valid. Only the foliage of the poison ivy plants was sprayed, a matter of personal convenience, and most closely resembled the normal application. The criterion used for the first evaluation of the different chemicals was the shortest time interval between the date of spraying and the death of the foliage; thus the chemical receiving the top rating killed poison ivy most rapidly.

The herbicides and their rate of kill are listed below:

Ammate X — 7 days
Brushkill — 11 days
Amitrol T — more than 11 days
Weedazol — more than 11 days

A second evaluation of the test plots was made in the spring of 1963. By using the amount of regrowth as the criterion, a much more accurate evaluation of the chemicals could be made. The reason for this is that poison ivy is a perennial and the amount of regrowth, the following year, is inversely related to the actual plant damage. This revaluation showed the original ratings to be completely reverse to the more correct second reading of the test plots. Thus upon the last observation of this test I would recommend the chemicals in the following order; for the control of poison ivy; Weedazol, Amitrol T, Brushkill and Ammate X.

Since this test was conducted in late July 1962 it would be false to imply that the same results would be obtained in June or August. It might even be incorrect to imply that the results would be the same in another year with a drier, more normal July. But I do believe that this test does evaluate the test chemicals relative to one another, so the results can be used as a general guide.

Effect of Chemicals on Plant Foliage

Ammate X—This is a contact herbicide, thus to obtain maximum results the entire plant should be sprayed. The foliage sprayed dries, turns brown and will disintegrate on touching.

Brushkill—This chemical is transported to all parts of the plant, therefore it required a greater length of time to act. This fact also means that the entire plant need not be covered with the chemical, but better results are obtained if this is done. The leaves first become distorted, then wilt, turn their autumn colors and die.

Amitrol T and Weedazol—They also are transported through the plant, but not as readily as Brushkill. Their effect on the foliage is a bleaching of the leaves (or chlorosis).

General Weed Spraying Rules and Precautions

A. To prevent damage to sprayer: 1, rinse out sprayer before and after use; 2, dissemble nozzle and clean after use; 3, do not leave solution in sprayer overnight.

B. To prevent damage to neighbouring plants: 1, use the right chemical for the right job; 2, do not spray on windy days; 3, keep sprayer nozzle close to the weeds; 4, set the nozzle for a small controllable pattern; 5, do not spray rinse water on cultivated plants; 6, follow the direction on the label of herbicide.

C. Miscellaneous: 1, immediately wash off any chemical spilt on the skin or clothing; 2, do not spray if there is a threat of rain.

Cannas (Cannaceae)

by **GRANT CHURCHER, Chief Gardener**
Manitoba Department of Public Works, Winnipeg, Man.

There are over 50 species of this beautiful flowering plant ranging in size from the 2-foot to 3-foot Pfitzer to the 16-foot latifolias grown in Africa.

Cannas are very formal plants and popular in parks and estates because their height presents a good view to the motorist as well as to the pedestrian. They likely will not bloom before July 7, but will continue from then until frost. Their stately foliage, moreover, has much appeal even before they come into bloom.

They are propagated by rootstock division. After the first frosts have killed back the foliage, and it has been allowed to dry for several weeks, the roots should be dug up and the stems cut off 3 inches to 4 inches above the roots. The roots are then placed in a medium-cool storage place, about 50°F, leaving part of the soil on them to prevent too rapid drying. (If they are too warm they will begin to grow; if too cold they will rot.)

Around the middle of November they should be cleaned and divided into sections containing 1 or 2 growing points and as much healthy tissue as possible per section. (Be sure to cut away any suspicious parts.) Leave about 2 inches of the thick fibre roots which are attached to the rootstem, dust with sulphur and pack in peat, sand or earth. Peat slightly moist makes the best medium for packing.

In February or March the roots are unpacked; any diseased portions are cut away, and the roots are planted with the eyes less than 2 inches below the surface of the soil. Most people plant them in 4-inch to 6-inch pots. We grow too many for this method so plant ours in flats about 20 roots per flat. Water well and grow on the warm side until all have started, and from then on cut back on the water to induce good rooting without too much top growth.

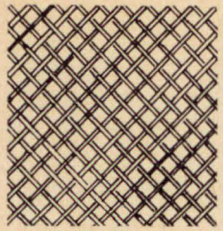
Cannas are tropical plants so are easily injured by frost, and therefore should not be planted out until frost danger is past, around the first week in June. Plant them deep and water heavily as deep planting helps hold the heavy plants upright. Cannas require a rich soil high in humus, a warm spot, plenty of water and full sun for best results.

Set the plants about 15 inches apart for mass effect, or as much as 3 feet apart if you wish to show the individual plants. Closer planting will result in taller plants. Keep the wilted flowers picked off as they give a ragged appearance, and also keep the seed from forming as this reduces bloom.

Cannas are our favorite flower for formal beds; they are also excellent planted in clumps in a hardy border or shrubbery. Against a heavy background of green their gaudy flowers show up beautifully.

Good varieties are: The President—In my opinion this is the outstanding canna, 4 feet to 5 feet, large scarlet flowers, green leaves; Yellow King Humbert—4 feet, yellow flowers, green leaves; Wyoming—6 feet, orange flowers, copper leaves; City of Portland—4 feet, pink flowers, green leaves; Eureka Ivory—white flowers, green leaves.

The new members of the Canna family developed by Wilhelm Pfitzer of Stuttgart are shorter growing and softer colored: Pfitzers Cherry Red; Pfitzers Chinese Coral; Pfitzers Primrose Yellow; Pfitzers Porcelain Rose; Pfitzers Shell Pink.



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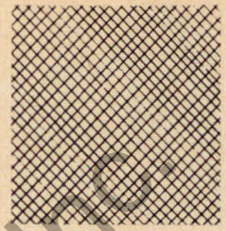
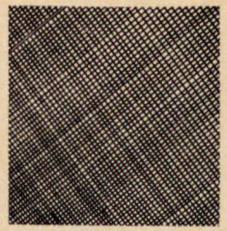


Cotton.



Silk.

Texture in the Garden

by **F. J. WEIR, Provincial Horticulturist**
Manitoba Department of Agriculture and Conservation

Texture in landscaping material is similar to texture in textiles, a difference in smoothness or feeling. Everyone can sense by touching fabrics the difference in 'feel' between burlap, cotton and silk. Texture may not always be considered consciously, but indirectly it becomes one of the factors in selecting not only the building materials and the furnishings for the home, but also the trees, shrubs and flowers for the garden.

When an architect is laying out the plans for the house, he ensures that the combination of stone, concrete, glass and lumber will be harmonious and pleasing to the eye. When the homeowner is building his garage, putting up his fence, or building a sidewalk, he should ensure that the construction materials conform with the ones already used in the house, so that all of the structures used have something in common with the house.

The selection of plant materials for garden design is dependent to a certain extent on the texture of the plants, and how these plants will fit in not only with the house and other artificial items on the grounds, but also with the other plants to be used. The overall picture should be a pleasing one, with enough repetition of certain plants to provide unity.

In selecting plants for his garden, the homeowner should consider first of all the plants required for the area adjacent to and surrounding the house. As a general rule the material should be of a fine- or medium-textured nature. However, material should be chosen that will complement the house and tie it in to the lawn area, to make the arrangement look as natural as possible.

Most of the plants used on the remainder of the average-sized lot, should be varieties of material from the medium-textured group. Coarse-textured shrubs and trees, such as lilac, basswood, American elm, and chokecherry, appear at their best when viewed at a distance, and so should be in areas at some distance from the house. An exception to this, of course, would be in cases where such material is required for shade purposes.

In the shrub border or shrub groupings, a good selection of material on the basis of texture is necessary to provide unity and interest. Most of the shrub varieties should be from the fine- or medium-textured group, with occasional spot plantings of coarser-textured material for purposes of variety and interest. Often use can be made of a coarse-textured but eye-catching shrub such as Shubert chokecherry to divert attention from some undesirable feature in the garden, or on adjoining property.

If care is used in the selection of varieties of plant material, all plantings should complement the home structures. They should be so selected and located that they will provide an attractive and unified picture for the enjoyment of the homeowner and the public.

The Art of Shrub Arrangement

by **R. H. KNOWLES, Associate Professor of Horticulture**
Department of Plant Science, University of Alberta, Edmonton, Alta.

Everyone is conscious of the fact that there is an art to arranging things for the improvement of garden or landscape. It is surprising, however, to note how few people realize that the principles involved are basically identical with all other forms of artistic expression.

Recently, I was amazed to hear a well known art collector remark, "Why, the principles of landscape design are no different from those of painting or sculpture!" I hastened to add that the same thing could be said of writing, music, poetry, or the dance. It is a rather strange situation, but still one which is typical of the average person's point of view. The really sad thing, however, is that we find people, who are competent in one field of artistic expression, filled with fear and trembling at the thought of undertaking what turns out to be the same sort of job in another medium.

This situation provides the excuse for presenting a brief and rather sketchy introduction to the principles of artistic expression, as well as something regarding their application to the arrangement of shrubs and trees in the landscape.

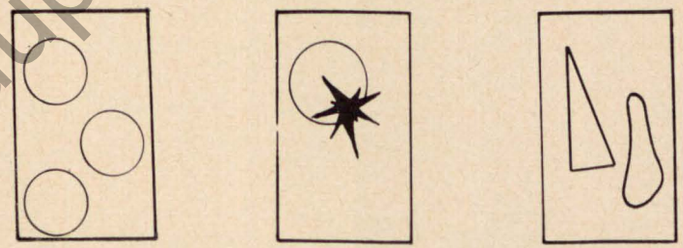


Fig. 1.

Before becoming involved in the subject of art principles, it will be necessary to become familiar with the three basic forms of relationship: Repetition, Contrast and Harmony, shown in Figure 1. While these, by definition, differ in matter of degree, each is capable of having a strikingly different effect on our senses. For example, Repetition when carried to extremes creates monotony; Contrast, on the other hand, will arouse interest; while Harmony follows the middle path between the other two.

It would follow from this that lively, interesting design or arrangement must possess a certain content of contrast or variety. This statement is true up to a point. Certainly, we have come to recognize variety as the spice of life; however, unless an arrangement of contrasts possesses an underlying thread of unity, it can be just as chaotic as those sounds of activity which emanate from the barnyard at feeding time.

But what is unity? We might look at it this way: if a design should possess two contrasting items and each should have equal strength, then the design *lacks* unity. If, however, one item should dominate the other, then unity is created. It's that simple; unity can be incorporated in a design by expressing a dominant idea or using a dominant element, or by emphasizing a particular

element by repetition or harmony. In other words, the artist might conceivably begin his work by using variety and then finish by incorporating a certain amount of either repetition or harmony to give dominance to his main element.

With this background to build on, we are ready to put theories into practice with respect to the layout of trees and shrubs for artistic effect. For the sake of example, we might try to combine the common native dogwood and the smaller purple-leaved plum into an interesting arrangement or composition.

In Figure 2 I have illustrated a group consisting of three dogwoods and two plums. Consider their value as an arrangement. Has it got interest? Does it possess unity?

Some interest apparently exists since there is variety created by (a) a difference in plant size; (b) a difference in foliage color; and (c) a difference in the numbers of larger plants to smaller plants. In consideration of these contrasts, the grouping might be satisfactory from the standpoint of interest or variety; however, if it does not possess unity, the arrangement will not be considered a composition. Fortunately, the grouping does possess unity because in all of the contrasting elements one dominates the other. For example, there are 2 red-foliaged plants to 3 green; 2 small plants to 3 large. In addition, there is repetition of the general form, the oval or globe, which in itself would be sufficient to provide unity.

In this way, with very little appreciation of art principles, an arrangement has been created which might very well be considered a composition. On the other hand, had this arrangement not been based on these guiding principles, we might very easily have created nothing of value.

Fig. 2.

Fig. 3.

While the arrangement shown in Figure 2 possesses the necessary contrasts and unity to be classified as an interesting composition, it may still be improved. This can easily be done by increasing the number of contrasts and/or varying the magnitude of the various contrasts. If the tall, narrow evergreen pyramid of the spruce were introduced as in Figure 3, it would mean not only an additional contrast, pyramid versus oval, but also a contrast of greater magnitude than anything used in the grouping heretofore. This increase in magnitude is achieved not only because of the contrast in form, but because the evergreen foliage contrasts, in addition, with that of the purple-leaved plum. In this way, the composition now possesses what might be described as both major and minor contrasts, a difference which in itself is capable of providing interest. It will be noted also that the addition of this one plant has not lessened unity in any way; the number of oval plants still dominates the scene.

Now, if plants were static or never-changing, you could see that it would be a very simple problem to arrange them in satisfactory groupings. Plants, however, are not static, and the dynamic or ever-changing character which

they exhibit with the changing of the seasons does complicate the matter of arrangement, even though it makes it potentially more interesting. Because of this, it is necessary to take another look at things to consider how an arrangement will look at all seasons of the year. Will the same interest be present the year round? Will the magnitude of the contrasts be lowered or raised as fall changes to winter? How will the change in season affect unity? These are questions which must be answered in order to have an arrangement achieve year-round satisfaction.

Fig. 4.

Figure 4 serves to illustrate this kind of planning. At first glance, you will notice that we have a combination of evergreen and deciduous plants. During the summer months, the deciduous plantings as a whole will dominate the evergreens, but it will be noted by the time winter arrives that the dominance has swung over to the evergreen side of the composition. I do not wish to imply that the evergreen material has been introduced here solely for the purpose of providing interest during the winter. On the contrary, these plants will be of extreme value the year round, and thereby can be considered an important and integrated part of the arrangement. If the pyramidal form were removed, our interest would immediately sag, for we would be left with a group of repetitious, or at best, harmonious, forms which could not provide the degree of interest one seeks to achieve.

Of course, a good deal of care must be exercised in the choice and arrangement of deciduous materials, for these are the most dynamic of all. Four choices have been listed. There are those which provide a major attraction in the spring and then become commonplace for the rest of the year. There are those which by virtue of their unusual foliage color provide interest the whole summer long. There are the group which achieve their greatest potential in the autumn, and then there are those which not only provide us a grand display in the springtime, but which provide us also a striking color display during the autumn.

Plants belonging to this last group, I feel, are the most useful and should be given a major position in any arrangement. In Figure 4, I would consider the position of major importance to be in the region where the vertical line of the spruce meets the deciduous material. At this point, we have a major contrast in direction (vertical versus horizontal), and it seems logical to give it prominence by having major color contrasts here also. The use of spring-blooming, fall-coloring plants assures us of this effect. It will be noted that smaller quantities of the same material are used elsewhere in the arrangement. These have been incorporated to achieve unity through repetition.

During the summer months, this arrangement is going to achieve its greatest effect through the contrast of green foliage with colors other than green.

There are a number of these to choose from, and provided our choice is not too varied, so that unity will disintegrate in a cacophony of color, these plants can be arranged to give an interesting number of contrasts for summer enjoyment.

This leaves us with the task of deciding what to do with those plants in the two remaining groups, namely, those which flower in the spring, and those which color up in the fall. These are perhaps the least useful of all our plants; nevertheless, it would be wrong to say that we have no use for them. Many of our most attractive ornamentals belong to one group or the other, and it would be impossible to ignore them. In Figure 4, they are used to supplement those plants which combine the attributes of both, but in other groups they might well be associated with less transistory color forms.

The art of tree and shrub arrangement is a fascinating business, and within the limits of this brief article I hope that I have been able to stimulate some interest. Unfortunately, one cannot expect to do justice to all the elements, principles and techniques involved. I can only suggest that you treat each problem on its own merits and then subject its solution to the type of analysis which I have tried to indicate to you. This, I hope, will reveal the true value of your arrangement.

Grafting Ornamental Plants for Special Effects

by **R. J. HILTON, Ph.D., Head, Department of Horticulture**
Ontario Agricultural College, Guelph, Ont.

An interesting aspect of our rapid entry into the World of Technology is the emphasis placed on change itself. Often it seems that change need have no other purpose than the avoidance of monotony.

It appears to be wholly on this basis, for instance, that my wife lays out substantial ergs, ohms and watts, and even an occasional "ugh!" in moving the living room furniture. She does this frequently, and all about. I have never ceased to marvel at the influence of permutations and combinations on the location of my favorite armchair, and I shall show no serious surprise when first I see a dusty trail across the room where the fireplace bricks have been transported.

One aspect of variation in our surroundings is the part now played by pools, patios, porches and penthouses. Like bay windows of a century ago, these now reflect a certain status. I have no objection to our mixing symbols of status and change to create an environmental (and conversational) composition that is pleasing and relaxing. Indeed, this is an excellent objective. But I have an almost pathological and single-minded interest in plants of every kind and shape, and if I can use plants to achieve garden effects that are not bizarre but that do meet standards of change, then I have it made, from stand points of interest and enthusiasm.

A brief article, even one so informally begun as this, can do little more than list some of the means for achieving exciting special effects through the use of plants. In this case we will be even more confining and limit our comments to the landscape use of grafted trees and shrubs, to obtain a design pattern that would not be possible if the plants were *not* grafted. A brief calendar of plant combinations that fit this category appears below:

THE WELL-KNOWN CAMPERDOWN ELM. This extremely weeping form of Scotch elm would literally and humbly crawl along the ground on its hands and knees if we did not graft it high upon some stalwart stem that is both hardy and compatible. Hence we graft Camperdown elm on an 8-foot or 10-foot stem of English or American elm, and perhaps we could use the hardier Chinese elm as well. Other examples of grafted 'weepers' are the weeping mulberry, grafted high on a normal Russian mulberry stem, and the weeping Caragana mutation, which also must be grafted high on a non-weeping stem—in this case we use the common *Caragana arborescens.*

TREE ROSES. Readers may complain that the conventional tree rose, made up of a desirable hybrid tea grafted high on a sturdy Dogrose stem, lacks hardiness and on the prairies must be taken into cold storage each winter. True enough, but it is time we explored thoroughly the possibilities for this effect to be obtained by combining, say, the attractive and graceful habit and coloring of selected *R. spinosissima altaica* hybrids, or *R. gallica,* grafted on a strong and hardy stem of one of the late Mr. Godfrey's or Mr. Bugnet's introductions.

MULTIVARIETY TREES. Although it has been recognized from ancient times that several varieties of one kind of fruit could be grown on one tree, providing they were compatible with the framework on which they were

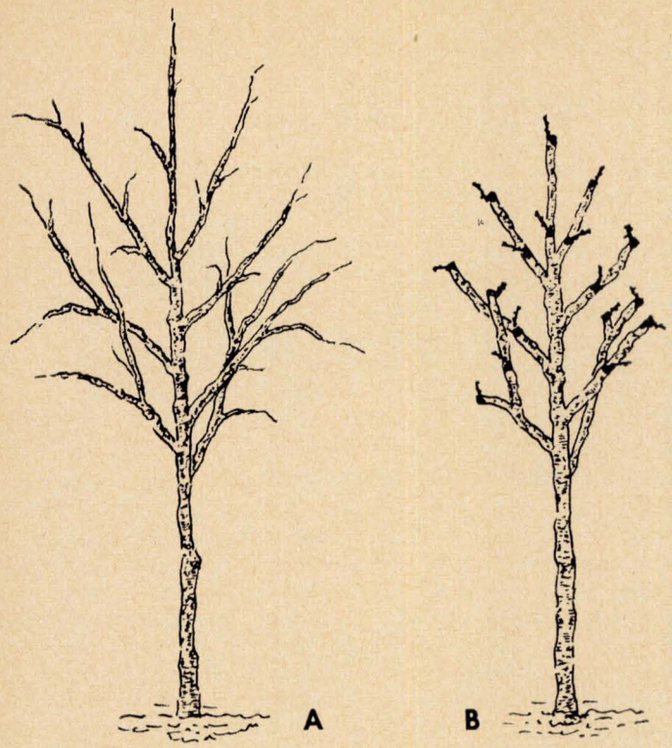


Fig. 1A

Well balanced young crabapple tree the framework of which will be used for supporting scions of 6 or 8 Rosybloom or other ornamental varieties.

Fig. 1B

Same tree after framework - grafting. In this case 3 scions each of 5 varieties were grafted into the stock tree.

grafted, the technique has been adopted commercially only a few years ago. Now many nurseries are advertising '5-in-1' trees of apple and pear; but how much more interesting for the gardener to build his own. He or she may then graft onto a suitable small tree as many varieties as they wish, and they may use different varieties of Rosybloom or other ornamental crabapples and obtain truly and excitingly unusual effects. In the same way, trees with 8 or 10 plum varieties can easily be established, and I have a single young plum on which plums, peaches and apricots are growing.

CONVERSATION PIECES. Have you seen the hybrid of Saskatoonberry and mountainash that R. Simonet of Edmonton found some years ago? In leaf and fruiting habit it is in between the parents, and Mr. Simonet also demonstrated that it was compatible to grafted scions of both parent species, and of hawthorn as well. Here, then, is a living and growing example of nature's breadth of interest—a tree consisting of three species and a hybrid!

A NON-BEDRAGGLED CHRISTMAS CACTUS! Too often we note that fine adult plants of Christmas cactus (*Zygocactus*) droop so heavily over the pot edge that they lose a great deal of their attraction. This is especially true when the plants are in flower. Not many garden and house plant enthusiasts seem to know that this plant will graft successfully and easily into tall, sturdy stems of Pereskia cactus species. In this way the 'head' of Christmas cactus may be grown at any desired distance from the pot soil level, within, say, limits of 4 to 36 inches.

We could go on listing the kinds of special effects one can obtain by grafting, but the foregoing will serve as examples. Anyway, there is a fascination in finding others by our own initiative and many readers will see new uses for grafting, and will expand their own hobby boundaries at the same time.

Fig. 2A

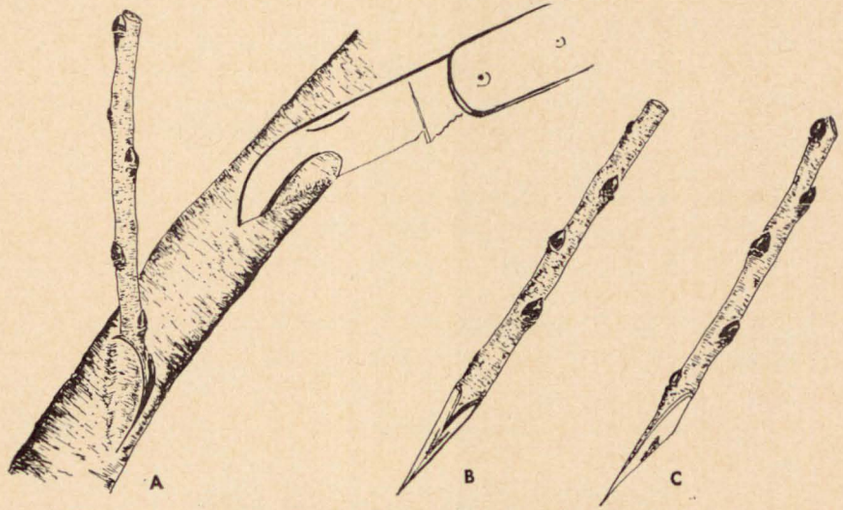
Pereskia cactus stem grafted (bracketed portion) to stem-pieces of Christmas cactus.

Fig 2B

Same plant as in A, 12 months later.

The second aim of this brief article is to discuss ways and means for carrying out the actual grafting. The techniques are by no means difficult and anyone who realizes the need for cambium layers of stock and scion to be in close relation to one another, i.e. in a tight fit, can bring this about easily enough.

There remains only the need to caution the novice (1) against the use of scions that are not wholly dormant; (2) to seal the cut surfaces of unions carefully, with a melted grafting wax or asphalt tree surgery emulsion or with



A.—One scion inserted ready for tip and union cut surfaces to be waxed over; another oblique cut made for a second scion.
B.—Face view of basal "double-wedge" scion cut.
C.—Side view of same scion base.

a durable rubber or plastic tape, but not with the tar-impregnated electrician's 'friction' tape; and (3) to keep the knife blade very keen as clean, straight cuts greatly reduce chances of graft failure.

There are hundreds of named grafting 'methods'* but everyone of these uses the cardinal principle of matching cambial layers of stock and scion tightly at one or several points. The scion may consist of a single detached bud, as in conventional 'summer budding' practice, or it could be a watersprout of a yard or so in length.

The question why certain plants are graft-compatible and others are not is one of Dame Nature's most complex study areas, as well as a very exciting field for exploring. We do know, for example, that a birch scion will not grow on a maple or an apple stock, but that many pears will unite quite well with quince and hawthorn and mountainash. Obviously then, botanical relationship provides part of the answer. However, there is no simple solution, and a discussion of compatible graft combinations may well be a suitable subject for a later article in THE PRAIRIE GARDEN.

*See Grafting and Budding Fruit Trees—J. A. Menzies and A. Gudziak, 1962 Prairie Garden.

INTERNATIONAL PEACE GARDEN, INCORPORATED, has a total area of about 2,188 acres. Thirteen hundred of these acres are in Manitoba and 888 acres are in North Dakota. The entire Peace Garden area is enclosed by a very substantial fence. The formal area consists of 160 acres equally distributed on each side of the International Boundary. *Harry A. Graves.*

Recommended Vegetables for the Newcomer

by **T. A. SANDERCOCK, Vegetable Specialist**

Manitoba Department of Agriculture and Conservation, Winnipeg, Man.

Many a winter evening is spent by the home gardener in thumbing through the numerous seed catalogs to select the list of vegetable varieties for the next season's garden. This, to the experienced, is a very enjoyable task and one which is awaited with great expectation.

However, to assist the enthusiastic but inexperienced newcomer in his initial selections, I have listed and described my personal variety preferences in the major vegetable crops. This list will serve as a guide to which additions or deletions may be made as more new and interesting varieties are discovered. There are limitless numbers of varieties available and no doubt personal preference will play a leading role in future variety selections as one gains from personal experiences in the garden.

Beans

Top Crop (Green)—Vigorous-growing plant with pods 5 to 6 inches long, slightly curved, round, free from strings. Excellent as fresh, canned or frozen.

Kinghorn (Wax)—Heavy-yielding variety with oval-shaped, fleshy and stringless pods. Suitable for fresh, canned or frozen purposes.

Cabbage

Golden Acre.

Golden Acre (Summer)—Rapid-growing, early-maturing, high-quality type. Can be grown from transplants or from seed sown directly in the garden. Heads average 6 inches in diameter and weigh about 3 pounds. Excellent for salads.

Danish Ballhead (Fall)—Storage type, produced from seed sown directly in the garden. Heads solid and crisp, having a diameter of about 8 inches. Size can be reduced by close spacing. Especially suitable for cole slaw.

Lettuce

Grand Rapids (Leaf)—Most dependable, hardy bunch-leaf lettuce. Vigorous-growing, upright and compact. One of the first crops to be harvested.

Great Lakes Types (Head)—Most reliable under Manitoba conditions. Grow very well from transplants.

Peas

Lincoln (Homesteader)—An all-purpose variety which can be used as fresh, for canning or freezing. It is midseason in maturity and high-yielding.

Tomatoes

Manitoba (Bush)—Produces medium-sized high-quality red fruit. Midseason in maturity. Gives satisfactory production in most areas of Manitoba.

Valiant (Staking)—Early-maturing, high-yielding variety with medium-sized fruit. Excellent for gardens with limited space.

Carrots

Special Nantes.

Nantes—Excellent for home gardens because of its crisp, delicious flavor. Roots bright orange and of medium length. Ideal for eating in the raw form and for freezing.

Royal Chantenay — Very easy to grow and of good quality. Roots average 5½ inches in length and taper to a point. Can be used in all forms.

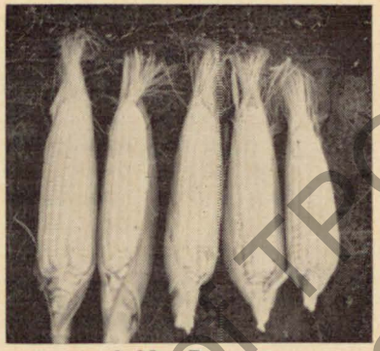
Cauliflower

Snowcap—Early-maturing variety which produces solid, large, deep white heads of finest quality. Can be used as fresh or in pickles.

Corn

Dorinny (Early)—Small-eared, sweet-flavored variety that matures one week earlier than most varieties. It freezes well but lacks the yield of the hybrid varieties.

Golden Beauty (Main Crop) — Outstanding for flavor, texture and tenderness. A favorite for freezing and canning as well as fresh. It is midseason in respect to maturity. Ears average 7 to 8 inches in length with 12 to 14 rows of kernels.



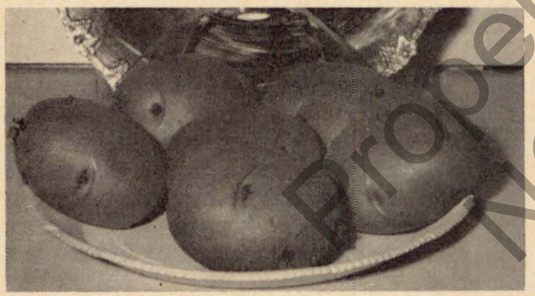
Golden Beauty.

Cucumbers (Slicing)

Straight Eight—A most attractive, high-yielding variety with a thick white flesh area and small seed cavity.

National Pickling—Most popular variety among the home gardeners and the processing trade. Ideal for most types of pickles.

Potatoes



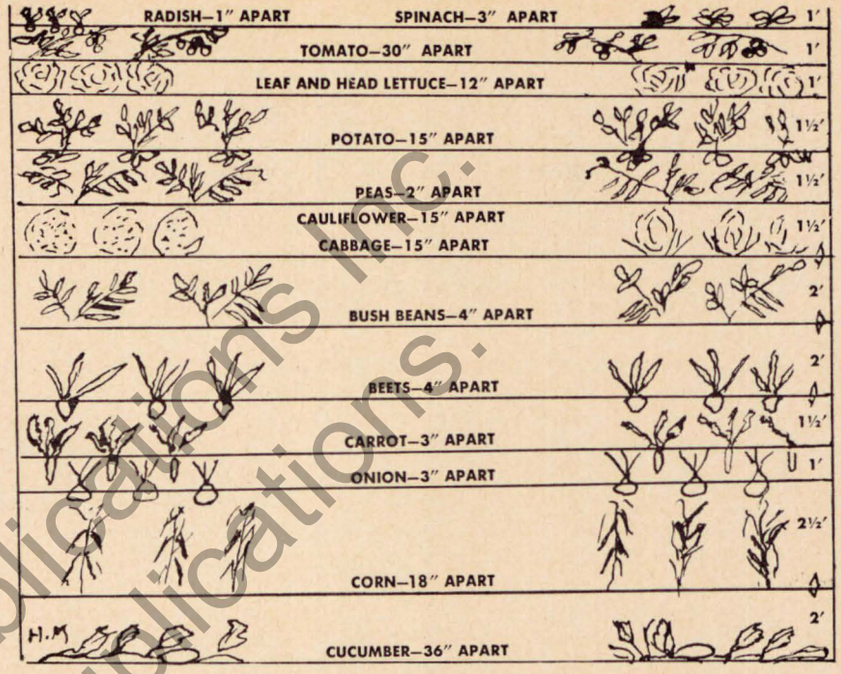
Norland.

Norland (Early)—High-yielding, good-quality variety. Oblong to round in shape with very shallow eyes. Red in color.

Irish Cobbler (Late)—A top-quality, late-maturing variety of white potatoes. Noted for its baking and chipping qualities.

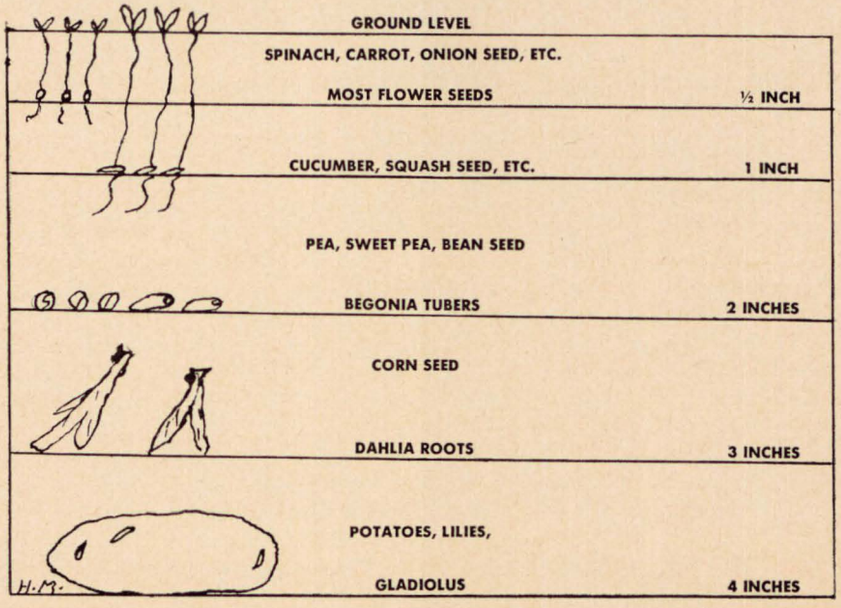
Radish

Cherry Belle—Bright cherry red, small, round, quick-maturing variety. Remains solid and crisp. Very colorful when used in salads or as trimmings.



Vegetable Plot

Where space is limited careful planning is necessary to get maximum yields from the plot. It will be noted that tomatoes for example, are planted close to radish, spinach and lettuce, all early crops that will be harvested before the tomatoes spread out. Planting corn near cucumbers also makes double use of the ground, the vines will grow through the corn. Distance between plants in inches, between rows in feet.



Melon Growing in Manitoba

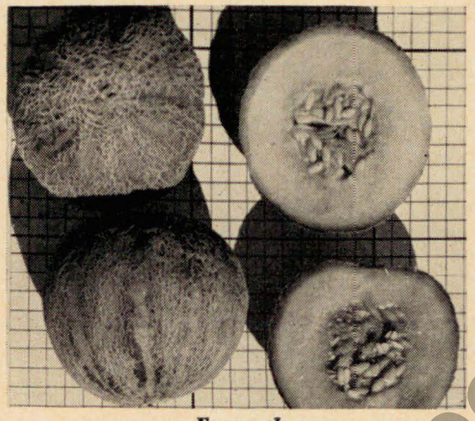
by **C. D. BAIRD, Giroux, Man.**

Melons require a rich, well drained soil and in wet years such as the last two in the Winnipeg area their maturity will be delayed and they will not be a success unless special efforts are made to grow them.

To grow even the earliest varieties in unfavorable years and the better-quality ones in good years, starting the plants early is essential. Peat pots and plant bands can be used for growing small plants, but for longer growing periods, short 5-inch flower pots or used plastic ice cream containers will be much better.

Melon plants must be grown in individual containers for if the roots are damaged at any time they will be set back, so most of the advantage of early starting is lost. They require high temperatures, 75° or over, to germinate and grow well, and while they can be started in a sunny window, they need the overhead light of a hotbed or a greenhouse later on so the plants do not become spindly and weak. The soil should contain plenty of fibre so the plants can be transplanted without disturbing the roots; and should contain a good portion of well rotted manure or be watered with liquid fertilizer similar to house plants.

In a warm season, the melon plants can be set out about the first of June and covered with Hotcaps, but when the ground is cold and wet as in 1963, planting should be delayed until about the middle of the month. In a dry season, covering the soil between the rows with clear plastic film may be an advantage, but in a wet year it may do more harm than good. Melons need protection from the wind, especially the cold north-west winds that often blow in early summer. If natural shelter is not available, the use of ply-wood sheets or 2-ply of snow fence with tarpaper between on the north side of the melon patch will help to trap the heat these plants need for their best development.



Farnorth

Varieties

Farnorth, Wheat City and Honey Gold are the best early muskmelons, but soon go out of condition when ripe. The hybrid varieties, Sweetie and Minn. 16, are somewhat later and better in quality.

New Hampshire Midget and Sugar Baby are two very good early watermelons. Early Kansas and Dixie Queen are later ones that can be grown to a large size under favorable conditions. The new hybrid varieties have not been better than these under local conditions.

Garden Problems

by **W. R. LESLIE, LL.D., Landscape Consultant**
Garden Columnist, "Over the Garden Wall," Winnipeg, Man.

The interest in growing plants has become so widespread that daily newspapers find the Garden Column one of their most looked-for features. Many queries are received by letter and by telephone by the Winnipeg Free Press. Some of the questions of most general interest are answered in the "Over the Garden Wall" garden column on Thursdays. The following brief treatment of a few of the problem items is adopted therefrom and presented here for the use of readers. They provide suggestions in reference form.

FIRE BLIGHT, the bacterial disease which attacks apple, hawthorn, saskatoon, cotoneaster, cherry, mountainash, and many other members of the rose family, has been common lately. The disease thrives when growth is lush, and is most active from blossom time until shoot growth slows down. It is spread from the overwintering cankers to blossoms, leaves, and young shoots by various insects, wind, splashing rain and pruning shears.

Control: Some gardeners leave the pruning off of diseased wood until early spring when branches retaining crisped leaves, and those which have the tips bent over, are removed down about 6 inches into normal fresh wood. However, most of us cut off infected twigs and spurs as soon as they occur, hoping to limit spread of the wasting disease through downward flow of sap. In March and April cut out the discolored and sunken canker wounds on large limbs and trunk. Disinfect the wound by swabbing with household bleach, diluted in 5 times its volume of water, or with mercuric chloride, 1 to 1,000. Then apply a thin coating of tree dressing, preferably one with an asphaltum base. It remains tacky and clings to the surface. Recoat with the dressing each spring.

Prevention: Avoid planting varieties that are susceptible to the disease, such as the Transcendent crabapple. Avoid heavy feeding with nitrogen fertilizers, heavy pruning and other practices which induce rank growth. Disinfect pruning tools by dipping them in denatured alcohol, or in mercuric chloride carried in a glass jar. The use of sprays of zineb or streptomycin, every third day during the period of flowering, may prove helpful but will not prevent the progress of the damaging twig blight which follows. Choose resistant varieties for planting.

YELLOW LEAVES, green sickness of leaves, known as Chlorosis. The common cause in our high-lime prairie soils is that the iron becomes tied up by other chemical elements to produce forms that are indigestible to plants. The result is a starved-for-iron condition that shows up as a yellowing of the tissues between the veins on the youngest leaves. Later the whole leaf may become yellow, then creamy white and finally brown and dry.

Remedies are of two kinds—acidifying the soil so that the iron compounds revert back into forms usable by the plants; or by applying iron sulphate to the leaves as a spray, to the soil for the roots, or as injections into the woody tissue.

Acidifying is attained by adding and working into the topsoil such materials as acid peat moss, pine leaves, oak leaves, compost and green manures. A quicker means is to apply chemicals which produce an acid reaction. Powdered sulphur applied at the rate of 2 pounds on 100 square feet should lower the pH value one point. Aluminum sulphate applied 4½ pounds on 100 square

feet also is expected to lower the pH reading one point. An effective treatment is equal parts of sulphur and iron sulphate, raked into the ground during the growing season. The sulphur makes the iron salt useful for a longer time.

Iron applied into the plant: There are three ways of getting usable iron into the plant: (1) through the leaves; spray with iron sulphate solution, 1 ounce of salt dissolved in 1 gallon of water. Use at one-half strength on young tender foliage. Apply as a fine spray to the leaves. Any surplus will dip to the soil and be absorbed by the roots. (The effect is not long lasting but is immediate. Repeat from time to time. Commence as soon as yellowing shows in the leaves.)

(2) Iron applied to the soil; apply iron sulphate, preferably accompanied with powdered sulphur, to the surface. Rake in and water well. Or, make a trench about the plant, about 2 or 3 inches deep, and out near the rim of the branches. Spread the chemical, fill in the trench and water. Or make holes with an auger or crowbar, 6 to 12 or more inches deep, about the spread of the branches, about 2 feet apart. Put in 1 to 3 tablespoons of the salt in each hole, fill in with peat and water generously.

(3) Iron applied into the tissues; bore holes into the trunk, or, better still, into the main roots with a ⅜-inch bit, 2 to 3 inches deep depending upon the thickness of the bark, and at an angle so that the salt will not run out. Plug with a cork. Apply wound dressing. The salt is dry ferric citrate, which is the form in which iron is fed to animals. This injection treatment should serve the tree amply for 3 years. The borings are around the circumference about 3 inches apart.

Iron chelate is an improved form for feeding needy plants. The chelating agent, ethylenediamine tetra-acetic acid, has the property of maintaining the iron in the desired form in spite of microbial action. Versenol (Dow) and Sequestrene (Geigy) are trade names for the product as offered by local stores.

In all cases, treat green-sick plants early and repeat as often as needed. Suitable feeding with iron salts will succeed in curing common chlorosis.

SCURFY SCALE: This is an insect enemy that forms amber-gray waxy daubs on the bark of cotoneaster, saskatoon, dogwood, and a number of other woody plants. Cut out near the ground those older stems that are heavily plastered with scale. Burn the prunings. Wet the bush with malathion spray about May 15, May 25, and June 5. Encourage growth by feeding with ammonium phosphate or a complete fertilizer.

GARDEN SLUGS: These are certainly tough competitors. They feed at night and keep multiplying all summer. Get the old timers early before they commence raising a family. Keep the surface free of boards, sticks, large leaves, stones and other objects under which they find harbor during the day. A dry surface is desirable because the creatures need a lubricated or wet surface on which to crawl. Unless the surface is moist they must secrete a silvery slime on which to travel. This weakens them. Pick them up at night with tweezers and drop them in a tin holding some used oil; find them in the gleam of a flashlight. Dust about the plants to be protected in the evening with metaldehyde (a condensation product of acetaldehyde). Place commercial slug baits, preferably those containing both metaldehyde and calcium arsenate, in the evening on a cabbage leaf or piece of wet board, covered to protect pets. Slugs are guided by smell. They are fond of citrus so a shell of half grapefruit is an inviting cover.

Dr. R. J. Hilton, Ontario Agricultural College, prescribes: "If the garden is kept really clean this year, you can bet the slugs will disappear when their

food supply is cut off. I suggest you let a light weed cover grow, then spread a commercially prepared bait over the soil surface. Repeat in 3 days. Then hoe or otherwise clear the area and dust the surface with 5 per cent chlordane dust."

ROOT KILLING: Last winter was trying on plants. Many people found apple trees and other semi-tender stock start to put forth leaves but, when about one-third grown, activity stopped, and the leaves gradually dried up. Some attributed the condition to a sharp spring frost. The trouble was root killing. When the warming sun aroused the buds in April, they opened and progressed only until they had used up the sap available in the trunk and branches. The roots were dead and unable to contribute soil water. In such a case it usually is best to discard the bush and replant. Sometimes part of the root system still has life and the leaves, although remaining small, persist. The thing to do is to cut back the top severely, lessening the amount of work the roots have to perform. As the plant builds up new vigorous roots a renewed top may result in a satisfactory bush. But "when in doubt, take it out."

PURSLANE: A very troublesome weed that germinates when the soil warms in early summer. There is one time to kill it easily, that is when the tiny leaves are still red in color. At that time one flick of the rake eliminates it. But when the fleshy leaves become green, it will root again if left on moist soil. Moreover, the seed which is borne in harmless looking little green capsules may remain viable in the ground for 4 or 5 years. The cheapest but rather tedious method is to hoe it every 5 days, removing all plants that have reached flowering stage.

Purslane succumbs to 2,4-D weed poison but requires stronger dosage than normally used. Weedicides carry hazard to other plants. Mechanical weeding is favored whenever and wherever feasible. The advice: Get them young!

CHICKWEED: This humble but tenacious weed, like the garden slug and purslane, is a pesky nuisance. The European plant finds prairie gardens to its liking. Although an annual it flowers early and continues to ripen seed continuously until frost. The protective seed coat enables it to remain viable for several years and to germinate irregularly. The hairlike roots are tough and difficult to eliminate by hand pulling.

Control is by persistent and frequent hoeing, preventing seed formation; choking out with dense growth of grass or clovers; providing free drainage; or by applying chemical plant poisons. In favor is hormone 2,4,5-TP, applied in May and again in September. Trade names for the weed poison include silvex, killex, compitox, and clover and chickweed killer.

TOADSTOOLS ON LAWNS: The part we see is the fruiting body of a fungus plant that is growing on rotting wood, leaves, manure or other decaying matter down in the soil. The toadstools are doing no harm but because they are unsightly are undesirable. The simplest treatment is to rub the heads off with the back of a rake. They will ultimately give up. The sod in the area can be taken off, the decaying matter on which the fungus is growing removed, the spot disinfected and then filled in with topsoil and the sod relaid. The third approach is to bore holes about an inch in diameter, about 5 inches apart, and 6 inches deep where the toadstools are appearing. Fill the holes with Bordeaux mixture, calocure, a phenyl mercury, or some other strong fungicides. Water in the chemical liberally. Repeat the treatment monthly until October. Fertilize and water the lawn to keep grass in vigorous growth.

CHERRY LEAF SPOT: Some of the bushes of Mongolian and other Morello cherries suffer from this disease that shows as small, round, purplish or brown spots on the leaves, develops into yellowing and drop of the leaves. Most important is to plant strains that are resistant to the disease. To control: collect and burn all leaves when they drop in autumn. Next spring spray captan, zineb, or some other fungicide, commencing when leaves are about half grown. Repeat when needed.

The Prairie Home Orchard

PART I — APPLES

Heyer 12. Tree very hardy and productive across the prairies. Fruit about 2½ inches, amber color. Excellent for cooking, fair as dessert. August.

Breakey. Tree vigorous and productive. Fruit medium size, striped red. Quality good. September-November.

Carroll. A promising general purpose apple recently introduced at Morden.

Garland. A companion for Carroll.

Goodland. Tree healthy and hardy. Fruit above medium in size, lightly colored, quality pleasing for dessert and sauce. Mid-September through December.

Manitoba Spy. Tree vigorous and hardy at Morden. Fruit large, resembling Northern Spy, flesh greenish amber. Quality very good. November-February.

Miami. Tree medium in vigor. Fruit about average size, heavily washed red. Quality acceptable as dessert, good as sauce. September-January.

PART II—CRABAPPLES and APPLE CRABS

Dolgo. Tree vigorous, upright. Fruit small, abundant, bright red, juicy, high in pectin, making it esteemed for colorful jelly. Hard to pick. August—early September.

Rescue. Tree moderate grower, productive, very hardy. Fruit large for crabapple, washed and striped red, sweet subacid. Quality pleasing as dessert, general purpose. Late August.

Trail. Tree roundish, hardy in southern Manitoba. Fruit roundish, to 1⅞ inches, striped orange-red, excellent as dessert and canned. Late August-October.

Kerr. An applecrab of great merit. Tree healthy, hardy, productive. Fruit average 1¾ inches, richly colored red, acceptable as dessert, excellent as jelly, pleasing canned. Mid-September-January.

PART III — PLUMS

Bounty. An improved form of native plum. Tree vigorous, hardy. Fruit medium to large, dark red with light waxy bloom. Fair as dessert, good for jam and canning. Last half of August. Valuable as a pollinizer for hybrid plums.

Dandy. An improved native, introduced by Boughen Nursery, Valley River, Manitoba. Tree spreading, very hardy and very productive. Fruit medium size unless small due to over-bearing, yellow blushed light red, mild in flavor. Quality pleasing. Late August. A pollinizer.

Pembina. Tree spreading, vigorous. Fruit large, pointed, red with heavy waxy coating, skin thick, flesh sweetish. Good for dessert but disappointing when canned. Late August.

Grenville. Tree vigorous, moderately productive. Fruit large, to 2 inches, yellow overlaid with dark scarlet, light waxy bloom. Quality excellent. Late August. A fine exhibition fruit. Requires a good pollinizer, such as Bounty or Dandy.

Kaga. An apricot plum hybrid. Tree spreading. Fruit to about 1½ inches, roundish, deep suture, dark carmine with bloom, skin, thick, flesh firm, perfumed, apricotish flavor. Excellent as jam and canned. Late September. Valuable pollinizer for late blooming hybrid plums.

Tecumseh. Tree moderate grower. Fruit medium size, bright red with bluish bloom. Quality good, general purpose. Mid-August.

Ptitsin No. 9. A Manchurian plum. Fruit about 1⅛ inches, greenish yellow, firm, freestone, flavor sweet, mild, pleasant. Mid-August. A pollinizer.

Climbing Annuals

by **J. R. ALMEY, Winnipeg, Man.**

While there is no scarcity of climbing plants the choice of those suitable for prairie conditions is very limited. We do not have any hardy evergreen climbers and few deciduous ornamental climbing plants that are hardy. The use of annual climbers is not practised nearly as much as is warranted.

Our houses have many bare panels of outside wall space on which climbing plants would greatly improve their appearance. Often ground space in the urban areas will not allow the planting of tall shrubs as foundation plants, but only a narrow area near the wall is needed for climbing plants.

To my knowledge, there are no self-clinging annual climbers that will make their own means of climbing up a smooth wall like the English Ivy or the Virginia Creeper (*Parthenocissus engelmanni*) so that supports must be provided at the time the plants are set out.

During the past summer I tested four annual climbers, one of which proved well worthy of growing. This was *Maurandia Barclaiana*. The other three, namely, *Quamoclit lobata* (Crimson Starglory), *Quamoclit pinnata* (Cypressvine) and *Dolichos lignosus* (Hyacinth Bean), gave varied degrees of success.

Seed of these was sown indoors in early April in 2-inch plastic pots. Thinning out of these plants reduced these to 1 or 2 to each pot. When 4 inches high they were transferred to 3-inch clay pots and given a 15-inch stake made of split bamboo. A longer support would have suited some because they grew rapidly when once established in the 3-inch pots. They were planted outside the first week in June. With protection against late spring frosts they could be planted earlier. All were planted along the base of a west wall.

The Cypressvine lacked vigor, seemed unhappy in my soil, and grew only about 3 feet tall. A few odd red blossoms appeared, not very showy, and they seemed unable to stand our July heat. The Hyacinth Beans started to bloom when only 12 inches high and the flower colors were poor. They were from mixed seed and perhaps seed selection would be worthwhile. Due perhaps to injury to the growing tips, their total height was only about 2½ feet.

The Crimson Starglory quickly grew beyond the 6-foot trellis support provided, reached for an eavestrough down spout, and by September was reaching for the sky above the eavestrough some 17 feet high. In early October it developed a few flower clusters, not very distinct, much like the blossoms of a scarlet runner bean, but about one-quarter their size.

Maurandia Barclaiana proved to be a very worthy annual climber. It reached a height of 8 feet and possibly would have gone higher had a taller support been provided. It has small, ivy-shaped leaves that are produced thickly along the twining stems; they are a bright, shiny green, and no insects or disease seemed to bother them. The flowers started to show up in late summer. They are a bright, medium deep blue, shaped like a shortened gloxinia blossom. They are produced singly along the branch stem that hangs down from the twining main stems. I plan to grow this again next season, starting it earlier, and hoping to have better developed plants for setting out.

I will try also the Hyacinth Bean again. I see no reason why it should not do better, and the fact that it blooms early should suit it to our short season. Whatever cultural practice is followed to raise climbing annuals, the avoidance of root disturbance and checks to growth before they are planted out is important.

VARIETY ADAPTABILITY GUIDE

We offer this "Do Best" or Special Use Flower Guide to highlight what to buy for that special spot.

	Cutting or Centre Pieces	Are Perfumed	Like Good Drainage	OK in Win. Box, Planters	OK in Borders or Edging	OK as House Plants	Stand Some Frost Best	OK in Shade, Bit of Sun	Like Half Sun a.m. or p.m.	Do Best in Full Sun
SPECIAL BULBS, ETC.										
Anemones	●		●			●			●	●
Begonias—										
Giant Flowered	●				●	●		●	●	
Hanging Basket				●		●		●	●	
Multiflora				●	●	●			●	●
Caladiums				●		●		●	●	
Cannas									●	●
Dahlias	●		●						●	●
Gladiolus	●		●				●			●
Gloxinias						●			●	
Iris	●		●				●		●	●
Lilacs		●					●		●	●
Lilies		●	●				●		●	●
Oxalis				●	●	●				●
Peonies	●	●					●			●
Roses	●	●					●		●	●
Ranunculus	●					●			●	●
Tigridia										●
SEED OUTDOORS										
Alyssum		●		●	●		●		●	●
Balsam				●					●	●
Bell of Ireland	●						●	●	●	
Calendula	●					●	●		●	
Coreopsis				●	●	●				●
Candytuft		●			●					●
Corn Flower	●		●		●		●		●	●
Sweet Sultan	●	●							●	●
Clarkia						●				●
Cleome										●
Cosmos	●								●	●
California Poppy			●	●						●
Forget-Me-Nots	●	●		●		●	●	●	●	●
Gaillardia	●						●			●
Godetia								●	●	●
Gourds	●		●							●
Gypsophila	●								●	●
Strawflower	●						●			●
Larkspur	●						●			●
Lavatera - Mallow			●							●
Linum Scar. Flax										●
Marigolds	●			●	●	●	●		●	●
Marvel of Peru								●	●	●
Mignonette	●	●		●		●			●	●
Morning Glory			●		●					●
Nasturtiums	●	●	●	●	●	●			●	●
Annual Poppies	●								●	●
Phlox	●			●	●	●	●		●	●
Portulaca			●	●	●					●
Scabiosa	●							●	●	●
Sweet William					●	●	●		●	●
Stocks	●	●				●	●	●	●	
Sweet Peas	●	●				●	●		●	
Sweet Peas, Dwarf		●		●	●	●	●		●	●
Zinnias	●		●		●	●	●		●	●
SEED INDOORS—Plant Outdoors										
Ageratum				●	●	●	●	●	●	●
Snapdragon	●									●
African Daisy			●							●
Asters	●							●	●	●
Carnations	●	●	●	●	●	●	●		●	●
Caster-Oil Bean									●	●
Celosia			●							●
Dianthus	●	●	●	●			●		●	●
Datura			●							●
Gazania			●							●
Gloriosa Daisy	●						●			●
Hollyhocks							●		●	●
Lobelia				●	●			●	●	●
Nemesia				●	●	●		●	●	●
Nicotine		●						●	●	
Nierembergia				●	●	●			●	●
Violas	●	●		●	●	●	●	●	●	
Pansies	●	●		●	●	●		●	●	
Petunias		●	●	●	●	●			●	●
Penstemon	●						●		●	●
Salpiglossis			●							●
Schizanthus			●			●			●	●
Salvia			●	●	●	●				●
Verbena				●	●	●	●		●	●

● Means OK

Annuals for Prairie Gardens

by **H. R. PFEIFFER, Gardener, Assiniboine Park, Winnipeg, Man.**

Although most flower gardens would not be complete without a good number of perennials many will agree that the annuals give us the greatest profusion of bloom and diversity of color during the height of the growing season. This holds especially true in our prairie provinces and in the neighboring States.

To grow these annuals to the best advantage most of them will have to be started indoors. This entails more work but I think the reward in beauty and satisfaction is worth the effort. However, if we lack the space and the facilities, or shun the effort, a supply is always ready from our efficient market gardeners. They deserve patronizing for bedding plants.

Comment on some of the most popular species of annuals:

For the low, compact border **Petunias** about top the list. I will name some of the most distinctive varieties from an almost endless list: Cherry Tart, double, rose-white, carnation-flowering; Masquerade, purple-white, stars, blotches, ruffled; Sabre Dance, crimson-red, white star, ruffled; Sugar Plum, lavender with darker veins; Grand Slam, deep crimson, large white star; Satellite, rose with white star.

In straight colors, the Satins lead with white, red, pink, and coral. In reds, Comanche, Red Ensign, Flaming Velvet; in white, Paleface, Popcorn, Fringed Snowstorm; in blue, Blue Bedder, Blue Lustre, Blue Mantle; in pink, Silver Medal, Ballerina.

Others deserving mention are Blue Lace, Theodosia, Celestial Rose, Fire Dance, Scarlet Lustre, Crusader.

In **Snapdragons** there are a wide range of colors and heights. A newer introduction is the variety Sprites, available in mixed or separate colors. Its compact growth, 12 to 18 inches, and its profusion and durability in bloom make it a standout.

Next come the Triumph class: Scarlet Gold, Mauve, White, Bright Yellow, and Orange. Then the Malmaison type: Orange King, Guinea Gold, Royal Cerise, Rose. Intermediates: Guardsman, Fireking, Carmine Pink, Rich Salmon Red, White. Talls: Cloth of Gold, Coral Red. Giants: Ruffled Tetra, Alaska, Canary Bird, Loveliness. Among the Talls are Rocket F_1 hybrid, Frontier Strain F_1 hybrid, and Mardi Gras F_2 hybrid. A very dwarf strain of interest is Rockery Mix.

Zinnias are among the favorites and here again are a large number of varieties, some of recent introduction.

Strong-growing with big blooms: Firecracker, Snowman, State Fair (mixed), Pink Lady, Miss Willmott (pink), Miss Universe, Burpee's Giant Hybrids, California Giants. Less vigorous: Sungod, Empress (pink), Treasure Island, Cherry Time, Ortho Polka, Glamour Girls, Lavender, Pride of Dieldrin.

Others of interest are Old Mexico, Persian Carpet and the single, semi-dwarf Golden Linearis. The real dwarf variety, Thumbelina, did not quite live up to its expectations, but many of you may have better results with it. The Pompon and the Carpet types should not be forgotten; they add differences.

Marigolds. Although choice of colors is limited they have wide variations in size of bloom and plant. Tall varieties: Climax strains are tops in bloom although somewhat brittle in stem. They come in yellow, gold, primrose, and

mid-orange in Toreador. Other tall varieties are Crackerjack, Superking (mixed), Riverside Beauty, Honeycomb. Tall, chrysanthemum-flowered: Orange Glow, Pennstate. Odorless foliage: Hawaii. Closest to white: Man in the Moon. Intermediate: Happiness, Rusty Red.

Dwarf: Spry, Sunkist, Flame, Flash, Tangerine, Color Magic, Butterball. Petite Dwarf: Petite Gold, Petite Orange, Petite Harmony, Petite Yellow. Dwarf chrysanthemum-flowered: Cupid Yellow, Cupid Orange, Cupid Mixed. Two worth mentioning are Spun Gold and Yellow Pygmy. Dwarf Singles: Red Head, Naughy Marietta.

Ageratum, dwarf species: Blue Mink, Midget Blue. **Verbena:** Masterblend, Sparkle, Sutton's Blue, Salmon King, Venosa. **Phlox:** Drummondii grandiflora (15 inches), Twinkle, Beauty Mixed, Blue Beauty. **Stocks,** 10-weeks; in separate colors or mixed. **Portulaca,** Moss Rose, double. **Morning Glory,** Dwarf: mixed or separte colors. **Calliopsis:** Tiger Star, Crimson King. **Coreopsis:** Dazzler. **Dianthus** (Pinks): Bravo, Loveliness, Sweet Wivelsfield, Heddewigii, Baby Doll. **Lobelia:** Crystal Palace, Mrs. Clibran. **Nemesia:** Strumosa suttoni. **Sweet William:** Annual mixed. **Alyssum:** Carpet of Snow, Royal Carpet, Rosie O'Day. **Salvia:** Blaze of Fire, Fireworks. **Vinca** (Periwinkle): Little Pinkie, Bright Eyes. **Asters:** Dwarf Queen, Dwarf Kirkwell, Thousand Beauty. **Dahlia:** Unwin's Double. **Tagetes:** Signata, Little Giant. **Gaillardia:** Picta, Indian Chief, Sunshine. **Cornflower:** Polka Dot, Double Early. **Balsam:** Camellia Flowered. The following annuals are in the tall range: **Cleome,** (Spider Plant): Pink Queen, Helen Campbell. **Cosmos:** Sensation, double-crowned-crested. **Salpiglossis:** Giant Emperor. **Scabious:** Cockade, mixed. **Gaura:** Lindheimeri. **Tithonia** (Mexican Sunflower): Torch, 6 feet. **Lavatera:** Loveliness.

Now some species for semi-shade:

Dwarfs: Pansies, Swiss Giants, Maple Leaf Giants. Violas, Giant White, Giant Yellow, Clear Crystals, Mountain Guard, Blue Perfection. Myosotis, (Forget-me-nots), Blue Bird.

In the medium range of annual border plants come the **Asters.** (We keep in the mind the ever-present danger of aster yellows disease). A few of the many varieties are: Queen of the Market, Powderpuff, Waldersee, Unicum.

Nicotine, Crimson Bedder.

Mirabilis (Four o'clock), mixed.

In the taller class are most of the **Nicotines.** Silvestris takes prominence, growing up to 6 feet, white bloom. Next are Affinis and Affinis Scarlet, Sanderae hybrids.

Some species which make a better show if sown straight into the ground: Amaranthus group, celosia, larkspur, cornflower, godetia, nasturtium, eschscholtzia (California Poppy), statice sinnuata, and strawflowers (Helichrysum). The last two give us material for dried bouquets.

In closing I shall not forget the darling of many, Sweet Peas. Here again there are many varieties.

As an afterthought, not only are these annuals a source of cut flowers during the summer season but they provide specimens for entering exhibits in the garden shows.

GERMINATION. Seeds of phlox, salvia and verbena germinate irregularly. A few seeds will germinate and the rest may lie dormant for 3 or 4 weeks. To speed germination, place the seeded pots or flats alternately in a warm room (80°F.) and a cool one (50°F.) for 2-day periods until germination is complete. *R. W. Oliver.*

Miniature Roses

by **MRS. W. H. DOWLING, Calgary Garden Club, Calgary, Alta.**

Miniature roses are charming little replicas of Hybrid Tea and Floribundas having perfectly formed buds about the size of a grain of wheat, opening to a size not much larger than a quarter, and bloom continuously on plants from 4 to 14 inches tall. The foliage, stems and thorns are like the standard rose plants except are smaller and more delicate, but they are also very hardy and winter well here in Calgary. Some specimens have quite a lot of perfume.

After you have once grown a few miniature roses you will like them so much you will watch the magazines and catalogs for new varieties.

Miniature roses may be used in Rock gardens, or for edging, also they can be grown in pots for patios, greenhouses and in the living-room. They may be obtained by mail throughout the year. In winter they would come as dormant bushes without foliage. For planting use a mixture of equal parts loam, leaf mold, sand, and well-rotted cow manure. Bulb type pots, 5″ to 7″, are adequate for these small bushes. Plastic pots are preferable as they do not dry out as quickly as clay.

Place them in a sunny window to encourage growth. They need all the sunshine possible during winter. If you do not have a sunny window you may grow them under fluorescent lights, using a standard commercial unit with 13″ or 15″ reflector and two or three 40-watt daylight or Gro-Lux tubes. Suspend the light 7″ to 12″ above the plant. As the plant grows and after a few weeks of blooming you will have to either lower the plant or raise the lights as the buds will be reaching into the lights. It would be preferable to cut the whole plant back to 3″ from the soil. Then it will make a quick come-back of new growth and buds.

Roses will do well in the ideal moisture range, which is 50 per cent humidity, and 70°F. temperature. One could provide them with more humidity by placing them on a tray of moist coarse sand, pebbles, Perlite, or peat moss. Keep the plants moist but not too wet and feed every 2 weeks with a soluble house plant fertilizer, or use according to directions on the container.

Spider mites infest miniature roses grown under all conditions and are most damaging as they sometimes reduce the plant to bare stems almost before you are aware of their presence, especially if grown in high temperature with low humidity. To help prevent this condition spray weekly with Black leaf 40, or use an aerosol spray which contains Captan, Karathane, and Lindane. This provides a fungicide-insecticide. Be sure to follow directions printed on the can and very sure to hold it at least 18″ from the plant.

If you have been growing them in pots outside during summer and wish to bring them inside, you must leave them outdoors in a sheltered spot to rest until about the end of December. Then bring them in, clean up, cut down to 3″, disinfect, then fertilize and place in a sunny window.

I like to get mine in the spring, grow them in pots, enter them in the Horticultural Show, and then plant them outdoors. But either way you desire, these romantic little plants will give you much satisfaction.

Sweet Peas

by **CHARLES YOUNG, Calgary Garden Club, Calgary, Alta.**

Sweet peas are one of the ten most popular flowers grown in this country. They are very free flowering, having from one new stem in bloom every day on cordon-grown plants to half a dozen or more on naturally grown plants, and their perfume is loved by all. They are easily grown, not being too fussy as to soil or location, but they do respond to good treatment.

Sweet peas do best in a sunny, airy location. Any reasonably good garden soil will do but preferably it should be deeply cultivated and well drained.

There are several varieties of sweet peas and a complete range of colors except for yellow and some restriction in the range of blue. The old standard variety, Spencer, is still the best as far as this area is concerned although the Cuthbertson, Zvolanek, and Burpee's Galaxy are worth a try. These do well in very hot areas and generally have more flowers per stem, up to 7 or 8 in some cases, but rarely will all be open at the same time. The Spencers have 3, 4, or 5, depending on the particular variety and method of growth, but they will all be open at one time. There are also two dwarf varieties, the Little Sweethearts, eight inches tall, and Colour Carpet twelve inches tall, which require no supports.

Sweet peas may be sown indoors or outdoors about the first of May. They prefer a little heat while germinating so do not sow the seed outside during a cold spell or when the ground is cold. If planted indoors, sow the seed about half an inch deep, preferably in individual pots or plant bands. The soil mixture I prefer is three parts good loam, one part peat moss, and one part sharp sand, with the addition of one teaspoon of superphosphate to a quart of soil. Some of the softer skinned seeds — usually the white or light colored ones — rot rather easily if too damp or cold and so I prefer to place the seed itself in a little sand. With this care, germination should be over 90 per cent except for most American varieties where 80 per cent is all that can be expected.

As soon as the seed has come through the soil, which should be from four to ten days, the plants should be placed in a cooler location. Otherwise they will grow weak and spindly. Do not over-water and do not fertilize until planted out. Anytime after the middle of May they may be put out in the garden in well prepared soil, preferably with the rows north and south in full sun and with some protection from the winds to the north and northwest.

If they are to be grown to a single stem (cordon system), they should be put six to eight inches apart and given support at once. When allowed to grow naturally they may be spaced three to twelve inches apart. After they have started to grow feed moderately at intervals of 10 to 15 days but never during cold, rainy weather. When they start to bloom keep the flowers picked off and **never** allow any to go to seed and you will have flowers all summer until the frost kills them.

If they are to be grown for exhibition, they should be grown to a single stem. After the plant has become established the strongest shoot should be selected and allowed to grow. All others are cut off. As it continues to grow all side shoots and tendrils should be picked off as soon as they appear to allow all the strength to go into the main stem. The stem should be tied to the supports regularly. This method will give you few but vastly superior blooms.

Mrs. Arthur Gunter, Silver Park, Sask., has made a considerable success of growing gloxinias. Correspondence solicited.

DECIDUOUS SHRUBS FOR THE PRAIRIES

By Dick Patmore, Patmore Nurseries Limited, Brandon, Man., in collaboration with D. B. McNeill, B.S.A., Skinner's Nursery Limited, Dropmore, Man.

Common Name (*Botanical Name*)	Foliage	Growth rate	Adaptation	Maximum spread in feet	Maximum height in feet	Hardiness	Comments
Amur Maple (*Acer ginnala*)	Medium, deeply lobed	Moderate	Sun, semi-shade	8 - 10	15 - 20	Fully hardy	This has been considered a dwarf tree, and can be used as a tree if pruned to a single stem. Foliage colors beautifully in the fall to shades of red, crimson and yellow.
Indigo Bush (*Amorpha fruticosa*)	Small, rounded	Slow	Sun, semi-shade	5 - 6	3 - 4	Fully hardy	Attractive foliage. Purple flower spikes in early summer. Will grow in hot dry locations.
Korean Barberry (*Barberis koreana*)	Small, rounded	Slow	Sun, semi-shade	4 - 5	4 - 6	Fully hardy	An attractive shrub, coloring brilliantly in the fall. Carries long, sharp thorns. Suckers moderately but is easily controlled. Produces crimson berry clusters. Varies considerably in form when grown from seed. The only barberry that is hardy on the prairies.
Butterfly Bush (*Buddleia farreri var crispa*)	Long, greyish-green	Fast	Sun	2 - 3	2 - 3	Root hardy	Mauve, lilaclike flowers in August and September. Kills back to ground in winter. In 3 winters tested at Dropmore has recovered quickly and bloomed profusely. Requires a good snow covering.
Common Caragana (*Caragana arborescens*)	Small, rounded	Moderate	Sun, semi-shade	6 - 8	10 - 15	Fully hardy	The well known common Caragana widely used as a hedge plant and low windbreak shrub. Well adapted to the prairies. Will grow under very adverse conditions. Heavy seeding and spreading habit objectionable. Sutherland selection is upright form.
Weeping Caragana (*C. arb. pendula*)	Small, rounded	Slow	Sun, shade	2 - 3	5 - 6	Fully hardy	This variety with foliage resembling the common Caragana, grows persistently downward, and it must therefore be grafted on a 4-6 foot stem from which it cascades to the ground.
Tidy Caragana (*C. micriphylla tidy*)	Small, oblong	Moderate	Sun, shade	2 - 3	5 - 6	Fully hardy	Small, oblong leaves give it a distinctive appearance. Branches out thickly from the main stem, creating a vaselike appearance. A Morden introduction.
Shortleaf Caragana (*C. brevifolia*)	Very small, rounded	Slow	Sun, semi-shade	3 - 4	3 - 4	Fully hardy	One of the best dwarf Caraganas. Holds its foliage. Difficult to propagate, at present unobtainable.

DECIDUOUS SHRUBS FOR THE PRAIRIES

Common Name (*Botanical Name*)	Foliage	Growth rate	Adaptation	Maximum spread in feet	Maximum height in feet	Hardiness	Comments
Globe Caragana (*C. frutex globosa*)	Small, rounded	Very slow	Sun, semi-shade	2	2 - 3	Fully hardy	One of the best dwarf shrubs we have. Develops a formal, compact globe form, thickly foliaged with dark green leaves which it holds into late fall. The best dwarf hedge plant.
Fern-Leafed Caragana (*C. lorbergi*)	Fernlike, light green	Fast	Sun, semi-shade	4 - 5	8 - 10	Fully hardy	Pendulous branching adds to the attractiveness of this shrub with its light green, fernlike foliage, contrasting well with other shrubs. Retains its form better when pruned and kept within bounds. Sometimes grafted on 4 to 5 foot stems for use as a standard.
Pygmy Caragana (*C. pygmaea*)	Short spiny needles	Slow	Sun, semi-shade	3 - 4	3 - 4	Fully hardy	An excellent dwarf hedge plant, dense and bushy. Also useful for base planting. Deep golden flowers in June.
Cotoneaster	Small, oval	Moderate	Sun, semi-shade	4 - 5	6 - 7	Fully hardy	Most commonly used of these is the Peking cotoneaster, *C. acutifolia*. Extensively used as a hedge plant. Glossy green summer foliage, black shiny berries, and beautiful yellow and red fall foliage make it a desirable specimen plant. Other species include *C. integerrima* with red berries and duller foliage, and *C. melanocarpa*.
Dogwood (*Cornus*)	Broad, lancelike	Moderate	Sun, semi-shade	3 - 4	4 - 6	Fully hardy	Two species, *C. stolonifera*, the native dogwood, and *C. sibirica* are quite hardy. Both are used for their colorful red bark. They have white flowers in spring with white berry clusters in the fall. Two variegated-leaved varieties, *elegantissima*, white and green, and *gouchalti*, yellow and green, are planted in parts of the prairies. They seem adapted in some areas, not in others where they are subject to scalding and winter-killing. They are smaller-growing than the two hardy species.
Toba Hawthorn (*Crataegus Toba*)	Medium size, deeply cut	Moderate	Sun	5 - 6	5 - 6	Slightly tender	A fine shrub with large flower clusters, opening white and turning to deep pink. Clusters of vivid red berries in fall.

DECIDUOUS SHRUBS FOR THE PRAIRIES

Common Name (*Botanical Name*)	Foliage	Growth rate	Adaptation	Maximum spread in feet	Maximum height in feet	Hardiness	Comments
Hawthorn (*Crataegus*) in variety	Medium size, lobed	Moderate	Sun	5 - 6	7 - 10	Fully hardy	Two native species, *C. succulenta* and *C. sanguinea*, are well adapted. They produce white flowers in spring and red fruit clusters in fall. *C. chlorosarca* and *C. eerythropoda* have dark, glossy, fruit clusters. This latter species makes a good clipped hedge. All hawthorn (including Toba) are alternate hosts of juniper rust and should not be grown near the blue *Juniper scopulorum* varieties. Green juniper of the sabina type are not affected.
Cytisus In variety	Small, rounded	Moderate	Sun	2	1 - 2	Hardy	Pealike flower in June. Varies from yellow to purple and white depending on variety. *C. purpurea* and *C. purpurea alba* do better with a good snow covering.
Rose Daphne (*Daphne cneorum*)	Narrow, evergreen	Slow	Sun	1	1	Hardy	Covers with pink flowers in June, recurrent bloom in August. Requires good snow cover.
Russianolive (*Eleagnus angustifolia*)	Grey, lancelike	Moderate	Sun, semi-shade	8	12 - 15	Hardy	A silvery-foliaged shrub useful for contrast. Appears to be quite hardy although occasionally has suffered winter injury, possible due to drought rather than low temperatures.
Silverberry (*Eleagnus commutata*)	Silvery, oval and curled	Slow	Sun	3	3 - 4	Fully hardy	One of our most attractive shrubs with a leathery silver foliage. Has a strong sweet scent when in flower. If this shrub did not sucker so vigorously it probably would be one of our most widely planted shrubs. Suckering can be controlled by placing a barrier around the roots, such as a section of 3- or 4-foot steel well cribbing.
Winged Euonymus (*Euonymus alatus compactus*)	Small, lobed	Very slow	Sun, semi-shade	2 - 3	3	Hardy	Foliage turns flame-scarlet in autumn in long-season areas. On the prairies frosts kill the foliage before it changes color. Winter of 1962/63, unusually severe, killed the roots on many of these in Manitoba.
Dwarf Euonymus (*Euonymus nanus*)	Narrow, needlelike	Slow	Sun, semi-shade	2 - 3	1½	Hardy in most areas	Usually considered an evergreen as foliage persists over winter. Seed pods are pink and attractive as they open to reveal the scarlet seed. Makes a good ground cover under trees.

DECIDUOUS SHRUBS FOR THE PRAIRIES

Common Name (*Botanical Name*)	Foliage	Growth rate	Adaptation	Maximum spread in feet	Maximum height in feet	Hardiness	Comments
Turkestan Euonymus (*Euonymus nanus turkestanicus*)	Similar to above	Slow	Sun, semi-shade	2 - 3	2	Hardy in most areas	Similar to dwarf, but taller and more upright.
Korean Golden-Bells (*Forsythia ovata*)	Small, narrow	Moderate	Sun, semi-shade	3 - 4	3 - 5	Hardy below snowline	On the prairies it sometimes kills back to the snowline. The surviving lower portion is covered with striking yellow flowers in early spring before leaves appear. Always plant where snow will drift deeply.
Genista In variety	Small, rounded	Moderate	Sun	1 - 2	1 - 2	Hardy	Bright yellow pealike flowers in June *Genista lydia* and *Genista sagittalis* are particularly fine types.
Siberian Salttree (*Halimodendron argenteum*)	Greyish-green, small, round	Slow	Sun, semi-shade	4 - 5	4 - 6	Fully hardy	A very desirable shrub which can easily be kept in bounds. Covered with pink pealike flowers in early July. Branches are spiney. A purple-leaved form also exists. Must be grafted on Caragana roots.
Russian Sandthorn (*Hippophae rhamnoides*)	Silvery-grey, lancelike	Slow	Sun, semi-shade	5 - 6	6 - 8	Fully hardy	Excellent contrast for the shrub border, with its silvery foliage. Branches usually loaded with large, bright orange berries in the fall and winter. Suckers moderately, but can be controlled.
Hydrangea (*Arvorescens Grandiflora*) (*Paniculata Grandiflora*)	Large	Slow	Sun	2 - 3	3 - 4	Tender	Attempts to grow these on the prairies have not been too successful. These plants require an acid soil and lots of water. They will normally kill back very severely, but can be worthy of trial where acid conditions and winter protection are provided.
Dwarf Honeysuckle (*Lonicera*) In dwarf varieties	Small	Slow	Sun, semi-shade	2 - 3	4 - 5	Fully hardy	Three varieties, Sweetberry, Bearberry and Clavey's Dwarf, are suitable for prairie culture. They are excellent low-growing shrubs for base planting, and they are very effective also as hedge plants.
Tall Honeysuckle (*Lonicera*) In tall varieties	Medium	Moderate	Sun, semi-shade	6 - 8	10 - 15	Fully hardy	Vigorous-growing, tall shrubs, spectacular when in flower. They grow too large to be useful near a house, but are effective in the shrub border or background plantings. Flowers range in color from white to pink and deep red. Zabeli is excellent. Arnold's Red is the darkest-flowering.

DECIDUOUS SHRUBS FOR THE PRAIRIES

Common Name (*Botanical Name*)	Foliage	Growth rate	Adaptation	Maximum spread in feet	Maximum height in feet	Hardiness	Comments
Mockorange (*Philadelphus*) In variety	Dull green, Medium size	Moderate	Sun	3 - 4	4 - 5	Vary	Some varieties are hardy, such as *Lewisii waterton*, with single white flowers. Double-flowering varieties such as Virginal are subject to frequent winter injury. They flower in early July with white flowers resembling orange blossom. Some varieties are very fragrant.
Goldleaf Ninebark (*Physocarpus opulifolius luteus*)	Large, lobed	Moderate	Sun, semi-shade	5 - 6	6 - 7	Fully hardy	A golden-leaved shrub, useful for contrast. A green-leaved variety is less used.
Potentilla fruticosa	Small, green or greyish-green with 5 finger lobes	Slow	Sun, semi-shade	2 - 3 depending on variety	2 - 4 depending on variety	Fully hardy	Several varieties include the dwarf *P. fruticosa farreri*, and taller varieties such as Moonlight. They flower over a long period from July until September. Obtainable in varying shades of yellow and some white. Do well in hot, dry locations.
Cherry Prinsepia (*Princepia sinensis*)	Long, lance-like, light green	Slow	Sun, semi-shade	4 - 5	6 - 8	Fully hardy	Arching branches give this shrub a unique appearance. It is excellent as a hedge plant. Studded with thorns which discourage animal intrusion. Fruit is useful for jelly.
Shubert Cherry (*Prunus virginiana Shubert*)	Large	Moderate	Sun, semi-shade	5 - 6	6 - 8	Fully hardy	An excellent contrast shrub. Leaves open up green, but turn a deep purple as they age. Usually grafted on the bird cherry, and green shoots from the base should be removed cleanly if they appear.
Amur Cherry and May Day Tree (*Prunus Maccki* and *Prunus padus commutata*)	Large	Moderately fast	Sun, semi-shade	8 - 10	25 - 30	Fully hardy	These two large ornamentals of the plum family are very similar and probably would be better classified as trees. Both have white flowers in spring, and those of the May Day tree are spectacular. An outstanding feature of the Amur cherry is its lustrous brown bark, which gives a distinctive appearance to the mature trunk.

DECIDUOUS SHRUBS FOR THE PRAIRIES

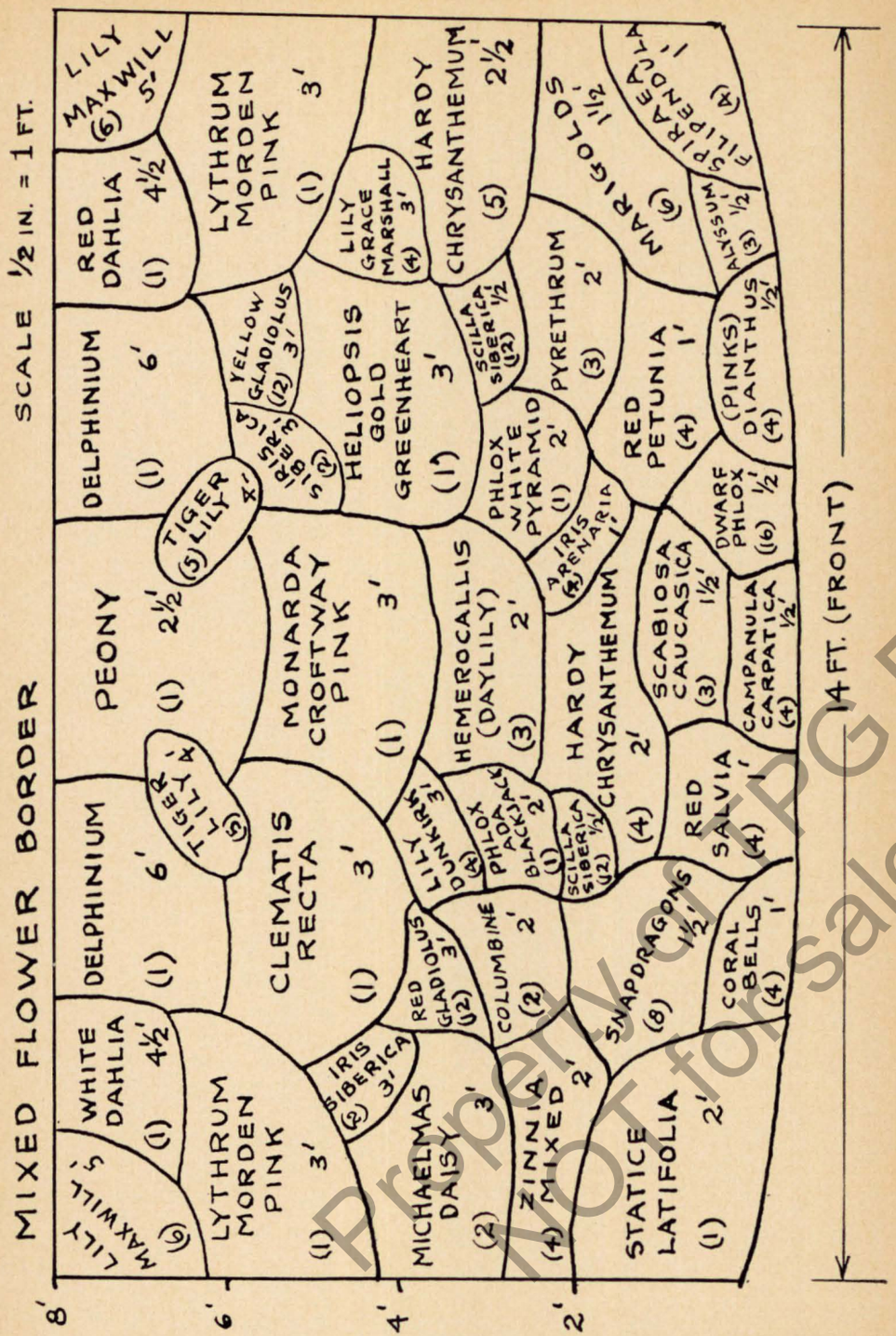
Common Name (*Botanical Name*)	Foliage	Growth rate	Adaptation	Maximum spread in feet	Maximum height in feet	Hardiness	Comments
Flowering and Ornamental Plums (*Prunus triloba, Prunus cistena,*) etc.	Small	Moderate	Sun, semi-shade	5 - 6	6 - 7	Hardy and half-hardy	A number of these ornamental plums are grown on the prairies. Best known is the Double-Flowering plum, *Prunus triloba fl. pl.* The purple-leaved *Prunus cistena* kills back almost every winter.
Smooth Sumac (*Rhus glabra*)	Large, compound	Moderate	Sun, semi-shade	3 - 4	4 - 5	Fully hardy	The most colorful of fall shrubs, as leaves turn to brilliant shades of red. This shrub suckers badly but can be controlled by placing a barrier around the roots such as a section of steel well cribbing.
Siberian Currant (*Ribes diacanthum*)	Small, lobed	Moderate	Sun, semi-shade	2 - 3	3 - 4	Fully hardy	This species makes an attractive shrub for hedging or group planting. Unlike the ordinary Alpine currant it holds its leaves well into the fall.
Shrub Roses (*Rosa*)	Small, compound	Moderate	Sun	3 - 4	3 - 4	Hardy	These include a large group with *Rosa blanda* hybrids, *Rosa laxa* hybrids and *Rosa rugosa* hybrids forming the large part. In addition there are miscellaneous species such as Persian Yellow and such hybrids as Prairie Dawn, with Tea rose blood. Many including Hansa and Prairie Dawn flower recurrently during the summer; others, such as Persian Yellow, flower in late June.
Dwarf Arctic Willow (*Salix purpurea nana*)	Long, lance-like, greyish-green	Fast	Sun, semi-shade	2 - 3	2 - 3	Root hardy	This dwarf willow is used sometimes as a hedge. Tops kill back during winter but new growth quickly replaces them.
Buffaloberry (*Shepherdia argentea*)	Grey-green small	Moderate	Sun, semi-shade	5 - 6	8 - 10	Fully hardy	Foliage useful for contrast. Carries masses of red fruit in fall. Thorns develop on the branches. Suckers moderately, but can be controlled.
Elder, Red-berried (*Sambucus racemosa*)	Large, lobed	Fast	Sun, semi-shade	5 - 6	6 - 8	Fully hardy	Specimens of this species grown from seed usually are rather coarse in appearance. However, there are two selections, which are propagated vegetatively, and these are excellent ornamentals. The cut-leafed Redman elder, originating at the Morden Experimental Farm, is one, and the golden leafed *Plumosa aurea* is the other. These usually produce white flower balls in spring followed by grapelike clusters of small red berries in the fall.

DECIDUOUS SHRUBS FOR THE PRAIRIES

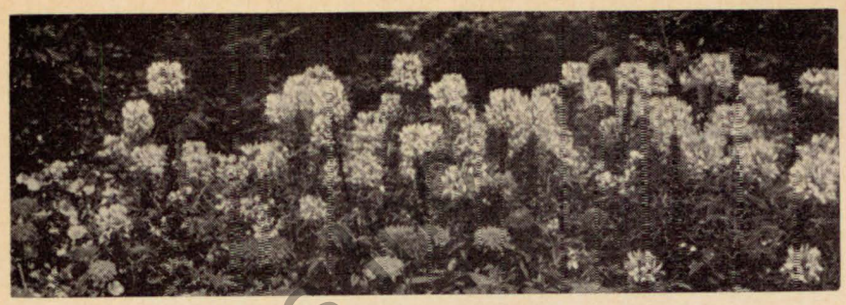
Common Name (*Botanical Name*)	Foliage	Growth rate	Adaptation	Maximum spread in feet	Maximum height in feet	Hardiness	Comments
Sorbifolia (False) Spirea (*Sorbaria*)	Large, pinnate	Moderate	Sun	3 - 4	5 - 6	Fully hardy	Sometimes called a spirea although it is not one of this family. Very ornamental foliage and attractive large, white flower plumes. Suckers moderately.
Spireas (in variety)	Varies with each variety	Moderate	Sun	2 - 4	2 - 6	Mostly hardy	Oriental (*Media sericea*) Pikov, Snowwhite, Korean, and Density grow to around 4 feet, Korean somewhat taller. Trilobata grows to around 4 feet and is widely popular. The pink varieties Anthony Waterer and Froebelli tend to kill back severly every winter. They prefer acid soil. Billiardii has large pink spiked blooms and is considered semi-hardy. Summersnow, Snowwhite, Korean and Density probably are the most satisfactory of the spireas.
Tree Lilac (*Syringa amurensis, S. amurensis japonica*)	Large, oblong, pointed	Moderate	Sun, semi-shade	8 - 10	15 - 20	Fully hardy	A treelike, non-suckering lilac with white flowers in early July. Some have flowered in September. An excellent small tree which has been used successfully as boulevard material.
Dilitata Lilac (*Syringa dilitata*)	Large, similar to common Lilac	Moderate	Sun, semi-shade	5 - 6	6 - 7	Fully hardy	The United States Department of Agriculture selection is one of the best we have seen of this species; it must be grafted. Flowers are mauve, single and insignificant, but foliage is outstanding, thick and lustrous, turning to deep green or purple in the fall.
American Hybrid Lilacs (*Syringa dilitata oblata hybrids*)	Similar to common Lilac	Moderate	Sun, semi-shade	6 - 8	6 - 8	Fully hardy	Wide range of colors from white to deep purple. Superior to French hybrids in that they are relatively free of suckers and flowers are produced from the ground up. Asessippi, Sister Justina and Pocohontas are some of the best. Foliage of many colors to deep purple in the fall. Lilacs do not like wet feet and should be in well drained locations.
Lilac, Villosa Hybrids (*Syringa villosa x reflexa*)	Large, oblong, pointed at base and apex	Moderate	Sun, semi-shade	6 - 8	10 - 12	Fully hardy	This is a non-suckering lilac. Leaves differ in appearance from the common lilac. Flower panicles usually are larger and range in color from light pink, through red to purple. Flowers in late June after other lilacs are past.

DECIDUOUS SHRUBS FOR THE PRAIRIES

Common Name (*Botanical Name*)	Foliage	Growth rate	Adaptation	Maximum spread in feet	Maximum height in feet	Hardiness	Comments
Lilac, French Hybrids (*Syringa vulgaris*)	Large, ovoid, pointed	Moderate	Sun, semi-shade	6 - 8	8 - 10	Hardy	Must be propagated vegetatively to ensure coming true to color and form. They range in color from white, through pink, blue and red to deep purple with both single- and double-flowering. They sucker but can be easily controlled.
Tamarisk (*Tamarix pentandra*)	Greyish-green, fernlike	Fast	Sun	2 - 3	4 - 5	Root hardy	Kills back to ground level in winter, but grows rapidly during summer producing large plumes of light pink flowers. A red-flowering form *T. pentandra rubra* is also available.
Arrowwood (*Viburnum dentatum*)	Lobed	Slow	Sun, semi-shade	3	3	Hardy	A semi-dwarf shrub which seems adapted to the prairies. Dark, glossy green foliage and white flowers in spring.
Wayfaring Tree (*Viburnum lantana*)	Large, greyish-green	Slow	Sun, semi-shade	2 - 3	3 - 4	Borderline	The texture and color of the leaves of this shrub are unique and make it useful for contrast. Suckers moderately but this can be controlled. Seems hardy in some areas, kill back occasionally in others.
Nannyberry (*Viburnum lentago*)	Large, ovoid	Moderate	Sun, and shade	4 - 5	7 - 9	Fully hardy	This is an attractive native shrub. Large leaves color well in the fall. Produces white flowers in spring with clusters of dark purple fruit in the fall.
Snowball (*Viburnum opulus roseum*)	Large, lobed	Moderate	Sun	2 - 3	4 - 5	Tender	This shrub does well in some localities when planted in a sheltered location or in the close shelter of a house; otherwise it is subject to considerable winter-killing. A desirable shrub where it can be grown Masses of ball-shaped, white flowers in late June.
Downy Arrowwood (*Viburnum pubescens*)	Large, oval	Moderate	Sun, semi-shade	5 - 6	6 - 8	Hardy	An excellent shrub for fall color. Clusters of black fruit persist well into the winter and are much esteemed by waxwings and grosbeaks. Suckers slightly, but easily controlled.
Highbush Cranberry (*Viburnum trilobum*)	Large, lobed	Moderate	Sun, shade	3 - 4	5 - 6	Fully hardy	A very ornamental native shrub that does not easily become overgrown. Foliage is very attractive, and it produces white flowers in large flat racemes in spring, followed by red berry clusters in the fall. A dwarf form of the European species, *V. opulus* is available, which appears to do well in some areas.



This is the most satisfying of flower borders. The plan includes Scillas which open the season in April or earliest May and Michaelmas Daisies which may be gay until the end of October. The inclusion of masses of annual flowers assures a bountiful array of bright flowers during the height of summer. To be impressive and satisfying a mixed border should be at least six feet wide. Eight to twelve feet is desirable.—Hector Macdonald, F.R.H.S., Supervisor, Assiniboine Park, Winnipeg, Man.



The Spider Flower

If you have a large garden plot and are looking for a showy annual that will give you striking accents from mid-July until freeze-up, the spider flower, or *Cleome spinosa*, is easily grown from seed started indoors and transplanted when danger from frost is past.

The seeds are started indoors or in the greenhouse during March in vermiculite or ordinary seed compost; if they are sown in the former they should be transferred to seed compost as soon as the young plants are established. The first transplant should be into 3-inch clay pots or peat pots when the young plants are about an inch high and within a few weeks they will need transferring to 5-inch pots. Towards the end of May they should be hardened off in preparation for final transplanting in small groups when danger of late frosts is past. Spacing 4 feet apart will give them plenty of room for growth.

Spider flower is conspicuous in the herbaceous border when it starts to send out its spikes of many rose pink flowers in July. These cluster around a central stem, with many purple stamens growing out in all directions and adding circumference to the stem. The stamens on a good plant often will be 3 to 4 inches long and it is when they are fully extended that the plant's popular name becomes appreciated.

As the lower flowers wither, fresh ones grow out of the centre to take their place and leave behind long, narrow seed pods. The plant starts to bloom when about 2 feet high, but by the time that it has finished flowering the spike may be 3 feet high or more. With plenty of room, as suggested in an earlier paragraph, the plant will produce several side shoots and an abundance of flowers. It is remarkably free from insect pests and diseases.

Information, Please

Gardeners do well to build up a reference shelf of books and bulletins. Our governments and universities prepare bulletins and circulars for public distribution. In most cases they are supplied free of cost upon request. The current lists are:

INFORMATION DIVISION, Canada Department of Agriculture, Ottawa, Ont.

Pub. 796—Annual Flowers for Canadian Gardens; 32 pages.
899—Hedges for Canadian Gardens; 23 pages.
908—Garden Rose Growing; 23 pages.
959—Planning Farm Home Grounds; 12 pages.
968—Herbaceous Perennials for Canadian Gardens, Descriptive Notes; 37 pages.
970—Growing Herbaceous Perennials; 24 pages.
994—Ornamental Trees for Canadian Gardens; 30 pages.
995—Trees for Ornamental Planting; 32 pages.
996—Flowering Bulbs for Canadian Gardens; 32 pages.
1011—Ornamental Shrubs for Canadian Gardens; 32 pages.
1016—Living with House Plants; 88 pages; sold by the Queen's Printer, Ottawa, Ont., for one dollar.
1033—Growing Vegetables in the Prairie Garden; 23 pages.
1070—Vegetable Gardening Practices for the Prairie Provinces; 18 pages.
1163—Lawns; 6 pages.
1168—Transplanting Trees and Shrubs; 3 pages.
1182—Planning Your Garden; 42 pages; written by R. Warren Oliver (retired) and replacing Publication 795 written in 1947, revised in 1957, and now revised and enlarged in 1963. Obtained from the Queen's Printer, Ottawa, at the price of $1.00.

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PUBLICATIONS BRANCH, Manitoba Department of Agriculture and Conservation, Norquay Building, Winnipeg 1, Man.

Pub. 233—Lawns, Their Preparation and Care; 8 pages.
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357—Landscape Your Grounds for Better Living; 16 pages.
INDEX of The Prairie Garden annuals, 1946-1962.

The Prairie Garden: All back issues are out of print with the exception of a limited number of the 1962 and 1963 publications. These are available at 50¢ each from 92 Queenston St., Winnipeg, Man. If you haven't ordered these books, suggest you send for them right away. You will then have a good start on a Prairie Garden "library."

The Gardener's Bulletin, quarterly bulletin of the Saskatchewan Horticultural Societies' Association, is published by the Extension Department, College of Agriculture, University of Saskatchewan, Saskatoon, Sask., and is edited by the Extension Horticulturist, D. R. Robinson. It carries articles on many garden subjects and is a valuable addition to our sparse horticultural literature in western Canada. Subscripition is 2 years for one dollar. Subscripitions are accepted from outside the province.

The Alberta Horticulturist, Box 273, Lacombe, Alta., is a counterpart of The Gardener's Bulletin in Saskatchewan. Published by the Alberta Horticultural Association since the beginning of 1962. The articles are on various subjects and the treatment meaty and of high order. Two years for one dollar. Four issues per year.

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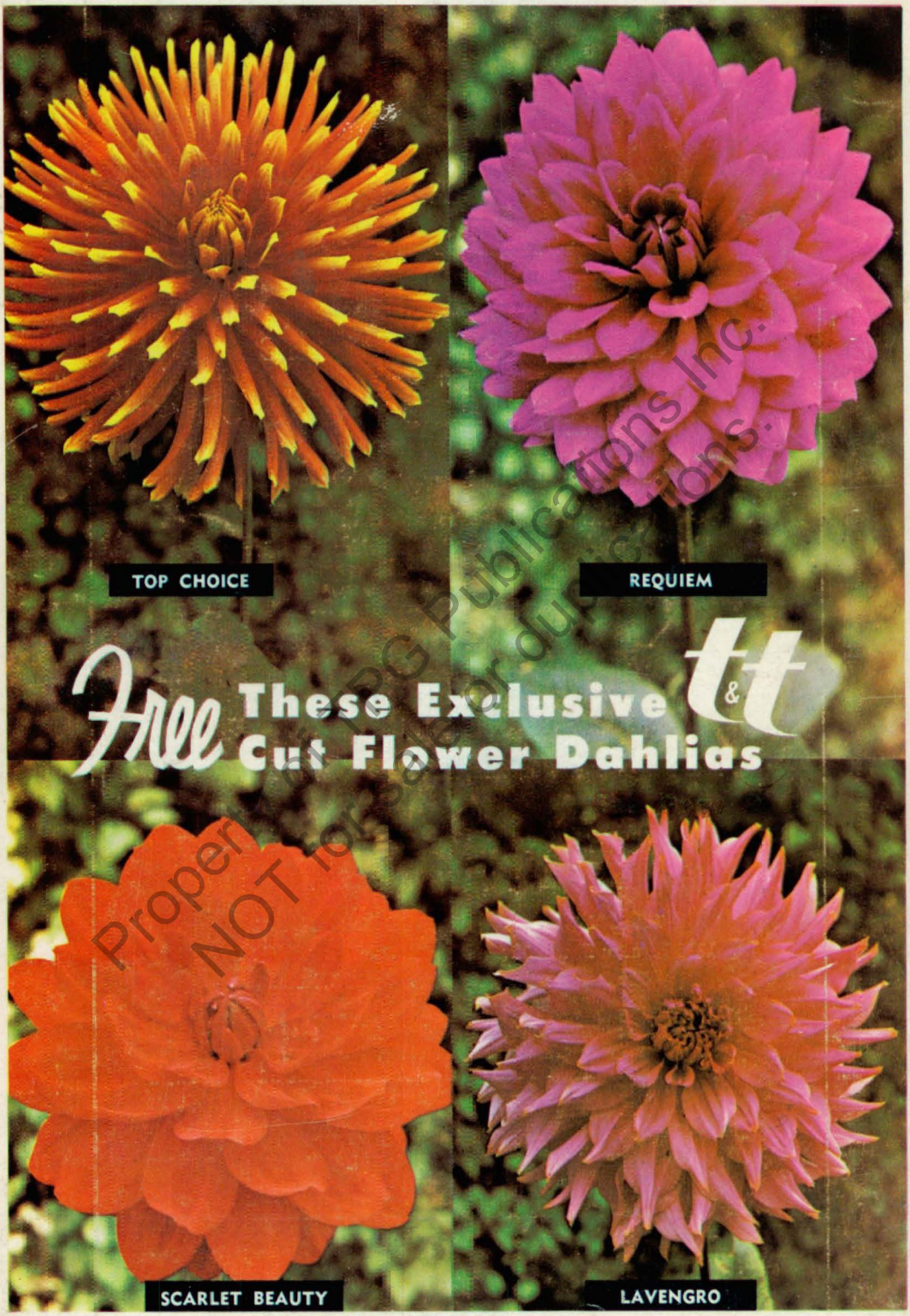

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