PRICE $1.00

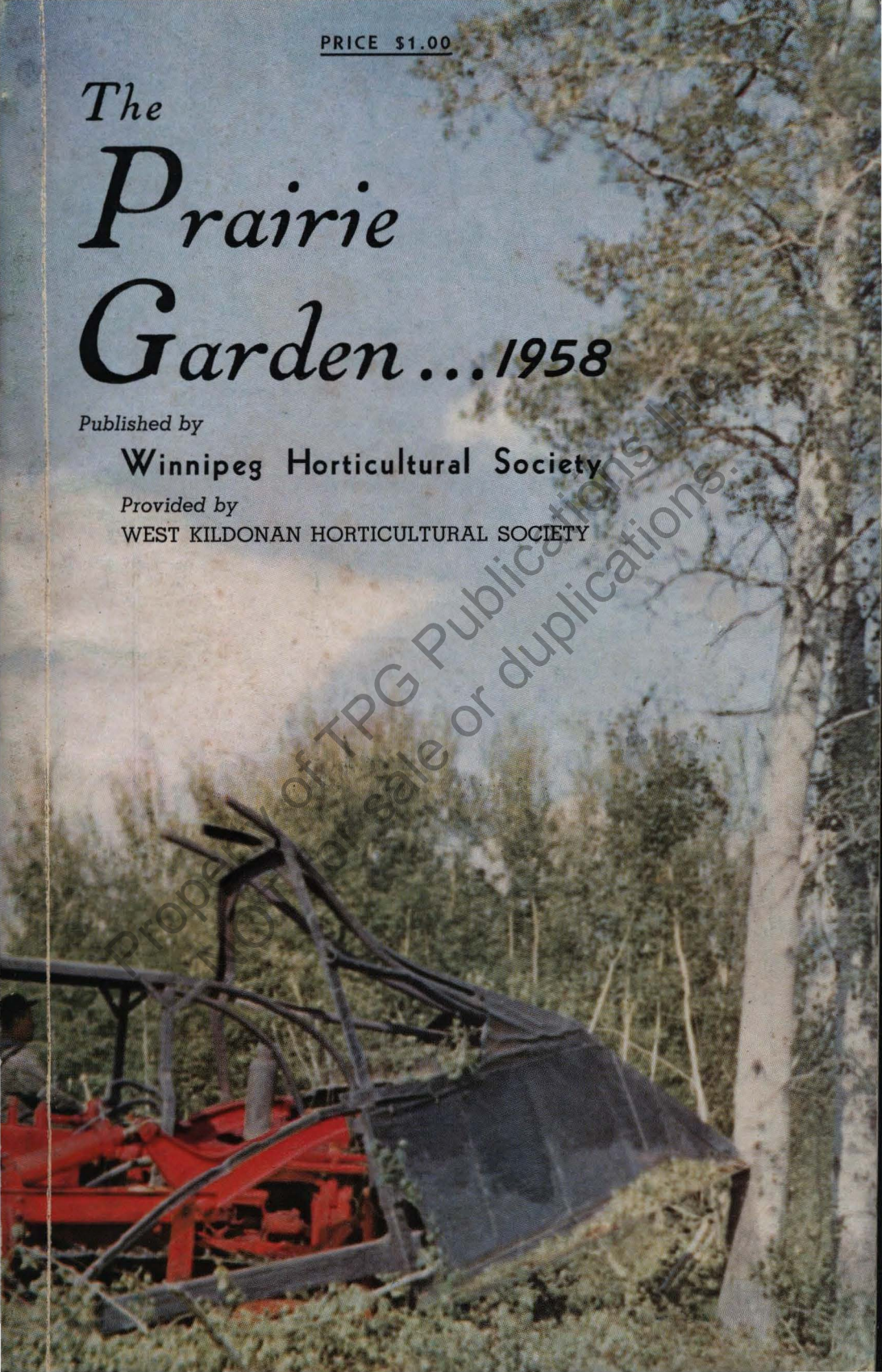
The Prairie Garden...1958

Published by

Winnipeg Horticultural Society

Provided by

WEST KILDONAN HORTICULTURAL SOCIETY



FOREWORD

F. C. W. Rice – President

Once again it is our privilege and pleasure to present "The Prairie Garden".

The reception accorded our publication is most gratifying and we pledge our efforts to a continuation of the high standard already achieved. In this regard we are indebted to our many contributors whose articles and helpful suggestions have made of our publication a real "handbook" for the "Prairie Gardeners". We are indebted again to Mr. A. R. Brown, C. B. C.'s Prairie Gardener, not only for his valuable assistance in publicizing our publication, but for his most interesting and informative broadcasts each Sunday morning throughout the year.

To our advertisers, without whose help we would be unable to bring this publication to you, we say a sincere "Thank You". Please remember them and let them know you saw their ad in "The Prairie Garden."

On behalf of our Society, we wish you good gardening in 1958.

My Neighbor's Rose

The roses red upon my neighbors vine
Are owned by him, but they are also mine.
His was the cost, and his the labor, too,
But mine as well as his the joy, their loveliness to view.

They bloom for me and are for me as fair
As for the man who gives them all his care.
Thus I am rich, because a good man grew
A rose clad vine for all his neighbors' view.

I know from this that others plant for me,
And what they own, my joy may also be,
So why be selfish, when so much that's fine
Is grown for you, upon your neighbor's vine.

Abraham L. GRUBER

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Green Grows My Garden

by A. R. BROWN
CBC's Prairie Gardener

The gardener who plants a tree or a shrub is doing something that stamps him as a superior citizen, one who is putting his own roots into the soil along with those of the tree he plants. He is planning for the future and planting for permanence. He is serving notice that he wants to share with his neighbors the responsibility of building a more attractive community.

★ ★ ★ ★ ★

Next year's gardens don't always live up to the dreams we have of them. But it is good fun to dream and plan and hope, and it is very important that we should, for dreaming brings objectives into focus, lights up the road ahead, and gives direction to our planning and enthusiasm for the work that must be done.

★ ★ ★ ★ ★

In the prairie region Nature has provided us with remarkably rich and productive soils. Gardeners have a great responsibility to care for these soils with a full sense of the trusteeship involved. The foundation of gardening success now and in the future rests on our skill and understanding in managing these soils. It's a privilege and a duty we shouldn't regard too lightly.

★ ★ ★ ★ ★

There are other values in hoeing other than the practical ones. I think it's a delightful form of exercise and that it does as much for health and peace of mind as any form of sport. I wouldn't suggest that everyone should substitute hoeing for golf, but for those who like it, wielding a hoe can be as much fun as swinging a golf club. It's pretty much a matter of getting the right viewpoint and then developing the necessary skills.

★ ★ ★ ★ ★

In a sadly troubled world it's sometimes difficult to acknowledge that "God's in his Heaven and all's right with the world," but all's right with the world as long as there are mothers to rear children in love not hate, in trust not deceit, in service not greed, and in fellowship not strife . . . mothers who teach their children to prize freedom and assume the duties of social responsibility.

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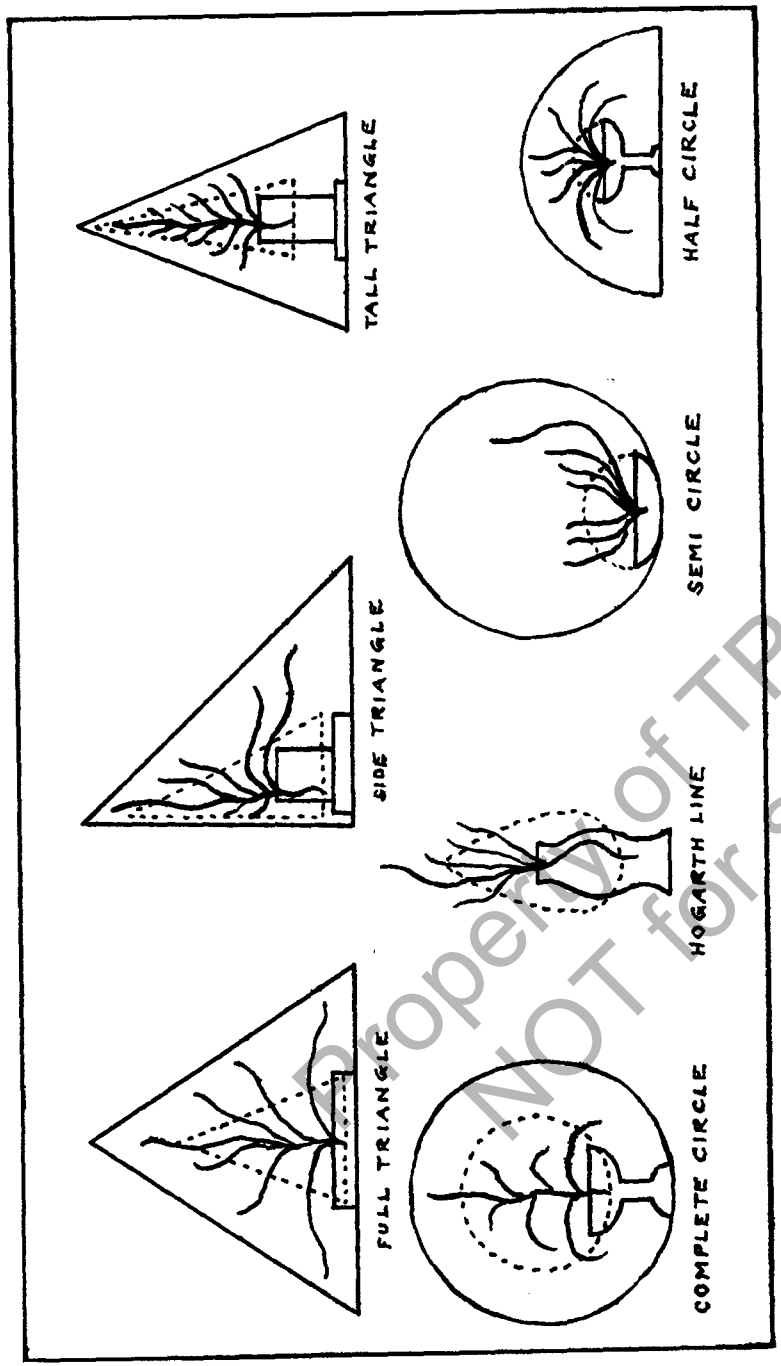
The joys and pleasures of gardening are increased many fold when shared with neighbours and friends.



THE SEVEN BASIC DESIGNS FOR FLOWER ARRANGEMENTS

Flower Arranging

by MRS. G. K. PETURSON
Fort Garry, Manitoba

Flower arranging is the displaying of flowers so that they look their best. A pleasantly arranged bouquet or an arrangement can play an important role in interior decoration today.

Not too long ago, flower arrangements more or less consisted of a dining room and a side board arrangement. However, this art has changed amazingly in a comparatively short time owing to our changed way of living. We travel, exchange ideas with foreign lands, and the structure and styles of our homes have changed. Furniture plays a big part here too.

How to make an interesting flower arrangement? In the overall picture we are creating beauty in material, simplicity of line and form. This is particularly true of the contemporary design. It is to preserve the best from the past and fit it in with today's living. The foresighted gardener and flower arranger often orders plants with the colors of the home background in mind, and what better way of using our blooms than to bring them into our house to enhance our different settings. For those who have older homes and non-modern furnishings it often becomes a challenge to get the right results.

A plan is a must in a design for a flower arrangement. Before flowers are cut or bought, as the case may be, thought should be given to where and how they are going to be used.

Flowers:

Garden grown flowers are particularly easy to arrange. Some are easier to arrange than others and I am thinking of the many types of spring bulb blooms and the later gladioli, dahlias and other summer flowering plants that are exciting to work with. Annuals are very good and for the most part lavish in flowering. Marigolds, zinnias, petunias, asters, snapdragons, calendulas and others are all pleasant to work with.

Flowering shrubs and branches are often used, especially in the spring to enhance and give a line to an arrangement.

Cutting and Conditioning of Flowers:

Garden flowers should be cut early in the morning or at night, and placed in water for several hours.

The ideal temperature for keeping cut flowers is 40 to 50 degrees. Some flowers like poppies and others last longer if stem ends are briefly charred or dipped into boiling water for not longer than one minute. Woody material like lilacs, etc., should be hammered from one to two inches at the cut end. This permits the flowers to take in water more easily.

Good conditioning will extend the time of pleasure you receive from your arrangement.

Foliage:

The foliage element has to be carefully used. For the main part foliage is used to establish a basic line or an accent. Foliage serves a real purpose, for instance, giving a relief to a mass or heavy arrangement of colorful flowers.

In the more modern arrangement, foliage can play a most important part and frequently form the main theme of the arrangement. Besides the florists' supply of foliage and the shrubs and bushes available, the modern arranger will also get from the vegetable garden such greens as asparagus, swiss chard, rhubarb, etc., to provide accent to an arrangement.

Conditioning of Foliage:

Like the flowers, foliage needs to be conditioned before it is used. Leaves and soft material such as vines and new shoots are best conditioned by placing them under water overnight.

Woody material should have stems slit several times and then plunged into deep cold water for several hours.

Containers and Accessories:

Containers need not be expensive. However, it is important that they should blend with and complement material used in the arrangement.

The old rule that roses could not be put into anything but silver or crystal does not hold good any more and some very fine examples have been shown using a variety of containers for an arrangement of roses.

A collection of containers is desirable, varying in sizes, shapes, texture and color. A rather low container is suitable for the dining room table, where the arrangement is kept low enough to see over it across the table.

The buffet (or sideboard) can be one sided, if desired, and your setting and imagination can give you a flower arrangement of style and beauty in a variety of containers.

Mechanical Aids:

Next in line to flowers and containers is the necessary equipment to put flower arrangements together. You need a sharp knife or a pair of clipers with a sharp cutting blade. The most popular holder is the needle point or pinpoint holder. These can be obtained now in various forms and shapes.

Other desirable material is plasticene and florists clay to anchor holders. Strips of plumbers lead are good for holding branches, and twistems and wire (chicken wire) are good for holding main lines of arrangements together.

A recent introduction in this field of work is the oasis sold in blocks which have to be soaked in water for several hours before using and is an excellent material for anchoring flowers in all types of containers.

Arranging Flowers:

To me, designs and main lines are most important. The successful arrangement is more easily made by establishing these two important steps at the beginning. A design is the form, shape or plan of your grouping. (See seven basic designs for arrangements.) A few strong lines, placed securely in the container, clearly set the pattern. When you have this good basic structure, filling in and completing the arrangement will be easy and the result will be gratifying.

Proportion is another subject to do with relationship such as size, color, texture and pattern in your design.

In spite of all rules and regulations to aid you, do not overlook the value and satisfaction of originality in your arrangements. As we work with flowers we come to feel the different relationships such as dominance, scale, weight, color, balance, rhythm, space, unity and, if we are lucky, distinction and originality to show our own personal touch and feeling.

A pleasing arrangement that we enjoy has most or all of these elements. As an example, in an ordinary arrangement (a massed one if you like) the slender tips of foliage and the slim buds are usually at the outer edges of the arrangement. This light material picks up your eye in a most pleasing manner and gradually leads you to the centre of the arrangement, which consists of more mature flowers, often deeper in color. In the very heart or centre of the arrangement, the fully opened and largest blooms are used. These flowers add color, weight and stability which this type of an arrangement needs. This is known as the point of interest or focal point in the arrangement.

The contemporary or more modern version of flower arranging is depicting the Asiatic trend of this art and which has been built on centuries of study, reflection and creation. From the Japanese, for instance, we have learned to dramatize our flower arrangements and to use foliage as an important and, sometimes, as a major part of our arrangement. Most of their arrangements are simple symbolisms in a triangle of three main lines representing the earth (the lowest), man (the intermediate), and heaven(the highest). Every flower, leaf and stem plays an important part in this type of an arrangement.

The following scale of points is frequently used by garden clubs in judging flower arrangements:

Design	35
Perfection of arrangement	15
Appropriateness to use	15
Relationship of materials	10
Color harmony	15
Condition	10

The following are faults to be avoided:

CROSSCUTTING of stem lines;
STEPPING of flowers at regular intervals;
SANDWICHING or alternating one kind or color between two of another kind or color;
EQUAL RANGING of heights;
PARALLELISM of adjacent stems or branches;
SPOTTING of colors.

An unbroken line at the brim of the container is considered a fault in an arrangement. To show too much of the flower holder is not considered good form.

Dry Arrangements:

Dry arrangements are being used more and more in home decorations. These are not as colorful as fresh flowers but can be just as decorative and give lasting pleasure.

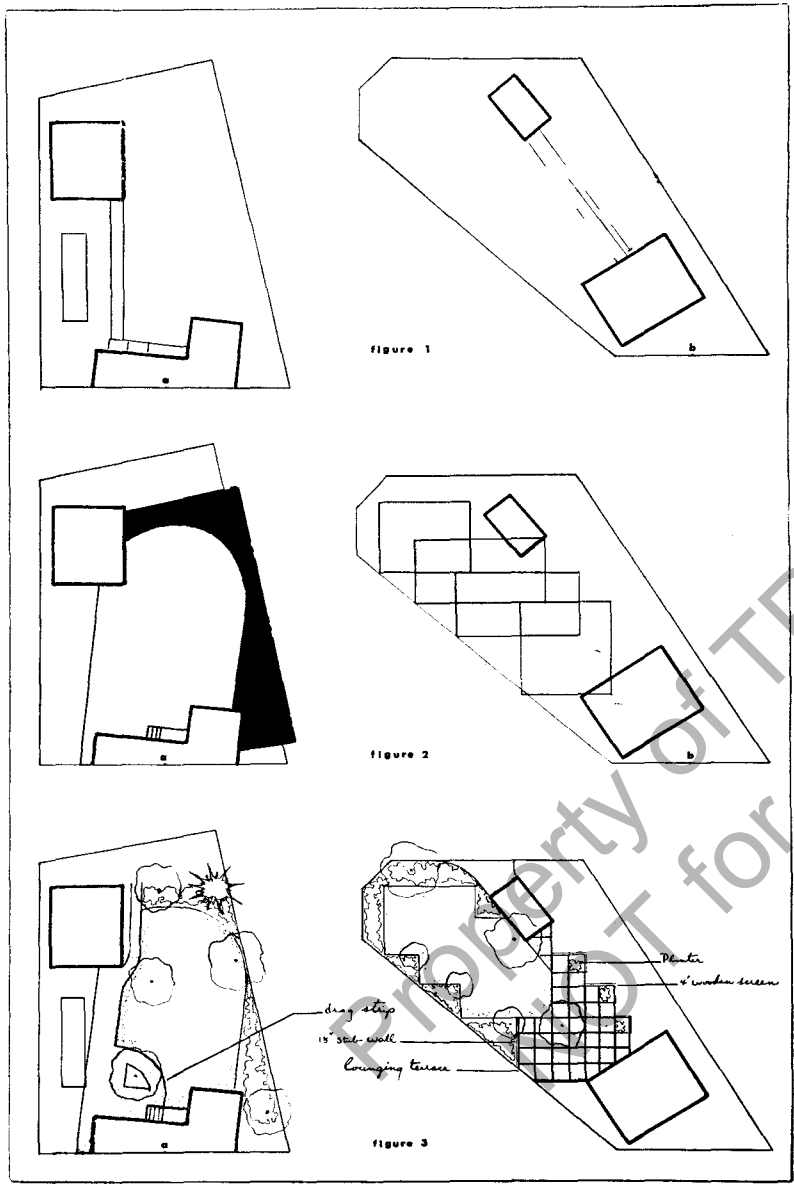
Materials can include flowers, vegetables, seed pods, vines, grains, ferns, grasses, leaves, branches, shrubs, cones, etc. A dry dim place is best for drying the specimen. I am going to give two simple recipes for this drying. First, is the good old fashioned one of tying up bunches of material and suspending them upside down from a line or stretch them out on shelves or place in wire containers. The average time for drying by this method is about two weeks depending on conditions.

The second recommended method of drying is burying your material in sand or borax or a mixture of the two. The sand must be fine, clean, sifted and dry. Put layers of newspapers in the bottom of a box or other suitable container. Suspend drying material from a cord drawn across the top of the container. Fill in with sand (or mixture) till heads of flowers have been covered. Store in a cool, dry place for at least two weeks. Flowers dried in this way will be amazingly colorful and fresh looking.

SUMMARY

Plan your flower arrangements. Plant your flower garden with this idea in mind. Cut fresh flowers and foliage at a suitable time and condition thoroughly before using. Check your containers and accessories for suitability both for flowers used and the occasion they are being used for. Designs and main lines are important in flower arranging.

Enjoy your flower arranging and do not forget to enter them in your local horticutural show for further pleasure and perhaps the thrill of winning honours.



SPATIAL ORGANIZATION IN THE SMALL GARDEN

Spatial Organization in the Small Garden

by R. H. KNOWLES

Associate Professor of Horticulture, University of Alberta

Paradoxical as it may seem in this age of the shorter work week, man has never had to work harder in trying to enjoy his leisure time. Busy highways and crowded resort areas have done little to make his weekends pleasant; yet few people, it seems, stay at home.

But why do people go on punishing themselves this way? Are they slaves to convention, or is there something lacking in their home environment? I find it somewhat hard to believe that we are all gypsies at heart, or that the open road under present-day conditions has more to offer in the way of peace and privacy than one's own backyard; but, then, the outdoor environment of the small city lot can leave much to be desired as well. This, I believe, is the crux of the situation, although potentially the city lot has a great deal to offer twentieth-century "lotus-eaters."

It is not too surprising to find that so many gardens lack appeal, for garden design is actually a complex process. Neither is it easy to pin-point one particular phase or stage of planning as being more difficult than another, although I would expect most people to encounter difficulty at that stage of planning which involves the general organization of the ground plane and the space above it.

In the accompanying diagrams, I have tried to illustrate this. Figure 1 shows two properties in which the usual planning sins have been committed. In plot plan A, the house has been placed in such a way that a person looking directly out from it finds himself in the neighbor's yard; while in plot plan B, the garage, sidewalk and clothesline have been so poorly placed they divide the lot into two almost equal and rather senseless parts.

In Figure 2, partial solutions to these problems have been resolved by using experimental arrangements of shapes which tend to focus attention away from the difficulties encountered in Figure 1. Two such arrangements are shown which, in addition to being practical, are pleasing as well. In plot plan A, Figure 2, there are two unrelated shapes which contrast with one another in the matters of size and direction. In each of

these contrasts, the magnitude of one unit dominates the other, and it is this that contributes unity to the arrangement. In plot plan B, Figure 2, the arrangement is no more complicated and no less unified than that of plot plan A; yet it possesses a higher degree of interest than the other. This is largely due to the position of the rectangles in relation to the area and to the shape of the area over which construction will take place. Another thing that contributes interest here is the opportunity for using sharp changes in direction, made possible with rectangular shapes. These make it easy to break up the area into a lively, dynamic sort of scheme, and this has been done in Figure 3.

But so much for the arrangement of the ground plane; what about the space above it? In Figure 3, you will notice that the plans are now covered with symbols and labels referring to a variety of materials and structures. Why were particular things located in particular places? Function has had a lot to do with it, but also — and I want to emphasize this — particular things with particular forms were chosen for particular places because of their value in modulating the "three-dimensional emptiness" which we call space. But is that idea concerned exclusively with garden design? No, of course, it isn't; the same problems are encountered every day in the interior design of buildings; the difference lies only in the objects or materials used. Structural built-ins, and to a lesser extent furniture pieces, are the space modulators of the home, and these simply become the hedges, fences, screens and tree trunks of the garden. They are placed so as to restrict movement and vision here, or to allow vision and restrict movement there. Indeed, there are many combinations but, in short, these modulators and the positions they occupy are chosen for a specific purpose, and that is to provide a conception of space that is truly three-dimensional. Suppose you try to envision it by studying the plans in Figure 3.

Growing Annual Flowers

by DR. GORDON MacKENZIE, Strathclair, Man.

Anyone with at least one window sill (especially facing the south) and the desire can have enough annual flowers started indoors to produce a blaze of colour in their flower garden. The amount of space and equipment needed depends on how many plants you wish to grow. I started a few years ago with one small can and in 1955 grew enough to put 3,900 (of 60 varieties) in the garden besides the ones I gave away. I thought of building a greenhouse but it would be inaccessible in March because of snowdrifts and also there was the problem of heating it. Because of this, I built a sunporch on the south side of my house 8′ x 10′ with plenty of windows. I have portable tables around three sides and these can be saved from year to year. By having a sunporch it can be utilized after the plants are put out whereas a greenhouse is idle for many months.

I start preparing for my annual flowers the previous fall. I put sifted soil, peat moss and sand in boxes in my basement; also I cut coffee and tobacco and 1-gallon anti-freeze tins to three inches high and pile them on a shelf along with wooden flats of various sizes. During the winter months, on occasion, I peruse the seed catalogues. This gives me an opportunity to learn the names of flowers, ascertain the colours, heights and shapes of the flowers. A pencil and paper should be handy to jot down your mental picture of designs of beds, arrangements and colour blends and contrasts. If you know where your plants are going to be placed beforehand, it saves confusion and mistakes when you commence to put them in.

The biggest success in producing annual flowers is in your timing. They must be put in at the proper time so that you can get the best display of blooms before the first frost in the fall. If started too early, they get too big before they can be planted outdoors and if started too late they are struck down by frost before they have reached their peaks.

As a guide, I keep a cheap book and have a page for each variety of flower grown. On this page I put down the nursery where the seed came from, when planted, number of days taken to germinate and when transplanted. I also mark down how many, and the location in the garden for next year's reference. After the season, I make a note of my timing for each variety; if too early, too late or just right.

When I wish to start the seeds, I mix the soil, peat moss and sand the previous day. As these are dry, I sprinkle the mixture with water and let it soak in. If you try to mix it immediately it will be very lumpy. The next day it will mix without becoming lumpy. I mix the three ingredients so that the mixture will squeeze into a soft lump but will not adhere to your hands. I fill the tin with the soil, tamp it down with the end of a bottle or tin and then sift a very fine layer of peat moss on the surface, using a flour sifter. Next, the contents are well watered by using a container with a fine nozzle. The one I use is like a clothes sprinkler of the rubber bulb type. This peat keeps the moisture close to the seed until it has started to germinate. After you have scattered the seeds rather thinly, sift on dry fine soil by means of the flour sifter to a thickness of about double the size of the seed. Place a few sprinkles of dry peat moss on the surface. Do not tamp down as it is sticky. Cover the tin until the seeds start to germinate at 65° room temperature, then place in the light. Some authorities advise watering from the bottom. I use the fine spray on top to save time.

There is a danger of the seedlings "dampening off". This is a soil borne infection which causes the stems of the seedlings to thin and the plant falls over and dies. Many methods of prevention are advised including baking the soil in the oven or putting a pinch of semesan in with the seeds and shaking the package. Some advocate mixing a solution of formaldehyde in the soil and leaving for a few days before using. I tried this one year for the soil for the flats. Within one-half an hour of transplanting the seedlings into the soil they were flat and all died from an overdose of treatment. It was too late to start planting more. I use water to which a few crystals of potassium permanganate is added, just enough to give a slight colouring. My best method is to plant more seeds, faster than the dampening-off process can destroy them and you have the balance to raise. The fine sprinkle of peat moss on the surface helps to prevent this.

Most authorities advise transplanting the seedlings in flats after the true leaves appear. I leave them until they are large enough for a couple of clumsy hands to handle without fumbling. Have the soil damp but not sticky and press the soil firmly to get it around the roots. If air pockets are left the seedlings cannot get rooted. Into the bottom one inch of soil in each flat I mix a couple of handfuls of rotted manure and a couple of tablespoons of Vigoro. I put the transplants into a midly darkened and cool room and after a couple of days bring them into an increasingly brighter atmosphere. When they can be put in direct sunlight, try to keep the

water off the foliage as the sun can burn them when the leaves are wet. On dull days, I turn on two 250-watt infrared bulbs in the sun porch.

In my district (North-western Manitoba), because of frost danger it is not safe to put the plants in the ground until at least the first week of June. In May, we have many warm sunny days so I open a window in the sunporch and push my flats out onto a platform erected outside the window. One platform has wheels and can be moved to sunny spots and also away from the wind.

Plants after transplanting into flats need a maximum of light. If the light is poor, the plants grow tall and "spindly" with poor colour. Ideal plants are strong, stocky ones of a good, green colour. When "spindly" plants are put in the ground, they wilt badly and "flop over," sometimes to stay that way. Some of the foliage dies and new shoots have to grow from the roots and much time has been lost. A small stocky plant is preferred to the tall, spindly, anaemic-looking one.

Plants should not be put in the ground directly from growing indoors. If this is done, they are liable to die as they are too tender to stand the move. They should be "hardened" first, by placing outside for a few days in partial sun and then full sunshine.

When the planting in the ground commences, I do so late in the day. This gives the plant time to get established before the sun becomes strongest the next day. I always put a couple of ounces of liquid fertilizer (Old Gardener in proper dilution) in the holes as I put the plant in. This provides ready food until the plant can utilize the food in the ground. I save every 28-oz. tomato tin and 40-oz. fruit juice tin and cut out both ends. After the plant is put in, I surround it with a tin for a few days. This protects it from the wind and some of the sunlight until the plant recovers from the shock of moving. Keep as much soil clinging to roots as possible when putting in the ground. Bare roots cause a greater failure rate.

The annual flowers that I use are in three divisions. First — Plants which have to be started indoors to reach their peaks before fall frost. Examples are Petunias, Snaps, Lobelia, Ageratum and Salvia. Second — Plants of which the seed is put in the ground directly. Examples are Calendula, Sweet Sultan, Nasturtiums and Candytuft. Third — Plants which fit into each of the first two divisions; that is, they may mature if put directly in the ground; but also can be started indoors to make sure. Examples are Zinnias, Marigolds and Portulaca. I cannot depend on the outdoor plantings so grow a surplus

of indoor starting ones to fill in the gaps because of non-germination of outdoor ones. A good idea is to place half a dozen of each kind grown indoors in a back plot to be used as spares to fill in if some die in your main beds.

Growing annual bedding plants can be as fascinating a habit as working Gladioli, Dahlias or perennials. They are on a short term basis because after the first heavy frost, you have nothing left. However, it is worth the work to have a brilliant display of colour when your plants are in full bloom. Of course, you can purchase bedding plants from a nursery and put them in at the proper time; but you will miss much by doing this. It is interesting to observe the different sizes, shapes and colours of the seeds you plant as well as seeing the plants erupt through the surface of the soil; some coming straight through and some looped. When you transplant the seedlings you will notice variations in roots, some long and single and deep and others shallow and made up of many threads.

After the plants are put in the beds, you can start the day off by walking in the garden each morning looking for the first appearance of buds and watching them turn into many coloured blooms. If you look closely at the blooms you will be amazed at the variations of structure.

If you have never grown bedding plants start off with a variety of Petunia, a Snap, a Marigold and Zinnia, and add more each year. You may be off on your timing but will adjust this by practical experience.

Every year, there is a competition for the best home grounds. I think there also should be one for the flower garden as it would be a more even contest. A wealthy man with an expensive home and a professional groundsman has a big advantage over a man of modest means who has to do his gardening after a hard day's work. In a flower garden all that is needed is a plot of ground and a few cents worth of seeds.

Dutch Elm Disease - A Threat in Western Canada?

by D. A. SHAW, Brooks, Alberta

The American elm, one of our most beautiful and desirable shade trees, together with other species of elms, is menaced in North America with one of the worst scourges that any of our shade trees have endured. It is the Dutch elm disease, so described because its depredations were first discovered in Holland about 1918. By 1921, it had become an epidemic across the European continent. Since then, the disease has all but decimated Europe's elm trees.

Inroads of the disease were first observed in America during the 1920's and it subsequently fanned outward from focal infection points located in the States of New York, New Jersey and Ohio. It now takes a heavy toll of trees in 21 states west to the Mississippi, and north across the Canadian border into Ontario and Quebec.

Russell R. Whitten, Chief of the U.S. Forest Service Insect Research Station at Columbus, Ohio, states, "I have no doubts that the disease will spread to every area of the country where elms are growing." It goes without emphasis then, that the elms of Prairie Canada will be menaced by this disease if they have not already been.

It is well for us to become familiar with the nature of this disease, so we can identify its onset; thus forearmed, we will be in a better position to initiate whatever control measures are practical.

The causal fungus **Ceratostomella ulmi,** is a wound parasite which invades and multiplies in the water-conducting tissues of the bark and sap-wood, producing either prompt or delayed wilting, killing of twigs and branches with ultimate death of the tree. The live wood just below the bark becomes dark in color as infection becomes established. Some other diseases also present a similar symptom. For that reason positive identification necessitates that samples of suspect wood be submitted to a pathological laboratory for culture and diagnosis.

The fungus is carried chiefly by the European and the native elm bark beetles (Scolytus species). The infested beetle chews into tiny twig crotches high in a tree, and in so doing,

leaves a calling card of Dutch elm disease spores. The spores become active in the open wound, resulting in development of the characteristic thread-like "mycelia" which multiply and grow downward through the living sap-wood until the whole tree is infected and death occurs. The infested beetles ultimately seek out a weakened elm, burrow into the bark and lay eggs which hatch into a new generation of beetles. The whole cycle is then repeated with increasing devastation.

It is readily seen that the combination of fungus and beetle is a deadly one for the elms. The infested beetles have been known to fly as far as two miles, where they infected previously healthy trees.

The possible methods of disease control include 1) sanitation, 2) spraying for beetle control, 3) feeding and watering in time of drought to keep trees vigorous, 4) chemotherapy — injection of fungicides, 5) development of trees resistant to the disease.

In American towns and cities such as Brookline and Amherst, Mass., or Greenwich, Conn., where control measures have been adopted, best success has been obtained through a vigorous, annually sustained sanitation and spraying program. First on the program is the searching out, removal and destruction of all dead and dying elm wood which would provide a breeding ground for the bark beetles. Secondly, at least two sprays of D.D.T. or D.D.T. alternated with methonychlor are applied to all elm trees. The first (and most important) spray goes on before the leaves appear in the spring, the second about July 1st. Alternating the type of chemical used assists in preventing the buildup of beetle populations resistant to either one of the insecticides.

Chemotherapy — the injection of fungicidal chemicals into infected trees to fight the disease directly, is also being tried experimentally. So far, while a few chemicals have proven to be useful, they are expensive, the effect is of short duration and impractical for large-scale use.

Much groundwork has been done in the breeding or selection of elms for resistance to Dutch elm disease. The Christine Buisman elm is the result of 16 years of experimentation in Holland by a leading plant pathologist, Dr. Buisman. In America, the Columbus, Ohio, laboratory of the Agricultural Research Service has selected 23 promising seedlings from a breeding population of over 250,000 seedling elms. If these selections continue to prove resistant, they may be available to the public in five to ten years. The College of Agriculture at Cornell University also has 16 selected elms which are

little bothered by the disease. There is real hope that eventually control of the disease may be greatly assisted through use of resistant varieties.

Let us now take a look at the cost of control measures, in terms of the cost of removing trees stricken by the disease. For the city of Brookline, 1956 expenditure for 6,000 city elms, including spraying, scouting, and sanitation measures was $3,300, or about 55c per tree serviced. The experience of Brookline, Mass. and Greenich, Conn., has been that cost of dead tree removal runs around $70-$80 per tree. They have found it very worthwhile to have a continuing program which, in the last 10 years has, in the instance of Greenich, brought their annual loss of elms from 186 down to little more than 30. Thus, Greenich has, in 10 years, through a vigorous control program, cut its outlay for tree removal from about $13,000 to $2,100. Certainly this is a worthwhile monetary saving, to say nothing of the fact that the citizens are positively saving their trees through the program.

The foregoing information suggests that a practical, money-saving control program is possible with respect to the Dutch elm disease.

Since Western Canada has many thousands of beautiful elms, it seems well for horticulturists, both amateur and professional, to be on the alert and prepared to initiate a control program should Dutch elm disease become established on the prairies.

For persons wishing additional information on this disease, the following bulletins may be requested:

1. Publication No. 1010, Canada Dept. of Agriculture, Ottawa, July 1957.

2. Extension Folder No. F195, Michigan State University College of Agriculture, East Lansingo.

3. Extension Bulletin No. 932, New York State College of Agriculture, Cornell University, Ithica, New York.

Beauty in the Autumn Border

by Dr. W. R. LESLIE

Dr. Leslie, after many valuable years of service to Western horticulture as superintendent of the Dominion Experimental Farm at Morden, is now resident in Winnipeg, acting as a local landscape consultant and writing a weekly column for the Winnipeg Free Press under the heading "Over the Garden Wall".

Prairie dwellers generally seem more enthusiastic when singing 'In the Good Old Summer-time' than when picturing the setting for the theme song at the other end of the year, 'Jingle Bells'. The tendency is to find joy in thoughts of spring with its flowers abloom, and to be depressed in autumn with its 'melancholy days' and meadows brown and sere. Very well, — so, let's up and do something about it!

The task of retaining the color and charm of flowers late into the year has become an easy one. Two types of plants, both of the ASTER family, — Michaelmas Daisy, and Chrysanthemum, do a beautiful service in furnishing the landscape. Each group offers rather remarkable diversity in plant form and stature, season of bloom, as well as flower size, shape, and coloring. Both flourish in the shortening days of September and October. They are adapted to our prairie loam soil. Although many varieties of each are decidedly too late for this zone, there are dozens of varieties of Michaelmas daisies and of Chrysanthemums which are happily at home in prairie Canada.

MICHAELMAS DAISIES or AUTUMN ASTERS have evolved by the crossing of a number of species. Chief among them are New England aster, Aster novae-angliae, common to the New England states region and found sparingly, and in somewhat smaller plant stature, from Sprague to the Riding Mountains in our Manitoba; New York aster, A. novi-belgi, although native to the eastern United States, and strictly an American plant, received its botanical name from a botanist in Holland; Blue Wood aster, A. cordifolius; Bushy aster, A. dumosus; Calico aster, A. laterifolius; Heath aster, A. ericoides (sometimes referred to as A. multiflorus); Small White aster, A. vimineus; and Smooth aster, A. laevis. The last named, as well as the Heath aster, is a most common feature of the local prairie realm in August onward.

Possibly a few other species have been introduced into the picture by bees and kindred insects. However, in order of importance, the chief forebearers of the modern varieties seem to be New York, New England, Smooth, Bushy, Blue

Wood, and Heath asters. Some distinctive new varieties have been bred and introduced by Dr. F. L. Skinner of Dropmore and H. F. Harp, Experimental Farm, Morden. Incidentally, these local two skilled plant breeders have been notably successful in their breeding of the more glamorous cousin of autumn asters, chrysanthemum.

GROWING: Most autumn asters thrive in moderately rich deep soil, and in sunny exposure. Some tolerate partial shade and are found in the edges of woodland but those plants showing the free billows of bloom are enjoying much direct sunshine. Scores of aster species are found in the wilds from the Atlantic to the Pacific in Canada. We encounter them out in the open grassy plains and in wooded wilderness places far into the northland. Most prefer well drained positions but the New England is capable of prospering under rather wet soil conditions.

PLANTING: The guide-rule of planting flowers that bloom in autumn in springtime pertains. The common procedure is to dig up a 1, 2, or 3-year clump in early May, after fresh young shoots have appeared above ground. Shake the roots free of soil. Snip off all sucker growths from the main crown. Sort them out, retaining for use only those owning strong rootlets. Place in wet burlap covering for protection. Plant in masses, 3 to 5 or more of a variety. Commonly 3 or more are placed in one hole but some vigorous kinds do well as a single sucker planting. Throw away the old plant because its career of full usefulness has been run. Fine effect usually comes to plants in first-year form. Thus, many growers replant each year. Dwarfs may do well unmoved for three years. Be guided by the well-being of your plants.

Spacing varies with stature. The dwarfs are set about one foot apart; intermediates 1½ to 2 feet; while tall New England can make good use of a full 3 feet of ground.

Long young divisions have their tops nipped back. Accord them good growing conditions. During prolonged hot dry spells, water them slowly and deeply. Old clumps may be improved in performance by limiting growth from the crown to from 3 to 9 strong stems. Sometimes this may entail removal of as much as three quarters of the young stems.

Pests are relatively few. It may be necessary to spray with malathion to combat aphids and mites and to dust with sulphur to ward off mildew. Often the plants will need no protective measures.

USES: Michaelmas daisies are sufficient in themselves to furnish an autumn flower border. They are valued to supply masses in the general perennial border. They blend

well with chrysanthemums in a composite border, — tall asters forming the background, and the lowly ones composing the edging. The dwarfs are almost priceless for adornment of the rock garden. That area is shy on flowering effects in late season. The little mounds of asters are greatly effective from early August onward. Many of them are good as cut flowers. However, New England varieties close at night and fail to reopen.

VARIETIES: In choosing your planting stock, pay due attention to earliness of flowering, freedom and coloring of blooms, resistance to mildew disease, and suitable stature for the location to be adorned. Usually it is playing safe to depend upon local prairie nurseries for the supply as they grow adapted strains.

Space limitations prevent description of varieties here. The following select few are worthy of serious consideration: DWARFS — Audrey, 12 inch, amethyst-violet; Blue Bird, 12, violet-blue; Princess Margaret Rose, 12, early, masses of carmine-red; Snowsprite, 12, white. INTERMEDIATES — Avalanche, 2 to 3 feet, large, white; Eventide, 3, violet-blue, semi-double, large, erect; Janet McMullen, 3, soft lilac-pink, large, semi-double; Morden Lavender, 1½, masses of lavender-blue; Beechwood Challenger, to 3 feet, crimson-red; Plenty, 3 to 3½, soft blue, very large, semi-double; Prairie Eventide, 1½ to 2, glowing pink with yellow centre; Royal Blue, 3, blue; Sunup, 3 to 3½, mauvy pink, early, graceful stems. TALLS — Blue Gem, 5 feet, deep blue, semi-double; Harrington Pink, 4, clearest bright pink, choice but somewhat later than desired; Lil Fardell, 4 to 5, mauvy-rose, early September, reliable; Morden Crimson, 5, non-fading crimson, dense heads, larger than Lil Fardell and a week earlier; Morden Purple, 5 to 5½, rich purple with bright orange centres, two weeks earlier than its mother parent, Ryecroft Purple; Mt. Everest, 3 to 4, white with small eye; Winston Churchill, 3 to 4, sparkling crimson, on the late side.

A border made up of groups of the above select varieties would be certain to present a beautiful display over a long period of autumn. It would add significance to the name that Michaelmas Daisy group has been happily called, — "Farewell Summer".

CHRYSANTHEMUMS: The word is derived from two Greek parts meaning gold and flower, paying deference to the color predominating in the flowers. It is only in recent years that the Garden forms of chrysanthemum have come into prominence on the prairies. Dr. A. C. Hildreth, of the United States Cheyenne Horticultural Station, appears to deserve the title of Trail-blazer in the development of hardy

Garden Chrysanthemum especially adapted to the Great Plains. He acquired plants from wherever they were accessible around the world and planted seedings to generous acreage. His policy was to let Nature do the selection as to adaptation, and then to harvest seed from only those overwintered plants which were of good habit, pleasing coloring, and early enough to ripen seed in the field. Cheyenne seeds and plants have been freely donated far and wide to prairie plant improvers. Effective work in breeding new improved varieties is keenly under way at the University of Minnesota, Nebraska, and Manitoba; on experimental institutions at Cheyenne, North Platte, Morden, and Sutherland. Dr. F. L. Skinner, of Dropmore, is recognized as the pioneer chrysanthemum breeder of the Canadian Prairies. His accomplishments are enthusiastically acclaimed as bold and outstanding. He introduced Zawadski species from Europe, and that plant which extends into Siberia in the wilds, has brought increased constitution and hardiness into modern local varieties.

The other blood lines involved are chiefly Pyrethrum, Chrysanthemum coccineum; Florist 'mums, C. morifolium; Korean 'mums, C. coreanum or C. sibiricum; Feverfew, C. parthenium; and Northland Daisy, C. arcticum. Garden Annual Chrysanthemums involve at least four further species. It is interesting to recall that among its close relatives, aside from Michaelmas Daisies, are Shasta Daisy, Giant Daisy, Oxeye Daisy, Marguerite, Tansy, and the Dalmatian which is so important to gardeners as it is the source of our pyrethrum insect powder.

There is little wonder, considering the complexity of background, that Garden chrysanthemums exhibit wide diversity in hardiness, habit, stature and season. Our concern here is to think over some of the factors in succeeding to introduce into the home autumn flower border the gaiety which attends growing these aristocrats.

CULTURE: Only brief comment is warranted as an extensive detailed article was run in the 1955 issue of this annual book. See Hardy Chrysanthemums, by Professor S. J. Westaway, pages 39-41.

Give conditions similar to those mentioned for autumn asters. Like other flowering plants, they thrive best in the lee of shelter which diverts strong northwesterly winds. Water during dry spells.

The formation of flower buds is directly related to the hours of sunlight. Most varieties tend to await the shortening days of late summer to begin flowering. Earlier blooming may be prompted by shading the plants for a period in midday or covering late in the day.

Plant in groups, having masses of one color. They are well suited to use in the general perennial border as well as the special autumn border. Flowers are of various sizes and shapes. Colors include almost every hue excepting blue and true purple.

TYPES: Garden 'mums have been classified into 5 main divisions, — Open-centre, both single or semi-double, as seen in Clara Curtis, a member of C. rubellum, a dependably hardy pink esteemed for bouquets; Pompon, with smallish double flowers serving well as cut flowers as well as in border display; Large-flowered, tall plants, often late in season; Anemone, with a fringe of petals about the rim of a flattened head of short florets; and Decorative, with flaring outer ray petals and a centre of narrow upright petals. To these general forms may be added the sub-divisions to accomodate odd-shaped flower types. They are known by their descriptive terms, — Quill, Spoon, Spread, and Thread.

VARIETIES: It seems well to emphasize the importance of depending upon local nurserymen who restrict their materials to local climatic suitability. Study their catalogs for descriptions.

You can expect much pleasure from a collection composed of Pigmy Pink, Morden Gold, Morden, Skyline, Richelieu, Redwood, Cree, Goldilocks, Sutherland Pink, Dorothy Howard, Purple Star, Santee, and Harmony. There are at least a score of others available which possess charm and the ability to perform superbly in Manitoba borders.

Any gardener who is partial to summer scenes with their billows of showy flowers, does well to plant a border of Michaelmas daisies and Chrysanthemums. They will maintain floral beauty after the glory of glowing autumn leaves has fallen from the maples, dogwoods, cotoneasters, hawthorns, sumacs, poplars, birches, ashes, and oaks. Thus, in a practical way do we extend summer-time.

Tuberous Begonia, Unique In Color And Form

by **HILDA M. McAFEE, Edmonton, Alta.**

Hilda McAfee is one of Alberta's best known personalities. Her winning garden, made up of thousands of profuse blooms also contains a lily pond, and a "Red Cross Wishing Well" out of which the many visitors to her lovely garden donate some five hundred dollars each year to The Red Cross Society.

Fortunately or unfortunately, largely depending upon the viewpoint our ideas of beauty change with the years. However, there is one thing that I think all amateurs will agree on, especially with so many new and beautiful homes today, and that is having a "spot" in the garden where "nothing will grow," such as a northern exposure, or perhaps a corner where the sun barely touches. It is truly provoking to have this happen, when all the rest of the garden has "done so well". So under the heading, "Making the best of an awkward situation," I would suggest the tuberous begonia which is extremely easy to grow, which still clings to its natural habits of loving shade and moisture, particularly a dampness on its foliage. It loves the humidity on rainy days, and is almost disease-proof. Originally a flower of the jungle, a rival of the aristocrats, the orchid and rose, it has the same delicacy and far greater coloring, from mysterious black-maroon, apricot to lemon, rose, salmon, scarlet and white. Their gorgeous exotic colors blend with any room when cut, and will stay fresh for more than one week.

Expert hybridizers have developed such classical forms as double camelia and gardenia, ruffled and frilled, giant sized singles and rose form picotee. The latter an exotic bi- not least the pendula or hanging basket type. Their hanging masses of bloom, truly magnificent, often trailing over a box color combination, with bold marginal edges, and last but almost five feet.

Number one bulbs, of course, cost a little more, producing more flowers and making larger plants. However, the same size flowers would also be produced from a smaller tuber, but not the same quantity.

Since we have established the fact that shade and moisture are necessary for their culture, it must be thoroughly understood, that if planted underneath trees, the branches should not be so low as to interfere with the circulation of air, resulting in an atmospheric condition under which no plant, not even a weed might grow. As an example, a Mountain Ash or Rowan tree would not create any difficulty, and then again, trees can be pruned. The roots of the tuberous begonia are very short, and surface feeding, and unless the trees are very old "poplars" with roots above the surface there is room for everyone and the begonia will do its best in producing a tropical display of breath-taking colors.

Growing an average of two hundred or more tuberous begonias each year, and "picking up" many trophies for same, I have gained a certain knowledge which I would like to pass on to my fellow gardeners. I would also like to add that I have no greenhouse or even the use of one, again proving my point that they are easily grown.

The method is the same whether you have six or sixty, so after they have been taken from their winter quarters, or purchased for the first time, it is only common sense to understand that they must have roots. This is very important to remember because sometimes this unglamorous-looking tuber will show green growth at the top without roots below, and at a later date will die. However, this is not a common occurence.

Place the tubers in shallow boxes filled with vermiculite or common peat-moss, about two inches apart, in nest shaped holes not completely covered. The warm basement is quite alright near a bright window.

The vermiculite or peat-moss must be kept damp at all times, but not soaking wet. A good idea is to use the sprinkler top, which may be attached to almost any bottle, often used in the laundry to dampen clothes before ironing. This system prevents over-watering. Another good idea is to use an ordinary fly-spray filled with water to produce a certain amount of humidity, so often lacking in our homes in the winter time.

The tubers should be started about the third week in March, no earlier, otherwise should the temperature outdoors rise rapidly, the growth could be very fast, and the plants

more difficult to handle. Every few days they may be picked up for examination to see if there are any roots which resemble short pieces of white thread. When these appear they are ready for planting in the proper soil mixture.

If one is a litle over-anxious about root development, and after lifting the tuber, no roots can be seen, it is quite all right to put it back into the little nest for a few more days, some taking much longer than others to develop a root system.

Planting, depending on the quantity, is a choice of pots or flats, but in either case good drainage is necessary.

The quantity I grow are mostly controlled in flats or boxes, about five inches deep, with the exception of the pendula or hanging types. These grow more rapidly and soon get to the hanging stage. Pinching the latter at each growing end makes a more beautiful plant. This, of course, applies to hanging types only.

The soil mixture for potting should not be heavy. About seven parts black soil, five peat-moss, three fine manure, one coarse sand and one vermiculite. Charcoal about one teaspoonful if powdered or chunk about the size of the little finger may be buried below suface level in each pot, per bulb, or several pieces according to size of flat. This helps to keep the soil sweet. The tuber again should not be completely covered, but when transplanted outdoors, may be placed about one inch below soil level, with the sharp pointed end of the foliage toward you for this is the "front" of the plant. The planting outdoors must, of course, be done after all danger of frost is gone.

Almost disease resistant, loving humidity, never having to be sprayed for insects, thriving on rainy days and cool nights, proves that this spectacular jungle flower is ideal for our climate. A window box facing north when planted with a back row of the upright growing begonia, with a row of the pendula in front to trail over the box makes an unforgetable display of exotic blooms.

The resting season begins with the slightest touch of frost outdoors. The stems being very thick and watery cannot take very much frost, so it is better to be safe than sorry. "Jack Frost" can be very annoying sometimes but we cannot do much about it. Care must be taken when digging out the tubers, for it is very easy to slice off a piece. However, should this accident happen, damage to the tuber may be avoided by dusting scar with powdered sulphur or charcoal. Blooms and leaves may be cut off along with about half of the stem and

placed in a cool dry place for about two to three weeks, when the rest of the stem or stems will readily "snap" off with a little sharp twist, to a level with tuber. It should then be allowed to dry, "meaning the green stem" to prevent mildew forming for there is still moisture lying here.

According to quantity again, depends on the size of container to store away the bulbs for winter. With great satisfaction I have used "orange crates" very similar to the ordinary apple boxes, but a little stronger and heavier to combat weight. Placing about four inches of peat-moss in the bottom of the box, then a layer of begonias, very close but not touching each other, then another layer of moss until the box is filled to within about five inches of the top. The last five inches being a complete covering with the peat-moss. Keeping in a cool place just above freezing temperature is ideal.

The Prairie Kail-Yard

by G. M. RAMSAY, Lacombe, Alberta

Mr. Ramsay was for many years head gardener at the Federal Experimental Station at Lacombe and is at the present time President of the Alberta Horticultural Association.

The securing of an adequate supply of nourishing food is a matter of first importance for all living things. Along with other animal occupants of this earth, we must eat to live. With our population increasing, our appetites more discriminating and demanding, available land for cultivation shrinking, and competition between the 'bugs' and ourselves for the good things we both eat about equal, the prospect should at least keep us awake. All life on this earth is dependent on the plants that grow on its surface, so it should not be necessary to stress the importance of any branch of agriculture. Vegetable growing is a civilized occupation, and in its long history there have been some thoughtful and ingenious people, who discovered possibilities in plants, and formulated ways and means to make their cultivation profitable. The pangs of hunger have, of course, provided a spur in this search for things to eat.

Western Canada has witnessed a spectacular development in the field of horticulture. Occupied until quite recently by a sparse native population, who found in the native flora all the fruit and vegetables they required, horticulture as we know it here, began from scratch less than a century ago. From the records of the Lacombe Experimental Station, 1907, we find that seedlings of hardy vegetables were often killed by late spring frosts, and the short season quite unsuitable for many we now grow successfully.

The weather may have modified a bit, and the frost free period extended, but this is hardly sufficient to account for the success we now have in vegetable production. The raising of vegetable crops in the West has grown from a few individual efforts, through truck gardens to truck farms, supporting a canning and distributing industry of considerable importance.

There has been a big advance in our knowledge of soils, and it is a most interesting, if complicated study. The ordinary gardener, however, may still learn much from the appearance and quality of the crops he grows. Tomatoes, Cauliflower, Potatoes, Swedes, etc., are excellent indicators, and their color, quality and general appearance will help to suggest a satisfactory treatment for a soil deficient or out of balance.

A serious study of the soil, whether from a scientific or purely practical viewpoint will soon cure the student of the habit of referring to it as "dirt", and may lead him to ponder a bit over the miracle it is. The ancient and original method of treating the land with well composted barnyard manure is the best known conditioner, especially for vegetables. We are more fortunate than our fathers, in that so many chemical formulas and soil conditioners are now on the market. Poor or unbalanced soils are corrected quickly and with little trouble. Vegetable strains and varieties we now grow would appear to be more pliable and adaptable than some other factors in the set-up. Not so many years ago, named varieties of vegetables, with a few notable exceptions, were distinguished more for their variations in yield and appearance than for conformity to type. This has been changed thanks to the fine work done by plant breeders, the seed growers and the interest of our governments. There is real satisfaction in raising the best in vegetables.

There is a wonderful variety of vegetables produced in Western Canada now, and it affords the average person, not necessarily associated with the growing of these, a real pleasure to see the splendid collections displayed at our horticultural exhibitions. Many of our vegetable plants are immgirants like ourselves, and have shown their appreciation of this good land by putting forward the best that is in them. Finally, we have the people, and although there are those who find a too intimate contact with the soil distasteful, they do have decided taste in regard to vegetables. The public demand for "tailor-made" varieties is desirable for the direction of those who make it their business to meet that demand, further, the splendid work of our garden clubs and horticultural societies in keeping the public informed, demonstrating the variety possible in this field and keeping the standard of quality high, we believe merits our sincere thanks and appreciation.

NOTE—For at list of vegetables most suited to your area, we suggest you contact your Provincial Extension Service for their "Recommended Vegetable Variety List".

Making Greater Use Of Solar Heat For Certain Vegetables

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

Persons living in many areas of the prairie provinces will appreciate the importance of obtaining harvests from heat-loving vegetables as early in the season as possible. All too often, early fall frosts arrive before any appreciable crop has been obtained. For several years, considerable effort, at this Farm, has been directed towards obtaining earlier maturity and an increased harvest of fruit from this class of vegetable.

A number of treatments have been tested. These include Super Hotents, black asphalt paper mulch, combined black asphalt paper mulch and Super Hotents, patented glass cloches, and wooden-framed, polyethylene-covered protectors. Most of the work has been done with cucumbers, muskmelon and tomatoes. Some very interesting results have been obtained.

Black asphalt paper alone gave poor results, usually poorer than the check treatment. Probably the main reason for this poor showing was the fact that the black color of this paper quickly faded to a gray. It no longer had the ability to absorb large quantities of heat from the sun, but rather tended to reflect this heat. Black polyethylene film will be tested in 1958.

Asphalt paper, plus Super Hotents, has given rather promising results, often considerably better than Hotents alone. A strip of paper thirty inches wide was laid down the length of the row with the edge held down by soil. A hole six inches in diameter was cut where each plant was to grow. The Hotents were placed over these holes immediately the seeds were planted or the tomatoes transplanted.

Super Hotents alone gave good results when properly handled. Under the prevailing conditions, a small ventilating hole (about one inch square) was cut on the east side of the Hotent about mid-June. The date of this ventilation depends on weather conditions. Before the plants became too crowded under the Hotents, two knife cuts at right angles to each other, and extending well down the side of the protector, were

made. The plants were then allowed to gradually force their own way out, before the Hotents were completely removed. In this manner, the change from the warm, humid atmosphere of the protector, to the rigors of a prairie summer, was made gradually and no damage to tender, succulent growth occurred.

Preliminary results from trials not officially connected with this project showed promising results from plants started in "Jiffy Pots" or plant bands and transplanted, with no root disturbance, under Super Hotents. Cucumbers, melons, squash, eggplants and peppers have been used in these preliminary trials. Best results were obtained when the plants were grown indoors only until the first true leaf had unfolded. Also, results indicated that, for transplants such as this, the Hotents should not be used much beyond June 15. Further tests will be conducted with this method of handling the plants. It would be reasonably simple for any gardener to start a few plants in the kitchen window and transplant them under the relatively cheap Hotents or Super Hotents. Jiffy pots are really preferred to plant bands, as, with the former, there is less danger of disturbing the roots of the young plants. It is a well known fact that it is impossible to successfully transplant a cucumber plant (or any Cucurbit) whose roots have been damaged.

The best results generally have been obtained from the glass cloche. The wire frames for these cloches were purchased from a firm in England. They were not readily available in Canada. Four panes of glass, ten inches wide and eighteen to twenty-four inches long, are held together to form the equivalent of a peaked-roof building with no end walls. These structures were butted end to end to accomodate a row of any desired length. A pane of glass was placed across each end of the row to complete the protection. The Chase cloches, as used at Scott, incorporate a simple method of ventilation that allows one of the top panes to be partially opened, or completely removed without altering the rigidity of the assembled frame.

Both air and soil temperatures were maintained at a relatively high level under the glass cloches. Probably, of particular significance was the fact that the soil temperature was maintained at a relatively high level overnight. The response of tomatoes, cucumbers and muskmelon to these protectors has been excellent. The early harvest of cucumbers, and usually the total harvest, has generally been significantly higher from these cloches than from any other treatment. The yield of ripe tomatoes has usually been significantly higher from this treatment while the yield of mature green

fruit has averaged as good from the polyethylene protectors as from the glass cloche. In almost every instance, all treatments, except the black paper alone, have significantly outperformed the check.

The only ripe or green-mature muskmelon of any significance has come from the glass cloche, the polyethylene cloche or the combined paper and Super Hotents. Generally, the glass cloche has been superior.

The major disadvantage of the Chase glass cloche for the home gardener is its rather high initial cost. Otherwise, it is an excellent device. This high cost prompted the search for a cheaper substitute. Thus, the idea of the cheap wooden-framed, polyethylene protector was born. The protectors that were designed and used here for two years have given promising results. Soil and air temperatures have been only slightly lower for the polyethylene than for the glass cloche. Individual frames eighteen inches wide and thirty-six inches long were built of three-quarter-inch by three-quarter-inch lengths of spruce. Both ends were covered with the plastic film so that each structure was a complete protector in itself. The two sides were hinged so that they could be closed to an inverted "V", or left partially or completely open. When completely open, the two sides were at right angles to the soil surface. The four corner posts were made six inches longer than the plastic-covered portion of the protector, and were pointed. These were pressed into the soil in order to prevent the light structure from blowing away in strong winds. These structures were butted end to end to form any length of row desired. The four mil sheet polyethylene was used, but the two mil material would probably suffice.

In order to trap rainfall and direct it toward the root area of plants growing under the glass and plastic cloches, a shallow trench was shaped with a hoe down both sides of the row of protectors and as close to them as possible. (During periods of dry weather it may be necessary to apply water under any of the protectors in order to achieve maximum results).

Complete protection from up to ten degrees of overnight frost, in late May and early June, has been obtained from the Super Hotents and the glass and plastic cloches.

New materials and ideas will be tested, as they arise, in an effort to devise ever better methods of hastening the maturity of heat-loving crops in the short growing seasons of the prairies.

Diseases of African Violets

by Ken BARNES

Winnipeg African Violet Society, Winnipeg, Manitoba

The No. 1 Killer of African Violets and one that is so hard to combat is Crown Rot. This disease is caused by one of two things, either the plant gets too dry or is overwatered. I have listed some suggestions to help overcome this condition and hope that if they are followed carefully, you will avoid seeing your plants wither and die.

First, be sure that your plant is in a small pot, one you are sure is too small for your plant. This causes the plant to be root bound, allowing the plant to bloom earlier than when in a large pot. When root bound, there is a surplus of roots that will dry out the soil quicker and prevent root rot. But here, care must be taken to prevent the small rootlets from becoming too dry or by being drowned out. Either of these conditions prevents the rootlets from obtaining the necessary oxygen from growth and when they die, root rot starts. If this disease is not stopped in the early stages, it will spread rapidly until the main root system is affected and then Crown Rot sets in.

The first sign of rot is the wilting of the outer leaves. At this stage, it is wise to take a good sound leaf cutting and root it in case the affected plant is not saved. A sure check on any plant suspected of having Root Rot or Crown Rot, is to let the soil dry out, then carefully knock the plant out of the pot and look at the outer rootlets. If they are white, repot the plant and add water in SMALL quantities. Please do not try and drown the plant because you think it is too dry. If the rootlets are brown, ROOT ROT has started. Remove all dark and brown roots, treat the remaining root with Detol, then replant in a sterile pot with sterile soil that has been slightly moistened. (Soil for potting should be just moist enough, so that if you pick up a handful and squeeze, the soil will crack or part when pressure is released.) Plant in this type of moistened soil but do not water anymore for at least 12 hours, and then only give the plant 6 to 12 DROPS of water, according to the size of the plant. Too much water when planting violets is fatal as it drives out all the oxygen from the soil and prevents normal growth.

If the disease has got such a hold that your plant roots are all brown, remove all the roots and lower leaves, then cut the base of the stem off past any point of disease, making a

new cutting from the crown or the top of the plant that is still healthy. Plant this in Zonolite or Vermiculite that is just moist, and in a short time, new healthy roots will form and the plant can be repotted.

We can be thankful that the types of rot mentioned will not spread to young or healthy plants. But if one plant is attacked, watch all other plants, as they might have received the same shortage or surplus of water that the first affected plant received.

It might be well to mention this point now, that in checking your plant to see if it needs water, do not assume that because the top of the soil is dry, the whole pot of soil is also dry. Push your finger down into the soil for a ¼ inch or so, and if the soil is dry that far down, then it is safe to assume that your plant needs water. But DON'T overdo the water treatment.

All soil to be used for violets should be sterilized. This is done by placing the well-moistened soil in a 250-275 degree oven for 30 minutes. Pots should also be sterilized after any bout of disease. Do this after first washing well with soap and water, then place them in a 275 oven for 30 minutes.

To sum up, remember sterilized pots and soil, careful watering and your plants will be free of the dread disease of root and crown rot.

We, in Winnipeg, can be thankful that our severe winters prevent practically all other diseases that affect African Violets from being carried thru the winter and giving us infected soil to work with. Therefore, our only precaution is to watch any imported plants. Keep them isolated from locally grown stock, and after these imported plants have had time to get over the shock of shipment, it is very wise to repot them in our local soil, in a new pot (both sterilized). The foregoing appears to be quite a chore, but the results obtained from the task are the very real joy of growing and showing African Violets in all their glory, and that indeed is a worthwhile reward for the fortunate grower.

WINNIPEG AFRICAN VIOLET SOCIETY

Novice, or expert, if you are interested in African Violets, you are cordially invited to attend the meetings of the above Society. Meetings are usually held the first Wednesday of each month, in Theatre "A", Government Bldg., Osborne and Broadway, Winnipeg, Man. For confirmation of time and place, phone Mrs. A. C. Driver, SP 2-4240 *or Mrs. W. Tanner,* LE 3-2402.

Fifty Years of Gardening on the Prairies

by R. DELALANDE
Lloydminster, Saskatchewan

I wonder how many people there are, ardent Horticulturalists, living today, who can remember the difficulties and disappointments encountered in the establishment of a garden fifty years ago — memory is apt to become a little erratic as one advances in years, so should I make any errors, I beg your indulgence.

In 1904, this area, 200 miles north and west of Saskatoon, was Primeval Park-land, the only means of arriving here was by wagon or on foot. I chose the latter and it was a nine-day jaunt all alone.

Land was immediately ploughed, mostly with oxen, for cereal crops and horticultural products. Potatoes were grown under the fresh ploughed sod, with very good results, the varieties being mostly Early Rose, Bovee, both pink potatoes. There was also a white variety, which was brought out from England a little later — the name was not known. Cabbages, beets, carrots, onions became an immediate necessity, the varieties being the same as are planted today. Ignorance of the devastating effect of the harsh climate was the cause of many disappointments, some were costly. In 1905, an order was sent to the Fonthill Nurseries, Ontario, for fruit trees and bush fruits and shrubs but with the exception of the currants and a few raspberries, the shipment did not survive one winter.

It became evident that short season varieties of greater hardiness had to be produced. Experimental Stations and trial plots placed in carefully selected areas were started in the far west and soon authentic information was available. A new start had been made. The wild fruits of Manitoba were the first ornamental trees to beautify our homes. Hybridization and selection soon produced earlier varieties of Crab apples and other fruits and vegetables. We were away with bells on and were very happy about it.

When the writer began to grow flowers, everyone said he was crazy. The first efforts were perennials and consisted

of Delphiniums of several varieties, of which Belladonna Hybrid was considered the best, together with Lychnis, Columbines, Iceland Poppies, Chrysanthemum, Indorum Bridal Robe and the beautiful Scilla Siberica. Annuals started in hot-beds were soon added such as Clarkia, Candytuft, Cornflowers, Stocks, Sweet Peas and pansies, etc., in fact the same plants that we grow today, the only difference being that we now have improved varieties.

Peonies were first planted about 1910, and quickly became very popular, a popularity not having diminished to this day.

The grower in the early days was blessed with a virgin soil, rich in humus and ideal for horticulture, we had no problems with weeds and insects, the only bad weed was "Pig weed", which seemed to spring up as soon as the land was ploughed. It was however, easily controlled, in comparison to the weeds we have today.

Insects were also few and far between and I do not think I found it necessary to spray for at least ten years; the cutworms were the worst and they could be controlled with bait.

I feel that, at this point, we should consider for a moment, and give credit to the many who embarked on the great effort which has produced the wonderful flowers, vegetables and fruits, etc., which we grow today in our gardens. The experimental Stations, Extension Departments of the Universities and such men as Professor Hansen, of Minnesota, Doctor Skinner, of Dropmore, Manitoba, and a host of others too numerous to enumerate. To all of these people, who have given of their time, I say a sincere "thank you".

What have we today? . . . A trip to the Show Room is an unforgetable sight . . . masses of glads in all the colours of the spectrum compared to the small spike of Brenchlyensis of fifty years ago. Forty years ago, the Sweet-pea reigned supreme in the Show and the gladiolus was just a promising child. The first break came with the Prince of Wales, Halley and Marshal Foch. The first two a salmon pink and the latter an "a la France" pink and were heralded as the forerunners of a great race.

The early Sweet Peas were all progeny of Countess Spencer, a pink variety found in the gardens of Countess Spencer and it is from that break that the modern Sweet Pea, in its endless variety of colour, style and placement, has developed.

Beauty through horticulture is now well on its way to making a better life for us all. It is noticeable now that when a new house is built, the owners do not consider it completed until lawns, shrubs and flowers are planted.

Horticultural Societies and Garden Clubs all help — and are doing so.

The Sunday "talks" by the Prairie Gardener, my good friend, Doctor A. R. Brown, are wonderful and a great help to many a budding horticulturalist. He was for many years a close neighbour and his botanical and horticultural knowledge has now been made available to all in the West.

It is indeed a long stride from the days of the Pioneers of fifty years ago to the days of F.1 and F.2 hybrids, Colchicine and Gibberelin, two drugs that have produced a completely new horizon. Today we pick ripe tomatoes at the end of July and think nothing of it. We pick strawberries all the summer and an abundance of raspberries.

Surely we should stop and think awhile . . . and give thanks.

Artificial Light as an aid to the Home Gardener

by Stanley J. WESTAWAY
Division of Plant Science, University of Manitoba
Winnipeg, Manitoba

For the home owner, necessity and interest alike dictate the development of the home grounds. Landscaping follows closely upon the completion of the house. And with a lawn established, it is natural that consideration be given to the types of shrubs and flowers most suitable and within the means of the owner to supply. Cost is, in many cases, a consideration in the early planting of the grounds and it is often necessary to extend the period of planting to cover the outlay that can be afforded. The question is how to get early color in the home grounds for the least expenditure.

This can be most easily affected by growing and planting annual flowers in profusion, provided one can grow plants from seed. We hear of enthusiastic gardeners growing from five to ten thousand annuals from seed for use on their own grounds. The cost of buying these as bedding plants would prove prohibitive. Certain facilities are necessary to carry out a program of this kind. A small greenhouse is essential as well as a few frames which may be used later in the season to harden off the plants before transplanting to the garden. With the use of the newer plastics, which may replace glass, the handyman can easily construct these for himself, and at a relatively low cost.

There is the problem, however, of growing satisfactory seedlings at the proper time in the preparation for planting in flats, and eventually setting out in the garden. One can resort to the kitchen window, but failure to germinate, damping off and spindly plants can discourage the most optimistic. The proper balance necessary between the factors of light, temperature and moisture is not always present. The use of artificial light, however, removes some of these hazards and can be used effectively at a fairly low cost.

Starting with good seed is essential. If one uses seed carried over from the previous years, preliminary testing will indicate whether or not they will germinate readily. By using a single 60-watt incandescent lamp a few feet away, seeds of

good viability can soon be induced to sprout. If one can ascertain the germination potential of the seed, much loss of time and effort will be avoided.

For the actual growing of the seedlings under artificial light, most basements are suitable. A table with sides sufficiently high to protect the plants from side drafts will serve as a platform. An enclosed growth chamber may be built, in which the required lights may be suspended. A room temperature from 60 to 70 degrees F. is required for most seedlings. Due to the vegetative nature of the seedlings, fluorescent light alone is sufficient, but a certain measure of incandescent light is necessary for maturing plants. To develop sturdy plants, a minimum light intensity of 600 to 1,000 foot candles is required. Seedlings may be grown for 5 or 6 weeks under a two-tube fluorescent lamp containing two standard white tubes. A three-tube grouping consisting of two standard white 40-watt tubes and one 40-watt standard cool-white is better. Single-tubed channel-type fixtures placed as close together as possible is the best installation. The lamps may be as close as six inches above the developing seedlings at first, but for the 4 or 6 weeks prior to setting out, they should be 15 inches from the top of the plants. Any number of units may be used, depending upon the facilities required.

Transplanting in the seedling stage may be carried out much earlier than we sometimes practise. It involves more time and care to handle the seedlings when they are very small, but if they are pricked out into pots or bands or flats as soon as they can be effectively handled, less trouble will be experienced from damping off.

Seedlings do not need to be grown under continuous light. Giving the plants 18 hours of light and 6 hours of darkness is a good practice, although they will do well with 16 hours of light. Prevent the seedlings from drying out. This is also very important with the very small transplants. As soon as it is feasible, the plants should be placed in a hot bed which can be converted later to a cold frame. Here, the plants may be protected at night, but given the advantage of direct sunlight during the daytime for some weeks prior to planting out in location. Early, well developed plants will give the most color and the longest season of bloom. They will add color to the new grounds, while plans for shrubbery and the more permanent features of the grounds are being developed.

For further information on this subject, we refer you to "Grow Plants with Artificial Light", page 81.

We Salute the Rosetown Horticultural Society

Rosetown, Saskatchewan

The Rosetown Horticultural Society has been in full operation for five years. It has held four Flower-Fruit-Vegetable Shows. The largest show was held in 1956 with 1,388 entries. Most difficult growing conditions reduced the total entries in 1957, but the members worked so hard to grow the 900 entries that it possibly should be considered the most successful exhibition.

An ambitious executive supported by an enthusiastic membership are the contributing factors to the flourishing Society. Two basic aims are kept before the directors — first, to stimulate a growing interest among the members so they will maintain and perhaps increase their gardening activity, and secondly to have an influence on the community by persuading more people to "grow things", with a resulting change in the appearance of homes both urban and rural, and a beautification of public grounds.

It was early realized that the successful operation depended on adequate funds, and although the purpose of the Society is not to raise money, a portion of the energies of the directors and members must go to money-raising projects. If the money used in 1957 had been raised by membership only, each membership would have been $10.00.

Some of the membership benefits included — regular meetings during the winter with speakers, slides, panel discussions and so forth. A short course in gardening, membership bulletins, premiums, plants for testing, field days, and of course, the flower show. We publicize our meetings and Society activities at every opportunity, urging more people to join, as well as keeping the community aware of the progress our Society is making. Fund-raising projects included the sale of glads, gloxinias, begonias, dahlias, etc., in the spring. More people began growing these bulbs when they were readily available and they could talk to people who were already raising them. In the spring of 1957, during a three-day sale, the Society sold over 21,000 bedding plants. Seventy-two members took an active part in this gigantic operation. Instead of advertising in the prize-list, local businessmen offered prizes for various classes in the Show. In the fall, a sale of Dutch bulbs for outdoor and indoor growing was held.

Horticultural Societies, to keep active, must provide a varied and interesting series of programs and activities.

Potato Problem in the Home Garden

by J. A. MENZIES
Division of Plant Science, University of Manitoba

The potato is attacked by many kinds of diseases and insects which reduce yields and damage the tubers. If you are one of the many people who grow only enough potatoes for your own use it is not likely that you will be familiar with all these pests, especially those which do not cause noticeable damage.

You probably know the potato beetle and the damage it causes, but not the tiny flea beetles which chew small holes in the leaves, or the equally small aphids and leafhoppers which suck the plant juices out of the leaves. They can reduce yields greatly, while the latter two also spread virus diseases. Among the diseases, late blight and scab may be familiar to you, but some, such as the viruses, are unknown.

No attempt will be made here to describe the specific insects and diseases or their specific controls. Instead, a number of general control measures which can greatly reduce the over-all problem will be discussed. Information on specific pests can be obtained by writing to the Publications Branch, Legislative Building, Winnipeg, or to the University of Manitoba.

Certified Seed — A number of the diseases are carried inside the tubers which, when planted, produce diseased plants. When potatoes are saved for seed year after year, there can be a considerable build-up of disease and a loss in yield and quality. Certified seed is as free of these diseases as possible and should be planted every two years. This is one of the most effective ways of controlling disease and improving your potato crop.

Crop Rotation — The home garden may be too small to allow rotation, but where possible it should be carried out. It is the most effective means of controlling diseases like scab and rhizoctonia which live in the soil and blackleg which may overwinter in the soil. If possible, potatoes should not be grown on the same soil more often than every three or four years.

Spraying and Dusting — Throughout spraying or dusting about every ten days will do much to control the potato in-

sects, late blight, early blight and the viruses which are spread by insects. Complete dusts and sprays containing both fungicides and insecticides are now available. The directions on the container will tell you what insects and diseases can be controlled and the amount to use.

Resistant Varieties — In cool wet seasons, late blight can spread very rapidly and if regular and frequent spraying or dusting is not carried out, severe damage may result. In the home garden, this rigorous control program is often neglected and it is here that resistant varieties will be of value. Canso, Cherokee, Kennebec and Keswick are four such varieties worth growing on a trial basis. Cherokee is also resistant to scab as is Netted Gem and where this disease is a problem they should be tried.

Healing of Cut Seed — Seed pieces may be planted immediately after being cut if soil conditions are favorable, but when the soil is wet and cold or hot and dry poor stands usually result from seed piece rotting. When these conditions prevail, seed pieces should be spread in layers about 6 inches deep in a warm, humid place for about one week. The seed pieces should be turned regularly to promote healing.

Careful Handling — Careful handling to prevent cuts and bruises while digging, transporting or storing the potato crop can greatly reduce loss from rot organisms.

Storage — Only sound, healthy tubers should be stored. Many cut and bruised tubers will be missed however and for proper healing of injured areas, potatoes should be held at 60 to 70 degrees F. with a high humidity for about two weeks after which the temperature is lowered. A storage temperature of 38 to 40 degrees F. will retard the advance of most rots as well as preventing sprouting. Used bags should be soaked and potato bins sprayed with a disinfectant such as Roccal or Teramine before being used.

WATER FREELY
- — plants that have large amounts of healthy leaves.
- — plants at peak of growing season.
- — when weather is sunny and dry.

WATER SPARINGLY
- — cacti and succulents with no leaves or only fleshy ones.
- — plants going to rest after their season of growth.
- — plants just starting growth after lying dormant.
- — when weather is raining and the air is humid.
- — when plants are in containers with no drainage holes.

Junior Garden Competition — Lacombe & District Garden Club

by T. E. NEWMAN, Acting Secretary
Lacombe, Alberta

A project we have found rewarding and which may be of interest to other Garden Clubs and Horticultural Societies is our Junior Gardens Competition. This competition gives every child in town and country an opportunity to grow flowers and vegetables in competition and for the incentive of a prize at no cost to the child or parent. Over the past four years our Club has worked out a method of reaching young gardeners which may assist other clubs in this worth-while project.

Early in April a committee of our Club meets and selects four varieties of flower seeds and two of vegetable seeds to be distributed free to competitors. This year, for the flowers we chose calendula, alyssum, clarkia and lavateria, for vegetables, beets and carrots.

Fifty mimeographed forms were made up by one of our Club members, starting age requirements, 11 to 15 years inclusive. Prizes, $5.00 for First, $3.00 for Second, $2.00 for Third. We specify plot sizes twelve feet by twelve feet so that Girl Guide and Boy Scout competitors may use this competition to assist them in obtaining their proficiency badges in Gardening. We state the number of seed packets to be distributed and that judging will be done early in August. In case further information is required, the secretary's phone number is given.

On arrival of the seeds we package them in large envelopes along with a brief guide on general care of plots. By the first of May these envelopes and application forms are turned over to one of our interested school teachers, who, through the facilities of our school, supervises the distribution of the application forms to the children of the proper age group. Those desiring to compete take a form to their parents, or guardian, who sign the form, to show willingness to furnish the necessary plot of ground. When the signed forms are returned to the teacher, the children are given their seed envelopes.

The application forms are then turned over to the Club Secretary who holds them in readiness for judging. This year forty-two of the fifty competitors were in a position to compete by August 11th, the date set by Mr. Young, our Club

President and myself as a satisfactory day for our preliminary judging.

Our school district takes in a large area and we make no stipulation on town or country competition. This year we had eleven of the forty-two competitors in the country and the balance in town. It makes lots of driving but we have been fortunate in lovely weather for our judging so it has made a pleasant six hour drive.

We select the best five plots, judging on the basis of 40 points for arrangement, and 20 points each for quality of plants, spacing and cleanliness.

We allow children full scope as to arrangement, providing they keep to the plot size, and of course they must do their own designing and work. They also must have at least two plants of each of the six varieties of seeds in their plots.

The five forms of our selected plots are then turned over to our district agriculturist who judges from them the first, second and third prize winners. The winners' names are announced and prizes given out at our flower show later in August.

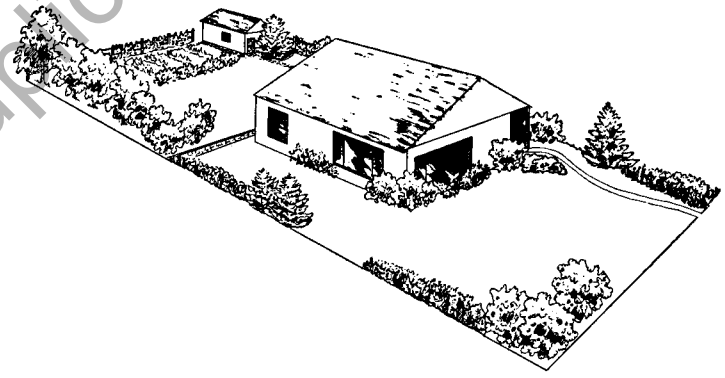
We have found this to be a rewarding project, to encourage interest in gardening at an early age. During the four years we have sponsored this competition, there has been some exceptional designs and we have noted a considerable improvement in the plots. The cost to the club has been nominal. The three hundred packets (five cent size) of seeds used were purchased by the Club for approximately $13.00.

We have found this project a definite move to promote gardening interest where it should be promoted, in our youth.

Planning the Home Grounds

by R. H. PATMORE
Patmore Nurseries, Brandon, Manitoba

The problem of planting the home grounds presents difficulties to many home owners, unfamiliar in many cases with the varieties of trees and shrubs available and with their characteristics. Unsuitable varieties may be chosen and because of their size or growing habits may be placed in an undesirable location. Uncertainty as to what and where to plant prevents many home owners doing any planting, when their grounds could be improved immensely by a few trees and shrubs.



Contrary to the general impression, the planting of the necessary trees and shrubs is not an expensive proposition. One or two of the desirable ornamental trees such as blue spruce, birch, mountain ash or elm to mention a few, with possibly a dozen or less shrubs are sufficient for most city lots. Their placing is important. For example, a spruce or pine should not be placed close to the house, unless they are of the dwarf types. A few dollars spent on professional advice, where available, may eliminate errors which can be difficult to correct after a few years of growth. Fortunately, there is not one right way and one wrong way to plant. There are many right ways. And by observing a few simple principles, the home owner can get a satisfactory planting and give free rein to his individual preferences.

When laying out the home grounds, it is usually helpful to make a sketch of the property, as near to scale as possible, giving location of house, windows, walks and other features. Then plot the trees, shrubs, etc., that you have in mind, changing them around until you can visualize the desired result.

Changes on sketches are inexpensive and even entertaining. After planting, they cost money.

There are distinct areas of planting around the home, and landscape men have terms for them. Base planting includes the area against the house; boundary planting, the areas along the sides of the property, particularly the front; accent planting, locations where a specimen tree or shrub can be placed with good effect to emphasize a feature or to show the shrub off to good advantage. There is also the back area planting, which may include private outdoor living areas, background for the house, etc., and in this, the tastes of the home owner have wide scope.

The base planting is often much overdone. As far as shrubs are concerned, this is a location for low growing shrubs, very dwarf if foundations are low, somewhat taller if foundations are high. Potentilla, pygmea caragana, the low growing spireas, roses, dwarf evergreens, etc., may be used here. One or two at each corner and flanking doorways with open spaces between, especially under windows, may be sufficient. If two or more shrubs are planted together, they are preferably of the same variety, except where a shrub of formal shape is used, for example a columnar cedar, in which case they should be individual specimens. While pyramidal cedar will grow tall if permitted to, they stand trimming well and can be used effectively close to the house. A continuous line of shrubs along the house is not usually desirable. A base planting which is overdone soon takes on an overgrown untidy appearance. Planters, now a feature of many of the new houses, limit the use of base planting. In some, shrubs or evergreens may be used, if the planter is low, and the bottom not cemented in. In many cases, however, planters permit the use only of annual bedding plants.

Individual trees and shrubs and sometimes groups may be placed at suitable points along the side boundaries at the front. On small properties, a continuous line of shrubs or trees is not recommended, as it tends to cramp the appearance of the property. A good specimen, possibly a cut leaf weeping birch or Mountain ash may be placed towards one front corner, and some other shrub or tree, possibly a blue spruce or pine, towards the other. It is usually desirable to avoid balancing them in a geometrical pattern, as an informal placing is usually more attractive. In particular, the balancing of two trees at equal distances from the walk in front of the house should be avoided. There may be a good reason for placing a fine specimen on the lawn in front of the house, but it should not be overdone and a formal pattern should be avoided unless there are good reasons for doing otherwise. Do not place tall trees close to the house. On larger properties,

a boundary planting of shrubs may be placed down the sides, but few city lots are large enough for this.

Accent planting is usually a feature of the front grounds. Specimen ornamentals such as pyramidal cedar or juniper, or the more desirable flowering shrubs are suitable for this purpose. They are placed in bends of walks or the outside curves, or towards the corner of a house. In large properties, they may be grouped. They may be placed out from a point in the shrubbery border. If planted near a walk, they should be well away from it since some shrubs, double flowering prairie almond, for example have considerable spread at maturity and if to close will require such trimming as to restrict flowering wood. They should be five or six feet away from the walk. Narrower shrubs, such as columnar types, or those that stand trimming can be closer.

The planting at the back of the house may include many features, such as flower or vegetable gardens, fruit trees, an outdoor living room surrounded by trees and shrubs. Fruit trees can form part of the screening or ornamental planting. Care must be taken to have trees and shrubs far enough away from the vegetable garden to prevent tree roots robbing the vegetables of moisture and plant food. It is advisable to have lawn areas as large as possible. Larger trees may be used to screen undesirable views, shrubs or hedges to give privacy. Since the average city lot is usually too small to permit shrubbery borders, the desired privacy can be secured by the use of vines. Native grape spaced three or four feet apart, growing over a trellis, 6 feet or more in height, will give a dense screen, free from insect pests. If the trellis is of wire, set on steel posts or pipe, the problem of rotting posts will be avoided, and the screen will last indefinitely. Evergreen groups at the back corners are often effective, and fruit trees spaced along a boundary will aid in screening.

Flower beds are a much abused feature of home planning. Cutting up lawn centers for such beds is not recommended, as large unbroken lawn areas set surrounding plantings off to much better advantage. Beds are better kept near the house or alongside walks, preferably separated by a strip of grass from the walk. They can be placed in front of shrubberies, if care is taken to prevent tree roots interfering with them. Beds should not be too wide on smaller properties, but can be of adequate length. Summer annuals usually give a better display of bloom than others; such plants as petunias, marigolds, salvias, geraniums, etc., will give bloom from early summer until killing frosts. Perennials may be used in border plantings and for naturalizing in shrubbery, but they are not usually desirable in front beds owing to their massiveness and height.

Rockeries are often desired by the home owner. They should fit into a natural setting, for example, connecting two levels, or where such natural settings can be created. A pile of stones in a level area with rockery plants set in them rarely looks attractive. Rockeries require considerable care in weeding, feeding, etc. This means hand labor, as machines cannot be used among the stones and plants. If unable to give them this care, do not include rockeries, as there is nothing so untidy or unpleasant as a rockery that is overgrown and uncared for.

In planning, the satisfaction of the desires of the home owner should be given high priority. This gives a planting its individual character and prevents repetition. There are well defined principles of arrangement that are usually followed, but they can often be violated with good results, especially if not repeated too often. A thick planting of blue spruce over a front lawn would not be recommended, yet one such planting has been very attractive, revealing glimpses of the house beyond the trees as one passes up the street. Such plantings repeated in an area would spoil the result.

A few don'ts might be observed. Don't space trees like a row of soldiers along or around a property unless there is a good reason for doing so. Certain formal types such as pyramidal cedar may lend themselves to such an arrangement, but others do not. Don't try to get as heterogeneous a mixture of shrubs in a group as possible. Massing of one variety gives a much better appearance. Don't crowd too many trees and shrubs into a small lot. As they develop, they will make the property look overgrown.

Keep in mind the effectiveness of your planting will be in proportion to the care you give it. If watered and fertilized (don't overdo the fertilizing) to get them well established, they will repay the trouble many times over. If left to struggle against dry weather, thirsty lawn grass roots, poor soil fills, etc., they will remain unsightly for years. Prune and stake where necessary to get well shaped trees. You will be surprised at the difference a little time and attention will make.

Pruning Ornamental Shrubs

by J. A. MENZIES
University of Manitoba

Pruning is a very old practice and one which most of us must tackle at one time or another. To do a good job a person should be familiar with the why, what, when and where of pruning, since improper pruning may result in more harm than if the shrub were not pruned at all.

There are two principal reasons for pruning shrubs: to improve and maintain their appearance and to limit their size. The latter is the reason why shrubs in many home grounds need to be pruned and pruned severely. This need would not have arisen if, in the beginning, a shrub of the right size had been planted in the right place. A spirea by the front entrance can be kept neat and attractive with a minimum of pruning, whereas a lilac in the same spot will become far too large and will need constant and severe pruning which will probably result in an unsightly mass of branches and leaves. It would be best to remove the lilac and plant a spirea or some shrub of similar size which will not grow beyond the desired height. This point is well worth emphasizing as it is the cause of much unnecessary work and many unsightly shrubs.

Habit of growth and response to pruning. Let us now look at how a shrub grows and how it responds to pruning. A shrub usually consists of several stems arising from the base. These stems increase in length and thickness and put out side branches. The bark becomes furrowed and gray. As the shrub grows older the top thickens and light and air are cut off from the base. The twigs and foliage on the lower part and new shoots that arise from the base are weakened and may die because of these shaded conditions. This results in the shrub becoming leggy, i.e. open at the base. As the shrub grows older there is a tendency for new growth to become shorter and weaker and for flowering to be reduced.

When a shrub is pruned we can expect some kind of response. Pruning during the dormant season, especially severe pruning, will result in vigorous new growth. This is because the top has been reduced but not the roots and each of the remaining stems receives a greater amount of food and

water. The new growth is longer and thicker which is why pruning is said to be invigorating. At the same time, the overall size of the shrub is less than if no pruning were done which is why pruning is said to be dwarfing. Summer pruning has a greater dwarfing effect than dormant pruning. Foliage has been produced at the expense of food stored in the roots and stems. When we remove this foliage before it has had a chance to produce much food we rob the plant of this food and growth is reduced. Summer pruning, especially if severe or delayed, may interfere with the normal hardening processes resulting in winter injury. For this reason, severe summer pruning or late summer pruning should be avoided.

Thinning Out and Heading Back. Two types of cuts producing entirely different results are used in pruning. In one, known as heading back, the terminal portions only of twigs and stems are removed. Buds immediately below the cut start into growth and where one twig was present before there are now two or more. It is a simple, easy method of pruning and one which is commonly used to control the height of shrubs. However, heading back usually results in a shrub having a dense mass of foliage at the top and none below, the natural structure and form of the shrub being destroyed. This is the type of pruning which is carried out on hedges where a very dense mass of foliage around the perimeter is desired.

In the second kind, thinning out, twigs are cut right back to the stem from which they arose and stems are cut back to laterals, to short stubs or to the ground. Thinning out stimulates growth in the remaining stems or portions of stems but it does not like heading back, increase the number of new twigs at the perimeter of the shrub. The shrub can be kept within bounds and at the same time it will retain a graceful, well balanced appearance. Most shrubs should be pruned by this method, with heading back being used only when it is necessary to thicken out the top or portions of the top.

Amount to Prune. In general, pruning should be light to moderate. If, at the planning stage, shrubs are carefully selected as to ultimate size, severe pruning will not be necessary. Most shrubs should be given a light pruning every year or two. These light prunings will give you a more attractive shrub than severe prunings given at intervals of several years. Severe pruning tends to destroy the natural appearance of the shrub and can often lead to numerous suckers arising from the base. These grow vigorously and straight up and it can be quite a job to control them and prune them so as to obtain an attractive looking shrub.

Time of Pruning. The proper time to prune is influenced somewhat by time of flowering but in general the early spring, while shrubs are still dormant, is the best time to prune most shrubs, and the best time to do any severe pruning. At this time, the framework of the shrub is fully exposed and it is easier to see and easier to remove weak, excess and poorly located stems and branches. During the summer, when shrubs are covered with leaves, it is much more difficult to determine what wood should be pruned out.

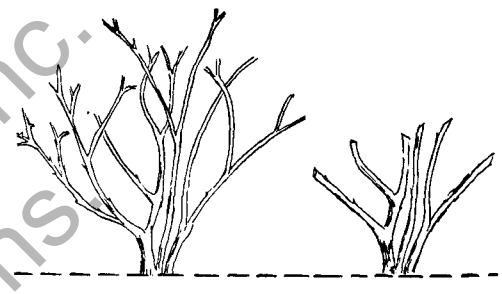
It was mentioned that pruning time was influenced by blooming time. Early blooming shrubs such as lilacs and most spireas, produce their flower buds around mid-summer. They will benefit from a light pruning immediately after flowering. This pruning should consist of removing old flower heads and thinning out weak and excess stems. However, it should be remembered that we are primarily interested in the form, the structure and the foliage effects of shrubs rather than in their bloom and that these effects are most readily obtained by dormant pruning. With this class of shrubs the fact that the flower buds are already present at the time of dormant pruning must be kept in mind. We often hear the complaint that a certain lilac carries few flowers. One common reason is improper pruning. The lilac carries its bloom at the ends of branches and if the shrub is headed back in the spring a great many flower buds will be removed and blooming will be sparse. So, rather than shearing back these shrubs, thin out weak and undesirable stems and twigs. This will promote the development of plump vigorous twigs and flower buds and enhance the appearance of the shrub.

Shrubs which bloom in the late summer and initiate flower buds in the spring are pruned before growth starts. Included in this group are Anthony Waterer Spirea, Tamarisk and Hydrangeas. They bloom on new wood so, for maximum bloom, they should be cut back severely. This will result in the production of many vigorous new shoots bearing flower buds. The amount of pruning will depend on the location. All stems can be cut back to the ground or to short stubs, in which case a new shrub will arise from the base. If the shrub is in an exposed position and such severe pruning would be unsightly, thin out some of the weak stems and cut the rest back to varying degrees.

Reasons for Pruning. The general aim of pruning was mentioned earlier but now some of the specific reasons will be discussed.

1. **Pruning at Planting.** All shrubs should be pruned at planting to compensate for loss of roots and to produce a well-

shaped shrub bushy to the base. At planting, broken and torn roots should be trimmed back. After planting, the top should be reduced by one-third to one-half. Weak, broken and poorly placed stems should be removed at the ground and the remaining stems cut back somewhat. If not cut back, growth is likely to occur at the top leaving a bare base. Cut these stems back to outward growing twigs and buds. This will produce a bushy, low-spreading shrub. After this initial pruning only light correctional pruning will be needed for several years. All that is necessary is the removal of dead and injured wood and poorly located stems. Some heading back of stems in the top and around the base may be desirable to make the shrub more bushy and dense.



2. **Dead and diseased wood** and broken branches should be removed when spotted. This wood is of no value to the shrub, spoils its appearance and may lead to the spread of disease.

3. **Directional Pruning.** The direction of growth can be controlled to a considerable extent by pruning. Heading back to outward growing twigs and buds will produce a more open, spreading and generally a more attractive shrub. If a more upright type of growth is desired prune back to inside buds and twigs. Stems of most shrubs tend to grow outward and this type of cut will result in more upright growth.

4. **Renewal Pruning.** The most beautiful form that a shrub can assume is the natural form. This is most easily maintained by renewal pruning in the spring. Some shrubs require very little maintenance pruning. Cotoneaster and Pygmy Caragana are prime examples. They have a naturally dense, bushy growth habit and about all that is required is a light correctional pruning.

Other shrubs tend to become leggy and open. This is not necessarily a fault as it may be desired to have the structure of individual stems exposed to view, but often, as around the foundation, we wish to have the shrub covered with foliage to the base. The older stems and poorly placed stems should be cut back or removed close to the ground. This will lower the height of the shrub and new growth from the base will keep it bushy down to the ground. Do not prune all shrubs

to the same size, shape and appearance but follow their natural lines. This will provide more contrast in the shrub plantings and a more attractive picture. When thinning out stems take care not to leave gaps which destroy the symmetry of the shrub. This point, of course, applies to all pruning. The natural beauty of shrubs can be easily destroyed by improper pruning so look the shrub over before pruning and decide what must be removed. Do not prune just for the sake of pruning, but with a definite objective in mind.

5. **To Keep Shrubs with Ornamental Bark, such as Dogwood and Willow, Looking Attractive.** The young bark in these shrubs is bright and colorful, while the old bark becomes dull and often unattractive. Older stems should be cut back close to the ground to force a vigorous growth of new wood. If these shrubs are in the background where their absence for a short time will not be noticed they can be cut back close to the ground or to a stump every year or two. A flush of new colorful stems will be produced. This is a good method of pruning the red and yellow-stemmed willows.

6. **Removal of suckers** is necessary with certain shrubs, including some of the lilacs and roses. If not required for renewal they can be removed at any time, the earlier the better.

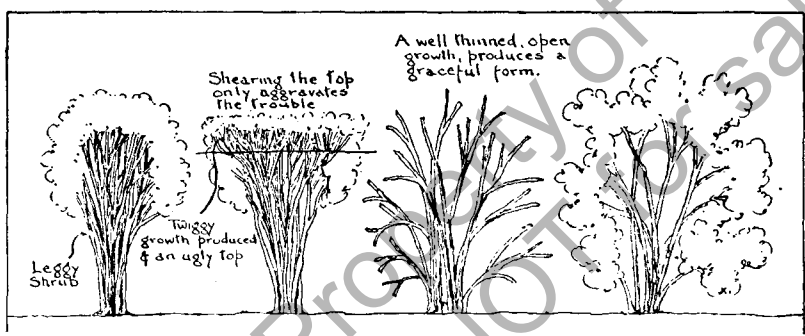
7. **Rejuvenation** of old neglected shrubs is a common problem especially with lilacs and the Tatarian Honeysuckle. While the whole plant can be cut back to a foot or so from the ground it is better to do it gradually. The first spring, cut back about one-third of the old stems. The second spring, another third may be removed and the remaining portion in the third spring. New stems will arise from the stubs and from below ground beginning the first year. These must be carefully thinned out each spring and so pruned as to produce an attractive spreading, bushy shrub. The root system of these old shrubs should be pruned as it is far too large for the new and smaller shrub. If the root system is not reduced it may be difficult to control growth and the shrub will quickly reach its former size which may be undesirable. Root pruning is easily done by shoving a spade deeply into the soil around the shrub, about two feet from its base. This root reduction compensates for the loss of top. Top growth will not be as vigorous and is more easily controlled.

Pruning Evergreen Shrubs. The dwarf Mugho Pine is one of our most dependable small evergreens. If left to itself it may become too loose and open. A dense compact form can be obtained by annual pruning beginning when the shrub is young. It is best pruned when new shoots have made most of

their growth. These shoots or candles are cut back one half or more. This will restrict growth in an outward direction, induce growth in the side buds and result in a compact, bushy shrub.

The dwarf cedars and junipers rarely need severe pruning. The dwarf cedars with a compact, rigid form should be lightly sheared in June before growth stops. New foliage will cover over the wounds. The Junipers with their informal habit should not be sheared closely as they are more attractive when allowed to develop their natural form. Pruning should mainly consist of cutting back new growth on branches which are growing too far out of bounds. Avoid cutting all the branches back to the same length as this destroys the informal outline. Light cutting back can be done in June as with the cedars. Heavy pruning should be done in the dormant season so new growth will be sufficient to cover the wounds.

In summary, here are some of the things to avoid when pruning. Annual heading back — this results in a flat-topped, leggy unattractive shrub. Late or severe summer pruning — may lead to winter injury, especially in the case of tender or semi-hardy shrubs. Severe pruning — should be avoided if possible. The resulting shrub is nearly always less attractive and many strong, vigorous suckers may arise to plague the pruner.



Winter Protection For Roses

by Hilda M. McAFEE, F.R.H.S., Edmonton, Alberta
"The Rose Queen of Alberta"

For the rose enthusiast, there is always one thing to remember with a great deal of satisfaction, and that is, the queen of flowers, as fragile and lovely as she is, has a stamina and strength beyond many coarser or less lovely shrubs, which proves her right to be an aristocrat.

There always has, and always will be a difference of opinion in regard to wintering roses. Experience is the best teacher, as all enthusiastic gardeners know, so without beating around the "rosebush" I will come to the point, growing an average of one-hundred bushes myself.

In regard to winter protection, a great deal, in my opinion, depends on how many bushes a person has grown through the summer months, whether it be an amateur with two bushes (his or her first try), a well experienced gardener with two dozen, or some other person who might easily come under the classification of rosarian.

A person with, say about nine bushes or less, could easily use the method of covering with a butter box, wooden tub, or even old-fashioned stove pipe and filling containers with soil right up to the top. However, it is a very good idea, and one which I follow myself, to prune the roses down to about the third eye, after Jack Frost has made his unwelcome call. This procedure taking place a few days before digging or covering, so that the wound may heal and dry a little. Usually, George Dickson and Frau Karl Druschki, two H. P. roses, are about four feet high.

This same procedure to a grower of about fifty roses would be quite a chore, for it would mean several wheelbarrow loads of soil to say nothing of finding fifty or more containers or covers.

Speaking for myself, this year again, I am using the "pit" method. The "pit" to hold one hundred bushes is approximately six feet long, two feet deep, and four four feet wide. The rose-bushes are pruned to about the third eye, stripped of their leaves and dusted with common powdered sulphur. After tying with strong cord in bunches of one dozen each,

they can be placed in the "pit" root to root. Tying in bundles works out very well in two ways. The first being that it is much easier to place twelve bushes into the pit at one time, than twelve single ones. In the spring it is very simple to remove bundles by grabbing the cord. Whatever soil is removed to make the "pit" should be replaced to form a mound for drainage.

Another method which I have used with great satisfaction, after pruning and dusting, is to place bushes, upright, in boxes of peat-moss or vermiculite, packed to top of box, in a root cellar. If the winter should be quite severe, these bushes are usually frozen as much as the ones buried out-doors.

Trouble is often caused by uncovering too early in the spring. This mistake is often uncontrolable, and could come under the heading "Spring Fever Among Gardeners". The symptoms are shown by the victim uncovering among other things rose-bushes to see if there is any sign of growth. It happens on a lovely day in April when the temperature has reached seventy degrees, but alas, it tumbles back to thirty during the night. Patience is the only remedy. It is just as unwise to remove the bushes from root cellar or pit and to plant outdoors. They must first recover from that dormant stage and kept damp in the basement or similar place for about ten days, or until life begins to show.

Some roses are much better keepers than others, even roses of the same variety differ greatly in size and looks. It is only common sense to realize that a bush that did not produce healthy foliage, or even bloom, under the same conditions and care you had on the rest, could survive the long cold winter.

RESTON MEMORIAL PARK, RESTON, MANITOBA

Reston Memorial Park

by J. H. MARTIN, Brandon, Man.

I first entered this little park to the skirl of the bagpipes on a decoration Sunday. We proceeded to a natural canopy of tree foliage for the address from the speaker. As I gazed through the trees to the spacious lawns, backed by native and specimen trees tapering down, to dwarfer bushes showing the perennial borders to advantage, I thought of the comrades who had given "all" to make this possible. Truly, this was a fitting memorial to them.

Again, as we marched to the magnificent cenotaph unveiled in 1921 by Mr. M. Ludlum, I found it formed one of the loveliest centerpieces of architecture — poppies galore with annuals to carry on after the tulips faded, and the word "Well Done" formed in 18" letters by hen and chicken (semperviviems). I scarcely heard the sacred ceremony in my haste to really look this park over. I have visited parks in several countries, from semitropical to these prairies, but here I found the gem of them all. Shady walks, spacious lawns, long sweeping perennial borders backed by tall trees, flower beds, etc. A sunken nursery glass-house artistically used with bushes to cover the necessary public convenience. As I meandered around, I found lovely peonies in full bloom with a couple of the feathery type just resting after blooming, Arguta, vanhoutti and pink spirea, mock orange, perennial scabiosa, bushroses of the Hansa, Betty Bland Grootendorst, etc., and hybrid tea roses. What a display of Delphinium, from white to blue, using the Chinese species to perfection. Golden glow, and particularly nice heliopsis provided the gold and yellow, as also did clump after clump of day lilies. Colorado and Koster blue spruce showed to advantage, with cutleaf weeping birch and a couple of cedar; and I also found two (I believe) bittersweets climbing on large trees.

It is hard to describe the loveliness of the whole landscape and one thing that impressed me "was the utter lack of name carving and petty vandalism" so often noticed in parks. This surely is a tribute to the youth of the district. Right here, I had to find out how this community project started and who the architect was. As I turned a corner, I met a rotund smiling faced gentleman who not only had green thumbs, but I detected a green halo over his head. Surely here was the daddy of the park. He was willing to talk flowers, but clammed up when I tried to get the true

history of this remarkable achievement for so small a Prairie center. Well, if Mr. Alf Archer wouldn't tell me, I soon found out from prominent citizens all about his visions and triumphs over trials and errors, difficulties of finding finances, etc., to foster his dream, right up to the magnificent monument to himself and fellow citizens who co-operated.

Here is a brief outline of how a little municipal hamlet of less than 600 people with its farming district around came to own this lovely park of about 4 to 5 acres, with its picnic grounds, bowling greens, besides the amities already mentioned, whose only water supply was our scant rainfall (since taken care of by the addition of its own dug-out). As in every community long range project, one thing was necessary and Reston had it — families like the one already mentioned — the J. R. Dunkins, Wm. Watts, N. Ready, Drs. Clark and Chapman, the latter still active as park president at the age of 94, W. Brady, J. Guthrie, A. E. Smith, E. H. Berry, A. D. Anderson, R. H. Bullough and others; men who not only were ready to dip into their pocketbooks but willing to roll up their sleeves and work. With this asset, plus the creative genius and garden know-how of Mr. Archer, the site was decided on, taking in a couple of blocks, including the road between and this being virgin prairie, one little slough ringed by a dozen or more native poplars (note, these succumbed in the hungry thirties).

To see this park as I last saw it in 1955, it was hard to visualize its birth in 1921 and to think that none of these men mentioned ever received a salary excepting voluntary donations to Mr. Archer to compensate the hours spent in the park, to the detriment of his tailoring and dry cleaning business. The story of the collecting of specimen bushes, trees and perennials, sale of cut flowers to defray expenses, exchange of surplus plant divisions with nurseries and parks; trials and errors to get specimens domiciled, coaxing fruits to bear as they should, encouraging bird life to build their summer homes (up to over a hundred nests plainly visible this fall as the leaves fell) . . . all this would fill a book.

If any community contemplates a similar project as this Reston accomplishment, get in touch with Mr. Alf Archer, Reston, Man., or as I understand, Mr. Jas. McMorran, editor of the Souris "Plain Dealer," who has a wonderful collection of Kodachrome slides of this lovely park that could be seen by interested groups on request. Take a drive out to Reston this summer and share my enthusiasm for this gem of horticultural accomplishment by a small community.

Lily Development At The University of Saskatchewan

by C. F. PATTERSON
Head Department of Horticulture
University of Saskatchewan, Saskatoon

"Consider the lilies of the field, how they grow; they toil not, neither do they spin; and yet I say unto you that even Solomon in all his glory was not arrayed like one of these". True when the foundations of the New Testament were being laid, this statement is equally applicable to the atomic age. Today lilies grow, they flower and they clothe themselves in a garb that surpasses the beauty of the garb of kings and of princes and of other dignitaries. These words of the Master, spoken of the simple flowers of the field and spoken in parable, are incontestable and place the lily of today in an enviable position among garden plants.

The lilies of the time at which these words were spoken have undergone some changes in the interval of 1900 years. The species of lilies of that day were doubtless essentially the species of lilies today. Plants of lily species have been assembled from various parts of the earth and placed in collections during recent years but these species, though unnamed in New Testament times, were essentially the species that now bear names and that adorn the gardens of this century. Many varieties have been developed from existing species during the past fifty years and these have added much to the list of lilies available for cultivation at the present time.

The Department of Horticulture at the University of Saskatchewan has had a small part in adding new varieties to the list of hardy lilies now recognized. About twenty years ago this Department began a project to develop hardy lilies of colors other than orange which dominated the lilies of this hardy class at that time and also to develop hardy trumpet lilies. The chief colors in the objectives set were white and pink though desirable lilies of other colors were not to be discarded. The lilies were to be sufficiently hardy in the prairie provinces of Canada to winter out of doors without mulching or without the giving of other artificial covering.

Many species and varieties of lilies were used as parents in this project. Some of those used were the following: Lilium elegans, L. dauricum, L. pumilum, L. cernuum, L. amabile, L. tigrinum, L. davidi willmottiae, L. regale, L. auratum, L.

sargentiae, L. candidum, L. speciosum, L. X Lyla McCann, L. X Grace Marshall, L. X Lillian Cummings, L. X Oriole, L. X G. C. Creelman and L. X Jillian Wallace. In the second and third generations, selected seedlings have been used extensively as parents.

Two serious problems have been encountered in this project. One of these has been the inability to effect hybridization in many cases. The other is the sterility obtaining in many of the hybrids. For instance, pollen of L. regale used on flowers of L. pumilum resulted in the production of seed in quantity on plants of the latter and pollen of L. pumilum used on flowers of L. regale resulted in a good set of seed on plants of L. regale. In neither case, however, did hybridization take place. The seed thus obtained from the plants of L. pumilum used as a female parent produced plants that were pure L. pumilum and the seeds obtained from the plants of L. regale used as a female parent produced plants that were pure L. regale. The seed produced in these cases was not hybrid seed and was purely maternal. A similar result was obtained with many other crosses that were made in the lilies. Then too, sterility is common in the hybrids obtained and many of the crosses desired have not been possible as a result. For instance, the hybrids White Princess and Rose Queen appear to be unable to produce seed. Fruits may be induced to set and to develop through the use of certain chemicals but such fruits have been found to be seedless. From the thousands of pollinations made using these varieties as female parents, not a single seed has been harvested.

The results to date have been very encouraging, however. The Department has named and introduced thirteen varieties of lilies that are very distinctive and that have been readily accepted. Some of these are pink, some are near white (cream at the time of opening and bleaching to white) some are rose, one is a beautiful yellow and one is pure apricot. These varieties differ in height, ranging from two and one-half feet to six feet. They differ in number of flowers to a stem, ranging from nine to forty. Reflexing is prominent in the flowers of these seedlings though marked differences do occur. The flowers are pendant in most cases though they face outward in Apricot Glow and some face outward in Lemon Queen.

The varieties named and introduced by the Department are described very briefly in the section which follows. These introductions have all taken place during the past eight years.

APRICOT GLOW — The flowers are deep apricot in color, facing outward and are up to seven inches in diameter. The plant is a strong grower, reaching a height of three and one-half to four feet, and bears up to thirty-five flowers to a stem. The blooming season is July. This is a very outstanding lily in its color class.

BURNISHED ROSE — The flowers are an apricot-rose or burnished rose in color, measuring four inches or more across, are nodding and number up to fifteen to a stem. The plant is a strong grower reaching a height up to five feet or more and it blooms early in July.

EDITH CECILIA — This is a very attractive and very pleasing pink lily with nodding reflexed flowers measuring up to three and one-half inches across and it bears up to forty flowers to a stem. The plant grows to a height of three feet, blooming in July. This lily was awarded the Reginald Cory Memorial Cup by the Royal Horticultural Society of Great Britain in 1955.

FUCHSIA QUEEN — The flowers in this lily face outward and all tend to face in the same direction as if in a spray. Their color is fuchsia-pink. The plant is a moderate grower reaching a height of two and one-half feet and bears up to fifteen four or five-inch flowers to a stem. It blooms in late July and early August.

JASPER — The flowers of this variety are old rose in color and measure up to five inches in diameter. They are pendant and borne eight to twelve to a stem. Flowering takes place during July.

LEMON QUEEN — This is a beautiful deep lemon-yellow lily with moderately reflexed flowers measuring up to four inches across and on long stems. Some are pendant and some face outward. The plant is a strong grower, up to five feet in height and produces up to thirty flowers to a stem. This, too, is a July blooming variety.

ORCHID QUEEN — The flower of this variety suggests somewhat an orchid, hence its name. The plant grows to a height of three to three and one-half feet with a sturdy stem bearing up to twenty flowers. The flowers are up to five inches across with three zones of coloring — the outer portion of the "petals" being dawn-pink, the middle area being straw-yellow and the basal parts, which made up the centre of the flower, being pale shell-pink, the colors merging one into the other. It is July flowering.

PINK CHARM — The flowers are predominantly pink in color. The face of the flower is pale pink on the outside and creamy toward the centre. The flower is reflexed and pendant

and reaches a diameter of four inches. The plant is sturdy, grows to a height of three feet and produces up to fifteen flowers to the stem during July.

ROSALIND — This is probably the most distinctive and the most outstanding very hardy pink lily that has been introduced. The general color of the flowers is medium rose-pink, with the backs of the "petals" showing good depth of color. The face has a very slight tint of apricot over the pink toward the centre of the flower. The plant grows up to three feet in height with up to thirty reflexed and pendant flowers, four to four and one-half inches in diameter. Its season of bloom is during July.

ROSE DAWN — The flowers of this variety are predominantly deep old-rose in color and the face of the flower has a slight tint of orange, particularly toward the centre. The plant is a sturdy grower, reaching a height of three to three and one-half feet and bears ten to fifteen four-inch flowers during July.

ROSE QUEEN — This variety has stems like those of a sunflower, reaching a height up to six feet and bears up to thirty flowers to a stem. The flower is deep old-rose in color, reflexed and pendant and measuring four inches or more across. The blooming season is late July and early August. It is a very striking and outstanding lily.

WHITE GOLD — As its name suggests, this lily is off-white in color, in reality a creamy white, that blanches to a white after opening. The flowers are reflexed and pendant and measure up to four inches in diameter. The plant grows to a height of two and one-half to three feet and bears from nine to twelve flowers.

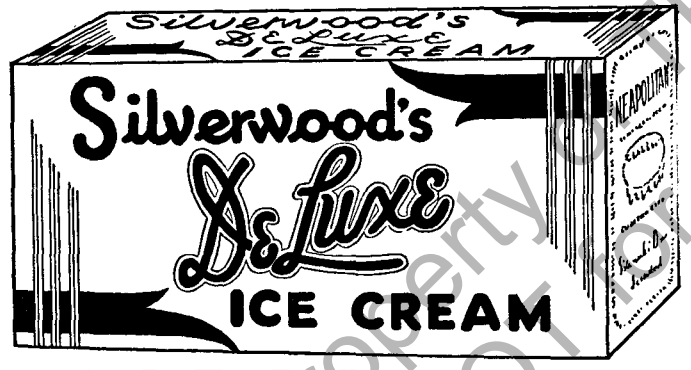
WHITE PRINCESS — This is a sister variety to White Gold but grows a little taller and produces a larger and more attractive flower than that found in White Gold. Its color is creamy-white marked with delicate dark lines. The plant is a good grower reaching a height of three to three and one-half feet and produces up to twenty flowers to a stem late in July and early in August.

Many other selections are in the process of being multiplied and being given further testing. Some of these will doubtless be named and introduced as soon as the supply of bulbs will permit. Variety in stature, variety in size of flower, variety in color of flower and markings and variety in blooming season characterize these selections. A tall strong-growing seedling with flowers deep golden in color and with attractive

markings, a citron-yellow flowered seedling with strongly reflexed division, a smoky-flowered seedling of good vigor, a large flowered purplish-red seedling, a very dark rich glossy red-flowered seedling and a pink-flowered upward-facing seedling are samples of those to come.

The lot of the hybridizers in this project has not been without disapointment. Even with all the effort expended to date and even with all the attempts to obtain trumpet-flowered seedlings that have been made in this project, these hybridizers have not succeeded in flowering to date a hardy trumpet-flowered lily seedling. Many thousands of seedlings have been grown from seed resulting from the use of a trumpet-flowered lily as one parent but the desired combination appears to have failed to take place.

Whether or not it is practicable to obtain very hardy lilies with trumpet-shape flowers remains to be seen. The make-up of the cells in the common lilies appears to be such that hybrids between the trumpet lilies and those with strongly reflexed flower divisions should be possible. The author of this article is hopeful that such lilies will be obtained. This belief is based on certain experiences gained during the prosecution of the work with lilies over a period of two decades. The prospect is stimulating to say the least.



"They're Colourful"
Selected Flowers for Prairie Gardens

by HECTOR MACDONALD
Supervisor, Assiniboine Park, Winnipeg, Man.

ZINNIAS, for their ease of cultivation and tolerance of dry conditions, are tops for Prairie Gardens. The new Giant MISS UNIVERSE strain, in mixed colours, is outstanding. New named varieties in the Dahlia flowered class are CRIMSON MONARCH, GOLDEN DAWN and SALMON QUEEN.

Everybody likes Roses. My favourites are PEACE, INDEPENDENCE, FASHION and CRIMSON GLORY.

Have you tried the ZVOLANEK MULTIFLORA SWEET PEAS? I am sure they are the best strain for our conditions, real early, long stems and lots of flowers.

Burpees introduced GLORIOSA DAISIES last year. Best started indoors. The glowing petalled blooms are over six inches across.

Another newcomer that stood up to its advance billing is AGERATUM BLUE MINK. It is one of the best edging plants to come our way in a long time.

Talking about edging plants, try a few bulbs of OXALIS DEPPEI, they multiply rapidly and store like Gladiolus. In no time at all you can supply your neighbours. The leaves have brown shading and are so like shamrock they start Irishmen arguing.

BEGONIAS, of course, for that shady corner. Do you know the cute MULTIFLORA BEGONIAS, I like HELEN HARMS, FLAMBOYANT and JEWEL OF GHENT, they can be had in mixed colours, too.

Most DAHLIAS are grown from roots and stored over winter. Three old varieties which are hard to beat are AMBASSADOR VAN KLEFFENS, GERRY HOEK and SHIRLEY WESTWELL. A packet of UNWIN DAHLIA seed started indoors, like tomatoes, will give a wonderful show of varied colours and bloom.

I found DWARF FAIRY CANDYTUFT last summer, it's new and neat, and mixed colours.

Tall, showy HOLLYHOCKS have been a feature of our yards for decades. New to me last year were HUNGARIAN HOLLYHOCKS, about four and a half feet high, they form bushes nearly as wide as they are high. Season of bloom is extended.

MARIGOLDS make a wonderful show, if aster yellows, are not too severe. The CRACKER JACK variety, of large flowered mixed colours, is outstanding. A good single is NAUGHTY MARIETTA, and for edging YELLOW PYGMY.

Nothing excels PETUNIAS for making a splash of colour. RED SATIN is my choice in the reds, SNOWSTORM in white, ROSE OF HEAVEN pink and BLUE BEDDER. I am looking forward to seeing MASQUERADE, purple and white, EXQUISITE, a fringed and ruffled scarlet and white, and WHITE SAILS, this summer.

PANSIES are popular, I like VIOLAS better, they come in straight colours and seem to stand up better through the summer's heat. MOUNTAIN GUARD, CHANTRYLAND and YELLOW GIANT are good.

I must mention SALVIAS, FIREWORKS is a grand dwarf form of the familiar red, SALVIA FARINACEA is not well known, blue flower spikes, grey foliage, make excellent texture plants.

For continuity of bloom we must have perennials. Before the annuals are through the ground, our old friends, tulips, rock cress, moss pink and others are in bloom, and after frost has touched the tender flowers, chrysanthemums and michaelmas daisies carry on. As we are familiar with most of the perennials I will limit my selection to a few which, in my opinion, are above the average.

LILLIES are receiving a great deal of attention these days. I like DUNKIRK, GRACE MARSHALL, CENTIFOLIUM and BRIGHT CLOUD. I like many more but that will do for here.

The modern DAY LILY (HEMEROCALLIS) is somewhat of a gamble. I have found GAIETY, T. S. GAYNER, GLOWING GOLD and TALISMAN hardy for three winters and very beautiful.

A little-known perennial, MONARDA, CROFTWAY PINK, is one of the loveliest things we have in the Winnipeg area.

Fortunately, the editor has put a limit on my space in the Prairie Garden, so I must stop. This list may help some of our readers when making their selection from the various catalogs.

Prize Contest

No doubt most of our readers have their favourite flowers, and we would like to hear about them. Write us for a short description of the **five** flowers you like best, and do best in your garden. For the best letter and the next best letter THE PRAIRIE GARDEN is offering cash order prizes to the value of $10.00 and $5.00 respectively, (seeds, bulbs, etc.). Address your letters:

MR. G. S. REYCRAFT,
92 QUEENSTON ST.,
Winnipeg 9, Manitoba.

Before October 1st, 1958.

Grow Plants with Artificial Light

by J. W. BATEMAN
Manager, Lighting Institute
Canadian General Electric Co. Ltd.

Light Essential

Light is essential to plant growth. This is well-known. Some plants require more light than others, and for different lengths of time. Artificial light can be used alone or to supplement daylight.

For many of the plants we wish to grow, there is not enough daylight at the time of year when we would like to have it, and outdoor temperatures are often too low to permit the use of the daylight there is.

Use Electric Light

Electric light is simple to use, and the cost is low. The amount of light required can be determined readily, and the time of use controlled. It is not subject to the tremendous variation of daylight in a window, for instance, where it may change from strong sunlight with too much heat, to no light and a falling temperature.

It is possible now to grow almost any plants entirely under artificial light, and this is being done. The Department of Agriculture and Research groups of universities have been doing this for several years. They have developed lighting techniques which make possible the growing to maturity of several crops of grain per year for instance whereas only one crop was obtained out-of-doors. This has greatly speeded up experimental work.

It is not necessary to use special electric lamps for this purpose. The regular incandescent household bulbs may be employed, or the regular fluorescent lamps so widely used in commercial and industrial installations, and in homes today.

How Much Light?

Some plants require more light than others. Horticulturists can supply this information. In the greenhouse, ten footcandles of light may be enough to supplement daylight. In the growth chamber where electric light alone is used, 1,000 to 2,000 footcandles or more are used. Daylight in the summertime reaches as high as 10,000 footcandles.

What Fluorescent Lamps to Use

There are various types of flurescent lamps which may be used in plant growth. The 4-foot length of lamp is most popular, but the 8-foot lamp is good for longer benches and the 2-foot length of lamp may be used for very short benches. In general, the longer lamps are somewhat more efficient.

Perhaps the 4-foot rapid start type of fluorescent fixture would be as good as any to use, but the 8-foot slimline fluorescent can be used in larger installations.

In colour, the standard cool white is commonly used. Daylight fluorescents are all right too, but give about ten per cent less light. Deluxe cool white lamps have more red in the light, but give about 25 per cent less light. Some growers of African violets like the results produced by using one standard cool white, and one pink fluorescent lamp in each fixture. Actually, the amount of light used has far more influence on the results than slight variations in the colour of the light.

Four-foot and eight-foot lamps are available also with an internal reflector right in the tube itself.

How Much Does It Cost?

Incandescent lamps are low in price. A 60-watt inside frosted lists at 22 cents, a 100-watt at 28 cents. Both are designed for 1,000 hours average life. A 60-watt neck reflector lamp lists at 70 cents, and 100-watt at 85 cents. Both of these are designed for average lives of 2,000 hours.

At a power rate of two cents per kilowatt hour, a 100-watt lamp can be burned ten hours for a cost of two cents. If the rate is one cent per kilowatt hour, the cost of electricity still is only five cents for ten hours.

All fluorescent lamps suggested have rated lives of 7,500 hours. A 2-lamp 4-foot industrial fixture consumes just under 100 watts, a 2-lamp 8-foot fixture about 172 watts. Thus, a 2-lamp 4-foot fixture for each cent per kilowatt hour of power rate uses about one cent's worth of electricity in ten hours. (This fixture has a light output over three times as great as the 100-watt incandescent lamp.)

Winter Gardens

You can have a growing healthy garden in your own home in the dead of winter. This can be in the basement, in a living area, or in a greenhouse. Fluorescent and incandescent lamps can be used alone, in combination, or to supplement daylight. The cost of the lighting need not be great, and the cost of the electricity used is relatively low.

A footcandle is the amount of light received on a surface one foot away from a standard candle. In a greenhouse where reflector-type incandescent lamps or regular lamps in reflectors are used, one watt per square foot of floor area will provide approximately five footcandles. Thus, a 100-watt lamp would provide an average of 10 footcandles over an area of 50 square feet. For fairly even light, the lamps should not be spaced further apart than 1½ times the distance above the plants. In this illustration then, the lamps could be spaced about seven feet apart and 4½ to five feet above the plants.

Fluorescent lamps provide over twice as much light for the wattage used. A two-lamp industrial fluorescent fixture with 40-watt four-foot lomps will provide twenty footcandles or more over an area of fifty square feet. At the same time, there is only about one-fifth as much radiant heat, so there is no trouble from too much heat concentration with the lamps close to the plants. For these two reasons, and also the long life of fluorescent lamps, there are very popular for this application.

What Plants to Grow?

Literature on the subject lists many plants that do well under artificial light. Included are: cactus, cala lily, geranium, gloxinia, hyacinth, phlox, salvia, snapdragon, asparagus fern, Boston fern, English ivy, philodendron, rubber plant, umbrella plant, Wandering Jew, and African violets.

Plants can be started from seeds or cuttings. To start seedlings, a fixture with two 40-watt fluorescent lamps mounted about one foot above the tray is satisfactory.

African Violets

Many people are growing African violets under fluorescent lights, very successfully. These plants do better under a fairly high intensity of light. Under the auspices of the African violet society, tests on the growing of Saintpaulias under artificial light were conducted at Ohio State University.

Plants were grown in a windowless basement with 65 degrees temperature, and 60% humidity maintained. It was concluded that is is possible to produce a good plant under 600 footcandles of light with 18 hours per day exposure time, in two to four months after potting. Under this light, the increasing of the time from six to 18 hours per day more than doubled the flowers per plant.

To get 600 footcandles on plants 12 inches below the lamps, two or three 2-lamp industrial reflectors mounted side by side close together are required.

Planning, Prices And Products

by P. J. MORAN
Dept. of Public Works, Regina, Sask.

Planning has become such an everyday part of our life that most of us use this word daily. When we are asked if we are going to do some particular thing during the course of the day, our reply is usually, "I hadn't planned to," or "I had planned to do something else." It is not feasible that such planning is also plausible in laying out your own home grounds.

The average homeowner seems to visualize a landscape plan as something consisting of sheets of blueprints embodied with names and symbols of unusual character, whereas in actual fact the homeowner undertaking his own work requires only a simple accurate drawing. Nothing elaborate is required for a fifty-foot lot and providing it is drawn to scale and legible to the person undertaking the work of planting, the planner can proceed with confidence, blending the Nurseryman's product, both economically and effectively, into their proper setting.

Many new homeowners are faced with at least one mortgage at the time of occupancy and the thought of additional costs for landscaping tends to discourage the initiation of any such scheme. There is only a limited number of individuals in any new housing district who can say that money is of no concern in getting the landscaping done. I believe the opposite is true in most cases and that money is the major concern. Only with a well prepared plan can the economics of the situation be properly evaluated. If a plan is prepared and only carried out in part due to limited funds, at least there is a logical development to the scheme and further development can be readily resumed when additional funds are available.

I believe it is the general practice and the most logical development to have the approach or public area's of new homes take precedence in development over other areas. People have enough self pride that they are interested in complementing their house which already represents a considerable investment. There are a number of different approaches taken by homeowners to such an endeavour and I like to

classify these various types into three groups. The first one comprises those persons who want to plant a few trees and shrubs around the house because they like trees and shrubs. They haven't given much consideration as to where they want to plant them or how many they need, but they have just so much money to spend and they want some trees and shrubs around the house. So, they pick up a nurseryman's catalogue and look at the prices of various trees and shrubs and pick out the ones whose prices add up to the exact amount they had intended spending. In some locations, they will plant too many ornamentals and where they don't have enough they'll stretch them out but above all they won't spend more money than they had intended. So, irrespective of what the overall effect is, they have their trees and shrubs around the home.

Also included in this group are those people who like flowers in their front yard because, as they say, "they're not much for cutting grass." They feel everyone likes flowers and they do a lot for the house, especially when the house is painted blue and the flowers are pink. They have a whole backyard in which to plant flowers but they like them in the front yard where everyone can look at them and where it will "brighten the place up." Besides, you don't have to spend so much money at one time when you plant flowers. You just pay a little bit out each year and they don't catch the snow in the winter.

I have a friend who also fits into this category and each year he has trees, shrubs and perennials which he buys or has given to him. Each spring he comes to me requesting that I draw a new landscape plan of his property so that he can fit all his latest acquisitions into it. He says he likes plants.

I have another friend who telephones me up each spring to tell me that a nurseryman is at the door and wants to sell him some shrubs. My friend wants to know if such and such is a good shrub. He doesn't know where he wants to plant it or how many he should buy but he does want to know if it's a good shrub. If I knew for what purpose he wanted to use the shrub I would be in a better position to express an opinion, but I think he now feels I just don't know and perhaps he's right.

The second group consists of those people who seek means other than through their own initiative to accomplish their landscape program. In some cases, it is due to a lack of time that one can devote to such a project or that the individual's finances are such that he can afford to leave this matter in the hands of some other qualified person. In many

instances, however, it is more often a case of inexcusable ignorance than a lack of time or abundance of funds. The extensive outlets that presently exist for our reference and observation of ornamental material are almost unlimited. The Dominion Experimental Farm System, the various universities, the provincial institutions and our city park systems provide us ample opportunity to observe ornamental material suitable for landscaping the home. Publications from the Information Service of the Dominion Department of Agriculture, the various university departments of extension and provincial departments of agriculture provide us with publications of more pertinent information. Since many people have neglected to use their own initiative by making use of these services, and because the services of professional landscape planners are limited, it has been necessary for many nurserymen to provide a landscape planning service. The request for such service comes from the general public and the nurseryman finds it necessary to provide it if in some cases he is to make any sale at all. Providing the ornamental material sold is not in excess of good planning requirements, the nurseryman is providing an excellent service. However, when such a condition does exist, where the person doing the planning is primarily in the selling business, the temptation of overselling does exist. Likewise, there is an existing temptation to overemphasize the slow moving products. Overplanting means excessive expenditures which the average homeowner can ill afford. Sound planning on the part of the homeowner will assure him of sound material requirements and sound costs.

The third group consists of those few people who have first undertaken the time and effort to formulate their plan on paper. Not an elaborate plan but accurate and effective. In this group you will find those individuals who have not been brainwashed by their neighbors who maintain that to arrange an artistic setting at the front of the home was beyond the average person's capabilities. In this group you will find those people who have formulated a simple picture with ornamental material of which every component part was placed for a purpose — to complement their house which already constitutes a heavy investment. You will also find in this group those people who are aware of everyone's artistic capabilities. You will probably refer to it as self pride but is it not fair to compare the principles of complimenting the public areas of our homes using ornamental material with the principles of complimenting our bodies using ornamental dress. How often have you heard people say, "that such and such really does something for that person." How people avoid

wearing anything "flashy" because it draws attention away from their good points. How the ladies arrange their hair, makeup, and jewellery, in such a manner as to make a thin face appear wider, a wide face narrower, a round face appear more square and vice versa. Call it self pride if you wish but it is still artistic in nature and the same principles apply in complimenting our homes. The elements alone are different. Is it not likewise true that it is inside our homes, out of the public's view, that we wear our "flashy" clothes, our lounging clothes, etc., and that it is in the garden or recreation area of our home grounds that we make greater use of our more "flashy" ornamental plant material.

In this group of people you will find those who have used the nurseryman's products as elements arranged to produce seasonal pictures in their approach or public areas; who have observed the ornamental materials at the various government experimental stations and used them to gain some particular effect in their plan; and who have perused the various government publications regarding their planting and care. These are the people who have spent a little time in planning to assure that their money has been well spent and that proper use has been made of the nurseryman's products.

The Strawberry Trial

by WM. OAKES, Miami, Man.

It is many years since I was introduced to the queen of fruits, and I have spent many of them trying to improve on what we had, and to get them to like our growing conditions.

Lately, I have tested some of the newer varieties of everbearing strawberries and they do not perform well with me, in fact they do not produce enough to pay for their initial cost. Some growers, however, claim that with them they perform very satisfactorily. In my breeding work, I have had many very promising plants which eventually did not turn out well, in fact some were outstanding and if conditions suited them would have been outstanding with me.

I have used Elgin to get better fruiting varieties and have some very promising new ones with large fruit and heavy yields. These ripen when Glenheart is past its best season.

At the present time I am working with plants obtained from the University of California. These varieties seem to be fairly resistant to leaf spot and some of the virus diseases, and at the same time have plenty of vigor. I have a small plot in Los Angeles where I can watch them at their home. The ones that appear best are moved to Manitoba for breeding work.

My advice to those who are intending to plant is:— The ground should be in good shape and fairly rich. Several varieties should be planted. When the plants arrive, they should be soaked in water for a short time. A spade or shovel should be pushed straight down into the soil to a depth of about six inches. The spade should then be raised forward and up, lifting the soil with it. The plant should be placed on the straight side of the hole, the roots fanned out, and the plant inserted with the crown of the plant left just a shade below the surface of the ground. Soil should be pressed in firmly around the crown. If the soil is very dry, the plant should be well watered.

It is advisable to spray the plants regularly to control insects, particularly the Tarnished Plant Bug.

In addition to the regular eating varieties, there are also varieties which are grown for ornamental purposes, which are usually grown from seed. The fruit on these is small and there

are no, or very few, runners produced. These are usually grown as edging plants. Another novelty variety is one grown for ground cover work in California. It is almost prostrate in its form of growth, has a very dark heavy textured leaf. The blossom is large and low set, and the plants make a very effective form of ground cover, particularly on banks and around stepping stones, although the fruit is of not much account. The plants are sold in flats, and are planted in clumps, rather than as separate plants.

Windbreaks

JOHN WALKER

**Superintendent, Forest Nursery Station,
Indian Head, Saskatchewan**

After over half a century of promoting the planting of windbreaks in prairie Canada by Canadian Department of Agriculture Forest Nursery Stations, it may be questioned if space should be used in this publication for discussing them further. During these fifty years, however, two new human generations have been born and are taking over in farm development and management and in home maintenance and improvement. They have to learn for themselves what is useful as windbreak material and how to use it.

Or course, they can learn from experience, but in this phase of home improvement and development the wiser plan, surely, is to be guided by the experience and testimony of others. By doing so, pitfalls as well as expensive mistakes may be avoided. It is hoped that the following notes may provide interesting as well as helpful advice on Windbreaks as they relate to prairie gardening.

Benefits from Windbreaks

The main benefits result from reducing wind velocity. This, in turn, means a lessening in loss of soil moisture (direct and through plants), reduction in mechanical damage to plant growth (by wind itself, heavy rains and hail), controlling the movement and melting of snow, and diminished soil erosion. In practice, all of these benefits mean improved conditions for germination of seeds, growth of plants, pollination of fruit blossoms, quality and yield of vegetables, etc., hence better returns and greater satisfaction from gardening efforts. The comfort of the family members responsible for the garden chores, and protection for the home are not insignificant influences. Windbreaks also, in varying degree, attract birds which, besides being attractive and interesting in themselves, are valuable in keeping insect pests under reasonable control. Isn't it true that earthworms in lawns suffer casualties after rains when robins are around?

Place of Windbreaks

To provide protection against wind, windbreaks must be planted at right angles to the direction of prevailing winds.

The harmful effect of winds may vary throughout the year. For instance, in most areas a windbreak on the north and west sides will reduce to a minimum inconvenient drifting snow, while a windbreak on the south side will prevent rapid melting of snow and reduce the drying and wilting effect of hot, southerly summer winds.

Of course, with no close neighbors and no great limitation of area for planting windbreaks, it is easier to develop multiple-effect windbreaks on farm property than on a town or city lot. Nevertheless, when establishing them, every advantage and benefit should be sought from windbreaks, whether or not they consist of one row or more.

The influence of shelter and shade on the south side in retaining snow cover on perennial borders has been forcibly illustrated at the Forest Nursery Station, Indian Head, Sask. A picture taken on March 2, 1957, shows no snow cover on the border with exposure to south, while a generous and protective snow cover remained on the border with exposure to north (hedge to south).

There are other tangible benefits from windbreak protection on the south side, such as, stronger and longer-lasting blooms on flowers, delayed blossoming of fruits which often means escape from damage by late spring frosts, and lessened need of artificial watering during dry periods.

In a city or town lot of limited size, owners may hesitate to plant living windbreaks because of likely interference with the growth of other garden plants, including the lawn. Serious interference or depression can be avoided if vertical root-pruning is systematically carried out alongside the windbreak hedge.

Any suitable garden tool may be used but root-pruning is perhaps most easily done by the use of a sharp spade when the garden or border is dug. If the garden area is plowed, an additional furrow made alongside the windbreaks will sever most "straying" roots.

Specific uses of a windbreak hedge, apart from serving to curtail wind influence are to provide: 1) a dividing line in the home garden, 2) a suitable background for other plantings, 3) a screen to shut off noise, dust, traffic or an undesirable view, 4) privacy for family in the garden. Whatever purpose is to be served will govern the choice of species to be planted. Generally speaking, a taller hedge is needed for a screen than for a background. In any event, viewed from every angle, there will be few instances where a severe formally trimmed hedge will be as attractive, and fit into the landscape as well, as an unsheared, natural hedge.

Plants for Windbreaks

Living windbreaks only will be dealt with. Readers in such a diverse area as prairie Canada have varied needs and conditions as far as windbreaks for the garden are concerned. Let us simply think of them as single and multiple-row plantings, the former in most cases being suitable for the urban garden where needed, and the latter being required for the farm garden.

Even though space in many urban gardens may be limited, a living fence or hedge is a natural adjunct to a garden containing flowers, shrubs and other plants. Its effect from a utility and beauty aspect will be determined by the plant or plants chosen for the hedge. Keeping in mind the purpose to be served and the space available, the aim should be to select and establish a windbreak hedge that will require a minimum of pruning (snipping off ends of branches), so that its natural beauty in blossom, fruit foliage and bark may provide year-round pleasure.

This does not necessarily mean that evergreens should be excluded; they too have blossoms and fruits. But the main thing with an evergreen windbreak hedge is to avoid having something that may be too sombre or uninteresting. For instance, the uniform solidity of a spruce hedge may not be the most attractive year after year.

For a windbreak to be effective, there should be no gaps in it, otherwise the injurious influence of wind may be accentuated where gaps exist. Under average conditions also, where a windbreak hedge is needed to provide shelter, it should be kept as low as possible so long as it stops wind. With the increased demand on a single-row windbreak hedge as compared with a multiple-row windbreak, greater care must be exercised in selecting the species to be planted in it.

In the following lists the common names of species as found in Standardized Plant Names are used. To give more than a minimum of descriptive details for each would make these lists unnecessarily long.

Low Windbreak Hedges:

Pygmy Peashrub — tolerant to drought, golden yellow flowers, small leaves, spiny.
Russian Peashrub — "Globe" — compact in habit, attractive foliage.
Peking Cotoneaster — glossy leaves, fruits black, bright foliage in fall.
European Cotoneaster — more spreading than Peking species, fruits red.

Sweetberry Honeysuckle — compact in habit, pale yellow flowers, fruits dark blue.

Bush Cinquefoil — tolerant to drought, bright yellow flowers, long season of bloom.

Cherry Prinsepia — yellow blooms early, fruits scarlet, spiny.

Russian Almond — tolerant to drought, flowers deep pink in bud, early flowering, spreads by root suckers.

Oriental Spirea — flowers cream-white, early flowering, hardy.

Korean Spirea — flowers white, later flowering than Oriental species, arching branches.

Medium-tall Windbreak Hedges:

Redosier Dogwood — suitable for shade, flowers cream-white, bark colorful, bright foliage in the fall.

Siberian Currant — small leaves, fruits red, attractive foliage in fall.

Altai Rose — flowers creamy-white, early flowering, fruits dark purple, spreads by root suckers.

Hansen Hedge Rose — bright pink blooms, hardy, fruits produced freely.

Hybrid Lilacs — blooms in various colors over a long season, majority hardy and do not produce root suckers.

American Cranberry Bush — suitable for shade, flowers white, fruits red when ripe, foliage attractive in fall.

Rocky Mountain Juniper — hardy evergreen, tolerant to drought, seedlings vary in foliage color and habit.

Wares Arborvitae — prefers shade and moist soil, compact habit, attractive windbreak.

Tall Windbreak Hedges:

Amur Maple — flowers fragrant, fruits (seed) colorful, attractive foliage in fall, chlorosis may develop in alkaline soils.

Saskatoon (Serviceberry) — suitable for shady location, white blooms, early flowering, fruits edible.

Hawthorn Species — several species make ideal windbreaks, bloom, fruit and foliage attractive, aphids often harmful.

Rosybloom Crabapple — attractive colored blossoms and fruits, upright forms are recommended.

Ussurian Pear — tolerant to drought, early white blooms, attractive in fall.

American Mountainash — suitable for shade, flowers creamy-white, foliage and red fruits attractive in fall.

Nannyberry — hardy native species, foliage and black fruits attractive in fall.

Where there is room for a single-row windbreak of large size it may be developed with well-known tree species: Siberian Larch, Bur Oak, Littleleaf Linden, Sharpleaf Willow* (if area moist), "Jubilee" willow (if area moist), Siberian Elm*, White Spruce, Black Hills Spruce, Colorado Spruce.

Farm Windbreaks:

The farm windbreak will in most cases require more than a single row. Generally speaking, 3 or 4 rows of leaf-shedding trees and one or more separate rows of evergreen trees are recommended. A shrubby species like common Caragana, Russian Olive, Chokecherry or Lilac, is considered essential in the outside row to provide protection at ground level. For the centre rows taller-growing species like Boxelder, Green Ash, Male Poplars, American Elm are recommended. For the final or inside row (or rows) hardy evergreen species like White Spruce and Colorado Spruce will give the windbreak a completed and attractive appearance.

Various combinations of species may be adopted in the centre rows, and rapidly-growing species as well as slowly-growing species should be included. In the drier regions few, if any, poplars and willows should be planted.

To obtain shelter in the shortest possible time after planting, and reduce to a minimum the amount of cultivation needed, close spacing of plants in rows should be adopted. Distances between rows may be governed by space available for the windbreak and the width of machinery to be employed in keeping the windbreak cultivated.

Trellises and Climbers:

An article on windbreaks would be incomplete without some reference to trellises and climbers. Attractive climbers like American Bittersweet, Golden Clematis, "Scarlet Trumpet" Honeysuckle, Riverbank Grape on a substantial, yet decorative, trellis may, in some instances, provide the shelter needed, and be a source of year-round interest without an undue amount of care and attention.

Much material is available to prairie gardeners for the development of living windbreaks. The lists given are by no means complete.

*Only these will require much pruning to keep them from occupying a great deal of space.

Garden Clubs in Northern Saskatchewan

by **D. R. ROBINSON**

Extension Department, University of Saskatchewan

4-H Garden Clubs in Saskatchewan have increased rather consistently during recent years. In 1953, there were 10 garden clubs with a membership of 187. In 1957, these clubs had increased to 87 with an enrollment of 1,405. Although the majority of the garden clubs are scattered throughout the farming districts of Saskatchewan our readers will be interested to know that 14 of these clubs are located beyond the settled area in the north and, for the most part, in communities adjacent to the Churchill River. These garden clubs extend from Cumberland House and Pemican Portage on the east to La Loche on the west near the Alberta border. Approximately 95 percent of the members of these "northerly" clubs are Indians or Métis.

Last September, I had the pleasure of attending five club achievement days in this area; and two other members of our staff attended the other nine achievement days. Although the 4-H Clubs are under the direction of Mr. Herb Clark, University of Saskatchewan, considerable guidance and help is provided by the Agricultural Representative Service of the Provincial Department of Agriculture. In particular, a great deal of credit goes to Mr. Don Neilson, Agricultural Representative for Northern Saskatchewan, as it is largely through his efforts that these outlying clubs are organized and maintained. Some of the 4-H Clubs are accessible during the summer season only by boat or aeroplane and, following a motor trip from Prince Albert to La Ronge, Mr. Neilson and I traveled to Cumberland House, Pine House Lake and La Loche by pontoon equipped plane. It is difficult to get a good view of the country from the ground, but you can see for miles and miles from the air. In general, the land is quite level with

great areas of water and muskeg interspersed with spruce, tamarack and aspen.

On our eastward trip we flew over Lac La Ronge and Cumberland Lake and on the westward trip we passed over the Peter Pond and Churchill Lakes. In a few communities on the southern fringe of Mr. Neilson's district the soil is reasonably fertile and manure is available for the gardens. Farther north the soil is lacking in fertility and manure is available in limited quantities or not at all. However, there is usually ample rainfall and garden plants grow rapidly because of the long days of sunshine. There is an old saying that "seeing is believing" and one really has to see in order to believe what can be grown in these communities in the way of both vegetables and flowers. The most southerly garden clubs are at Montreal Lake, Green Lake, Pemican Portage and Cumberland House. These settlements lie between townships 57 and 61. (It is of interest to note that Cumberland House is the site of the first inland post of the Hudson's Bay Company and the first permanent settlement in Saskatchewan. Samuel Hearne established a post there September 3, 1774). At the club achievement days in these four communities there were well grown specimens of beets, carrots and potatoes. In addition, at Pemican Portage the children exhibited peas, cabbage, pumpkins and green tomatoes. Almost all clubs grew turnips but in several instances the roots were damaged by turnip maggots. Two garden clubs adjacent to Montreal Lake had fine displays of potatoes, also carrots and beets. At Green Lake the boys and girls exhibited nine different vegetables as follows: cabbage, corn, cucumbers, onions, beans, pumpkins and ripe tomatoes.

Going farther north we find other 4-H Garden Clubs at Beauval and Ile-a-la-Crosse, (township 71 and north). Here, again, there were good displays of well-grown vegetables, including carrots, beets, turnips, cabbage and potatoes. The most northerly clubs are at Pine House Lake, Buffalo Narrows and La Loche. These include two potato clubs and two others growing a variety of vegetables. La Loche is northwest of La Ronge and about 510 miles north of the International Boundary. Buffalo Narrows and Pine House Lake are between La Loche and La Ronge. At La Loche, the soil is very sandy and low in fertility. However, because of its sandy nature it is probably a warmer soil than those to the east of La Ronge. This fact may account for the rather remarkable display of vegetables and flowers at the joint achievement day at La Loche. There were three varieties of potatoes, including Warba and Bliss Triumph. In the root vegetables there were beets,

carrots and turnips. Other vegetables grown and exhibited by the boys and girls were cabbages, vegetable marrows and citrons. The tables were nicely decorated with bouquets of dahlias, calendulas and poppies. Similar but less extensive collections were displayed at Buffalo Narrows and Pine House Lake.

La Loche was the most northerly settlement that we visited on this trip, (close to latitude 56° 30′). However, it is worth noting that potatoes and carrots have been grown successfully for several years at Cree Lake, approximately 170 miles northeast of La Loche.

All of the communities that we visited are, with one exception, made up of Crees. At La Loche the people are Chippewayans. Local leadership for the clubs is provided by teachers from the Department of Education schools in the Northern Administration Area. These local leaders deserve much credit for the work they are doing. Through the medium of the garden clubs the sponsors are endeavouring to improve the nutritional standards of the people in these outlying communities. There is good reason to believe that definite progress is being made in this direction.

A Pest Of Raspberries

Defoliation and a greyish blotching of the leaves of raspberry plants are indications of Spider Mite infestations. H. P. Richardson, Officer-in-Charge of the Entomology Field Station, Science Service, Morden, Manitoba, says this pest can be controlled by thoroughly spraying plants with Ovotran or Aramite just after the raspberry leaves open and again just before blossoms begin to open. One pound of the 50 per cent wettable Ovotran powder in 100 gallons of water or 2 pounds of Aramite, 15 per cent wettable powder in 100 gallons of water will give satisfactory control.

Spider Mite adults overwinter in trash or other protected places and usually appear in the spring simultaneously with new raspberry foliage. Eggs are laid on the undersides of the leaves on which they are feeding and all stages of Mite development may be present at one time. Four or five generations may be produced each year.

A Pest of Currants and Gooseberries

One of the chief limiting factors in the successful production of currants and gooseberries in many parts of Canada is the Currant Fruit Fly. H. P. Richardson, Officer-in-Charge of the Entomology Field Station, Science Service, Morden, Manitoba, says one pound of 50 per cent wettable DDT powder in 100 gallons of water, sprayed thoroughly on the bushes, will kill the adult flies. Spraying should be done when 80 per cent of the fruit has set and again ten days later. If DDT is applied at the proper time, these pests can be destroyed before they have a chance to lay their eggs.

These small, pale yellow flies with dark markings on their wings over-winter in the soil beneath currant and gooseberry bushes. They emerge from the soil just before blossom time and the females lay eggs in the newly formed berries. Eggs hatch into small white grubs which live inside the berries. Their presence can usually be detected by discoloured blotches on the sides of the fruit and many berries ripen prematurely and fall to the ground. Maggots leave the fruits soon after they drop to the ground and enter the soil to a depth of one or two inches where they develop and emerge as adults the following spring.

Varieties Of Fruits For North Central Saskatchewan

by R. H. ANDERSON, Horticulturist
Federal Experimental Farm, Melfort, Sask.

Fruit growing has become quite general throughout north central Saskatchewan since the advent of hardy prolific varieties. The size and quality of the fruit grown in this area compares favorably with fruit grown in more southerly areas of the province. Fireblight and other diseases have not been serious and insects have not been troublesome except on the currants, gooseberries and raspberries. The insects are fairly easily controlled through the proper use of suitable insecticides.

A large number of varieties have been grown and many have proven their worth not only as to hardiness but in quantity and quality of fruit produced. Only a few of the more important varieties are mentioned here.

Heyer 12 is the outstanding apple variety. The tree is hardy and fairly vigorous. It is a consistent and heavy fruiter and is early but a poor keeper. Battleford is also hardy and the fruit is later and keeps until late fall. It is not a consistent and heavy producer. Haralson and Patten are not hardy enough for this area and only produce fruits on the lower branches.

Rescue is the outstanding crabapple and apple hybrid. The tree is hardy, vigorous and produces a good crop of fruit annually. The fruit colors brilliantly and has a distinct apple flavor. Trail and Renown are two other apple-crabs that are hardy and prolific. These varieties are later than Rescue and the quality is not quite as good. Rosilda and Piotosh lack the necessary hardiness.

There are many crabapple varieties well suited to this area. The following notes briefly describe some of the better ones: Dolgo — a strong grower, upright and hardy; a consistent fruiter; fruits medium size, brightly colored and excellent for jelly. Anaros, Bedford, Columbia and Garnet — are very hardy, vigorous and extremely prolific; the fruit is of good size and fair to good quality for jelly and preserves. These varieties mature fruit about the middle of September. Saska is also a hardy, prolific variety and is a little earlier than the above, as is the Sylvia. Unlike the other varieties, the fruit of Sylvia does not keep. Robin is hardy

and tends to dwarfness. Fruit is 1¼ to 1½ inches in diameter, ribbed, fair quality and good for canning. Osman is not quite as hardy but is a little earlier and a heavier producer. The fruit is up to 1½ inches, thin skinned and excellent for preserving. Florence trees tend to a spreading habit of growth and are considered reasonably hardy. The fruit is large and of very good quality.

A number of plum and plum-cherry varieties can be depended on to produce satisfactory crops of fruit each year except when the blossoms are damaged by spring frosts. Trees of Assiniboine and Mammoth are hardy, vigorous and fairly productive. The fruit is medium to large and is good for dessert. Dandy is a hardy variety, early maturing and produces large good quality fruits. It is one of the best plum varieties. Bounty, McRobert, Mina and Norther are only semi-hardy and light fruiters. Pembina, a plum hybrid, has excellent fruit size and quality but the trees do not possess the necessary hardiness for this area.

Brooks is the best of the plum-sand cherry varieties. The bush is spreading to upright, vigorous, hardy and productive. The fruit is up to one inch in size, thin skinned, firm and juicy and early maturing.

Satisfactory varieties of the sandcherry plum hybrids are Sapa, Opata, Manor, Heaver and Tom Thumb. Dura is hardy and productive but late maturing.

The small fruits are easily grown and with a little care and management great returns can be obtained from a minimum amount of time and labor expended.

Raspberries: The red raspberry is the most widely grown small fruit in north central Saskatchewan. The hardy varieties will stand most winters if given a sheltered garden location. The hardiest variety and one of the most productive is the Honeyking. The fruit is only medium in size, lacks quality in the raw but is good preserved. Chief is the popular variety. The canes are hardy and prolific. The fruit is large and has excellent quality and is medium early maturing. Muskoka canes are quite smooth and about as hardy as Chief. The berries are large, dark red in color, later than Chief. Viking canes are smooth and vigorous, the berries are large, conic, bright red and of superior quality. Canes are tender, however, and winter protection is needed but worthwhile. Tahoma is a promising variety. The berries are larger than Chief and the canes appear equally as hardy. Varieties such as Gatineau, Tweed, Trent, Madawaska, Rideau and Newburgh are satisfactory in some districts but are generally not as suitable as the above varieties.

Strawberries: This fruit is a favorite in many small gardens. Varietal recommendations are extremely difficult because of the variations in the performance of the different varieties when grown under varying soil types and soil moisture conditions.

A few varieties do well over a fairly large region. Glenheart and Glenmore are two strong growing vigorous varieties. They runner quite freely. The fruit of Glenheart is large, fairly well colored, of excellent quality but lacks a little in firmness. Glenmore fruit is slightly smaller but firmer. Senator Dunlap is an old variety but it has done well over a large area and has given good crops of delicious fruits of good size.

The Prince Albert variety is a very heavy producer. It is hardy, is vigorous and produces many runners but the berries lack colour, quality and firmness.

The summer-bearing varieties are the most satisfactory; however, two everbearers are worthy of mention. Gem plants are strong, hardy and fairly productive. The fruit is of good size and quality but lacks in color. Parkland is a very hardy variety, is vigorous and produces sufficient runners to maintain the plantation. The fruit is quite large and deep red in color.

Gooseberries and Currants: These fruits are not as popular with the home gardener as are strawberries and raspberries but they do have a place and are valuable for jams, jellies and pies. Pixwell is highly recommended. The plants are hardy, vigorous and productive. The fruit is of medium size only and is pink at maturity. Abundance is only moderately hardy, is highly productive but more difficult to harvest than Pixwell. The fruit is small. Pembina Pride is quite hardy. The fruit is of medium size and green. Oregon Champion plants are somewhat tender and usually kill back considerably. The fruit is large and of good quality. Stonevale, Red Jacket, Carrie and Clark are not hardy. The fruit of Red Jacket and Clark is very large and possesses excellent quality.

Black, red and white currants are all popular. In black currants, the new Willoughby strain of Boskoop Giant is a favorite. Kerry and Magnus are also satisfactory. Diploma, Red Dutch and Stephens No. 9 are the most popular red varieties although Red Lake, Prince Albert and London Market do well in some areas. White Imperial, Large White and White Grape are highly satisfactory white varieties.

A "Peaches And Cream" Diet

by A. A. DAWNS

President, Rosetown Horticultural Society
Rosetown, Saskatchewan

"Your gardening achievements need never die if kept alive in your library of color photographs".

There are no two hobbies that complement each other quite as well as photography and gardening. The photographer is always wishing to permanently record his many achievements. So if you're a gardener and wish to increase your enjoyment by having a pictorial record of your accomplishments, you should consider going into photography in a small way; and if you are an ardent photographer and wish something challenging, seek out your nearest enthusiastic gardener and you will have a wealth of subject material; or better still, buy some seed and get in on the thrill of growing things yourself.

We may as well face the facts, and realize that black and white film has certain limitations. Now I have seen some remarkable and beautiful black-and-white photographs of garden subjects, but too often results are disappointing. Some items to remember are: Do not try to photograph a general garden scene, or a border in black and white. Better stick to the following: Single plants or blooms with a plain background of contrasting texture; pictures of trees from a low point of view so they are outlined against the sky; parts of a border with the sun shining from the side so some shadows are formed, or the outlines of blooms will not be noticeable; close-ups with makeshift plain backgrounds of cardboard or similar material.

If at all possible, use color film. Your possibilities are almost unlimited. First, consider general garden views. Your point of view, lighting and background are important. Many good photos of gardens have been marred by the hoe leaning up against the trellis. A bare sky can be relieved by taking the picture through the trees, or by having a small graceful branch appearing in an upper corner. This is known as "framing" and gives your picture depth. The area should be viewed from all positions before deciding from where to take the picture. By far the best is an elevated spot — the neighbours upstairs window, the top of a truck, or a tall step-ladder, with the sun in your back and as little wind as possible.

We much prefer taking individual plants or even individual blooms. Consider a dozen tulips blooming in the garden. If you include the whole group, a great deal of unattractive spring garden area shows in the picture and the detail of

the bloom is missed. However, if you can take the picture close enough to include only three blooms, the background is greatly diminished as most of the picture is taken up with bloom. The exquisite detail of the waxy blooms is the point of interest. One of our most enchanting slides is a close-up of the common California poppy. Just as the shutter was about to release, an obliging wasp was settled for a moment in the flower. On looking at the picture, your attention is captured by the detail of the delicate stamens, the shimmering velvet texture of the petals, and the wasp poised for flight.

In photographing glads, try this: When the first floret is well open, and one ambitious bud is ready to burst, move in on the subject until these two items fill the field. You can tilt the bloom for any lighting angle you wish. Careful light meter readings are necessary, with the meter as close to the bloom as possible without shading. If you are dealing with the blush or pastel shades, decrease the exposure one stop, in other words deliberately under-expose or the elusive soft shades will bleach out. The result will give you all the texture, color variations, and fine detail of your summer glads, providing much enjoyment throughout the long winter.

You may use Kodachrome film — slow but with an accurate color response; Ektachrome or Anscochrome 00 faster films for close-up work; or Kodacolor — if you want prints rather than slides. Close-ups are made with either portra-lenses or extension tubes. Portra lenses can be purchased for almost any camera that is suited to ordinary color work. There is no adjustment in exposure necessary, just remember to use very small f stops and corresponding slow speeds. This will give depth to your close-ups; however, a gentle breeze may upset your plans for 1/10 second exposures, and if possible it is better to take blooms and all inside to a sunlit window. Proper centering is easy if you have a reflex camera, but an eye-level viewfinder is not accurate for close-ups. The centre of your subject must exactly line up with the lens along the lens-axis. A small square and some practice will soon enable you to position your subjects accurately. Exact distance measurements are necessary in close-up photography. The use of extension tubes is confined to cameras with interchangeable lenses, and is a field of its own. The tiny blooms of Brachycome can be expanded to sunflower sizes, and the single floret of the hyacinth appears as a huge piece of Christmas candy.

When you project your close-ups on the screen in the winter, you notice and appreciate the detail and color of the flower even more than when they actually were in bloom. Your gardening achievements need never die if kept alive in your library of color photographs.

Outdoor Chrysanthemums on the Prairie

by H. F. HARP

Experimental Farm, Morden, Manitoba

Since the first chrysanthemum crosses were made at Morden in 1947 thousands of seedlings have been tested and many selections made. The result of this work clearly indicates that chrysanthemums hardy enough and early enough for the prairie region are now a certainty.

Plant material from the Horticultural Field Station at Cheyenne, Wyoming, and also from the University of Nebraska has been used with the Morden hybrids which were developed from crosses between C. arcticum as pollen parent and early flowering border chrysanthemums.

Besides selecting varieties early enough, some attention has been paid to frost tolerance in the bud stage. In most of the prairie region, early autumn frost is of short duration and is frequently followed by periods of congenial weather. Plants tolerant of light frosts are especially useful in prolonging the season of bloom in the flower border.

Outdoor chrysanthemums have been observed to behave quite differently when planted in widely separated zones across the prairie. In the northern parts and in areas adjacent to large bodies of water, a variety will tend to flower earlier than when planted in southern zones. With this in mind, a programme of testing promising selections is being carried on in Saskatchewan and Alberta as well as in the northern parts of Manitoba. The results of these trials will be helpful in assessing the true value of a variety before it is named and introduced.

There is a marked differentiation in both frost tolerance and response to daylight in the Morden seedlings. Dark colors are less susceptible to frost damage than are white or pale colors. This observance is made with full cognizance of the fact that frost damage to the dark colors is far less obvious.

Response to length of day varies considerably within the progeny of any particular cross. Some seedlings do not initiate flower buds early enough to be of value in a short season climate while others will set flower buds in June,

often at the expense of the plants' vegetative growth. This extra early bud formation is undesirable as the resultant blooms are of poor color and quality due to the excessive heat of July.

Many of the Morden selections have remained thrifty for five years without any form of winter protection. Two bearing the name of Morden Gold and Morden Skyline respectively have been widely planted and are of proven usefulness. Several more are to be named and will be made available to the home gardener through local nurserymen.

Power Mower Maintenance Tips

by J. W. RICHARDSON, Assistant Chief Engineer, Power Products Corporation

Modern power lawn mowers are sturdy, precision-made machines that give dependable service with very little care. But Power Products, which makes engines used on some 40 leading brands of mowers, suggests a few simple things the user can do to keep his mower operating at high efficiency, prolong its life and cut repair costs.

Spark Plug — If the spark plug becomes oil or carboned, it will cause difficulty in starting and unsatisfactory operation. To prevent this, remove the plug periodically, clean off any accumulated oil or carbon and check the gap — on Power Products engines and many others the correct gap is .030 inch. It is good, inexpensive maintenance to replace the spark plug every other season or oftener, depending on use. When replacing, make sure the new plug is the same type as that supplied as original equipment by the manufacturer.

Carburetor — Power Products engines, and most others, have two fuel adjustment screws on the carburetor — one for high speed operation, the other for idling. These were carefully tested and adjusted at the factory — don't change them unless you are sure it is necessary. If re-adjustment is needed to get smoother engine operation, turning the fuel adjustment needles clockwise will give a leaner mixture; turning them counter clockwise lets more fuel enter and gives a richer mixture. (Check the instruction sheet that came with the mower for normal settings.) When running under a light load, double-power action engines used on many rotary mowers may seem to miss but this does not affect good operation. Both needles on such engines are set slightly on the rich side to permit the mechanical governor to adjust the engine speed automatically to the varying cutting loads that may be encountered.

Keep Mower Clean — Grass clippings, dirt or residue from spilled oil or fuel should not be allowed to accumulate on the engine or mower housing. This applies particularly to the governor throttle linkage and the carburetor throttle shaft. These should be wiped clean and oiled with light machine oil as needed. Use an old whisk broom or stiff brush to remove clippings from around the engine fan openings, the carburetor air intake and the under side of rotary mower housings. Dirt or clippings around the fan openings restrict the flow of air needed to keep the engine cool; on the under

side of rotary mower housings they may interfere with the lifting and cutting action of the blade and, in excessive amounts, will lessen the power out-put of the engine.

Carburetor Air Filter — Keep the outer screen free of dirt or clippings. After about 25 hours of operation, dry type filters like those on Power Products engines should be disassembled by lifting the outer screen with a hooked wire and removing the filter mesh and inner screen. Wash the filter parts in gasoline or some other solvent to remove all foreign material, then immerse the filter mesh in lubricating oil, allow it to drain and reassemble. Oilbath type filters should be disassembled and washed in the same way. In addition, clean the old oil from the filter housing and replace with fresh oil, being careful to fill it to the level marked on the housing.

Muffler and Exhaust Ports — These should be cleaned once a season or after about 50 hours of operation. To do this, take out the spark plug, disassemble the muffler by removing the attaching screws and scrape all carbon from the interior of the muffler and openings. To clean the exhaust ports, crank the engine until the piston is at the bottom of its stroke, below the exhaust ports. With a blunt tool, so as not to burr the edges of the openings, remove any carbon from the cylinder and replace the spark plug.

Lubrication — Mowers with 2-cycle engines are adequately lubricated as long as they have fuel, since the oil is pre-mixed with the gasoline at the filling station. On 4-cycle engines, the oil-level in the crankcase must be maintained at the level specified by the manufacturer and with the required grade of oil, or the engine will be damaged. On this type, check the oil level periodically by sight or feel and add oil as needed. The oil in the crankcase of a 4-cycle engine should be drained and replaced at least once a year, or after 50 hours of use — oftener if the mower has been used under dusty or severe conditions. On rotary mowers the drain plug is usually located under the deck or blade housing. Use machine oil on the wheel bearings and other external moving parts to keep the mower in smooth running order.

Safety Precaution — Always disconnect the spark plug wire before working on the engine or cutting blade, to guard against accidental engine start should the magneto flywheel be revolved. Bend the wire away from the terminal — the spark may jump a small gap.

Preparing the mower for winter storage

1. Remove any unused fuel from the tank.
2. Start the engine and let it run until it uses the fuel in the carburetor and fuel line; when it starts to sputter, operate the choke to drain the carburetor.
3. If it is a 4-cycle engine, drain the oil from the crankcase. This is not necessary if it is a 2-cycle engine using premixed fuel.
4. Remove the spark plug and pour or squirt about two teaspoons of No. 10 lubricating oil into the cylinder. Crank the engine several times to distribute the oil over the inside surfaces and replace the spark plug.
5. Clean the outside of the mower and engine, tighten any loose screws or nuts and wipe exposed metal surfaces with an oily rag.
6. Store the mower in a clean dry place and cover to protect it from dirt or accidental damage. The handle can be easily removed from most mowers for easier storage. Basements are not recommended for winter storage because of dampness.

If these suggestions are followed, the power mower should give years of satisfactory service. When it needs repairs or parts replacement, remember it is a precision-built machine and take it to a competent, authorized service shop.

— Seed World — July 19, 1957, pp. 32.

OUR TREE

by Hector MACDONALD

Supervisor, Assiniboine Park, Winnipeg, Man.

Our house is not new. We raised our family in it; it faces south on a quiet street. There isn't a great deal of room between the house and the sidewalk, and most of that is taken up by a big spruce tree.

We haven't much room for flowers in our front yard. We seed a row of four-o-clocks along the fence in spring; put our geraniums outside beside the door when the weather warms up; and the oleanders in a corner.

Our lawn is not very good. The tree takes too much from the soil, and near the tree, Creeping Charlie takes the place of grass. We would never win a prize for our home grounds, with the big tree taking up so much room.

Little birds nest in our tree. Lots of robins nest and often we have doves that wake us with their cooing. Once or twice, waxwings built in our tree and fed their young on ripe honeysuckle berries.

Johnny, that was our second boy, brought home the tree one Labor Day from the beach. Johnny never came back from the beaches at Dieppe.

Battle Of The Virus

We do not yet quite know where viruses stand in the order of living things, but that they are living there is no doubt, despite their confusing ability to behave like chemicals by forming crystals at some stages.

In the Amos Memorial Lecture which he recently gave at Wye College, Mr. F. C. Bawden made it plain that the infective core of these microscopic particles is nucleic acid. Now, this is the same substance which is found in the nucleus of all living cells, and which governs the appearance of the plant or animal. Viruses do not act like fungi or bacteria which usually can be readily enough destroyed; they enter literally into the life of the cell, their nucleic acid combining with and transforming that of the host. And, once infected, a plant cannot throw off the infection. Indeed, it can accumulate several strains of virus — like suffering from chickenpox, 'flu and polio all at once.

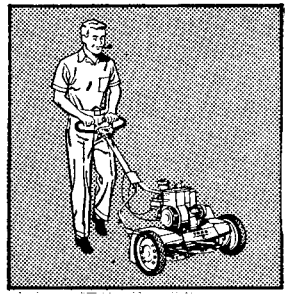
It is now realized that very few plants are virus free. Many do not show the disquieting positive symptoms; they are insidiously affected in vigour and cropping. Unfortunately, the plants which suffer most are those which, in order to continue the desirable characters of a named variety of, say, strawberry or apple, we increase by cuttings, runners, layers or grafting — all methods which spread the virus at the same time. Seed seems to be nature's way of cleansing plant races of virus, for very few viruses can be transmitted in seeds.

All this is rather depressing, the more so when we consider the phenomenal virus-spreading powers of some insects, such as the homely aphis which, for example, annually succeeds in infecting almost every sugar beet plant in Britain between sowing in March and harvesting in August.

But at last there is some sign that the tide of battle is beginning to turn; that we can destroy certain viruses in a plant without literally burning them. Hot water treatment of strawberries and sugar cane are now practical processes, and it has been shown that if many plants are grown at a specific relatively high temperature for a period viruses are killed. What is more, there are distinct possibilities that chemical virus killers are on the way; and the scientists have other methods up their sleeves.

We cannot yet treat a full-grown tree, but virus-free stock can be produced and, in this country (Great Britain) at any rate, it should shortly be possible to ensure that new stocks of all kinds of fruit start life uninfected. After that, it is up to the gardener.

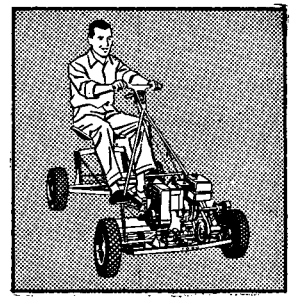
— Courtesy Amateur Gardening.



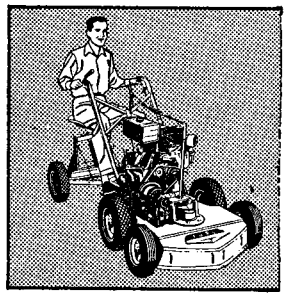
20″ Sportlawn

18″ Whirlwind

Illustrated are a few of the many models made by TORO—the world's most complete line.

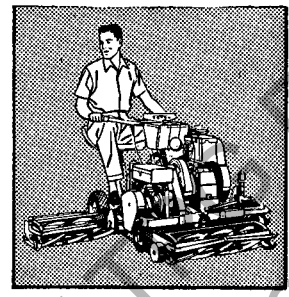


27″ Starlawn



31″ Whirlwind

HAND PROPELLED
20″ Whirlwind



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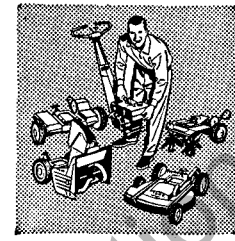

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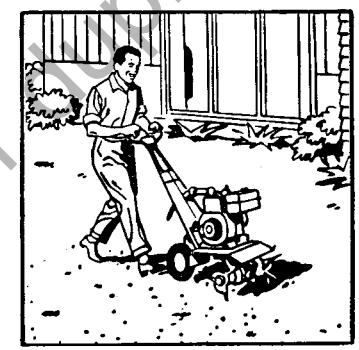

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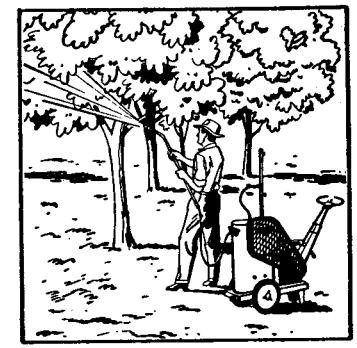

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Thrills of a Novice Gardener

by Ellen MICHIE, Souris, Manitoba

Once the tendrils of horticulture have wound themselves firmly around your heart, you are never again the same person; a new personality with latent talent and absorbing interests blossoms forth as you seek to surround yourself with the beauty of flowers, shrubs, green grass and trees.

When we moved to our first home, there had been a garden of sorts, but the land was so light that with the first strong wind, seeds and soil were so scattered, that we had little to show for our efforts. For the next couple of years, with my husband, although a master of the spade and hoe, working away from home and then in the armed forces, I preserved the best I could, growing a few petunias, dahlias, nasturtiums and tomato plants.

However, when he was home again, we looked over our grounds and began in earnest to bring back our land to a state of good earth and the creation of pleasant home grounds. With the acquiring of a plentiful supply of well rotted manure and the starting of a compost heap, which I referred to as our "pile of gold" we took several years of breaking up land and fertilizing to develop the garden area which now produces high quality products. My husband experienced a tremendous thrill of satisfaction when one day an old friend, a pioneer of many seasons and a good gardener, picked up a handful of our soil and remarked on its rich loaminess.

The flower beds were prepared for growing things and since the flowers were to be my responsibility, I poured over seed catalogues and dreamed dreams. I decided to start with a bed at the north of our house. I selected purple Iris and dwarf yellow Iris as a backgound. These were planted in the early fall and were nicely settled by winter. The following March, I sowed a flat of pansies in the house. They came up almost 100%. Watching these fresh green shoots grow, I exerienced the first stirring of the tremendous appeal of horticulture. I planned to use the pansies as a border for the north bed as soon as the ground was ready. I was so encouraged with my flat of pansies, I sowed several flats of annuals which meant vying with my husband's tomato plants for a share of the best window space which in turn led to the building of our first cold frame.

In no time the pansies were set out and the north bed seemed to be growing before my eyes. One lovely spring

morning, there, before us, was the crowning miracle of the north bed. Blooms of purple Iris, masses of yellow Iris and here and there, colorful pansy faces. I thought of the words "Solomon in all his glory was not arrayed like one of these" and from that moment I was captured by horticulture. Each spring, I experience the same thrill when this bed is in flower; the bright golden yellow of the dwarf Iris reminds me of the shining personality of my friend whose gift they were and who is now gone from our midst; the pansies for thoughts happy and nostalgic. I also found this bed an excellent spot for bleeding heart and daytime nicotine.

It was our habit to rise early so that we might spend a little time working in the garden before the pressure of the day began. As time went by, we would walk around the garden, pausing to note a new color, the delicate marking on a flower, admiring the stately stand of a gladiolus, gently touching the petals of a peace rose and never finding an adjective which adequately expressed its beauty, sniffing appreciatively the fragrance of the sweet peas. Many are the mornings we felt the Glory of God in creation. Perhaps you have had a similar experience in your garden; if not, it may come to you one day, and it will thrill you deeply and remain with you.

The tremendous appeal of horticulture first stirred by the flat of pansies was further nurtured by becoming a member of our local Horticultural Society and exhibiting at the Show. What difficulties I encountered when I set out to pick from my little garden row of pansy people, 6 pansy faces. There were sprites and gnomes and witches too, yellow, purple, garnet red and blue, funny faces, smiling faces, each one saying "Why don't you choose me, I'm a winner, don't you agree". Over and over I went, checking for that all important factor in exhibiting — "quality". I finally chose eight, two extra in case of an accident. That was the year our petunias were a mass of glorious bloom. It would be a pity not to show such lovely blooms, so I entered petunias, double, ruffled, and single; by this time, I was so enthused, I entered the arrangement class. For the high table arrangement, I chose colorful Snapdragons, arranged in a glass container placed in a brass bowl, offset with feathery asparugus foliage packed into brass candlestick holders with moist cotton batten. The three pieces looked attractive to me, well, at least original shall we say. The low table centre piece contained purple double petunias, golden calendula and green foliage.

Tremendously excited, we set off for our first show. My husband had his vegetable specimens carefully packed in

boxes. I held my box of precious exhibits, and long before we reached our destination, I realized the value of careful packing. During the 10-mile drive, my burning enthusiasm cooled off, the pansies were losing their personalities, my arrangements were a bit 'shook up', and the petunias that looked so showy in the garden, now seemed plain ordinary. What had happened to me and my exhibits during our drive, I was fervently wishing I had stayed at home. Once we entered the Show building, we were caught up in the bustle of the exhibitors, busy, friendly people still finding time to give a word of advice and direction to novice exhibitors.

Somewhat timidly, I placed my exhibits, checked with my husband's progress, and looking around appreciatively at the colorful array, I was suddenly aware of hitherto unthought-of obligations. As an exhibitor, I should be interested in the success of the show. I should be interested in showing for the sake of showing and I should not have hesitated to bring in the best of what I had. I discussed these thoughts with my husband on the way home. We agreed we would only show for the sake of showing.

With a feeling of subdued excitement, we returned in the evening, wondering how our speciment measured up with those of our fellow gardeners. The arrangement section that year was near the door. As I entered, I glanced at the table, suddenly I halted, incredulously I gazed at my exhibits — first prize in the high arrangement, second prize on the low centre piece. I fairly flew to where my husband was discussing the merits of the long carrot with a fellow exhibitor, excitedly I said "Come quick and see. I think I've won a first and second prize". With what seemed to me maddening nonchalance, he replied, "Congratulations, I'll be over in a minute". I hurried back to look again; yes it was true. I stood marvelling that my exhibit won over the others. Suddenly, I remembered my pansies and petunias. With mounting excitement, I hurried to them. Red and blue stickers were evident — 2 firsts and 2 seconds. First Prize gave me a tremendous feeling of satisfaction, second prize acted as a stimuli, but the nicest experience of all is to receive sincere congratulations from fellow gardeners and exhibitors.

The thrills of a novice gardener are not confined to the flower bed or the garden patch, nor prize winning entries. When horticulture captured me, it opened the gateway to the most fascinating pathways beckoning to be explored. Though I have wended my way along a few paths, gathering here and there a thrill, none stirred me as deeply as the glowing face of our 5-year-old daughter when she beheld a first prize on her Ortho Zinnias, or the arrangement she had created from

Complete tourist information is available at the Bureau of Travel and Publicity in the Legislative Building, Winnipeg, Man.

her own Zinnias and marigolds and offered on her best plastic plate to me for my tea table. A colored film of our grounds, gathering and sharing a harvest of high quality products, to be able to recall almost as vividly as we lived them, the moments when we stood in the gathering dusk, watching the shadows blend over the garden, creating a new beauty and surrounding the gardener like a Benediction. These are the lasting thrills.

We have now been transplanted to a new home. At the moment, we feel lonely without our beloved plants and shrubs, but spring is coming and we will soon be making friends with the good earth around us again.

Gardening

It takes much time for gardening
With rain and wind and sun;
With digging here and planning there —
And then it's just begun.

It takes much work for gardening
With sun and wind and rain;
With weeding here and spraying there —
And then begin again.

Ah, but there's love in gardening
With rain and sun and wind;
With purples here and yellows there
And blues all massed behind.

And oh, there's joy in gardening
With sun and rain and showers;
With iris here and roses there
And fragrant, sunlit hours.

And there's all life in gardening
With sun and rain and breeze;
With neighbors here and friendship there
And rest beneath the trees.

— NAN EMERSON

(Reprinted with the kind permission of the Author from her book of verse, "Wind Song and Other Verse)

Stettler News

by M. F. COSTIGAN
Secretary, Stettler Garden Club

Stettler, Alberta, is a town half ways between Edmonton and Calgary. The last 10 years, the town has grown, as there are a number of oil wells in the district.

This town has held a "Flower Show" in August every year for twenty-five years.

The small towns close to the town have all sent flowers to the show for competition, including two competitions for 4-H clubs. The two banks in town present two very fine trophies each year. One presents a lovely engraved silver tray for the finest Glad in the show, the other bank an engraved tray for the finest Sweet peas exhibited. The merchants and service clubs of the town give prizes for "Best kept church grounds", Best kept public grounds", Best kept gardens", etc.

The show is held in the Memorial Hall, and 10 cents admission is charged.

Mr. Ramsay, of Lacombe, has judged our competitions for years. Two outdoor competitions are judged a week before the show.

We have never had to worry about finances, as our townspeople are most generous.

Our president has held office for 10 years.

One of our merchants once said: "The Stettler Garden Club is the finest organization in Stettler.

Notes From Saskatchewan

by D. R. ROBINSON
Extension Horticulturist, Saskatoon, Saskatchewan

During the early '40's, horticultural extension activities in Saskatchewan were at a rather low ebb, — due mainly to the channelling of energy and effort into war-time projects. Only 14 of the regularly organized horticultural societies were active in 1942. (These societies operate under provincial charters and are eligible for certain grants from the Department of Agriculture). Since that time, the number of active chartered societies has doubled, 28 having operated in 1957. While the increase in the number of societies can be viewed with some satisfaction, the increase in society membership has been even more marked. During this period, 1942 to 1947, society membership has almost quadrupled, — having expanded from 1,117 to 4,445.

As might be expected, the number of horticultural shows sponsored by these societies has likewise increased from 12 in 1942 to 26 in 1957. The above-mentioned societies, operating for the most part in the larger towns and cities, are doing much to stimulate interest in home beautification and other phases of gardening. At the same time, we must not overlook the good work being done by other organizations, the majority of which operate in the smaller towns and villages. In this group are included Gladiolus Societies, certain Agricultural Societies, Homemakers' Clubs and others. Expansion on the part of these organizations has paralleled that of the horticultural societies and flower shows sponsored by this group have increased from six in 1942 to 20 in 1957. (Actually an all-time record was set in 1956 when 55 horticultural shows were held in Saskatchewan). As indicated above, some very creditable shows are staged each year in several of the smaller centres, with populations of 800 or less. At the same time, there are a dozen or more good sized towns (population more than 1,000) where there is almost no organized horticultural activity. What an opportunity there is for someone to do some missionary work in these centres!

Programs and projects are developed by the societies and other groups with assistance from a considerable number of persons working through the Saskatchewan Co-operative Agricultural Extension Program. Under this program, help is provided by federal, provincial and University workers.

One other project worth mentioning is the Extension Gardeners' Guild, sponsored by the University of Saskatche-

wan. The Guild is a special mailing service of horticultural bulletins, pamphlets and newsletters (ten mailings each year), and for which an annual membership fee of $1.00 is charged. Initiated in 1952, the Guild was intended primarily to provide horticultural information to gardeners who do not have an opportunity to join a horticultural society. This mailing service has proven popular and membership in the Gardeners' Guild has increased from 472 in 1952 to 798 in 1957. Through the Guild, the 4-H Garden Clubs and the societies, our department has been instrumental in distributing more than 1,500 copies of the 1957 edition of the "Prairie Garden."

Aster Yellows

by G. S. REYCRAFT
Winnipeg, Manitoba

Aster yellows is a plant disease which is very evident particularly in some years, both on horticultural and agricultural plants on the prairies. The insect carrier of the disease is called Macroteles fascifrons or six-spotted leafhopper.

The name, "Aster Yellows," was given to the disease because the virus was first found and studied intensively on asters. It is known, however, to attack many different species of plants. Among the ornamentals, asters, marigolds and petunias are particularly susceptible; in vegetables, head lettuce, potatoes, carrots and onions are often attacked as well as such weeds are stinkweed, plantain, sow thistle and ragweed.

The most common symptom is yellowing and stunting, particularly on the upper part of the plant. On ornamentals, its effects are particularly evident in the misshaping of the bloom; asters may produce almost normal flowers with one part of the head greenish instead of the normal color. Plants infected early may produce only small greenish-yellow flowers, or none at all. Leafy vegetables and root crops show other symptoms. Lettuce affected by aster yellows fail to head, carrot tops turn yellow with the roots excessively hairy, while potatoes develop symptoms known as "purple top wilt."

The damage done to various crops differs with the time of infection. If infection is early the plants may be killed; if late, it may be slight or confined to a few flowers or scattered plants.

In 1957, the infection in Manitoba occurred early and caused heavy damage, while in 1956, aster yellow infection was relatively light. The reasons are not entirely clear. It is known that the virus is not transmitted by seed or by mechanical contact but only by the leafhoppers themselves. Consequently, the severity of the disease is dependent on the time and number of leafhoppers present. Leafhopper eggs are known to overwinter in the Dakotas and Minnesota. Even if some eggs do hatch in our area, it would appear that our severe outbreaks are dependent on the northward migration of virus-carrying adult insects from southern regions.

This article is written primarily to help you recognize this disease and to understand its source and consequences for to date, there is little effective control. It is doubtful that

an insecticide program is very effective, as it is believed that the leafhopper will infect the plant before succumbing to the effects of the poison. One observation made by Hector Macdonald, Superintendent of Assiniboine Park, Winnipeg, was that the leafhopper appears to be much more active in direct sunlight. This observation is based on the fact that in 1957, in the "Old Fashioned Garden" in Assiniboine Park, a bed of Marigolds in full sun was almost completely destroyed by aster yellows, while a similar bed in partial shade had only spotty infection.

Delphiniums

Delphiniums like well-drained good garden soil, and shelter from winds. In real dry weather, a good soaking will keep them thrifty, and they like a little extra nourishment during the growing season. Any good fertilizer sparingly applied, when the young shoots are half a foot high, and again when the flower spike is starting to show, will keep them thriving.

Not more than four stems should be allowed to develop on each clump, on young clumps two or three are enough. Pliable willow sticks, six to eight feet high, should be placed at each stem as soon as possible and the growing plant securely and neatly tied as it develops.

Dusting with powdered sulphur to arrest mildew and regular applications of insecticides such as "malathion", are routine chores.

Start Delphiniums from seed indoors in February, or sow outdoors just before freeze up. Indoor seedlings should bloom the first year, outdoor seedlings in the second year.

Pacific Giant strains are most popular. Named seed series come nearly true to colour, White Majesty and Galahad in white. Astolat in pink and rose. Cameliard, lavender. Blue Bird, good blue, and Black Night, deep purple.

Gleanings from the Glad City

by Thomas KILDUFF, Lethbridge, Alta.

Flowers are definitely part of gracious living, and fortunate are we who know the gladiolus as part of the good life. As presently grown, this flower, from somewhat nondescript parental species of subtropical origin, has developed such pleasing variation in size and color and form, and adaptation to such a wide range of climates and soils and cultural treatments that it appeals to home gardeners, hobbyists and specialists the world over. Boy . . . am I out of breath!

These introductory remarks, while modest in acclaiming the merits of the gladiolus, are intended to discourage the casual reader . . . if it's about glads, the glad fan will persist to the last paragraph. Besides . . . I think the introduction should be in keeping . . . this is the Chinook belt, land of the big wind and the big sky . . . to which man has added the big ditch, and Lethbridge, the Glad City.

That Lethbridge, some years ago, adopted the gladiolus as its floral emblem speaks well for its performance in this area. It also indicates that there was (and still is) an active growers group here, dedicated to its culture and promotion. They have had the usual trials and tribulations, along with the thrills and triumphs associated with glad growing. Probably more of the latter, since the soil and sun and a good long frost-free growing season combine to that end.

How are they grown here? Well . . . some plant early, some late; some plant deep, others shallow; some space them widely and some crowd them together. They do well regardless. Over all the group, however, two practices are growing in popularity, because they show favorable results. First, more care is exercised following corm harvest to provide for fast ripening under 80 degree to 90 degree temperature conditions. Second, sanitation is practiced to control insects and disease, from digging through the storage period to re-planting. An "all purpose" dust, containing fungicide and insecticide, is favored. Corms have a film puffed over them in the trays as they come from the field. This is renewed when stock is worked over to separate the old from the new, and again, if the husk is stripped off at planting. Disease is a touchy topic here, since so many growers "went overboard" on the "All American" introductions. The generally unhappy results of the A.A.G. program here to date, has emphasized the value of sound clean corms.

The glad fan group has, by means of an annual "Corm Sale", made available stocks of the better, proven varieties to the budding enthusiast. The sale committee leans heavily on symposium information of the Canadian Gladiolus Society annual, as well as on their own experience, prejudice and preferences. They've put a lot of good corms of good varieties into local circulation. Then, in their sneaky but effective way, they have planted the seeds of showmanship in a growing number of new fans by staging small shows twice a week during the blooming season. It's all added up to marked improvement in the glad section of the major annual horticultural show. However, not content with progress made, this glad fan group now says: "If Lethbridge is the Glad City, then it doesn't want 'just another show'; what it should have is a 'Gladiolus Festival'. Calgary has its 'Stampede', Toronto its 'Royal", and other cities an occasional visitation of the 'Grey Cup' . . . Lethbridge must, sooner or later, have its 'Gladiolus Festival'."

Lilacs

by W. A. CUMMINGS
Dominion Experimental Farm, Morden, Man.

Lilacs continue to be one of the most popular groups of shrubs grown on the Prairies. They are easy to grow. The near neutral or slightly alkaline prairie soils are ideal for them. They are available in a wide selection of colors, ultimate sizes, seasons of bloom, double or single flowers.

The scientific name for lilac is **Syringa.** Occasionally, you may hear the mockoranges referred to as Syringas, but correct usage of today only includes the lilacs in this group. There are at present approximately 800 species and varieties of lilacs recognized. Many are obsolete varieties which have been replaced by later, better selections. None of the lilac species are native to North America. The common lilac was the first to find its way to this continent; the exact date is not known, but it was probably introduced before 1700. Well over 300 named species and varieties are in the lilac collection of the Morden Experimental Farm plus many unnamed selections. Regardless of the amount of breeding work that has been done with lilacs, there is still a challenge to the modern plant breeder in this group, especially in the early and late flowering sections. Dwarf, compact bushes are needed, as well as freedom from the often objectionable suckering habit.

Lilacs can be roughly grouped into four classes according to their season of bloom, early, midseason, late and very late.

The early hybrids bloom from a week to ten days ahead of the common lilacs. The first varieties of this group to be introduced came from the work of the Lemoines in France. They crossed **Syringa oblata giraldi** from Northern China with common lilac varieties. The hardier **Syringa oblata dilatata** came to this continent from Korea in 1917. Dr. F. L. Skinner, of Dropmore, secured this species from the Arnold Arboretum and in 1922 he began using it in his hybridization work. His first two selections, Assessippi and Minnehaha, were named and introduced in 1932. These, along with Evangeline, introduced in 1934 and Pocahontas in 1935, have been widely acclaimed wherever lilacs are grown. Three of the aforementioned have already taken their place among the recommended 100 varieties selected by a committee of the American Association of Botanical Gardens and Arboretums. I would

confidently predict that many of Dr. Skinner's newer hybrids will be included in the "Recommended One Hundred" once they are more widely distributed and better known. Generally, varieties of this group do not grow quite as tall, are more compact and do not sucker as freely as the common lilac varieties. Many of them have inherited purple fall leaf coloring from their Korean parent.

The common lilac varieties make up the bulk of the lilacs which are midseason in their blooming time. Seventy-five out of 100 recommended varieties originated with the Lemoines of France, hence this group is often referred to as the French Hybrids. At the present time, most of our better known lilac varieties fall within this classification. The majority of the common lilac varieties hold their dark green foliage well into the autumn, which makes a pleasing contrast with the colored foliage of other trees and shrubs. It is true that many varieties of this group sucker very freely, but a little bit of diligent work with the spade in the spring will keep them within bounds.

The Preston hybrids and other hybrids of **Syringa villosa** make up the bulk of the varieties in the late flowering class. Miss Isabella Preston, working at the Central Experimental Farm, Ottawa, bred, named and introduced a large number of these hybrids, hence the name Preston Hybrids. Dr. Skinner has also several top varieties in this group to his credit. The Morden Experimental Farm has introduced five varieties. Lilacs of this class are vigorous large shrubs, with large rather coarse leaves. The individual flowers are small, as compared with those of the other two groups, but the spikes are large and are borne in abundance. They do not sucker.

The very late lilacs are best represented in our climate by the Amur and Japanese tree lilacs. These grow to 20 feet in height, foliage is clean and bright and the bark is cherry-like. The very large, creamy white panicles of bloom come after all other lilacs are past. A well grown specimen of this non-suckering, large shrub is truly impressive when in bloom.

Lilacs will continue to find a very important place in plantings around the home. Their usefulness is in border, screen and specimen plantings. Because of their size, caution should be used to avoid overplanting. A few carefully chosen varieties, well placed and well grown, will bring rich reward. They grow well in our soils and climate and are comparatively free from attack by insects and diseases.

No two people are likely to agree absolutely on which varieties should be included in a Recommended List. In proposing the following thirty varieties, I have taken into consideration:

(1) Their hardiness and suitability for the prairies.
(2) Their availability to the Prairie Gardener.
(3) Their rating by lilac authorities.
(4) Their appeal to me personally.

EARLY

Pocahontas — single, dark purple
Assessippi — single, lilac
Minnehaha — single, light purple
Evangeline — double, magenta

MIDSEASON

Marie Legraye — single, white
Ellen Willmott — double, white
Edith Cavell — double, white
Mme. Lemoine — double, white
Pres. Lincoln — single, blue
Olivier de Serres — double, blue
Pres. Grevy — double, blue
Jacques Callot — single, lilac
Victor Lemoine — double, lilac
Leone Gambetta — double, lilac
Lucie Baltet — single, pink
Mme. A. Buchner — double, pink
Montaigne — double, pink
Belle de Nancy — double, pink
Congo — single, magenta
Capt. Baltet — single, magenta
Mme. F. Morel — single, magenta
Paul Thirion — double, magenta
Mrs. Ed. Harding — double, magenta
Chas. Joly — double, magenta
Ludwig Spaeth — single, purple

LATE

Donald Wyman — red-purple
Coral — pink
Royalty — purple
Helen — pink

VERY LATE

Amur — large trusses, creamy-white
Japanese tree — large trusses, creamy-white.

Hollyhocks

Hollyhocks should be grown in full sun in ordinary soil. Their deep tap roots enable them to withstand considerable drought. Although classified as biennials, they many times will carry over and bloom for two or three years. They can be easily grown from seed which is best sown in the open ground, and the plants moved to their permanent location when small.

Seedmen offer both single and double forms. Some have slightly ruffled flowers and others different shaped leaves. The Antwerp or figleaf hollyhock has leaves shaped like those of the fig.

Today, we have annual types which probably are more satisfactory than the old fashioned biennials.

Gibberellic Acid – The New Plant Growth Accelerator

by G. S. REYCRAFT, Winnipeg, Man.

Gibberellic Acid growth stimulant is getting a lot of attention these days, but most recognized authorities urge extreme caution with its use. Admittedly, most plants when treated with the acid do make unusual growth, but just how beneficial this growth response is to the plant as a whole or quality of bloom is still in the experimental stage.

In preliminary greenhouse work, many startling results have been obtained. Minute applications have stimulated the growth of ornamentals such as geranium, rose, salvia, dwarf dahlia, petunia and aster, to grow one-half to three times taller than untreated plants within three or four weeks. African Violets so treated tend to grow more erect and produce a more pointed attractive leaf. Also, as it stimulates crops to grow faster, form flowers, set fruit and produce seeds weeks and months ahead of Nature's schedule, it gives promise of having far reaching economical importance in producing food crops.

We suggest, however, that much more research and experimental work needs to be done on this product before it can be used with confidence (in the meantime, gardeners should do their own testing before applying to everything in the garden).

Gibberellic acid was first obtained from a fungus, long a major disease of rice, in Japan, causing excessive elongation of the rice plants and reduced yield. It may well have the same effect on many of our crops. The watchword for its use is still **Caution.**

Promising Vegetable Varieties for the Home Garden

by Dr. Chas. WALKOF, Sr. Horticulturist
Vegetable Crops, Dominion Experimental Station
Morden, Man.

The list of vegetable varieties suited to the home garden in the Prairie Provinces is constantly changing. This has been a good feature of the developing horticulture industry. Varieties have thus been made available that are adapted to the growing conditions typical of the Prairie Provinces. Now vegetables can be grown in localities where previously adverse weather often made this a risky enterprise. As a result, more people have been able to grow good vegetables and thereby increase variety in the diet.

Many of the vegetable varieties introduced during the past 15 years were developed specifically for home garden use. In recent years, there has been a marked change and new varieties now appear to be designed mostly for the large commercial garden and the vegetable processing industry.

During World War II, the Victory Garden program provided a great incentive for intensive home vegetable production. The momentum of this program was so great that interest continued at a high level for several years in the post war period. However, as the economic prosperity of these years resulted in high personal earning power, the incentive for growing vegetables at home began to lag and more people purchased their vegetables from the commercial gardener. The time previously devoted to vegetable growing at home was used in growing lawns, flowers and other luxury items. The sales of seed packets from the previously popular display cases waned and instead, bedding plant sales increased.

The garden seed trade flourished during the Victory Garden era. Now it is experiencing a drastic business retrenchment. The downward trend of sales curves of small packet vegetable seed has initiated an economic depression in the seed industry. The method being used to avert disaster is to develop varieties especially for the commercial grower and to cater to the bulk seed business of the vegetable processing trade by offering high quality seed.

The home gardener that continues to grow his own vegetables is likely to find that available varieties are the kind that are designed largely for high volume production and good market appearance. In some instances, this may occur at the risk of lower quality. However, in general, the new varieties will be of considerable interest when grown in the home garden and will adequately provide for the needs of the family. There are likely to be fewer dwarf growing varieties that fit well in the confined space of the small garden. Varieties of carrots will have long and brightly colored roots and sweet corn hybrids may grow tall and produce large and bulky ears. On the other hand, radish, onion, beet, turnip and cabbage varieties will be quite suitable in size and appearance for home production.

A brief description of new varieties that have been promising in tests conducted at the Morden Experimental Farm is given here for the guidance of those who are interested in new varieties currently offered for sale by seedsmen. A number of older varieties still give excellent results and where they have been found satisfactory, it is advisable to continue growing them until the home gardener is sure that a new variety in his garden has given consistently superior results.

A number of new green-podded bean varieties have been developed in recent years. The **Pearlgreen** variety in particular has been outstanding in quality. It produces a fleshy pod with very little pod fiber and has a fine, sweet flavor. For those who prefer pole beans, so that the vines may be trained to grow over a wire or board support, the white-seeded **Blue Lake** variety is recommended. It produces green pods that are straight, fleshy and of pleasing quality.

In garden beets, **Red Ball,** a good strain of Detroit Short Top, has been impressive. The roots are of exceptional quality and the flesh is brilliant red in color when the roots are in their prime for use at the two-inch diameter size. For the gardener that is interested in a sweet garden beet that can be eaten raw, **Long Season** may be of interest. This is a turnip-rooted variety and the flesh color may be pale.

The **Golden Acre No. 84** cabbage from Denmark has been very impressive in its solid heads, fine-textured foliage and excellent quality. The heads are of medium size. **Early Marvel** is a promising new early cabbage that was given a high rating in Morden tests. The heads are of medium size and appear particularly suitable for early summer salads.

The **Royal Purple** cauliflower turns a deep green color when it is cooked. It remains firm at all times and is preferred for freezing purposes.

Two interesting celery varieties that appear to be highly resistant to conditions causing hollow stem are now available. These are **Woodruff's Top Ten** and **Ten Grand.** They are green stemmed and have an excellent, nutty flavor.

Golden Beauty hybrid and **Morden J7701 hybrid** sweet corns are valuable and interesting items for the garden. Golden Beauty is mid-season, produces ears 6 inches long and has pleasing quality. It has given good results in freezing tests. The Morden J7701 hybrid is not yet on the market. It has been highly promising in recent tests, yielding well and producing ears of good quality up to 7 inches long.

Two cucumbers that appear highly promising are **Smoothie** and **Long Marketer.** Both are attractive and useful for slicing purposes. Smoothie has dark green and cylindrical fruits with crisp white flesh. Long Marketer, an improvement on the long time favorite Marketer, produces fancy, eight-inch-long, slender and dark green fruits.

In lettuce varieties, **Progress** is an excellent heading variety and **Salad Bowl** is a good heat resistant leaf lettuce. Progress appears to have considerable tip burn resistance and produces solid and crisp heads.

Hybrid onions have become highly popular in recent years with commercial growers. The **Autumn Spice** and **Epoch hybrids** command considerable attention because of their early maturity and solid well-ripened bulbs. Both hybrids keep well in storage.

Among the many varieties of peas available, **Arctic Sweet** and **Progress No. 9** are probably the most outstanding for gardening in the Prairie Provinces. Arctic Sweet is the earliest and produces a heavy yield of good quality peas. Progress No. 9 has larger pods and sweet peas that are favored for freezing.

The **Cherry Belle** radish continues to produce the most reliable crop of this vegetable in spite of adverse weather. It remains solid and crisp even under hot and dry growing conditions.

Gardeners have been waiting a long time for a medium-sized pumpkin suitable for pie making and for celebrating October 31st. The **Jack-o-Lantern** variety is prized for these purposes.

Among bush tomato varieties, the **Mustang hybrid** commands considerable respect because of its early ripening and high yielding qualities. It also appears to possess considerable resistance to adverse growing conditions and will bear fruit

when other varieties fail. **Fireball,** a medium to large-sized tomato has given large quantities of ripe fruits in Morden tests and appears to be a promising variety for the prairie garden. In staking tomatoes, **Peto's Early Giant hybrid** has won acclaim because of its large fruit and good quality. It will ripen fruit at Morden in most seasons.

The **Altasweet** rutabaga developed by R. Simonet of Edmonton is a good winter turnip. Root size is medium and its table quality is difficult to equal.

A new watermelon, **Sugar Baby,** has been impressive in recent tests. It has medium-sized fruits that have highly appealing, sweet and deep red flesh.

Most of the varieties mentioned here are available to gardeners through regular commercial vegetable seed channels. It may be necessary to check catalogues from various seed firms in order to find them listed. The Morden Experimental Farm does not distribute seed of varieties listed by the trade. However, further information to that given in this article regarding the varieties mentioned will be gladly supplied on request.

Vegetable Growing In The Upper Peace River Region

by R. S. HARRIS
Horticulturist, Experimental Station, Beaverlodge, Alta.

Most cool-season vegetables can be grown in all parts of the Upper Peace River region but, unless special cultural practices are used, the warm-season crops such as corn, tomatoes and cucurbits, can only be grown in selected areas. There are very few insects or diseases to contend with and, with few exceptions, vegetables can be grown without the expense of spraying or dusting.

The Upper Peace River extends from Whitecourt, in Alberta, at approximately 54 degrees north latitude and 115 degrees west longitude, west to Finlay Forks, B.C., and north to Keg River on the Mackenzie Highway and Mancho Lake on the Alaska Highway. The potential arable land is estimated at 16,500,000 acres. Agricultural interests in the region are served by the Canada Experimental Farm at Beaverlodge, Alberta.

A short season and low mean summer temperatures are the main factors limiting production. The length of the frost-free period varies from 80 to 100 days, depending on the locality. The mean summer temperatures are generally slightly lower than in some agricultural areas of north-western Canada, but the lower temperatures are compensated for, at least for cool-season vegetables, by the longer days. The average annual precipitation is about 17 inches, but only half of this falls from May through August, so that moisture is sometimes a limiting factor.

Most soils of the region are heavy-textured and slow to warm up in the spring, but there are large areas of sandy and silty loams which are warmer and texturally better suited for vegetable production.

Most farm gardens are on heavy-textured soils. However, provided the correct varieties are planted, large quantities of organic matter are added and protection is given from the prevailing west and southwest winds, these soils will produce excellent crops of vegetables. Potatoes, cabbage, Swiss chard, carrot, beet, peas, parsnip, green onion, radishes, lettuce, rutabaga, cauliflower and rhubarb are grown in most gardens. Asparagus, green sprouting broccoli, celery and onions for

storage can be grown, but have not enjoyed the popularity they should.

The most reliable varieties for the heavy soils of the Peace River region have been determined over a period of forty years by the Beaverlodge Experimental Farm and co-operators in the region. Some work has been done in determining the best cultural practices for the cool-season vegetables, but much is yet to be done on the warm-season vegetables.

Vegetable research at the Experimental Farm is presently concentrated on breeding a tomato able to set and ripen fruit in the cool summers of the region, and in studying cultural practices for the production of warm-season crops in heavy-textured, cold soils. Progress has been made with both problems. With tomatoes, a yellow-fruited selection shows promise both as an early variety for the region and as a parent for breeding, while clear polythene mulches have shown considerable promise for the production of corn and bush beans in the heavy-textured soils.

Most of the commercial vegetable growers are located on undifferentiated alluvium soils in the river valleys, especially along the Peace River. There are about 67,000 acres of these soils in the surveyed areas, much of which is suitable for vegetable production. Here, most of the common vegetables can be grown, but corn, cucumber and tomato production is stressed. A few growers specialize in potatoes. The main variety is Irish Cobbler, but some Warba are grown for the early market.

The north flats of deep river valleys are particularly favourable for growing vegetables. The light-textured soils warm up readily and the high banks protect the plants from wind. Summer temperatures in the valleys are usually higher than in the surrounding districts, probably partially due to heat reflection from the banks and partially because the heat is not dissipitated by the winds. In case of drought, water for irrigation is readily available from the river, or streams running into the river. In the autumn, when air temperature begins to drop, a heavy mist forms along the rivers and frequently extends the frost-free period.

To date, very little experimental work has been done on vegetable production in these specialized areas. A recent survey of commercial growers in the Peace River valley has shown a need for experimentation to determine the best varieties and cultural practices. About half of the growers are using fertilizers and about as many practice irrigation but the details for applying fertilizers and water to vegetable crops in these soils have not been determined. The ten growers interviewed are growing 13 varieties of corn, 12 of cu-

cumber and 8 of tomato. Spancross corn is being grown by four growers, while Golden Beauty and Marcross corn, Straight Eight and Early Russian cucumbers, and Bush Beefsteak tomatoes are being grown by three growers. The other varieties are being grown by only one or two growers.

At present, commercial growers satisfy only a small part of the vegetable requirements of the cities and towns in the region. Most of the vegetables are imported into the region at high cost. The savings in not having to spray heavily for insects and diseases together with the saving in not having to pay freight charges gives the local producer a decided advantage on local markets and in shipping to northern points.

Evergreens for Town Properties

JUNIPERUS (Juniper):

Sabina var. Skandia—Spreading, bright green. Does not turn purple in fall.
Sabina var. Arcadia—Spreading, grey-green. Does not turn purple in fall.
J. horigontalis Douglasi—Blue-green. Purple in winter.
J. scopulorum (Rocky Mountain Juniper)—Isolate from Crataegus.

PICEA (Spruce):

Montgomery Blue—Dwarf form P. pungens.
Hoopsii—Branches in horizontal tiers; blue, distinctive.
Morden Blue—Select Colorado seedling; shapely; dense.
Moerheimi—Steel blue; fine needles.
Endtzi—Silver blue; choice; dense.
Koster's—Popular Blue spruce.
P. albertiana conica—Dwarf; narrow, conical (somewhat tender).

P. ABIES (Norway Spruce):

Dwarf horticultural forms:
Maxwelli—Dense; dark green.
Nidiformis (Nest Spruce)—Broad; low.
Ohlendorffii—Compact; globular.
Repens—Flat; spreading.

PINUS (Pine):

P. mugo-mughus—Select dwarf forms. Sandy soils best.
P. sylvestris nana Wateri—Dwarf Scotch pine. Sandy soils best.
P. sylvestris — Patmore's selection from Finnish seed. Sandy soils best.
P. cembra (Swiss Stone Pine)—Grafted selection (Patmore). Sandy soils best.

BROADLEAVED EVERGREENS:

Pachistima canbyi (Ratstripper)—Blue Ridge Mountains, Va.; 1 foot.
Pachysandra terminalis (Japanese Spurge)—6 to 9 inches; shade tolerant.
Buxus Koreana (Korean Box)—Shade and smoke tolerant.
Vinca minor (Periwinkle)—Ground cover for shade.
Yucca glauca (Adam's Needle)—For hot dry banks.

Stevenson Memorial Gold Medal

The Stevenson Memorial Gold Medal was instituted in memory of the late A. P. Stevenson, of Pine Grove Nursery, Morden, Manitoba. This stalwart Scot arrived in 1874 from his native Perthshire and planted his first apple tree.

Mr. Stevenson began his horticultural experiments by trying to acclimatize trees from the British Isles, Eastern Canada and the Northern States. However, he found it more satisfactory to introduce plant material from Russia, as it seemed to perform better under Manitoba's rigorous climate. Many of his early introductions are still in use as breeding material, and many of our present day varieties have some of the blood of Stevenson's introductions — the "Pine Grove Red" apple and the "Mammoth" plum are two of his important introductions.

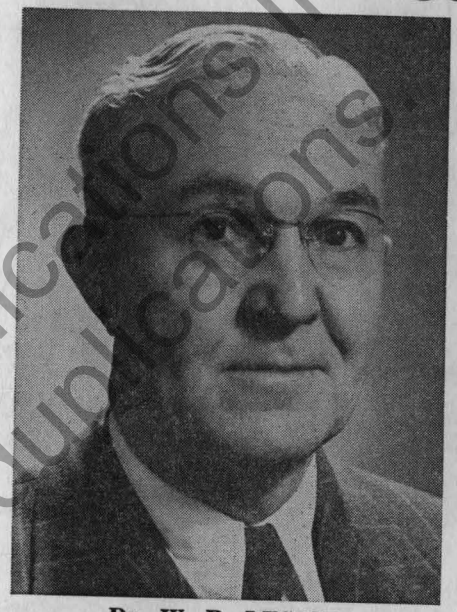
"Pine Grove Nursery" for many years was a mecca for farmers who wanted to buy and pick fruit, or for interested people to visit, where one could see Manitoba apples growing. At one time, there were over a thousand trees in the nursery, and over four hundred of these bearing fruit. Mr. Stevenson's outstanding work in the early part of the century with fruit trees won him the popular title, "Apple King of Manitoba."

One of the outstanding contributions of the late Mr. Stevenson was to demonstrate that farming was a "way of life." He followed sound agricultural practices, and believed that the land should be handed on to succeeding generations in a better state than when received.

For many years, Mr. Stevenson was a very familiar and welcome figure on many a prairie farmstead. As an employee of the Forest Nursery Station at Indian Head, Saskatchewan, Mr. Stevenson travelled over the prairie encouraging farmers to plant shelterbelts. Due to his energetic encouragement in tree planting, many prairie farmsteads can boast orchards and ornamental plantings which otherwise could not survive prairie extremes of climate.

As well as a memorial to this great prairie horticulturist, the Stevenson Memorial Gold Medal also honors individuals who have made "conspicuous achievement in the field of practical horticulture." Men so honored have all contributed greatly to the list of varieties of vegetables, fruit and ornamentals now in use. We owe these men a great debt for their worthwhile efforts. Much of our present day horticultural information is the result of their vision, skill and patience.

1958 Award of the Stevenson Memorial Gold Medal



Dr. W. R. LESLIE

An award of the Stevenson Memorial Gold Medal is scheduled for February 12th, 1958, in Winnipeg, in connection with the 60th annual convention of the Manitoba Horticultural Association. The Stevenson Memorial Board has selected Dr. W. R. Leslie, Horticultural Consultant in Winnipeg, and formerly superintendent of the Dominion Experimental Farm at Morden, as the worthy recipient for the ninth award of this medal.

Dr. "Russ" Leslie is well-known to prairie gardeners. While Dr. Leslie was at Morden, the station was developed and research work undertaken in vegetables, fruit and ornamentals. Varieties of horticultural plants, whether it be for the prairie garden, orchard or for ornamental work, must be adapted for the rigorous climate of the prairies. They must be drought resistant when necessary, they must be able to tolerate alkali or high lime content of the soil, and be able to withstand below zero winter temperatures with varying conditions of soil moisture. Research work at the station has been geared to these factors.

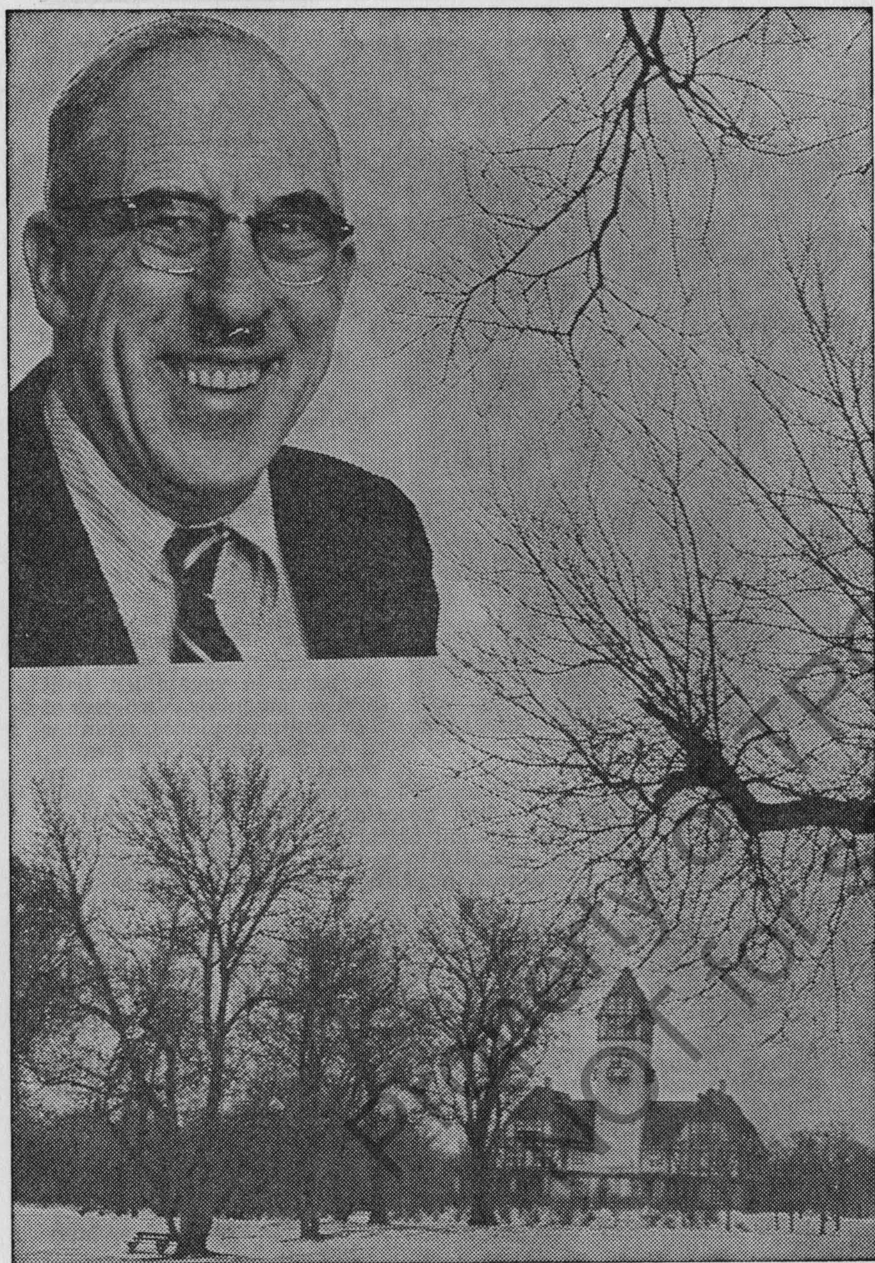
Many varieties of vegetables, fruit and flowers were developed at Morden. Many ornamentals, annuals, perennials, shrubs and trees have also been introduced at the station. Dr. Leslie very modestly places the credit for this work on the staff at the station, but no research work can be effective without direction and efficient supervision.

In receiving the award of the Stevenson Memorial Gold Medal, Dr. Leslie joins that group of august horticulturists who have contributed so greatly in the development of better gardens of fruit and vegetables and better surroundings on the prairies.

PREVIOUS AWARDS

DR. F. L. SKINNER, Dropmore, Man. — 1932.
*DR. N. E. HANSEN, Brookings, S. D. — 1935.
*G. F. CHIPMAN, Winnipeg, Man. — 1938.
N. M. ROSS, Indian Head, Sask. — 1941.
PROF. W. H. ALDERMAN, University of Minnesota — 1944.
*WM. GODFREY, Morden, Man. — 1947.
M. B. DAVIS, Ottawa, Ont. — 1951.
DR. A. F. YEAGER, New Hampshire, U.S.A. — 1954.

* *Deceased.*



Hector Macdonald, Supervisor of Assiniboine Park, and his snow clad acres.

The Winnipeg Tribune recently printed an article in conjunction with the above picture under the heading, "More Than 3,000,000 People Visit Hector Macdonald's Garden". In summer, it is truly a beauty spot. For further information, refer to Page 116. We suggest also that you don't miss the "Old English Flower Garden" — a mecca for flower lovers from far and wide.

The European Corn Borer In Manitoba And Saskatchewan

by R. D. BIRD
Entomology Section, Canada Dept. of Agriculture, Winnipeg

and W. W. A. STEWART
Entomology Section, Canada Dept. of Agriculture, Saskatoon

The European corn borer, **Pyrusta nubilalis** (Hbn.) first occurred in both Manitoba and Saskatchewan in 1949. At this time, considerable damage was done to sweet corn in the southern Red River valley area and isolated reports came from the Brandon and Estevan districts. Since 1949, the corn borer has continued to spread across Saskatchewan. In Manitoba, there has been little expansion of range but there has been a marked fluctuation in abundance. A single larva was found at Medicine Hat, Alberta, in 1956, but it was not found in 1957.

In Saskatchewan, in 1950, the corn borer was found in six locations in the southeast corner and in 1951, had spread to Whitewood, Moosomin and Manor. No reports were received in 1952 but, in 1953, it was found at Indian Head and Saskatoon. In 1954, it was widely distributed north to the Qu'Appelle Valley and west to the Third Meridian. An isolated infestation occurred at Kamsack. A further extension of fifty miles north and west occurred in 1955. By 1957, it was found as far west as Maple Creek. In southeast Saskatchewan, ten to ninety per cent of the plants in all plots examined in 1956 and one to sixty per cent in sixty-three per cent of plots examined in 1957 were infested with borers.

In Manitoba, in 1949 and 1950, infestations averaged 3 to 5 per cent with a few fields as high as 50 per cent. There was a progressive decline in numbers in the following years, in spite of winter survival of 25% to 60% of the mature larvae. In 1953, the borer was extremely scarce but in 1954, there was a great increase with an infestation up to 35 per cent throughout the Red River Valley. Crown millet was also attacked. The heaviest infestation to date occurred in 1955 with extremely low numbers again in 1956 and 1957 except at Morden in the latter year.

The European corn borer now appears to be firmly established and it may still be expanding its range. However, it

is not clear how serious a pest it may become. It is at the northern limits of its range and its abundance from year to year appears to be dependent on high night temperatures when the females are egg laying. Warm nights are not common and their absence at the critical time can greatly reduce the population. Sweet corn is more susceptible than field corn and early planted fields are generally the most severely attacked. To date, control has not been practiced in Manitoba. However, growers of canning crops are advised to examine their corn carefully for egg masses commencing about mid-July. Eggs are laid, overlapping one another, in groups of 10 to 30 on the underside of the leaves. When 10 to 15 egg masses are found on 50 plants control should be considered and must be applied immediately to be effective. Repeated applications at intervals of five days may be necessary if more eggs are found at that time. Either DDT or Ryania may be used, but DDT-treated foliage should not be fed to livestock although the cobs are safe for human consumption. Apply the insecticides in the following amounts:

DDT — ¾ to 1 lb. of active ingredient to 40 gallons of water for each one half acre

or

RYANIA — 2½ lbs. in 40 gallons of water for each one half acre.

If low pressure sprayers are used, obtain the DDT in emulsion form, wettable powders will clog the nozzles.

Insecticides applied as dusts are satisfactory, but the rate must be increased. Three to five per cent DDT or 40 per cent Ryania at 30 lbs. of dust per acre is required.

Obituary

On January 7, 1958, Professor Frederick William Brodrick passed away at the age of seventy-seven.

Prof. Brodrick was born in St. Catherines, Ont. He graduated from the Ontario Agricultural College in 1903 with the degree of B.S.A., joining the Dominion Department of Agriculture in June 1904, as representative of the Seed Branch in the Maritime Provinces.

He came West in 1906 and was professor of horticulture at the University of Manitoba until his retirement in 1937. Prof. Brodrick was an honorary life member of the Manitoba Horticultural Association and, in 1954, was made the first honorary life member of the Western Canadian Society for Horticulture.

As an active and valued member of the horticultural fraternity in Western Canada he held and despatched with credit the duties of many offices, among which were: secretary of the Manitoba Horticultural and Forestry Association, from 1905 to 1912; president from 1921 to 1923; president of the Great Plains section of the American Society of Horticultural Science from 1919 to 1920.

He was a member of the American Association for the Advancement of Science, the American Genetus Association, Canadian Society of Technical Agriculturalists and the Winnipeg Scientific Club. He was also active in Masonic circles, being a past master of Prince Rupert Lodge.

His long and valued services to Western horticulture, his kindly nature, courteous manner and friendly smile will long keep his memory green among his friends and associates.

He is survived by his wife, three daughters, three grandchildren and one brother.

Everyone associates flowers with ideas of beauty, and every gardener knows the thrilling story of how that beauty develops. First, there's the seed tucked in its earthy bed, then the magic of germination and growth and, finally, the crowning miracle of flowers opening in the sun to display their soft texture, their alluring lines and attractive coloring.

Thus, out of the dark earth beauty emerges to enchant and inspire us. That's the great gift our flowers yield. They purify the earth and out of the dross of the commonplace they refine the essence of beauty.

— A. R. BROWN, CBC's Prairie Gardener

12 RELIABLE LILIES OF FINE PERFORMANCE

Recommended by Dr. W. R. LESLIE, Winnipeg, Man.

Caucasian (Lilium monadelphum) — 3 to 4 feet; early June.

Coral (L. pumilum or tenuifolium) — 1 to 3, June.

Morningstar (L. concolor) — 2, June.

Matagon (L. martagon) — in variety; 3 to 5, June-July.

Stenographer Group, as Brenda Watts, Grace Marshall, Coronation — 2 to 4 feet, June-July.

The Duchess (L. amabile, Skinner hybrid) — 2, July.

Greenstripe Ichang (L. centifolium) — white trumpet lily, 4 to 6, July.

Dunkirk (L.-Skinner hybrid) — 3 to 4, July-August.

Maxwill (L.-Skinner hybrid) — 4 to 7, August.

White Gold (L.-Patterson hybrid) — 2, creamy-white.

Splendens Tiger (L. tigrinum splendens) — 3 to 5, August-September.

Henry (L. henryi) — 3 to 6, August-September.

Among many others, which are available locally and of much worth, are Scottiae, Redman, Amaryllis, Dieppe, Enchantment, Rose Queen, Lemon Queen, Oriole, Brandywine, Glacier, Nubian, Mega, White Princess, Azalia, Juanita, Dalhansoni, H. J. Elves, and Sunset Glow.

FAVORITE ROSES

The following varieties or roses are recommended by the Winnipeg Horticultural Society. These varieties topped a poll of popular roses, conducted by the Rose Section of the Winnipeg Horticultural Society.

Peace — H.T.	Independence — Floribunda
Crimson Glory — H.T.	Fashion — Floribunda
Frau Karl Druschki — H.P.	Orange Trumpet—Floribunda

GARDEN GLADS

The following varieties are specially selected by Mr. Evered L. Lawrence, Winnipeg, president, Canadian Gladiolus Society:

White — Professor Goudrain	Scarlet — Dieppe
Yellow — Prospector	Red — Red Charm
Purple — King David	Rose — Rosita
Violet — Violet Charm	Pink — Friendship.

MINIATURES

Pink — Little Sweetheart	Red — Atom
Salmon — Peter Pan	Yellow — Statuette.

Winnipeg's Third International Flower Show

Winnipeg's Third International Flower Show will be staged jointly by the Winnipeg Horticultural Society and the Winnipeg Gladiolus Society, in the Winnipeg Civic Auditorium, on August 20 and 21, 1958. Plans are being made to make this year's show even better than its predecessors. Some new and interesting features are being added to the show.

All sections in the Winnipeg Horticultural Show will, as usual, be open to all competitors.

The Winnipeg Gladiolus Society has added gladiolus sections for competitors under 14 years, as well as for competitors between the ages of 14 and 18 years.

African violets and fruits will also be staged.

WINNIPEG HORTICULTURAL SOCIETY

Financial Statement for year ending October 31st, 1957

RECEIPTS		
Balance on hand, Nov. 1, 1956		$ 533.80
Membership Fees		832.00
Grants and Donations:		
Province of Manitoba		535.50
Province of Manitoba 1956 Membership		36.10
Winnipeg Free Press		50.00
Winnipeg Free Press Vegetable Gardens		150.00
Other donations		25.00
Advertising, Year Book		1,012.30
Sale of Year Books		1,465.04
Tickets, annual dinner 1956		196.00
Picnic receipts, 1957		141.25
International Flower Show:		
Profits, 1956	$239.59	
Mailing prize list	40.98	
Prizes, 1957	921.00	
Profits, 1957	171.79	1,373.36
		$6,350.35

DISBURSEMENTS	
Prizes, Flower Show	$ 921.00
Vegetable Gardens	150.00
Picnic Expense	130.00
Door Prizes	12.75
Printing	405.36
Stationery	119.15
Postage	373.22
Judging Expenses	23.75
Expense re display Brandon Flower Show	39.23
Annual Dinner, 1956	231.00
Rent, Meetings, etc.	16.00
Life Membership	8.60
Donation:	
Stevenson Memorial Fund	50.00
Gift to Member	35.00
Year Book Committee	200.00
Year Book	2,300.30
Refund, International Flower Show	460.50
Bank Charges	16.15
Honorarium	350.00
Flowers and Fruit	7.50
Balance on hand Oct. 31, 1957	500.84
	$6,350.35

WILLIAM J. TANNER,
Secretary-Treasurer.

AUDITOR'S REPORT

To the President, Directors and Members of the Winnipeg Horticultural Society:

I have compared the above statement with the books and vouchers relating thereto, and certify that it is a correct record of the receipts and disbursements of the Winnipeg Horticultural Society for the year ending October 31, 1957, according to the explanations and information given me.

W. F. BLACKWELL, Auditor.

Second International Flower Show

by William J. TANNER
Chairman, Flower Show

Winnipeg's second International Flower Show was held in the Civic Auditorium on August 21st and 22nd, 1957. This was, as in the year before, staged by the Winnipeg Gladiolus Society and the Winnipeg Horticultural Society under the direction of the International Flower Show Committee. This committee was composed of four members from each society.

The show last year was an excellent one, and many favourable comments were heard from visitors. Our visitors book was signed by visitors from England, Ireland, Scotland, Holland, Mexico, Cuba, Yukon, all provinces of Canada except two, and from seventeen States south of the border.

Entries were about the same as last year in the Winnipeg Horticultural Societies Classes, and prize money paid out amounted to $549.50. There was a considerable increase in entries in the children's section, credit for this belonging entirely to Miss G. Matchatt, who works with school children in the Greater Winnipeg area in the Waugh Shield competitions.

Once more we are greatly indebted to the T. Eaton Co. for the loan of tables and also for donating our prize ribbons. Many thanks also to Hartstone Memorial Church for the loan of tables and to Silverwoods Dairy who very kindly loaned us the bottles. The Inland Broadcasting and Television Service kindly loaned the P. A. System for music.

In June, last year, your Society staged a successful Flower show at the Red River Exhibition held at the Arena June 22nd-29th. Owing to the difficulty of keeping flowers looking their best for so long a period, three separate shows were held, with identical prize lists for each. House plants classes were the exception, as these did not have to be replaced, only one judging was necessary. The African Violet Society's display attracted a lot of attention at both the Red River Exhibition and at our own show at the Auditorium.

I would like to take this opportunity of saying "Thank you" to all who worked so hard in setting up and dismantling the show, and to everyone who helped make the show a success. A particularly big vote of thanks to all exhibitors, who are really the ones who make the show. To all the judges and their helpers, a very special "Thank you".

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L. BRIGHT CLOUD

L. HENRYI