The Winnipeg Flower Garden

Presented By
The Winnipeg Horticultural Society
1945

Foreword

I take great pleasure in introducing the Year Book for 1945, after an absence of two years.

As you will see it is much larger and for the first time in our history it has pictures from Manitoba.

It has been a great task, and I take this opportunity to thank all those who helped, also my personal thanks to those who contributed money and advertisements in order to make it possible for the publication of this book without incuring additional cost to the society.

Our slogan: "Members owe at least one new member to the society" has proved a great success, to the extent of a larger membership than ever before.

At this time I think it is well to remember, that even though Victory is here we should not lessen our effort for a Victory garden. On the contrary, food will certainly be needed more than ever in Europe for the coming years, and it must come from this side, so keep up the good work.

Another kind of Victory Garden will be needed, the Flower Garden; let us make this City more beautiful than ever, it is not enough just to clean up and paint; you must also plan and plant, talk to your friends and neighbours about W.H.S. Do not forget bigger and stronger Societies always give more help and support. It is your Society and will always be what you make it.

My sincere thanks to all members for the trust and confidence you have had in me as President, it has been a pleasure and a great honour.

Eric Sochting
President.

The Winnipeg Horticultural Society

ESTABLISHED 1930

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1941—Mr. Thos. O. Graham
1942—Mr. Theo. E. Howard
1943—Mrs. Roy Hunt
1944—Dr. S. W. Edgecombe

*Deceased

Winnipeg Horticultural Society

Statement of Receipts and Disbursements for year ending October 31st, 1944.

Receipts:

Membership	$295.00
Government Grant	72.30
Free Press, re printing for Victory Garden Contest	23.25
Free Press, judging expenses for Victory Garden Contest	12.60
Clark Leatherdale Co. Donation	9.00
Donations for presentation	10.00
Refund on Banquet Tickets	2.03
Total	$424.18

Disbursements:

Printing	$102.71
Postage	85.53
Membership Com., 1943	3.20
Garden Competition	22.78
Secretary's Honorarium, 1943	50.00
Stationery	22.58
Year Book	40.05
Presentation and flowers	28.75
Expenses for meetings	18.00
Radio Talks	5.00
Complimentary Tickets to banquet and lunches	7.40
Bank Charges	2.00
Judging Expenses, Free Press Victory Garden Compt.	12.60
Total	$400.60

Surplus for Year	$ 23.58
Balance, October 31st, 1943	105.83
Balance on hand, October 31st, 1944	$129.41

NOTE—$15.00 donated by The Winnipeg Tribune for the Garden Competition was paid direct to the winners and is not included in the above statement.

R. W. BROWN, Secretary-Treasurer

AUDITOR'S REPORT

To the President and Members,
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 31st, 1944.

J. A. MacPHAIL, Auditor

Winnipeg, Manitoba., November 13, 1944.

PRESIDENT'S REPORT - 1944

By DR. S. W. EDGECOMBE

During the past year, the Society conducted a rather ambitious program. Nine public meetings, with 918 attendance, were held. The attendance figures show the great amount of interest on the part of the membership. The society also co-operated with the Mayor's Victory Garden Committee and the Winnipeg Free Press in stimulating interest in the Victory Garden campaign. The socity judged the Free Press Victory Garden contest in districts 1, 2, 3, 5, 8 and 9, and the final for Greater Winnipeg.

The yearbook committee, under the capable chairmanship of Prof. F. W. Broderick, issued the annual yearbook of which 300 copies were distributed.

The annual home grounds competition which included nine classes, 25 competitors, 98 entries and $125.00 in prizes, was another feature of the society's 1944 program. Mr. R. W. Brown, Secretary-Treasurer, was chairman of the competitions and, as usual, did an excellent job. Few society members or contestants realize the amount of work and time such competitions entail. Mr. Brown deserves a rising vote of thanks.

The society was very aggressive in 1944 in trying to reach and serve as many gardeners as possible. The radio committee, under Mr. H. A. Green, arranged for 24 radio talks. Copies of these were mailed to 76 different people by the secretary, Mr. Brown. The membership owes much to Mr. Green, Mr. Brown, the Winnipeg Supply & Fuel Company, and radio station CKRC (who furnished the radio time), and to the speakers for making the broadcasts possible. The response was so good that I hope the society may be able to make this service permanent.

The society advised people interested in horticulture that those who cared to address horticultural questions in writing to the secretary would be furnished information from the best available sources. Mr. Brown had numerous requests which were adequately handled.

In order to carry on the business of the society, the Board of Directors met twelve times with an attendance of 144. The credit for an aggressive worthwhile program should go to our Board because they did not meet for a social half-hour but really worked on ideas that would be of value to those interested in horticulture in Winnipeg and vicinity. I have mentioned several members of the Board in relationship to special

activities. This singling out of individual Board members is somewhat unfair because the Board has worked as a unit and every activity has had the Board's full support.

The Board, early in the fall of 1943, decided to disperse with a paid membership solicitor. Instead, they decided to secure membership themselves. The final membership of 291 (an increase of 14 over 1943) is a tribute to their efforts. In the past the society has had a large number of members who were members only in name. This year we can truthfully say that our membership consists of actively participating members. Naturally, such a membership is vitally interested in the society's affairs. My only regret is that we were unable to secure a membership of 500—1,000 which would more truly represent the horticultural interest in Winnipeg. Still, during times like these, it would seem that the society's affairs have been well handled. In spite of the many extra activities undertaken, our Secretary informed me on October 30th that we had a balance of $129.71 on hand.

The motto of this year's Board and membership has been "Service to all persons interested in horticulture." The start made in 1944 will not bear fruit at once. If such a program can be maintained for several year, I am sure Winnipeg horticulture will be greatly benefitted. Winnipeg needs strong horticultural societies—The Winnipeg Society is in a strong position to serve the area and, with the capable leadership within the society, progress is assured.

As your President for the past year, may I apologize for leaving the Board in August and being away most of June and July. I know that I did not carry my share of the work. In spite of this, the Board did carry on successfully.

Although I have moved away from Winnipeg, I want to emphasize that my interest in Winnipeg and Manitoba horticulture is a continuing matter. The past year has been a privilege and pleasure and I will treasure its memories throughout my lifetime.

I hope in the years to come that the society's membership will remember that my home address is W. Atlee Burpee Company, Fordhook Farms, Doylestown, Pennsylvania, and they will come and visit me whenever possible.

Finally, may I close with this urging: "Keep up the good work and God bless you, one and all, in your work which does much to assure Peace on earth and Good Will to Men."

Sincerely,

S. W. EDGECOMBE.

Some Ornamental Fruit Trees

By W. R. LESLIE, Experimental Station, Morden Manitoba

Plant children from the orchards are becoming widely esteemed as ornamentals for decorating parklands and home grounds. A few of those hardy in Manitoba are mentioned Bush and berry fruits of landscape value are too numerous to be included. Nut trees are overlooked also for reason of space. Names, botanical and common, accord with Standardized Plant Names, 1942 edition.

Malus baccata, the **Siberian Crabapple**, is known favorably for its prodigal bloom and its berrylike fruits which cling to the branchlets well through the winter. Its hybrids—Dolgo, Flame, and the new Morden selection, Dolgo x Haralson, bear showy fruits. The last two hang on the tree very late.

Manchurian Crabapple is a substitute that tends to grow very upright and produce myriads of small currant-like fruits. The trees root more deeply than the Siberian.

Malus ioensis, the **Prairie Crabapple**, has lobbed leaves, and pinkish blossoms that open about a week after the Siberian. The fragrance resembles violets.

Malus pumila-variety Niedzwetskyana has been crossed with the Siberian to produce a new tribe known as the **"Rosybloom Crabs."** Most are smallish trees, with foliage of various degress of redness, and flowers from light pink to deep maroon. Dauphin is very early with large red flowers. Erie is dwarfish at Morden and Popular. Other kinds are Cowichan, Temiskaming. Wabiskaw, Hopa and Red Silver. The last two are from South Dakota, the others from the Ottawa Experimental Farm. A number of second and third generation hybrids at the Morden Experimental Station are selected for their freedom of violet shades in flowers. for persistence of bloom, beauty of fruit, and redness of foliage. The Strathmore, developed by A. Griffin at Strathmore. Alberta, is a very choice, finely-branched small. dense variety with arresting red leaves. Some varieties, as the Scugog. are discarded due to fire blight disease. This new race of crabapples are due for still further improvement. Already they are among our most prized ornamentals.

Malus toringoides, the **Cutleaf Crabapple,** is a slow grower with deeply cut leaves.

Malus transitoria, the **Tibetan Crabapple,** resembles the Cutleaf but is finer throughout. Grafted on roots of the Siberian, it supplies one of the most pleasing hardy plants for a clipped hedge.

Pyrus ussuriensis, the **Ussurian Pear,** is fully hardy. The foliage becomes highly colored in autumn.

The stone fruit genus, Prunus, offers a long list of diverse subjects.

Prunus cistena, the **Cistena Cherry,** from South Dakota provides rich maroon foliage. Bushes tip-kill some seasons but new growth puts forth in May.

Prunus var. Newport, the **Newport Plum,** from Minnesota is much similar but taller and has larger leaves.

P. davidiana, the **David Peach,** is almost hardy in southern Manitoba. The foliage is long and narrow and the flowers red pink.

P. fruticosa, the **Ground Cherry** or Mongolian Cherry, is the hardiest sour cherry. Leaves are thick and glossy and the fruits round, showy and useful for jelly. The bush remains of pony size—about 3 to 5 feet.

P. humilis, the **Bunge Cherry,** is a low bush of much beauty. The large lustrous scarlet cherries cling to their mooring into autumn. The Bunge Cherry has value in the shrubberies of southern Manitoba.

P. japonica, the **Chinese Bushcherry,** is a fine textured little bush that is showy when laden with countless small scarlet cherries from mid-summer until autumn.

P. Maacki, the **Amur Cherry,** is suggestive of a large finely-textured chokecherry. The yellowish papery bark is somewhat like that of the Canoe Birch. This cherry is hardy at Dropmore. It becomes a large round-headed shade tree. The Amur Cherry deserves extended use on large grounds. The bark adds life to the winter scene.

P. mandshurica, the **Manchurian Apricot, is hardy but less showy in bloom than the Siberian, as the flowers are pale pink to white.**

P. nigra, the **Canada Plum,** native as far north as the Duck Mountains, is ornamental from mid-May until late October.

P. padus commutata, the **Harbinger European Birdcherry,** is known locally as the **Mayday Tree.** It is considered as a glorified chokecherry, with large early bloom. This large, vigorous tree has much value where planted apart from chokecherry and other natives that are subject to black-knot disease.

P. pennsylvanica, the **Pin Cherry,** has acquired new interest with the introduction of the Stockton variety with double flowers, and the Jumping Pound with slow-growing pendulous habit. Both came from the wildwood—the former from near Stockton, Manitoba; the latter from southern Alberta, introduced by A. Griffin.

P. pumila, the **Sand Cherry,** is a small bush, attractive when in bloom and when the foliage becomes flaming red in autumn. The cherries often cling into the winter season.

P. serotina, the **Black Cherry,** native to northern Minnesota. is worthy of planting for its fine foliage, blossoms, and masses of slender strings of glossy cherries.

P. sibirica, the **Siberian Apricot,** is the earliest of our tree fruits to bloom. The strains producing deep pink flowers are preferred. It thrives only on well-drained soil. Standing water soon smothers the roots of apricots in prairie gardens.

P. skinneri, the **Baton Rouge Almond,** is a handsome new shrub bred by F. L. Skinner of Dropmore, by crossing the Chinese Bushcherry with pollen of Russian Almond. This hybrid is larger than the Russian Almond. Blossoms are bright red pink and more lasting than those of the pollen parent. When worked non-suckering root stocks, this promises to be a very serviceable new hardy shrub of medium small size.

P. tenella, the **Russian Almond,** was formerly known as P. nana. This early blooming shrub comes in various colors, from white to dark red. The most common hue is full pink. The habit is from broad spreading to stiffly upright. The vigorous suckering habit limits the locations to which the Russian Almond is suited. This handicap may be overcome by working it on non-suckering roots.

P. tomentosa, the **Manchu Cherry,** has been known as the Cherry. The pale pink blossoms come in mid-May. Bushes

are very decorative when loaded with thousands of round glossy cherries in white, pink, scarlet or red, which may be almost half an inch in diameter. The cherries are appreciated for dessert and for canning. They adorn the bushes for several weeks, if unpicked. Birds are fond of the fruit.

P. triloba, the **Flowering Plum,** is a favorite ornamental shrub. The strain bearing double pink flowers is most planted. It seldom ripens any fruit. The single-flowered kinds bear bountiful crops. Some selections have red pink flowers that resemble peach bloom.

P. virginiana, the chokecherry, is well known as a tall native shrub that bears long narrow strings of flowers, and in autumn is arrayed with glossy red to black cherries. Two new forms add variety to the shrubbery planting. One class bears showy golden fruit, as represented by the variety Spearfish. The other and latest introduction is unique in that it wears large thick leaves of deep maroon color. It was contributed to prairie gardeners by Dr. George F. Will, horticulturist of Bismarck, North Dakota.

Rock Gardens

By JOHN F. CLARK
Ontario Department of Agriculture, Toronto, Ontario

There are many reasons for the rapid rise to popularity of the rockery. Rock Gardens do not require tearing out every year for renewal of soil. Mulches and fertilizers are unnecessary. Plants that thrive best in this form of garden require little in the way of manuring, many even doing better in poor soil than in rich loam. Spraying, which is unpleasant to most people, is practically unknown in this form of garden. Many of the finest alpine plants require a dry condition, while most demand good drainage, hence the need of constant watering is necessary.

The chief charm of the rock garden lies in the wonderful plants that may be classed among the most beautiful of all hardy flowers. Attractive dwarf plants that will succeed in any soil, forming tufts of bright green foliage from which innumerable flowers appear in dense heads. Other desirable plants are of free and graceful habit, producing much branched stems and marvellously free-flowering, such a Aubretia, Gypsophila repens, and Tunica Saxifraga. Then in the rock garden can be used many of the daintiest and most delicately beautiful of hardy plants, the interesting dwarf, creeping perennials for carpeting bare spots over the dwarf bulbs, which flower early and pass on, leaving vacant patches. Again there are distinct species which have attracted much attention by their unique habit of growth, their floriferousness and lateness of flowering. Cushion-like plants, 2½ feet across, producing a mass effect of brilliant flowers in great profusion. make the rockery an unexcelled picture in spring and summer.

There are many indispensable perennials, which can be planted satisfactory only in a rock garden. Noble in their wonderful foliage and flowers, demanding perhaps to be planted in between two rocks where their roots may search for moisture and nourishment deep in the fissure. Such dwarf novelties as Ramondias, and encrusted Saxifragas are lost in a perennial border.

Position and Arrangement

The requirements as to position of the rock garden are not hard to meet. A very gentle slope, bank or incline affords a charming site where many fascinating little plants can be grown to perfection, or let us suppose that we have a rocky bank which may even be a sort of retaining wall; perhaps a small brook whose banks we would like to plant, this is an ideal location. Again, suitable gardens cannot be made on hot, dry and sunny slopes or inclines with success, yet in such location many of the rock plants thrive to the best advantage. Planting material such as Dianthus, Thymus and Sedums, covered with fine cut flowers, does exceptionally well in a hot, dry position.

Rock plants are mostly sun-loving and are easily grown if not disturbed about the roots by cultivation. The most satisfactory exposure would be a southern one, but when properly built the rock garden may have pockets and fissures with exposures to all points of the compass in order to accommodate shade-loving plants, such as Primulas, hardy Orchids, Columbines, Ferns and some Campanulas. Therefore a northern exposure would be quite suitable for a rockery.

Kind of Rock to Use

Weathered and waterworn limestone is the most satisfactory material for construction purposes. This grey mountain limestone with coarse strata, beautifully weathered into quaint and delightful pockets, ledges and fissures by the action of water over a great period of years, is ideal. By the use of this kind of stone, the rock garden assumes the old and weathered appearance which is half the charm.

In the event of no limestone, such as the above, being procurable, pleasing effects are made by using boulders and weatherbeaten stone, laid at random to hold a very steep bank about a house or other artificial object. The spaces may then be filled with good soil and rock-loving plants induced to grow. Only the weather faces should be left above ground, unless the rock has just been broken. Avoid granite, hardy field stone and rocks carrying sparkling crystals; rather choose rocks with an aged appearance and an open porous surface, which will absorb moisture. If the rock is slightly flat on top, it will serve the purpose better than round boulders.

Construction of Rock Garden

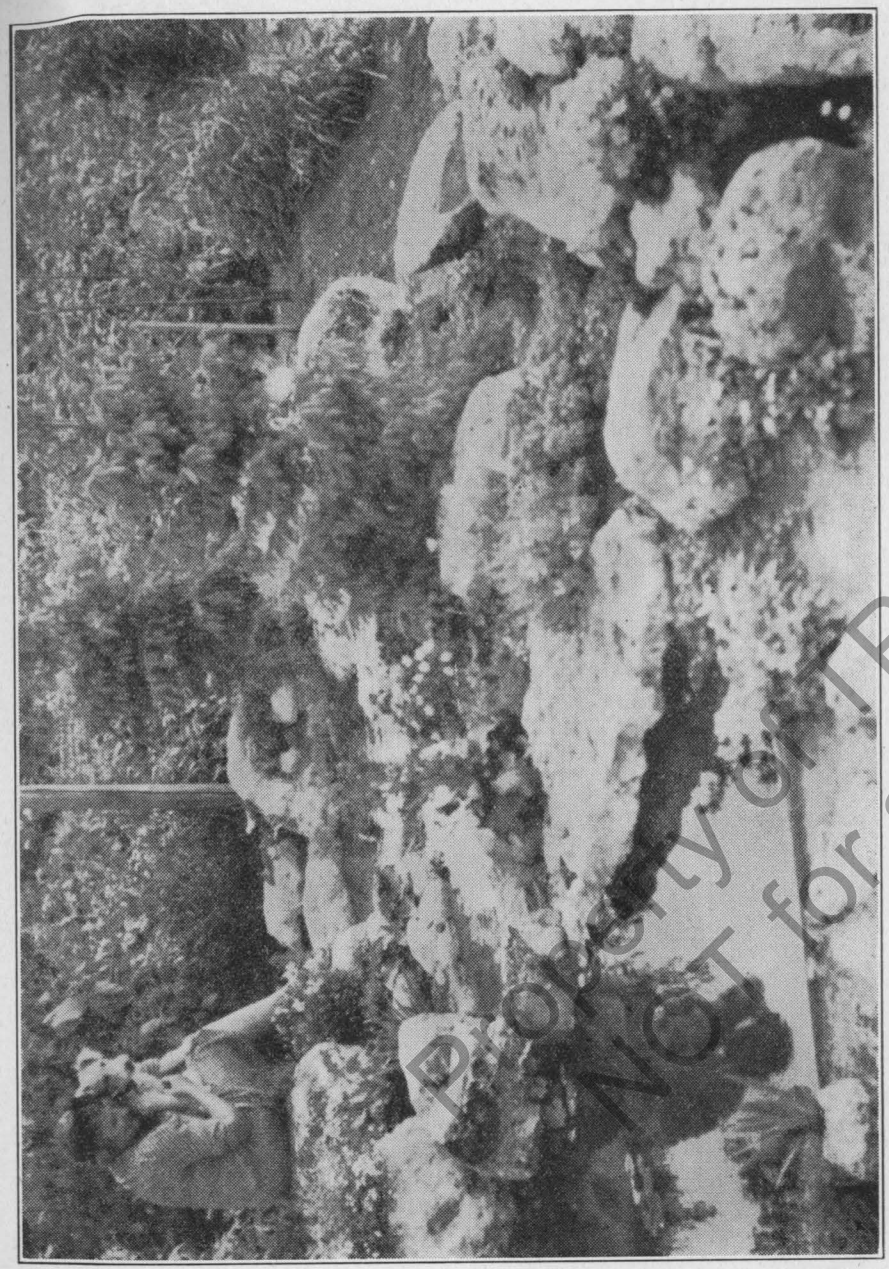
On no account should a rock garden be built in the centre of a lawn. The arrangement of such a garden should conform to nature's grouping. There should be no attempt at precision and the look of extreme tidiness, which spoils everything but the most formal design, will most certainly result in failure no matter how carefully it may be planned. The finished scheme should be distinguished by character and natural charm, avoiding circles, squares and oblong. Let the design take the form of a miniature mountain range or a small rugged hill with irregular lines.

Good drainage is essential and should be provided by incorporating coarse cinders, gravel, broken limestone in the centre area of the rockery and well down towards the base; this will insure the excess water being drained away. Alpine plants do not suffer from cold but many perish very quickly on sodden ground.

A study of natural arrangement or rocks suggests that they should be of many sizes if the garden is to be interesting. Wherever there is a steep slope, several large rocks at the base will prevent the soil from washing. There should be no crowding of rocks or the effect will be heavy. No stone should stand on end, instead each should lie on its broadest base. The problem is to build up the rocks informally and with soil between them. They should never be arranged in correct tiers, nor should the direction of the strata in the rock be seriously changed.

Pockets and fissures should be filled with a rather rich, not too light soil, consisting of good loom and one-fourth leaf mould, and coarse sand. Incorporate very fine chips of limestone, which may also be sprinkled on the surface. It is advisable to mix a little peat moss, and make sure all crevices and fissures open into areas of soil, pressing out any air pockets. No further fertilizers are necessary when these soil mixtures are used.

No stone should stand out too prominently, as each rock should overlap another and should conform to the natural aspect of the design. The rocks may be buried one-third of their depth, appearing as an outcrop, not sitting on the surface. When finished, the garden should be pleasingly irregular to give it a natural appearance, the land sloping sufficiently in all parts to provide rapid surface drainage. The slopes should not be too steep, in order to permit the rain to penetrate the soil, and reach the roots exposed.



Mr. and Mrs. Murray's Garden at Douglas Park Road, St. James.

Planting Material

The material for planting in this form of garden is almost unlimited, as alpine plants of many species and varieties may be numbered by the thousands. Species or varieties that are remarkable by reason of great rarity rather than beauty should be carefully avoided by the amateur. Plants of easy cultivation and those which will give a good display, ought to first be grown by the beginner, then, as taught by experience, the finer and novelty plants may be secured. It is well to grow in the rock garden some of the interesting little plants which draw much attention, such as Campanulas, Sedums and Sempervivums, all of which are easily grown with success.

Special pockets of soil may later be provided for plants demanding certain requirements, but where the average good soil exists, it is seldom necessary to make any additional provision. Distinctly rock-loving plants must have the conditions which they like. These should be supplied them in order to insure success.

Many fine little bulbs may find a congenial home in pockets of soil or hidden under patches of Sedums or Thymus. Bulbs such as Snowdrops, Scillas, Crocus, Muscari, Chionodoxa, Ixiolorion and the beautiful Iris Reticulata add materially to the glorious beauty of the rock garden. These bulbs should all be planted in the autumn.

Perennials which form pretty rosettes of foliage can be grown with ease on a stone wall or between stone steps in the rock garden. Gypsophila repens proves a beautiful trailing plant for placing in a small pocket or soil and in July and August becomes a cloud of small white and pink flowers. Iris lucustrus is a dainty native creeping species from the Bruce Peninsula and Manitoulin Island, about 4 inches in height, blooming with sky-blu flowers in May. Iris pumila blooms about the same time, in white, yellow, blue and purple.

Depending on the situation and the amount of space available, some shrubs might be included. The best rock garden shrubs are found amongst the evergreens, as they provide a rugged touch and lend dignity to the rockery. Juniperus tamarisifolia and sabina are excellent, the Mugho or dwarf Mountain Pine and dwarf Thuyas also proving desirable. Retinosporas are particularly fine for rock planting. as also the dwarf Spruce. Tall and wide spreading material should be avoided. Other ornamental shrubs worth planting embrace Cotoneasters, Euonymus, Berberis, Daphne and Erica.

TREES—Nature's Gift and Man's Responsibility

By WATSON H. PORTER, Editor of The Farmer's Advocate and Home Magazine.

I wonder how many there are sitting this morning who still like to hear the crash of a falling tree.

There is no use wrapping things up. I confess that I am guilty. It gives me a thrill to see a tall elm sway, then fall prostrate to the ground with a resounding crash.

I wonder why George Washington cut down that cherry tree. As boys, we held a cherry tree in high respect. It must have been the only tree left on the grounds or George would not have singled it out for slaughter.

Why do you suppose it is that when you give a small boy an axe he at once sets out to cut down a tree? He doesn't chop into the corner of the barn or hack at a fence post. Nothing but a living, growing tree will do.

And then watch a man who has finished grinding an axe. He feels the edge, and if satisfied he will look around for a tree. There may be no trees in sight—usually no tree that needs cutting down. But instinct causes him to think of a tree.

Hostility to trees is in the bloodstream. It's an infection that must be cured. It's an infection of long standing, and this is how it came there:

This land was originally covered with forest primeval. The settler first cleared a spot on which to build a house and barn. Then the conquest of the forest began. Each year he cut and piled and burned the trees. He battled against the forest for possession of the land. While working industriously in the cleared patch something would swish past his head, and turning around he would see an arrow lodged in the logs of the barn. The father and mother lived in desperate and constant fear that their children would be attacked by wild beasts that lurked in the nearby woods.

The forests were the pioneer's enemy because they occupied the land he needed badly and because they provided a sanctuary for all his foes.

The fight went on for two generations—a conquest of the forest. We, the heirs of those rugged pioneers, still like to hear the crash of a falling tree. It is in the bloodstream.

The people of Ontario won the war but they did not win the peace.

The victory was too decisive—far too complete. Generation after generation has stripped the forests, denuded the hillsides, drained the swamps and ditched the fields. We have laid waste the countryside, and as a result floods are bigger and more devastating as the years go by; droughts are more severe and more ruinous to crops; the wells dry up in summer; the springs stop bubbling; the streams cease to run, and the fish die.

The habitat of wild life is destroyed, so pests and diseases, unchecked by their natural enemies which nature provided, attack the crops that man plants on the land. Nature is unbalanced, and nature unbalanced may, at times, become a desperate and unconquerable foe.

I cannot proceed without expressing the thought that the bird in the tree and the worm in the ground are just as essential to harmony in nature as is man himself. Actually, I think the bird and the worm are more essential. I cannot think of one contribution that man makes to the balance or harmony in nature. In his relations with nature man is a rebel and a pirate.

Nature's Use for Trees

You and I may attach importance to trees for altogether different reasons, and we are both right. You no doubt like to see beautiful trees on your lawns and in the parks. You enjoy them on your boulevards, and you like to see them dotted across the countryside or planted on the roadside to form a pleasant avenue through which to drive. In that sense they have an aesthetic or intrinsic value. In that I can join you.

I hold in high regard the noble elm, whose arched branches suggest the sublime architecture of a beautiful cathedral. I like the maple, in whose shade you see the live stock lying during the heat of the day. I like the spread and the aroma of the conifers. The nut trees appeal to me, and so does even the blue spruce growing as an ornamental tree on the lawn. But my interest is in great masses of trees growing in forests or in woodlots as nature intended they should grow.

There the dying branches and the falling leaves create a ground mulch or sponge that absorbs the rainfall and feeds it gradually into the subterranean water reservoirs from whence it reappears as ground water to nourish the crops, to feed the springs, supply the wells and cause the streams to run.

The Town's Link With Nature

Lest some of you may think that all this talk about ground water and streams and wells and springs does not concern you, let me paint a possible picture of your home town.

The town council is in session and the reeve or mayor is in the chair. He says to the council: "Gentlemen, the most pressing problem with which we have to deal tonight is the town water supply. Rags Unlimited have threatened to move their mill to some other town if we don't provide them with 25,000 more gallons per day. I don't know where we are going to get the water. We are short of water now for domestic use. Those springs don't run near as much water as they used to, and I think the whole country is drying up. The stream that runs through the town is almost dry in summer. The algae is dying on the banks of the stream, sewage is clinging to the abutments of the bridges. When women come down town in the mornings to do their shopping they carry a shopping basket in one hand and hold their nose, with the other. The stench is becoming unbearable. People are complaining, and I don't blame them. I can hardly bear it myself. The only solution I can see is to drill ten new wells or else pipe water from the lake, put in a filter and in that way get enough water for domestic use and industrial purposes. It will cost us $50,000."

"You're crazy, Mr. Mayor," one alderman pipes up. "That would be three mills on the assessment for 20 years. The people wouldn't stand for it. I move we leave this problem for the incoming council to handle." And that is what that council would probably do.

Finally the health authorities would condemn the water and the council would have to act.

If they were wise they would act as the village of Beeton did act 20 years ago. They planted trees on 75 acres surrounding their springs, thereby doubling their water supply

and improving the quality. At one time their supply was inadequate. Now they have more than enough and sell water to the railroad.

And let me tell you this: You cannot make your town beautifu with gladioli when "Rags Unlimited" move out and leave an empty building surrounded by abandoned homes.

Nothing is more essential than water.

The Lingering Hostility to Trees

That is why I like forests and woodlots on the hills and slopes and waste lands of this province. From 10 to 20 per cent of the whole countryside should be well clothed with healthy, ungrazed woodlots. That is why I ask you to join in this crusade to destroy the lingering hostility to trees. We must get it out of the bloodstream, and the time to purify the blood is when the boys and girls are young.

We can teach respect for trees by defending the trees we have. Some may say that "they should pass a law", "legislation should be much stricter", "they don't enforce the law".

Ladies and gentlemen, a genuine public consciousness of the value of trees and a love of trees is a stronger force than legislation.

No legislation will defend trees if the people themselves are hostile to trees, or even indifferent.

Speaking and spouting about the beauty of trees will not save them. People must be positive and aggressive in their defence of trees—willing to take sides in a fight to defend trees and willing to go into court, if necessary.

Roadside Ruthlessness

Throughout the countryside there are many exhibits of ruthlessness. Roadside trees have been half decapitated so wires, that should be underground, may not be detoured or their standard height altered. Sometimes we see one side of a whole row of roadside trees slashed off, and the other side remaining.

We have exchanged beautiful roadside trees for ugly poles and miles of wire, all because a sufficient number of people didn't care. There was no deterring public opinion.

We must not ignore the hazard to public safety in town or on country roads that old and decaying trees present. Neither must we overlook the physical effect on highways when trees are planted too close to the roadbed. Public utilities commissions and engineers are responsible for public safety and sometimes beauty must be sacrified for good and sufficient reason.

Right About Face

But the situation isn't altogether bad. The Department of Highways will, no doubt, prove to be one of the leading forces in the Province to encourage and demonstrate the possibilities of roadside tree-planting.

Much of the feeling toward the Hydro-Electric Power Commission dates back a decade or more when construction gangs (gangsters really) put up the rural lines. Trees meant nothing to them—nothing but obstacles.

Now most of the extensions in rural parts are constructed under the direction of the Superintendents of the rural districts. These men are responsive to public opinion, as is the Hydro-Electric Power Commission itself. The situation in regard to roadside trees is much better than formerly.

In urban municipalities the matter is almost entirely in the hands of the citizens themselves. The rules and regulations are enacted by the Council and any attempt at vandalism can be quickly stopped.

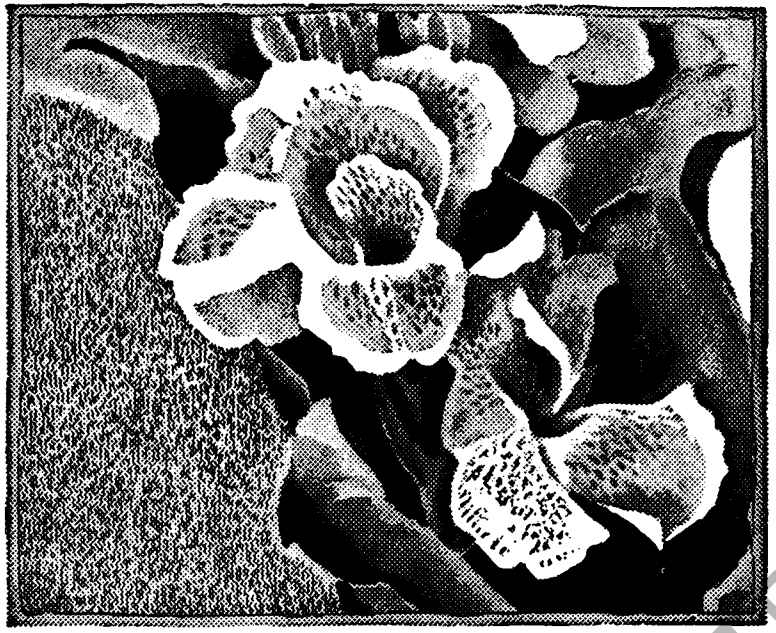
There has been a very noticeable change in the last ten years in our attitude toward trees, and we should do all we can, each in our small way, to promote the cause.

In the Mediterranean area whole civilizations have been destroyed because they did not protect their trees.

Central Europe saw the handwriting on the wall and, in time, they adopted a state policy of forest conservation.

We in Manitoba are at the cross-roads. I hope we will take the right road.

Trees are nature's gift; but trees, definitely, are man's responsibility.



Summer Care of Gladioli

By L. A. YAGER

Glads are not hard to grow, but they do respond to the extra care that may be given them. Choose a garden location where they will get plenty of sun and keep them away from roots of trees and hedges. They prefer soil of a sandy loam texture, but will grow well on a wide range of soil types as long as the soil is well drained. If the soil is a little on the heavy side, the addition of such soil amendments as sand, manure, peat and leaf mould will help to improve the friability and drainage. It will help if the ground is well worked in the fall and enriched with a generous dressing of well rotted cow manure.

Just before planting dip the corms, in semesan, lysol or corrosive sublimate. Soak corms in corrosive sublimate at the rate of 1 oz. to 6 gals. of water for 5 to 6 hours. Corrosive sublimate is extremely poisonous and is also corrosive to metals. Always use earthenware containers for the dip. Dipping reduces disease.

Where the land has been used for a number of years the glads will do better with the addition of a little fertilizer to the soil. Fertilizers like ammonium phosphate (11-48), 9-27-9, Vigoro or others of a similar type are recommended. The author has used 9-27-9 with very good success. This fertilizer should be applied very sparingly at the rate of 6 to 7 oz. per 50 ft. of row. Ammonium phosphate fertilizer makes a good supplement to manuring in the fall. Though there is much controversy on the part of glad growers as to the best placement of fertilizer, the author prefers to place it in a band about 2" from either side of the corm, and at, or slightly below the level of the corm. Placement too near the corm is apt to be injurious.

Growers of exhibition glads give the plants a "boost" once or twice during the growing season with some nitrate fertilizer such as nitrate of soda, ammonium sulphate, blood meal or liquid manure. Amateurs should proceed with great caution in applying side-dressings. Nitrate of soda should only be given in solution and in very small quantities. The application of any side-dressing should be followed by very liberal supplies of water. Where glads are given large amounts of water, side dressings have proven most beneficial.

Amateur growers are usually over-enthusiastic in the spring and err by planting too early. Corms germinate very slowly in cold soil and are liable to develop rots. As a general rule don't plant till the leaf buds on the nearby trees are just beginning to break.

Planting distances vary depending on the use to which the glads will be put, and also will depend on the amount of ground available and on the watering facilities. Space the corms 6″ to 8″ apart, in rows 18″ to 24″. For exhibition spikes a wider spacing is advocated.

The planting depth varies with the size of corm with the soil texture. For our heavy soils plant no deeper than 3″ for large corms. Plant up to 5″ deep on lighter soils and plant smaller corms shallower, according to size.

In most seasons the soil at planting time is quite moist and no extra watering is required until the plants are well above the ground. Watering during the growing season should be thorough, soaking the soil to 2 or 3″ when necessary. Glads are heavy feeders of water, so irrigate at weekly or 10 day intervals if rainfall is not plentiful. Light daily sprinklings do more harm than good.

Give the glads a thorough (not deep) cultivation after each watering or heavy rain. This will discourage weeds and maintain the soil in a fine friable condition that will help to retain the moisture.

Cutworms like young tender glad shoots and it is important to watch for these pests as they appear in late May and early June. Protect the plants either by plant collars or by a poison bait. Control cutworms as soon as the first signs of damage are noticed.

Thrip is a very serious pest of gladiolus and plants should be sprayed with tartar emetic or Paris Green at the first sign of damage, and at weekly intervals after that. In cutting spikes always allow a sufficient number of leaves on the plant to develop the new corm—4 leaves should be ample.

Glad varieties come in a very wide range of colors, shapes and forms. These are some of my favorite ones: Red Charm, Corona, Greta Garbo, White Gold, Helen of Troy, Elizabeth the Queen, Lady Jane, Myrna, Avalon, Royal Gold, Aladdin, Margaret Beaton, Snow Princess, Ethel Cave Cole, Vagabond Prince, Zuni and Picardy.

The Making of Lawns

By M. B. DAVIS

Unlike any horticultural project, we are not very often able to choose the site of a lawn. Generally that is decided by other factors. This, of course, makes the choice of soil a matter almost impossible. We nearly always have to take just what we find and attempt to improve it as best we can.

Kinds of Soil

Roughly we may divide our soil into three classes — heavy clay soils, loamy soils and sandy soils. The loamy soil need not give us much worry. The clays are not easily handled; they are liable to bake or pack too tightly, and without some improvement, are not ideal soils for a lawn. They can be improved, however, by applying a liberal quantity of sand or pear, say, two inches, and have this spaded in and thoroughly incorporated with the top five inches of soil. If there is a great deal of grading up to be done, the best practice would be to use only a good loam for the top four or five inches. The sands, especially if they are very light, will require some improvement also. The safest is a top-dressing of good soil, as in the case of the clay, but failing this, the incorporation of peat or plenty of well-rotted manure will add greatly to the soil conditions.

If a good loam is used, little **fertilizer** will be required at the commencement, but if in doubt a good complete fertilizer is made up as follows: 4 parts sulphate of ammonia, 3 parts acid phosphate, or steamed bone meal, and 1 part muriate of potash. Apply this at the rate of 300 pounds per acre, or 1 ounce per square yard of lawn. Work well into the soil by raking. This fertilizer may be used a couple of times during the growing season, applying it at any time when plenty of water is available.

Kind of Grasses to Use

The standard lawn grass mixture is one consisting of Kentucky Blue Grass and White Dutch Clover. This gives, for general purpose the most satisfactory lawn. Where the owner cannot give constant attention there is no other grass to equal

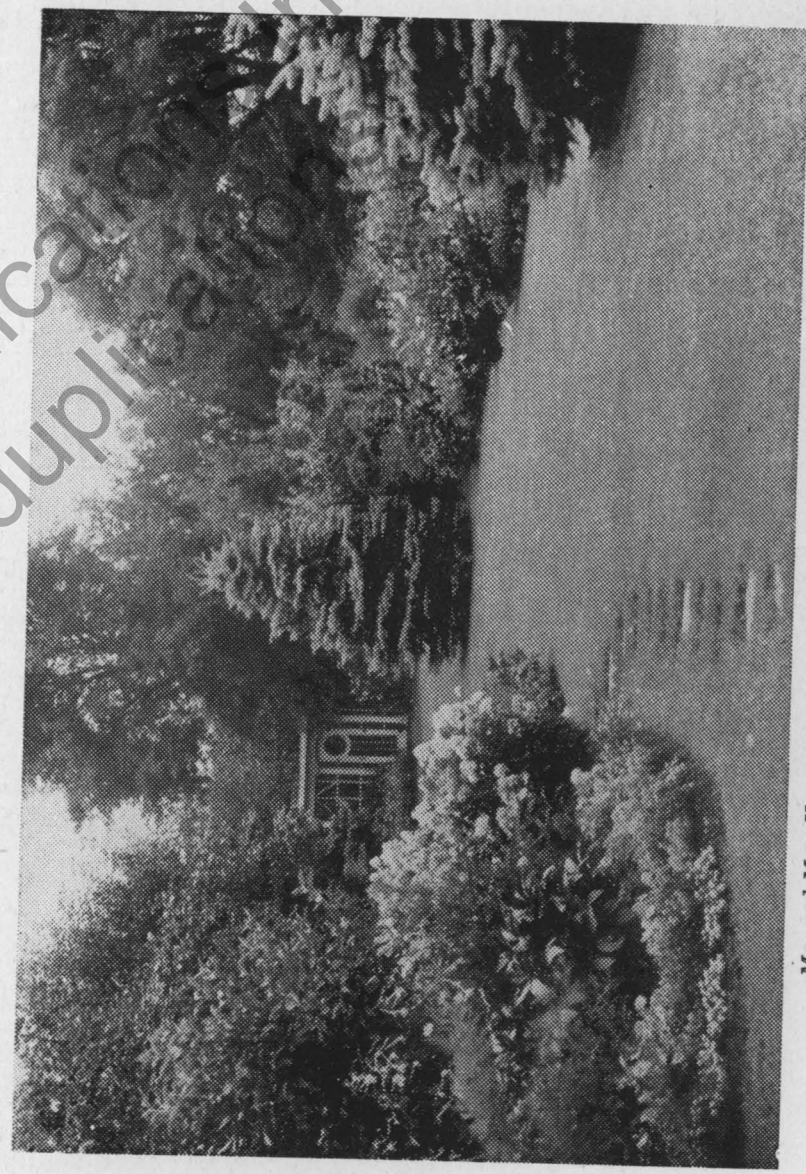
Kentucky Blue. It will withstand more abuse than any lawn grass in common use. In adition, it will make a very fine lawn when good treatment is accorded.

The seed may be sown almost any time, except during driest periods, preferably early in spring, or mid-August or September. Sometimes good results are obtained by sowing just before freeze-up. The seed is simply sowed broadcast and raked in with a fine rake. After this a good rolling is very desirable, followed by a good watering, if possible. Those who have small lawns, an area 50 x 100 feet, or 5,000 square feet, requires about one peck of Kentucky Blue and about one handful of White Dutch Clover.

If you are prepared to give more attention to your lawns and much greater care than is ordinarily given, you can duplicate the beautiful turfs on the putting greens by using the grasses they use. One of these, which is propagated by seed is known as Velvet Bent, Agrostis canina, or tenuis, sometimes called Island Bent or Prince Edward Island Bent. This Bent stands more neglect than others, because it is not a creeping bent. It makes a somewhat finer lawn than Blue grass, with a much denser turf, and when well cared for, presents a superior appearance, but like most bents, it is not satisfactory when water for irrigation purposes is not available. From three to five pounds of seed, per 1,000 square feet, is used. It requires to be cut at least two a week and in this respect is not nearly so exactly as the creeping bents. Frequent top dressing are desirable and the advice on this score applies to all bents. For this purpose a good rich loam or muck, or mixture of loam and muck is used and the method is as follows:

Apply a heavy coating to a portion of the lawn, just after it is cut, then rake off all you can with a good lawn rake, not a garden rake. What you rake off can be used as the first dressing on another portion. Continued in this way until the whole lawn has been top-dressed. If the soil is at all poor the fertilizer mixture referred to previously may be mixed with this top-dressing.

Among the creeping bents are some of our finest grasses which give us our most beautiful turfs, but only at the cost of continual work and attention. This is known as Agrostis stolonifera and the best strains are Washington, Metropolitan and Virginia. They root at every internode and the chopped



Mr. and Mrs. Hammond's Garden, Palmerston Avenue, Winnipeg

up stems are simply broadcast over the ground rather thickly and covered with two or three inches of soil. Sometimes the whole plants are lifted and run through a chopper and occasionally, where money is no object, the whole plant, without being chopped up, is used. In from six to eight weeks, if plenty of material is used, a good lawn is established. An application of about 100 bushels of the cut stems to every 15,000 square feet of lawn is required for a good job.

The secret of getting a good turf with these creeping bents is a daily cutting and lots of water. If not cut almost daily they grow rapidly and some of the stalks do not root, then after a few cuttings, a thick mat of unrooted stalks is formed. These turn brown or yellow after a time and the lawn has a sick look. You must cut continually and also very close and water plentifully. If you are willing to do this you can create a fine, velvet carpet, which will be the envy of all your neighbors.

The Growing of Perennials for the Home Grounds

by J. DE JONG, Fort Garry

No plan for beautifying the home is complete without the inclusion of some choice perennials at least.

Shrubs, too, are essential to the success of any plan in that direction, as they form the setting or background for the flowering plants. Also they give protection to such plants against strong winds, while in wintertime they will catch and keep the drifting snow as a soft blanket over such plants, thereby preventing serious losses through winter-killing.

Annuals and perennials both, are required to give color to our landscape, but by using annuals only, the period of color is very limited. Many perennials already have spent themselves in providing gorgeous sheets of color to our home grounds, before the first annuals appear. We only need to think of our Tulips, Marguerites, Phlox Subulata, Iris, Bleeding Heart, Columbine and many others to know that such is true. Besides, no annuals can give us the solid amount of bloom, what we find in the Peony, Bleeding Heart and Canterbury Bells, or the stately beauty of the Delphinium, riental Poppy, Hollyhock, etc.

While perennials generally require two years and sometimes more to be at their best, still many of them will live for many years, increasing in beauty from year to year and paying for their initial cost over and over again.

There are two ways open to the home owner in obtaining his perennial plants. The first one and often the most economical one is to buy one-year-old plants or divisions from a reliable nursery man. By doing this, generally a full year is gained and a certain amount of bloom may be had the same year, providing the plants are procured early enough in the season; as a general rule, during the month of May.

The second way, and for many a quite interesting way, will be to procure the seed and raise the plants.

There are many factors to be considered in the raising of vigorous plants of good quality. Some of the most important are:

Choice of Seeds

In looking through our catalogues, we are often faced with a host of varieties. All varieties are advertised to sell, and naturally their strong points are stressed. This make it harder for the uninitiated to know how to choose. The price of the

seed often is an indication, but beware of Novelties unless well known, for very often they are disappointing. Choose the finest strains available, provided they are hardy and suitable to our conditions. While the seeds must be fresh and of a high germinating power, it is well to remember that the finest strains are so highly bred that their germinating power is lowered. Seeds of coarse plants are always higher in germination than those of the more delicate but finer varieties. Once however the seed is procured the next important step will be:

Germinating the Seed

All seeds contain a living germ. With most seeds that germ will lie dormant for a long time, if kept under proper conditions. To spring into life, the seed requires heat and moisture. With many perennials, "refrigerator treatment" of the seed before planting is benericial. Placing the seed in a well-closed glass jar in the refrigerator for about six weeks is all that is required. Another simple way is to sow the seed in pots, pans or flats late in the fall and place outside in a protected place, where the snow will cover them. Seeds of Pansy, Delphinium, Columbine and many others respond to this kind of treatment very readily.

Early in the season the pans or boxes may be lifted and brought inside, either greenhouse or frame, where they should be shawed out slowly, after which they are handled the same way as our other pans and boxes.

In sowing our seeds, we must use fine soil in our containers, rich in fibre or humus. The soil need not be rich in plantfood, in fact it is better not to supply plantfood until later on. After firming the soil lightly, the seed should be carefully scattered over the surface not too thickly. Fairly heavy seed should be well covered with a mixture of fine soil, sand and peat moss, this to be well packed by hand with a small soil packer. The smaller the seed, the less cover should be used. For very small seed, as petunias, nicotiana, etc., we hardly use any cover at all, but in all cases, once the seed is planted and moistened, the seed must never be allowed to dry out. This would be fatal. Especially for small seeds, it works quite well to cover the surface with a piece of blotting paper and water carefully through this. Lift it every day, for if a tight cover is allowed over the surface continually, mold will set in. As soon as the seeds show signs of germinating the blotting paper should be removed, still taking great care that the surface is moist at all times. While dry conditions are to be avoided at all costs, the soil should not be overmoistened. Wet

soil, especially when combined with high temperatures, will lend to "damping off" in the young seedlings.

Care of the Seedlings

Once the young seedlings appear, our actions change radically. While up till now our containers were preferably kept in dark or only moderately lighted places, from now on the seedlings are in need of all the light possible. This will be necessary, to keep the the plants dwarf. Temperatures from 50 — 65° Fahrenheit are, generally speaking, sufficient. A slow and steady growth in the seedlings is far to be preferred over a fast growth, as that would only lead to checks later on.

When the seedlings are becoming crowded they should be carefully lifted and transplated or "pricked over" in larger containers about three inches apart each way for most plants. The soil in the larger containers may be enriched by adding well decayed farmyard manure to the soil. The roots of the plants, always hunting for plantfood, will send out more and more rootlets, with the result that a well-developed root system is formed and all that will be needed from now on is the hardening of the plants for frosty conditions they may still find if set out early. In the case of perennials, which generally are hardy, this will be very simple by exposing them to outside conditions at least two weeks before setting out, protecting them at first by light covers, but gradually leaving off all protective covers.

Once the plants are ready, the same care will have to be given in selecting the proper place for them in the garden, as would be the case with plants purchased from a nursery.

Soil Conditions

As perennials remain in the place where they are planted for a number of years in succession, it is necessary that we select a position necessary for their best development. They must have sunlight over a long period each day. If that light can be tempered during the hottest part of the day by surrounding shrubs or trees, so much the better. The soil for most flowering plants should be fairly rich and very fibrous. For that reason rotted manure, free from noxious weed seeds, is ideal as it supplies plantfood as well as fibre or humus. The plant roots work freely in such a soil and if they have no serious competition from roots of trees or surrounding shrubs, they will soon form solid clumps, producing loads of bloom for years to come.

Moisture is one of the most important factors in producing plant growth. A well worked soil, kept from cracking by keeping the surface loose at all times, will keep the moisture from escaping. The soil will remain mellow or loose, producing plants with lots of foliage, which in turn will keep the surface beneath moist and cool. A well worked and well enriched soil will encourage a vigorous root system, which in turn will develop a strong and well developed plant. While artificial watering is very desirable at times, such waterings must not be overdone, as it will produce a heavy but rather weak watery foliage. Rather give a good supply of water when needed and then cultivate the soil around the plants thoroughly until there is a real need for more moisture. This will encourage the forming of a rich, hard foliage which will send out many flowering stems, producing a crop of bloom of the highest quality and lasting over a long period of time, bringing satisfaction and joy to the grower.

Two New Shrubs

By F. L. SKINNER

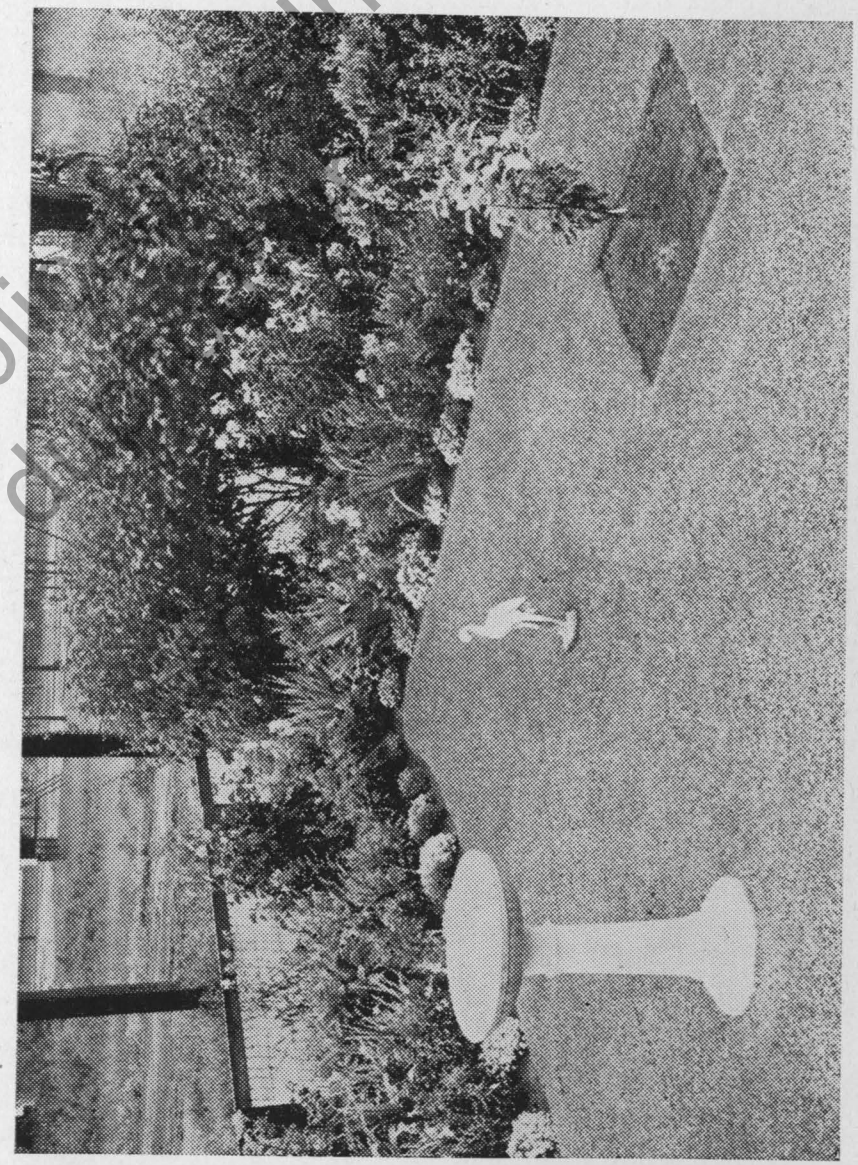
There are two type of plants that most gardeners want to grow, the old favourites they grew up with and the newest things. The plants I intend to tell about may be classed as belonging to both types. They are both quite new in America while at the same time both are closely allied to and closely resemble old favourites that unfortunately are not hardy enough to thrive in Manitoba.

The first of these, Forsythia ovata, is so new that it was not mentioned among the "Golden Bells" listed in "Bailey's Cyclopedia of Horticulture." It is a native of Korea and was sent to the United States by E. H. Wilson in 1917 and soon after found its way to Dropmore. Here its wood has proved hardy but the flower buds are a little tender and it flowers freely only after mild winter or on the branch that are under the snowline. In Winnipeg, however, where the snowfall is usually heavier than with us and the winter temperatures just a little less severe, I understand that it does quite well.

The bright yellow flowers are borne on the leafless stems and are the first flowers to appear on any shrub at Dropmore. Coming so early it is a most welcome guest and well worth a little trouble to give it the protection necessary to ensure its flower buds coming safely through the winter. Snow shovelled over the bush in early winter or a little brush and leaves piled around it in autumn should be sufficient in most years. In fact in winters when the snow comes before severe weather sets in and lies deeply, no other protection is needed.

The second item is a Diervilla that came to me as seeds from Manchuria. This is probably a form of Diervilla florida (Weigelia rosea) and to distinguish it from the other varieties that are not hardy in Manitoba, I have called it Diervilla Dropmoreana. It kills back to a certain extent in severe winters at Dropmore but is sufficiently hardy to come through ordinary winters without protection and flowers quite freely. At Morden it is quite hardy and promises to grow to a height of about two and a half or three feet.

In colour the flowers vary from pink to deep rose and are equally as large as the named varieties. In sheltered gardens in Winnipeg it should be quite hardy without protection and will bring a new type of hardy flowering shrub to the June garden.



Mr. and Mrs. Munt's Garden, Basswood Place

Hedges for Beauty and Utility

By JOHN WALKER
Superintendent, Forest Nursery Station, Indian Head, Sask.

Just as there is at present a definite trend towards a greater use of small, free-flowering shrubs in garden development and home grounds beautification, so also is there a swing towards the planting of less-vigorous-growing, yet more suitable, plants for hedges.

The reasons for this trend are fairly obvious, namely:

1. They require less care to develop and maintain in an attractive condition.
2. The informal development of the small plants is in keeping with the natural, rather than formal, type of garden design and plan at present adopted.

There are definite uses for hedges in the home garden plan. Not all these may be found in every garden, but every garden may be improved in outline, design and appearance by a hedge of one sort or another.

Chief purposes or aims in planting hedges are:

1. To provide dividing lines between adjoining properties. Such hedges may be of any desired height or type; they should never become infested with diseases or insects. A hedge can also be used very effectively as a garden boundary or as a division between two distinct parts of the garden.
2. To form a background for other plants, for example, flower borders and shrub clumps show off to much better advantage, just as flowers in vases do, when a suitable background is provided. Hedges planted for this purpose should remain in their natural habit of development without apparent evidence of trimming.
3. As a screen to give privacy and to shut off unwanted views. An outdoor living-room in the home lot, framed by attractive hedges and shrubs, is much more cosy and interesting than one surrounded by dead, wooden fences.

4. As a barrier to prevent harmful trespassing by dogs, thoughtless people, etc.
5. As a definite garden ornament in its own right. According to the care and thought exercised in choosing the plant for the hedge, it can be attractive not only in flower, but in leaf, bark and fruit. In other words, the hedge should be a definite asset in the garden, and contribute to its beauty twelve months of the year.

Hedges intended to fulfil aims one to four already listed must be planted in more or less obvious and specific places. A hedge planted primarily for its own beauty should be closely associated with, and appear to be a part of, some other garden feature, such as a clump of shrubs, terrace, or flower border, rather than be a disassociated unit.

Hedges for all purposes should be selected with extreme care. The plants set out should be vigorous and of good size for the kind chosen, so that the effect sought may be obtained without too much delay. Soil preparation for hedge plants should be the same as for any other shrub, tree or flower. There should be good drainage where it is planted. Planting around May 1 will be successful with most species, and single-row hedges are preferable.

For the small home lot particularly, plants with a suckering habit of growth should be avoided. Where such plants are used, lawns become marred by adventitious shoots which arise from underground roots, and flowering plants in borders near them are restricted in growth by them. Some shrubs in this group are: Lilac, Salt Tree, Wolf Willow, Altai Rose, Large Flowered Peashrub, Golden Currant, Snowberry, Siberian Almond.

Hedge Plants to Choose

There is a wide choice of plants suitable for hedges in prairie gardens. Only by persistent public demands, however, will planting material of newer and more attractive plants become available from nurserymen.

Plants more difficult to multiply and slower to develop than common Caragana or Lilac, are also likely to be more costly. For home lot beautification this factor should not be a deterrent towards securing something distinct and effective.

1. Distinctive among plants suitable for a tall hedge are:
   Manchurian Elm — Resistant to alkali, hard. fine leaf, quick recovery from pruning and winter injury.

Amur Lilac—Finer foliage than common lilac, retains leaves late in season, blossoms lost through pruning.

Manchurian Apricot—Red buds conspicuous in winter, early blossoms, some variation among seedlings.

Amur Maple — Flowers inconspicuous but foliage many hues of bright colors in the fall, attractive bark color in winter.

Hawthorn—Several species—easy to keep in pleasing form, spines discourage careless contact, attractive in foliage, fruit, and bark.

Evergreens—Of the hardy Evergreens and Larches, White Spruce, Colorado Spruce, Balsam Fir, Siberian Fir, White Cedar, Siberian Larch and Tamarac make substantial, easily-managed, year-round hedges.

2. For hedges to be maintained at a height of three to four feet the following kinds are suggested:

Cotoneasters—Hedge, European, and Peking—quite distinctive in fruit and late summer foliage colors, fruits cling well into the winter, require little pruning, splendid in informal layout, succeed in partial shade.

Redosier Dogwood—Warm, rich tumn color of foliage, and bright bark color in winter, partial shade desirable.

Spiny Caragana—More effective than the most prickly hawthorn in preventing trespassing, showy yellow blooms, little pruning required.

Amur Tamarisk—Feathery grey-green foliage, colorful reddish stems for winter beauty.

Poiret Barberry — Hardy, upright plant, slight tendency to sucker, but fine foliage very attractive and colorful in the fall.

Korean Spirea—One of the hardiest, and most attractive spireas when in bloom, individual blooms quite large.

Rocky Mountain Juniper — A very attractive evergreen hedge of medium height, some variations in color among seedlings.

3. A few plants suitable for low hedges follow:

Pygmy Caragana—One of the hardiest, large yellow blooms, little pruning required, no suckering, small spines.

Shrubby Cinquefoil—Yellow flowers produced freely all summer, no serious insect enemies, requires a minimum of pruning.

Dwarf Winged Euonymus—Distinct in bark and stem characteristics, foliage and bittersweet-like fruits attractive in the fall.

Oregon Holly Grape—Glossy leathery foliage, evergreen, clusters of yellow blooms, partial shade desirable.

Dwarf Mugho Pine—One of the hardiest of the dwarf pines, hardier than most of the dwarf White Cedar varieties.

Upkeep of Hedges

Planters should bear in mind that ease of upkeep with hedges is definitely related to hardiness, rate of growth, recovery from trimming, and susceptibility to attack by insects and diseases. Ability to retain leaves throughout the season is also a desirable feature in a hedge plant.

Uniform density throughout its length, and from top to bottom is of paramount importance in a hedge. This condition can be achieved by co-ordinating the following three practices:

1. Setting the plants close enough together in the row at planting time, for example, small plants from nine to twelve inches apart, and larger plants from fifteen to twenty-four inches apart.

2. Inducing branching near the ground by severe cutting back at planting time; evergreens should not be pruned a great deal until they have reached the height of hedge desired.

3. Trimming in later years so that maximum amount of light may penetrate to the lower leaves and branches of the hedge. The form of hedge may be geometric conic, or pleasingly rounded at the top.

Vegetable Growing

By P. DAMAN

If you plan to have a vegetable garden this year the first thing to do is decide on the size.

Take exact measurements of width and length. Draw the plan on paper, marking lines for every variety and find out what space each variety takes guided by the amount of space available. In this way you can get a fair idea of what can be grown. Also with such a plan, you can refer back as to where and when to seed certain varieties. Most varieties of vegetables can be seeded by the first of May or as soon as ground is fit to be worked. The tender vegetables such as corn, cucumbers, squash, beans should not be sown until May 24th. Next determine what kind of vegetables you intend on growing. Make a list of these and then find out what you will grow for summer use and what for winter use.

Plant the summer vegetables on one side of the plot and the winter ones on the other. It is a good policy not to pick vegetables out of the winter use plot since some of those which remain in the ground may be bruised and when these are pulled in the fall for winter keeping they are more susceptible to rot, as fungus usually enters bruised vegetables more readily.

Remember that the choice of the right varieties is half the battle in vegetable growing, so always select carefully from an approved variety list.

These are some of the planting distances recommended for culture where artificial water can be supplied:

Beans (green or wax)—3 seeds in hill, 12″ apart, rows 12″.
Beets—seed thinly in rows 12″ apart.
Cabbage—16″ in rows, rows 24 to 30″ apart.
Cauliflower—as for Cabbage.
Carrots—seed thinly, rows 12″ apart.
Celery—12″ in rows, rows 12″ apart.
Sweet Corn—plant in beds of 5 or 6 rows, 3 seeds to hill, 12″ in rows, rows 24 to 30″ apart.
Cucumbers—seeds 1″ apart, rows 48″ apart.
Leaf Lettuce—seed thinly, rows 12″ apart.
Head Lettuce—12″ in rows, rows 18″ apart.

Onions—seed thinly, rows 12 to 16″ apart.
Parsnips—seed thinly, thin to 4″, rows 12″ apart.
Peas—seeds 2″ apart, rows 12″ apart.
Radish—seed thinly, rows 12″ apart.
Tomatoes—12″ in rows, rows 30″ apart.
Turnips—Seed thinly, thin to 8″, rows 30″ apart.

Now comes the preparation of the soil. If it has been ploughed or spaded in the fall it will be fairly easy to rake out smoothly. Ploughing or spading in the spring will leave the ground in a rougher condition. Try to prepare the soil as free of lumps as possible. If manure has been incorporated in the soil it will keep the soil in a more friable condition and will hold moisture longer during dry seasons. About 6 lbs. of Ammonium phosphate or 11-48 for every 100 square feet broadcast and raked in at the time of preparing the soil will be found to give good results for the average city garden.

Next comes seeding. Use twine to mark rows and keep all rows straight and parallel with one another. It will make hoeing a lot easier later on. Seeds which are small should be seeded shallow. Drills can be made with the point of the hoe. After seeding, cover lightly with soil, then tamp with the blade of the hoe so the soil on top of the furrow is firm and will not dry out so quickly. The larger seeds, such as peas, beans and corn, can be planted deeper. To make seeding of smaller seeds easier, flatten out an old pepper tin somewhat so that it will have a "lip" similar to the shape of one on milk jugs. Put the seeds in the pepper tin and scatter the seeds in the seed furrow by tapping the tin with the fingers, causing the seeds to flow gently out of the tin. In this way the rate of seeding can be well controlled. Never seed thickly—6 seeds to the inch are plenty.

After seeds break through the ground, give the rows a careful and very shallow scuffling. Keep the garden free from weeds from the start. It is far easier to pull the weeds when small, for the pulling of large weeds removes a lot of good soil and disturbs the small roots of the vegetable plants. After the plants become bigger, hoe about once a week and never deeply. When the vegetable plants are full grown, only hoe to keep soil from cracking. If the garden is watered give the garden a good watering at week or ten day intervals. Break the crust by hoeing or scuffling as soon as the soil is dry enough to work.

If insects appear during the summer, dust the vegetables once every week with a rotenone—containing dust, such as Cubor or Derris. These are highly toxic to insects but not harmful to man. These dusts control fairly well most insects attacking vegetables. Apply dusts during the afternoon as it is then the insects are most active and most likely to come in contact with the dust. Try to get a good cover of the dust over the plant, for even if the dust does not reach the insect, the insect will gather the dust while walking or crawling over the leaves of the plant. Once the dust is eaten the insect soon dies.

Vegetable Variety List

The Vegetable Committee of the Manitoba Horticultural Association

(*) Suitable for freezing for locker storage.

ASPARAGUS	*Mary Washington.
BEANS	
Green Podded	*Stringless Green Pod, Tendergreen.
Wax Podded	*Webber Wax (very early), Round Pod Kidney Wax, *Pencil Pod Wax.
Baking or Dry Shell	Grainer (Gohns Rainy River), Great Northern (large), Pacer (early large).
Broad Beans	Broad Windsor Wonder (long and short pod varieties).
Pole	*Kentucky Wonder (green and wax podded), Dutch Case Knife, Oregon Giant.
Edible Soybean	Agate (early), Black-eye.
BEETS	Early Wonder (early), Detroit Dark Red types.
BRUSSEL SPROUTS	Improved Dwarf, Long Island Improved.
CABBAGE	
Green—Early	Jersey Wakefield (conical head), Golden Acre.
Mid-Season	Copenhagen Market, Green Acre.
Winter	Danish Ballhead, Penn. State Ballhead, Round Head, (drier areas).
Red	Red Acre (early), Mammoth Red Rock (late).
Savoy	Chieftain Savoy, Sutton's Best of All.
CAULIFLOWER	Early Snowball, Dwarf Erfurt No. 18 (mdi-season).
CARROT	Nantes (early, very brittle, not suitable for commercial washing), Red Cored Chantenay, Danvers Half Long types.

CELERY	Golden Plume (early), Golden Pascal, Utah or Salt Lake (green, late).
CITRON	Red Seeded.
CORN (Sweet)	Banting, Dorinny (very early), Gills' Early Golden Sweet (early), Gills' Early Market (for shipping), *8-row Golden Bantam.
CUCUMBERS	Early Russian (very early), Straight 8, Delcrow, Long Green.
Pickling or Dill	National Pickling.
EGG PLANT	Black Beauty, Blackie.
LEEKS	Giant Musselburg, Giant Carenton.
LETTUCE	
Leaf	Grand Rapids, Early Curled Simpson, Prize Head.
Head	N.Y. types, Sweetheart.
Cos	Paris White.
MUSKMELON	Champlain (early), Far North (early).
ONIONS	
From seed	Early Yellow Globe, Yellow Globe Danvers No. 11, Red Wetherfield, Ebenezer (also grown for sets), Australian Brown (sometimes grown for sets), Sweet Spanish and Prizetaker (used as transplants).
Perennial	White Welsh, Egyptian.
Pickling	Silver Skin.
PARSLEY	Paramount.
PARSNIPS	Guernsey Half Long, Hollow Crown (roots rather long for heavy soils), Short thick.
PEAS	
Early	*Little Marvel.
Mid-Season	*Lincoln (homesteader), *Laxton's Progress.
Late	*Alderman, Stratagem.
Edible Podded	Mammoth Luscious Sugar.
Dried for Soup	Dashaway (yellow soup), Arthur.
PEPPERS	
Sweet	King of the North, Harris Earliest (early), Harris Wonder (late).
Hot	Cayene (early), Hamilton Market (mid-season).
POTATOES	
Early	Warba, Bliss Triumph.
Mid-Season	Early Ohio, Irish Cobbler.
Late	Chippewa, Green Mountain.
PUMPKIN	Small Suger, Connecticut Field (table and cattle).
RADISH	French Breakfast, Scarlet Globe, White Icicle Scarlet Turnip White Tip.
Winter	Black Spanish.

RHUBARB	*Valentine, Canada Red, Coulter, *Ruby, *Macdonald (not possible to grow a specified variety from seed; grown only from roots).
SPINACH	*Longstanding Bloomsdale, *King of Denmark, New Zealand (late, not true Spinach).
SQUASH	
Winter	Greengold (early), Table Queen, Green and Golden Hubbard.
TOMATOES	
Non-staking	Bounty, N.D.A.G. 38, Early Chatham.
Staking	Earliana, Bonny Best, Break O'Day, Stokesdale (mid-season).
TURNIP	
Swede or Rutabaga	Canadian Gem, Perfection, Laurentian.
WATERMELON	Early Canada (extra early), Sweet Sensation (early), Honey Cream.
VEGETABLE MARROW	Long White Bush.

The foregoing list is recommended on the basis of quality, adaptability to Manitoba conditions, suitability for the farm garden or commercial grower and existing seed stocks.

Less Commonly Used Vegetables

ARTICHOKE	
Jerusalem	White skinned types.
BORECOLE or KALE	Dwarf Green Curled Scotch.
BROCCOLI	Italian Green Sprouting or Calabrese.
CELERIAC	Large Turnip Rooted.
CHARD	Lucullus, Fordhook Giant.
CHICORY	Witloof (for basement forcing).
CHINESE CABBAGE	Chihili, Wong Bok (short head).
CORN—Pop Corn	Tom Thumb (yellow), Pinkie, Jap Hulless.
GROUND CHERRY	Novelties, Golden and Purple Husk, Tomato.
HERBS	Anise, Balm, Borage, Caraway, Catnip, Cherville, Chives, Dill, Fennel, Garden Cress, Horehound, Lavender, Marjoram, Mint, Pot Marigold, Mustard, Rosemary, Saffron, Sage, Summer Savory, Sweet Basil, Thyme, Wormwood.
HORSE RADISH	Maliner Kren.
KOHL RABI	White Triumph of Prague.
OKRA	Dwarf Green.
SALSIFY	Sandwich Island.
TURNIP—Summer	Purple Top Milan, Golden Ball.

Annual Borders

By Mrs. ROY MUNT

There is fascination in planting an annual garden, in visualizing the different types of flowers and combination of colors which appeals to one's individual tastes. By planning your border first, no matter how simple the plan is, it helps to develop a garden that is pleasing to the eye.

Annuals come to us from almost all parts of the world. Properly chosen they can provide bloom and fragrance in the garden from early spring to late fall. As they come in many forms, heights and colors, they lend themselves to many uses and a very brilliant effect can be secured from a few packets of seeds or nursery plants. Some are excellent in beds or borders, either massed by themselves,—in varied combinations,—as fillers among perennials, or to follow spring blooming bulbs, and they are invaluable as cut flowers.

Two things must be remembered in growing annuals. The first is the necessity of obtaining the best seed or plants from a well-established firm, if possible. These seedsmen and nurserymen have a pride in the purity of the strains they offer, and the gardener can safely count on the right color and the desired quality in plants grown from their carefully selected seeds. The second thing to remember is that if you wish to prolong the blooming period of an annual the flowers must be picked before they fade or immediately thereafter in order that no seeds may form. A true annual has a slight root system. It stores no food for future seasons and it lives to bloom quickly, set seeds, and complete its life cycle, therefore constant picking conserves its energy and stimulates it to use this energy in producing new blossoms as fast as the old ones are removed.

Annuals run the gamut of the spectrum, in both brilliant and pastel shades, from darkest purple to white. While individual taste naturally will dictate the arrangement of flowers with regard to color combinations, attention should also be paid to harmony. Beautiful effects are obtained by massing of colors. The following combinations produce excellent results:

Maroon and White — Scabiosa and Nicotina; Black Prince Snapdragon and Sweet Alyssum.

Blue and Yellow—Calliopsis and Centauria; Dwarf Zinnia and Larkspur.

Pink and Yellow—Snapdragon and Marigold; Verbena and Calendula; Phlox drummondi and Snapdragon; Scabiosa and Marigold.

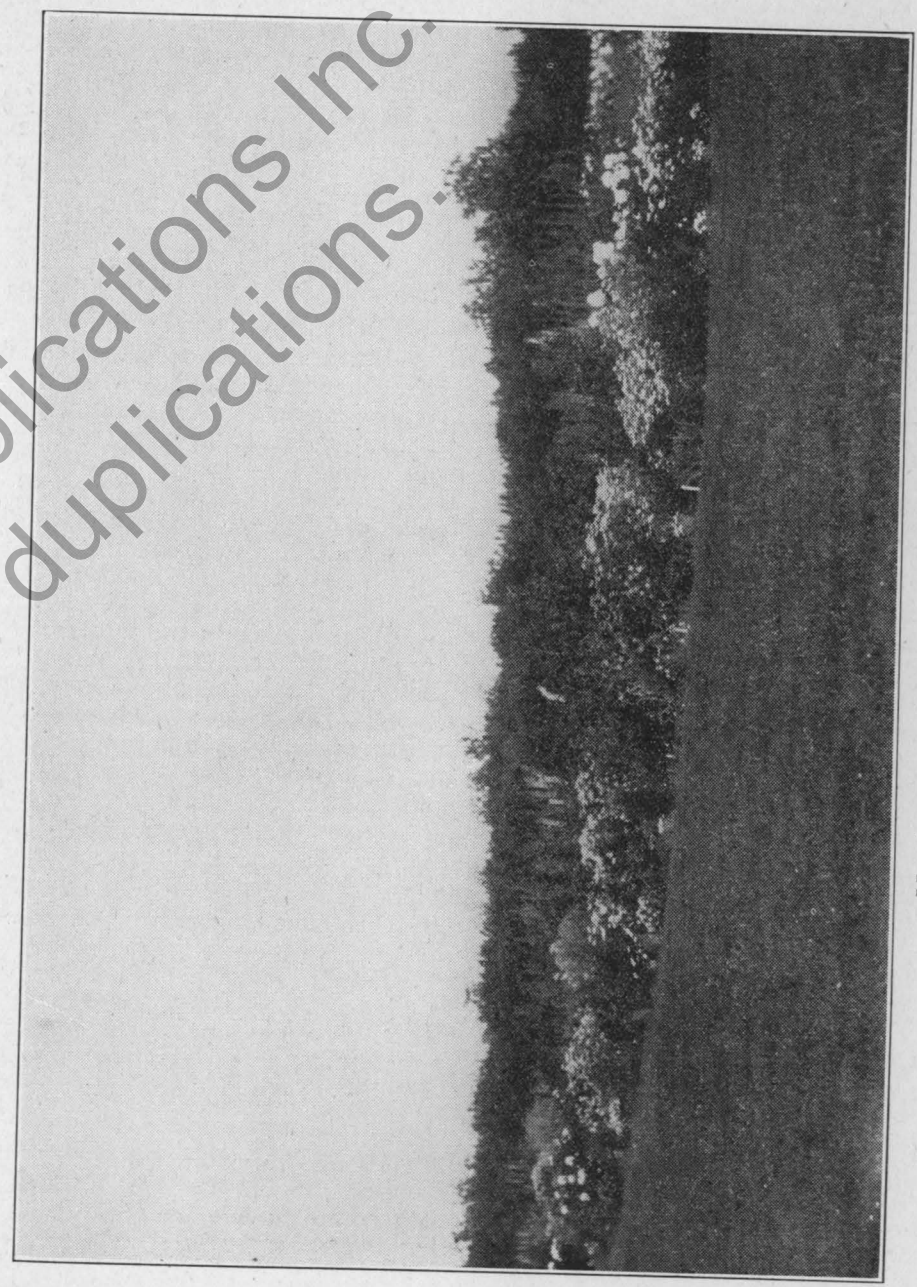
Pink and Blue—Phlox drummondi as edging for Larkspur; pink and blue Larkspur, Dianthus and Ageratum.

Orange and Red—Calliopsis and Nasturtium; Marigold and Salvia; Zinnia and Marigold; Gaillardia and Marigold.

These combinations are suggested for the gardener who is making his first attempt. The experienced grower will learn from experience which colors are harmonious, as well as the annuals which are best suited to his special purposes.

Before deciding on plants for specific uses, however, the gardener should be certain that he has a liberal quantity of the most practical annuals. The most practical plant, of course, is the one that provides the most bloom over the longest period with least effort. For display alone the Petunia seems to carry the greatest favor. It gives greater bloom over a longer period than any other annual with the least amount of attention and is of great value for flower arrangements. For beauty of display, for cutting and for a long flowering season, the Zinnia is a general favorite. Close behind are Marigolds, which are limited in color to varying shades of yellow, orange and brownish reds, and Poppies, which, however, have a short season. For cutting alone, Asters are very highly regarded, but they do not flower until late summer. All these annuals, however, should be in every garden, provided one has the room, for they come in a wide range of form, color and height, the Zinnia being produced from tiny buttons of the lilliput type to the mammoth forms that rival Dahlias. Marigolds range from the tiny flowers that spangle the fern-like foliage of the Tagetes signata pumila to the huge globes of the African type.

Others that are special favorites are Larkspur, Scabiosa, Salpiglossis, Ageratum and Lebolia. One may have a border of annuals just for cutting where they are grown in rows like vegetables and are spaced and cultivated in the same manner. In a garden of this type they will develop to perfection, and one may cut them without thought of marring the effect of the garden picture, and will have an abundance of blossoms



Morden Experimental Station, Morden, Man.

for the house. Other annuals which make excellent cut flowers include the following: African Daisy, Annual Carnation, Baby's Breath, Cosmos, Godetia, Larkspur, Love-in-a-mist, Lupine, Marigold, Mourning Bride, Nasturtium, Pansy, Petunia, Pinks, Stocks, Sweet Pea, Sweet Sultan and Verbena.

Many borders do not have sun all day, and it is often necessary to select annuals that will grow well in shade. While most of them must have some sun and hardly any will thrive in dense shade, there are a number that will do well in locations which get only a little sun. Among them are Asters, Centaura, Forget-me-not, Godetia, Pansy, Snapdragon, Sweet Alyssum.

The appearance of the herbaceous border may often be improved by the planting of a few annuals in the foreground, or a bed of geraniums or other plants may have its beauty enhanced by an edging of low growing annuals. Perhaps attractive low plants may be wanted for lining a garden path or border. Such situations offer some of the best uses for annuals. There is perhaps no more satisfactory edging plant than Alyssum, covered from spring to frost with a sheet of bloom. White varieties are best, though some of the lilacs and pinks are often grown to advantage. Among the whites Little Dorrit and Little Gem are unsurpassed for edging. Other annuals suitable for such purposes include Lobelia and Pansy. A border designed especially for fragrance can be made doubly attractive by the use of annuals notable for their fragrance, such as Alyssum, Candytuft, Dianthus, Evening Stock, Petunia and Snapdragon.

Tidiness means a good deal in the success of a bedding scheme. Keep the soil lightly cultivated as long as it can be done without danger of injury to the plants and pick off the withered leaves and flowers. In some cases pinching back of wayward shoots may be necessary, especially if the design is formal, but this is less needed if the right kinds of plants are chosen and if they are good, uniform stock. Neatly kept edges add much to an attractive appearance. Curved edges help to give distance, and finally, due consideration should be given to the general landscape when planning the flower beds and borders.

Now a few words regarding a very important phase of growing annuals. This is the preparation of the soil. Regardless of the excellence of the seeds you buy, or the perfection of the plants that arrive from the nursery, if they

have to struggle through their lives in heavy clay soil that packs so solidly around their crowns that they almost choke, they are not likely to produce strong, healthy plants or profusion of bloom.

This condition may be remedied by the use of lots of humus. Rotted sod, leaf-mould, well-rotted barnyard manure, Sphagnum peat or any decayed vegetation will provide the very necessary fibre to loosen the soil, provide areation, and to conserve the moisture. Thus humus really ought to be dug into the soil in the fall and the beds again forked over in the spring, so that full benefit may be derived. However, such material as well-rotted manure, rotted sod, leaf-mould, or properly processed peat may be used to great advantage in the spring.

Now that the borders have been dug, the soil should be firmed either by light tramping or by watering. This doesn't mean that you should produce a hard surface, but if the soil is left too loose, the plants are liable to be left high and dry as the soil packs down during the summer.

When this has been done rake the border lighly to level the soil and break down hard lumps. When planting be sure that the little plants are pressed firmly into place; this eliminates air spaces around the roots and helps the plants to resist winds which would otherwise beat the plants about and disturb the root systems. Now water well and sit back and watch your flowers develop into pictures much more beautiful than those in the seed catalogues.

Starting Early Plants

E. T. ANDERSEN, Assistant Professor of Horticulture,
The University of Manitoba, Winnipeg.

Give the plants in your ornamental or vegetable victory garden a break by providing them with six to eight weeks of additional growing weather. This can be done more easily than it is usually thought possible by using some simple type of hot bed or cold frame.

Because of the short growing season of our prairies it is necessary to provide certain vegetables like tomatoes, celery, peppers, eggplant and Spanish onion with a longer season to give them a chance to mature. Others produce much better crops if they are given a chance to grow early in the season when weather is cool. Cabbage, cauliflower, and lettuce are started early for this season. Similarly many of our finest annual bedding flowers will be better if given a longer season. Some of those requiring very early planting preferably in March are lobelia, snapdragon, pansy, salvia, Iceland poppy and statice.

As it is usually a difficult matter to get the hot-bed into operation much before April 1, it is often not feasible to start plants much before that time. As a general rule flowers and vegetables produce satisfactory plants for setting out if started during the period from April 1 to 15. Celery of the vegetables and lobelia of the flowers are two which are better started 2-4 weeks previous to this time. Members of the following group will produce good plants by transplanting time if sown around April 1—ageratum, alyssum, calendula, larkspur, nasturtium, nemesia, petunia, phlox, schizanthus, and stocks. Asters, marigolds, salpiglossis, and scabiosa can be sown two weeks later with good results.

A very satisfactory method of starting the seed is to sow it in a special container such as a flower pot or shallow box and later shift the seedlings to the hotbed. Fill the container to within ½ inch of the top with a fine mixture about ½ sand and ½ soil. Pack, level off and scatter the seeds evenly, but not too thickly over the surface. Then sift enough sand or soil-sand mixture over the seeds to cover about ⅛" deep. Watering must be done carefully, preferably by placing the container in a shallow pan or basin of water and permitting the moisture to rise in the soil till it shows on the surface. Cover the container with a piece of glass or paper and set in a warm place such as a kitchen window. Care must be taken to prevent the soil from drying out.

Most seeds will germinate and be ready for shifting or transplanting to the hotbed or to larger flats (shallow boxes) in about 2 weeks. The use of flats is more convenient than planting directly into the hotbed soil as it permits better arrangement of the plants in the bed and easier removal to the garden area. The soil used in the flats or hotbed must be of fine texture. A small tool similar to a lead pencil is used to make the holes in the soil into which the young seedlings are planted. The soil must be firmed about the root to exclude any air pockets and prevent drying out. The flats should then be watered thoroughly and placed in the hotbed.

A hotbed 6 by 6 feet is ample for the average home gardener. This is a convenient size and can be covered by using two standard hotbed sashes which are 3 by 6 feet. If sashes of other sizes are available the frame is built accordingly. The back of the frame should be toward the North and 6 inches higher than the front, to provide a southern slope of the sash. Such a slope permits better utilization of sunlight. A 6-inch layer of good soil is required and a space of about 8 inches between the soil and sash at the front or lower end to permit plant development.

Hotbeds may be heated in several ways. Fresh horse manure about 1/3 straw, were it can be obtained, is quite satisfactory. Two weeks before the hot bed is required, pile the manure close by and dampen to start heating. Fork it over two or three times at 3—4 day intervals. A pit about two feet deep must be provided to allow space for the manure under the soil of the bed. At the end of two weeks the manure is placed in the pit and tramped down thoroughly, especially at the corners. A few days should elapse before any plants are placed in the bed as overheating is likely to occur.

Manure heating is becoming very scarce and very often some other methods is more convenient. In cities and towns or rural areas suplied with electrical power, electric heating cables or light bulbs can be used very satisfactorily and cheaply as a source of heat. Hot water or steam can also be used.

An even simpler and often successful type of hot bed is one built against the south wall of the house and enclosing a basement window should be hinged so that it can be opened or closed conveniently. In this way the bed can be warmed sufficiently to grow good sturdy plants by utilizing the heat from the basement. Stronger plants will be produced in beds kept fairly cool around 44 — 65°F. than if kept at higher temperatures. This often is a disadvantage when using manure for heating as temperature usually run considerably higher.

After placing plants into the hotbed, watering and ventilating must be watched carefully. When the plants are wattered, they should be wattered thoroughly. Frequent light waterings tend to develop shallow root systems and encourages the spread of disease by keeping the foliage wet. Ventilation aids in keep the foliage dry and prevents temperatures from getting too high on warm sunny days. It is accomplished by placing a black between the sash and frame on the side away from the wind. When temperatures are high and water condenses on the under side of the sash it is time to ventilate.

By carefully observing the watering, ventilating and temperatures of the bed you can be assured of sturdy vigorous plants for early outdoor transplanting.

The ROSE

God shield the stock; If heaven send no supplies,
A Rose as fair as ever saw the North;
Grew in a little garden all alone;
A sweeter flower did nature ne'er put forth;
Nor fairer garden yet was never known;
The maidens danced about it morn and noon,
And learned bards of it their ditties made;
The nimble fairies by the pale-faced moon
Water'd the root and kiss'd her pretty shade.
But well-a-day; — the gardener careless grew;
The maids and fairies both were kept away.
And in a drought the caterpillars threw
Themselves upon the bed and every spray.
The fairest blossom of the garden dies.

—WILLIAM BROWNE.

Birds and the Garden (Group 27)

By J. B. WALLIS

"The kiss of the sun for pardon
The song of the birds for mirth,
One is nearer God's heart in a garden
Than anywhere else on earth."

"The kiss of the sun!" "The song of the birds!" Does not the mere thought of these arouse in the gardener's mind dreams of the flowers and fruits which, in all their beauty, will soon arise at the magic of his touch?

There are, of course, too widely different reasons for making a garden. It may be made as a means of livelihood in part or in whole, or as an expression of the love of beauty in Nature which seems to be inherent in most of us. Does anyone ever make and maintain a garden without, in some degree at least, loving it? Perhaps even the very first garden was not a purely utilitarian affair. Could it not have been that some cave-man, desirous of impressing the lady of his choice, transplanted to the entrance of their future home the most gorgeous blooms he could find?

At any rate much of the interest and pleasure derived from a garden lies in the happiness, satisfaction and joy of utility or beauty.

But to enjoy anything properly requires sharing, so you must have visitors. Indeed you will have them whether or not you invite them. Some will be undesirable, some neutral, some desirable but all kinds will come and among them will be many birds. In the spring the Juncos and other sparrows will pass, paying for their stop-over by eating many weed seeds. There will come, too, in spring and early summer, wave after wave of birds seemingly intent upon but one thing: insects. Many a creature which might have damaged some pet plant of your will go down those voracious throats. Many of these birds will pass on, perhaps far to the north, to find nesting places, but some will be glad to remain as your guests should you care to have them.

Undoubtedly insects will come without invitation and many will be most undesirable. If you are growing cabbages

or nasturtiums the beautiful green caterpillars of the Cabbage White Butterfly will, unless checked, work havoc among them. If you like Columbines so does the root and crown boring caterpillars of a beautiful moth. Cutworms of several species are almost sure to appear ready for nearly anything young and juicy.

But even among insects there are numbers which will not merely be of use but which will add much to the interest and beauty of your garden.

Birds insects and flowers are mean to go together. The most brilliant and exquisite flower garden is even more charming when enlivened by the flash of a wing of bird or butterfly. The Fritillary with its golden brown upper and silver spotted under side as it alights on one of its favorite composite flowers; the Monarch on a zinnia; a Hawk-moth thrusting its long tongue down the throat of a petunia; surely these add a touch of fairyland!

Of course your human friends will visit you. They will admire your wonderful crop of peas; exclaim at the fragrance and perfection of your roses; wax enthusiastic at the size and colors of your pansies. But you smile and say that you have other things to show them. On your lawn a little comedy is being enacted. A fine cock-robin is looking for earthworms on the recently watered turf. On each side of him is a house sparrow, apparently minding his own business and certainly not in the least interested in the robin. The robin cocks his head on one side, an alert look in his beady eyes. A stride or two forward, a lightning stroke of his bill and then he has pulled on unwielding earthworm almost clear of its burrow. He settles well back for the final tug, the poor worm stretched and taut, when there is a flash. A sparrow streaks in, grabs the worm and is off with it. For a second or two the robin sits there with an amazed expression and then sometimes is so exasperated that he gives useless chase; but usually after a moment of almost human discomfiture he remembers his hungry family and philosophically goes on the hunting.

Or you point to your colony of Pure Martins and admire their weaving flight or busy musical chatter as they return to their nests with food.

Perhaps you are lucky enough to have a pair of Tree Swallows as your guests. If so you will have an opportunity

of showing your friends how the parents take turns on the nest and how individual is the behaviour of each.

A Humming-bird goes by so swiftly that the eye can scarcely follow. It suddenly poises in midair. It has seen another Hummingbird and an instant the tiny warriors are engaged in fierce combat. Up, up they go until almost out of sight. They break off the fight and in a matter of seconds one is back seeking nectar from the lilies, looking as though quarrelling could never enter its head. You may even know where its nest is and show the tiny eggs in their minute miracle of camouflage.

Best of all perhaps you can go softly down to the corner shrubbery and there, very carefully, peep at mother Yellow Warbler as she broods lovingly on her eggs.

But if you wish to have birds as your guests you must make it clear to them that they are welcome.

Water is of first importance. A bird both kept filled with clean, fresh water is a necessity. Such a bath may be either a simple pan of suitable depth place on a pedestal, or a tiny pond with plants adding to the beauty of your pot.

Next come suitable nesting sites. There are several useful and interesting birds whose natural choice of nesting place is holes in trees. Natural sites of this kind are becoming increasingly scarce and the competition for those left correspondingly keen. There is, therefore, usually little difficulty in securing occupants for house suitable for these "hole" dwellers.

Such hole" dwellers include the House Wren, Bluebird, Thee Swallow and Pure Martin. Of these the first three like single rooms while the Martins insist on an apartment block. Martins like to have their home at a considerable height; the other houses may be paced low enough to permit easy observation. Should your garden be fairly close to a wooded area, houses with a somewhat larger entrance may be put up in the hope of attracting a woodpecker or an owl.

One of the problems you will have to face is how to keep the House Sparrows from taking forcible possession of homes intended for more desirable tenants. One hesitates to recommend extreme measures for on our city streets in winter even House Sparrows are better than no birds. With all their faults it is scarcely possible to help admiring the cheeky, self-reliant pugnacious little rascals. That they do some good no one can deny who has seen them hunting the female canker worm moths on the trunks of trees; taking the caterpillars as they hang from their silken threads, searching high and low for the caterpillars and chrysalids of the Cabbage White Butterfly. Nevertheless, we do not want them in our bird houses!

It is said that House Sparrows will not build in anything that swings so try hanging your houses in such a way that they will swing a little. It may not work but it would be interesting to prove or disprove. Should you try this send reports on the results to the "Bird" section of one of our local papers.

Robins will use a shelf placed under some protection and it is quite likely that Phoebes will be glad to avail themselves of a similar site.

The third necessity is protection. Dangers to be guarded against are small boys, squirrels, and, particularly, cats. Fortunately the number of cats seems to be decreasing but there are still far too many for the goods of the birds and you should do all in your power to make it impossible for one to enter your garden.

Almost essential, certainly most desirable, is a thicket of shrubbery, even a tiny corner. The shrubs should include as many different kinds of wild fruits as possible, besides densely growing shrubs such as the Wild Rose.

This thicket will serve the birds in several ways. It will provide shelter and food. The Catbird, Chipping Sparrow, Yellow Warmbler or even the Brown Thrasher and Rose-breasted Grosbeak may be tempted to nest there.

Early in the season when insects and seeds are scarce a feeding station may help to persuade some desirable guest that your garden is a good place in which to set up housekeeping.

Material that can be used in nest building, such as feathers, cotton wool, moss, fine hay, and short pieces of string may prove an added inducement.

Finally you will add greatly to your own interest and pleasure and perhaps help to ascertain something of importance to science if you get some ornithologist who has a supply of bird-bands to band some of your tenants, either adult or nestling. How eagerly you will watch in the spring to see whether last year's occupant of "Bird House in the Maple' or of "Rosebush at the Corner" will be back again to stay with you. Or you may receive an official letter from Washington, D.C., to tell you that Miss Chipping Sparrow, banded in your garden in June and found in Louisiana in the following January.

And so—Good luck to you! Of this be sure: Should you become on friendly terms with the birds of your garden so that they are in a very real sense **your** birds, they will add much, very, very much, to what may already be a part of Fairyland.

Hardy Shrub Roses (Group 30)

By WM. GODFREY

Dominion Experimental Station, Morden, Man.

The term Hardy Shrub Rose is used here to designate a group of roses which are capable of withstanding the cold of the prairie winter to an extent which enables them to bloom in the spring and early summer. Some of them are entirely hardy, others slightly less so, but none can be classed as tender. A few species, but mostly they are of garden origin, the result of the plant breeders' work.

The general character of these plants is one that permits only a limited period of bloom, but it comes abundantly and in early season. Many will, however, continually or intermittently until frost appears. Attractive foliage and elegantly graceful growth are features which enhance their value when the flowering season is over.

These shrub roses are not subjects for the formal rose garden, but they can be used appropriately and harmoniously in a border planting to define the limits or to mark its enclosure. They are valued as single specimens in the small shrub planting or in groups in the larger one.

At the Morden Station a boundary planting of Harison's Yellow, White Burnet and a red rugosa produces an attractive colour effect. It has grown defiantly undisciplined during the war years, but can be restored to amenity and orderly ways.

For convenience of description and order the various members of the group are arranged in two sections, namely, Rosa species, and Rosa rugosa and its hybrids.

Rosa Species

The Altai Rose (R. spinsissima altaica)—Is a native of the Altai Mountains of Siberia. Its hardiness is absolute and it should have a place in every garden. The plants produce mounds of pale yellow three-inch flowers in June, and the purplish-back fruits are ornamental in winter. Height 4 to 8 feet.

Harison Yellow—Sometimes listed as R. harisoni: Some rosarians claim this to be a hybrid. Its origin being a little

obscure, and its appearance distinctive, it is included here with the species. The golden yellow flowers have two or more rows of petals and are slightly fragrant. Hardiness and abundant disase resistant foliage are notable qualities in this fine rose. Height 4 to 5 feet.

The Scotch or Burnet Rose (R. spinosissima)—The plant in this old species is a rounded mound of graceful pendulous branches which provide garlands of white flowers in early June. Sometimes the blossoms may be pinkish and there are double forms. Height 2 to 3 feet.

Austrian Brier syn. Austrian Yellow (R. foctida)—Brilliant yellow single flowers on upright red-brown stems are distinctive characters of this species, and the blossoms and foliage are a little unpleasanty fragrant. The double flowered Persian yellow belongs here and makes a handsome erect plant.

Austrian Copper is amost startling in the richness of the intense copper red flowers with yellow on the reverse side. These roses are constitutionally hardy, but are extremely susceptible to Black Spot Fungus which will undermine their vigor. In spite of this adverse commentary they are worth a trial. Height 3 feet.

Willmott Rose (R. willmottice)—This rose will reach a height of 8 feet, and in effect produces a pillar of deep rose red with its myriads of small flowers. The foliage is small, roundly pinnate and distinctive.

The Bristly Rose (R. nitida)—Is native to Newfoundland. The flowers on this very dwarf species are small and of an appealing shade of pink. The beauty of the plant lies in the rich, dark green varnish shine of the foliage, which turns to a lasting brilliant scarlet in the fall. It is a good plant for the rock garden.

Father Hugo Rose (R. hugonis) — This is a much catalogued rose and is very attractive in May with its pale yellow flowers on a six-foot high plant of red stems and clean green foliage. It is included here to give a record of its performance at this Station, where it comes through intact three winters in five. When most of the stems are frozen, the whole plant is cut down to near the ground with a hope for a better future. The young growth will be a summer ornamental.

Rosa Primula—Formerly confused with R. ecae. This rose is noteworthy for its clean dark green round leaflets and the beauty of its brown-eyed stems and glistening prominent thorns. The primrose yellow flowers are abundantly displayed in late May. It is distinctive and attractive after the bloom period. Height 4 to 5 feet.

Rosa Rugosa and Its Hybrids

Sometimes called the Japanese rose, R. rugosa is noted for its luxuriant deep green healthy foliage and robust stems. It is hardy and the large single flowers are in shades of rose pink and there is a white form. There is a great variation in the hardiness of its hybrids and only those that are reliable and typically rugosa in character are mentioned in detail.

The Kamchatka form of R. rugosa is a sturdy upright plant with smaller leaves than the type and bright crimson flowers. It makes a good dooryard rose. Height 4 to 5 feet.

Hansa—One of the best known and oldest varieties. It has large double flowers of reddish violet on a strong plant, and blooms throughout the season. When the plant becomes crowded with old stems it can rejuvenated by cutting it down entirely to one foot from the ground. It will bloom freely a little later than ordinary. Height 3 to 4 feet.

Agnes Emily Carmen or **Belle Pointevine** are similar in plant type with flowers of different shades of pink.

Blanc Double de Coubert is a sport of the white form of rugosa. The flowers are large, dazzlingly white, and freely produced during most of the season. Height 3 feet.

Mrs. Anthony Waterer has large crimson scarlet flowers on a spreading plant with leaves less rugosa than the type.

Yatkan will grow to a height of eight feet and almost as much through. The large single rose pink flowers come in late May and are produced in profusion for about three weeks. It is one of N. E. Hansens group of rugosa hybrids and is a good subject for a particular corner.

F. G. Grootendorst is a rugosa hybrid with a polyantha cluster of dark crimson double roses. They are small but fimbriated which accounts for the name, carnation rose, by which it is known. It is not very hardy but will bloom freely after

the dead wood is cut out. There is a pink form named Pink Grootendorst. Groot endorst, a third and latest introduction, is dark red. Height 2½ feet.

Agnes—The leaves are small but rugose on this variety, and the double flowers are amber yellow in the bud which opens to a butter yellow. Raised by Dr. William Saunders, of Experimental Farm fame, it is a gold medal winner of the American Rose Society. The parents were R. rugosa x Persian Yellow. It is quite hardy but there are usually some dead tips showing in the spring which are the result of a peculiar die-back rather than winter killing. These should be cut out to improve its appearance before blooming. Its season is from late May to end of June. Height 4 feet.

Dr. E. M. Mills — Is an early blooming spreading shrub with a profusion of semi-double pink inted yellow flower. The foliage is faintly rugose but its parentage is in doubt. Gracefully arching branches and deep green eaves are notable features in this rose. Height 3 to 4 feet.

George Will—Raised by Mr. F. L. Skinner of Dropmore, is a rugosa acicularis seedling crossed with a garden rose. It has clusters of deep pink flowers of medium size throughout the summer. Height 2 to 3 feet.

Wasagaming—This is also produced by Mr. Skinner and the full double fragrant flowers of soft clear rose resemble the old cabbage rose, but is much more hardy. Height 3 feet.

Mrs. John McNabb is another Dropmore hybrid which is a combination of R. rugosa and R. beggariana. The double white flowers are produced freely in July and occasionally throughout the rest of the season. Height 3 feet.

Betty Bland—Comes from the same course as the preceding three. It has large pink flowers and red stems. The dark red colour of the bark is effective as a winter landscape feature. It will grow to a height of 5 feet. The native R. blanda is one of its parents.

Stanwell Perpetual—This R. spinosissima hybrid has a charm and an attraction for many plant lovers. Its double blush pink flowers appears continually and are often better and more numerous in the fall. The growth is inclined to become prostrate.

The fruit or seed pods, sometimes called hips, of many of these shrubs are very ornamental, but where the Black Snouted Rose Beetle is troublesome they are better removed and burnt as they develop, or before the end of August at the latest. R. altaica is an exception to this rule.

Pruning of shrub roses is simple and not at all necessary every season. Removal of dead wood in early spring and the cutting out of old spent branches immediately after flowering will encourage young growth on which most of the blossoms are produced.

Disease—As previous mentioned, freedom from diseases is characteristic of the group generally, and this note has reference to the paragraph on Austrian Briars and their weakness to Black Spot. This disease is not common and it is usually encountered where Hybrid Tea roses are grown. It is given utterance here as information and not as a deterent to prospective growers.

Rosarians in all parts of the world are on the alert and working for something new in roses. Perhaps the rose of the future will be a shrub rose. It might be well to get acquainted with them.

Small Fruit in the Home Garden

By F. V. HUTTON

In planning a small fruit plantation, location is one of the first items to consider. Protection from the prevailing winds, lay of the land, and convenience to water and buildings are three factors which add greatly to the value of the planting.

The windbreak is usually trees and should give protection on the north, east and south. It should be wide enough to check the wind and protect the plants. The land should be nearly level or slope gently to the east. Southern slopes will produce earlier maturing crops, but may be more severely damaged by early spring thaws and drying south winds. North slopes, on the other hand, will delay spring growth but favors fruits such as black currants. If the slope is abrupt, cultivation should be around the hill or on the contour rather than up and down the grade. Convenience to a pond or dug-out is very desirable so that irrigation can be employed in dry seasons. All small fruits, and particularly strawberries, respond bountiously to water. Convenience to buildings is important in saving labor and supplying protection from birds and other fruit-loving marauders.

The most satisfactory soil, for all types of small fruits, is a rich loam well supplied with organic matter. A thorough summerfallowing the season before planting is the best preparation which can be given. A heavy application of rotted barnyard manure should preceed the plowing. Summerfallowing should eliminate all grass and other perennial weeds, incorporate the manure with the soil and store a good supply of moisture. With such a foundation the new plants should get a good start and be well established the first season.

Strawberries

Strawberries are the most popular of the small fruits and will give quicker returns following planting than the others. They appreciate a rich loamy soil and a regular moisture supply. A comparatively shallow and restricted root system is responsible for this. Early spring planting is necessary in order to take advantage of abundant soil moisture and cool weather, both of which are desirable for a good stand. Only

strong, healthy young plants should be used. This is indicated by strong disease-free levaes and an abundance of white or light yellow roots. Dark roots indicate old plants which are not desirable. Roots should be kept moist until planted by folding in damp burlap. Trim plants to two healthy young leaves and in planting set crown level with the soil surface. Planted more deeply the crown may be smothered, and more shallow plants will die out. Plants are usually put in rows four feet apart and the plants eighteen inches apart in the rows. Blossoms should be kept picked off until July in order to encourage runner formation. If time is available, runners can be spaced so as to have new sets at equal distances. Plants should not be closer than 8 inches for good production. Weeds are to be kept out at all times. After a few sharp frosts in October and before the ground is frozen a mulch of about three inches of clean wheat straw or similar material should be applied for winter protection. This covering is removed soon after spring break-up or when the land can be worked on conveniently. Some of the straw can be tramped between the rows and will aid in conserving moisture and checking weeds. Sufficient fine material is left among the plants to keep the berries clean. One of the most convenient ways of managing the strawberry patch is to set a new patch each year. By this method the old patch is plowed up after taking off one crop of fruit. Glenmore and Dunlop are two good June-bearing varieties. Gem is a good everbearer type.

Red Raspberries

Red raspberries, like strawberries, are very popular with most people, but require more time and foresight to develop a producing plantation. The common method of production is in a continuous row or hedge-row. The plants are put in about two feet apart and allowed to form a continuous row about two feet wide. The rows should be far enough apart to allow for six or eight feet of cultivated land. After the second year the young canes are thinned so that each young cane is about six inches from its neighbor. Planting is done as early as possible in the spring as growth starts early. In purchasing plants for a new plantation buy only certified stock from a reliable nursery. Raspberries are subject to several destructive diseases which are carried in the plants and can only be guarded against by clean stocks. Hardy varieties should require no winter protection, but tender sorts may be

Fruit can be grown with great success in Manitoba. This Photo was taken at Charleswood.

brought through winters by bending the canes to the ground in late October, and covering the tops with soil. The soil is removed in the spring after the ground thaws about the end of April. When the fruiting season is over the old canes should be removed by cutting off near the ground. If not removed they may carry disease or insects over winter. The young canes may be thinned at this time but if left until spring will give added winter protection. Chief and Latham are two of the most popular varieties today, the former being more hardy but the fruit slightly smaller.

Gooseberries and Currants

Gooseberries and currants produce fruit which is valued by many people for jam and jellies. The prevalence of maggots of the yellow currant fly has reduced their popularity, but when a convenient control method is developed they will be used again.

Planting should be done as soon as possible in the spring as the buds open early on most of this group. Space six feet each way and plant slightly deeper than they were in the nursery row. Three years will be required to bring them in full-bearing but if properly cared for the plantation will last many years. After the second year, pruning should be practised each fall after freeze-up. In pruning, first remove all very droopy and broken branches which are well spaced. Three or four two1year-old and the some of three and four-year-old wood will complete the quota of branches for a fully developed bush. As black currants and most hardy gooseberries fruit on the new wood, more new wood and less three-year-old wood may be left in these bushes.

Pixwell is a very satisfactory red-fruit gooseberry, and Thoreson a very hardy and productive green. Good red currants are Cascade, Red Lake, Diploma and Stephens.

White Imperial is a satisfactory white type.

Popular blacks are Kerry, Climax and Boskoop Giant.

Morden Experimental Station, Morden, Manitoba

MANITOBA FRUIT LIST--1944

Recommended for planting by the Fruit Committee of the Manitoba Horticultural Association

The Province has been divided into four zones, as indicated on the accompanying map. The recommended use of each variety in any designated zone is indicated as follows by a letter under the zone number and opposite the variety.

C—Commercial H—Home Garden T—Trial only.

The letter "W" next to the name of any variety means that the variety should be covered in winter.

Varieties of the same general degree of hardiness within the same fruit group, are shown separated by a cross-line.

This general zoning of Manitoba for tree fruit growing has undergone some minor changes since its first presentation two years ago, and is based on behavior of the various varieties in trial plantations. The boundaries have conformed in part to soil types and to topography.

	Fruit Zones			
	Zone 1	Zone 2	Zone 3	Zone 4
CRAB APPLES AND APPLE CRABS				
Osman	C	C	C	C
Bedford	C	C	C	C
Robin	C	C	C	C
Dolgo	C	C	C	C
Rescue	C	C	C	H
Heyer, No. 12	C	C	C	H
Florence	C	C	H	H
Trail	C	C	H	H
Rosilda	C	C	H	T
APPLES				
Moscow Pear	C	H	T	T
Charlamoff	C	H	T	T
Hibernal	C	H	T	T
Patten	C	H	T	T
Mount	C	H	T	T
Waukon	C	H	T	T
Haralson	C	H	T	T
Manan	C	H	T	T
Manitoba Spy	C	H	T	T
Red Duchess	H	T	..	..
Breakey	H	T	..	..
Godfrey	H	T	..	..
Redant	H	T	..	..
Atlas	H	T	..	..
Melba	H	T	..	..
Patricia	H	T	..	..
Antonovka	H	T	..	..
Crimson Beauty	H	T	..	..
Wealthy	H	T	..	..
PEAR				
Ussurian	C	C	H	H
Tait Dropmore	C	C	H	H
Bantam	H	T	..	..
Pioneer No. 3	H	T	..	..
PLUM				
Mina	C	C	C	C
Bounty	C	C	C	C
Dropmore Blue	C	C	C	C
Dandy	C	C	C	C
McRobert	C	C	C	C
Norther	C	C	C	C
Pembina	C	C	H	T
Objibwa	C	C	H	T
Mandarin	C	C	H	T
Radisson	C	C	H	T
Underwood	C	H	T	..
Tecumseh	C	H	T	..
Fiebing	C	H	T	..
Grenville	C	H	T	..
Ember	C	H	T	..
Redcoat	C	H	T	..

	Fruit Zones Zone 1	Zone 2	Zone 3	Zone 4
Tokata	H	T	..	..
Kaga	H	T	..	..
La Crescent	H	T	..	..
CHERRY PLUM				
Dura	C	C	C	H
Sapa	C	C	C	H
Ezaptan	C	C	C	H
Mordena	C	C	C	H
Mansan	C	C	C	H
Compass	C	C	C	H
Opata	C	C	C	H
Convoy	C	C	C	H
SAND CHERRY				
Manmoor	C	C	C	C
Mando	C	C	C	C
Brooks	C	C	C	C
Black Beauty	C	C	C	C
OTHER CHERRIES				
Coronation	C	H	T	T
Wragg	C	H	T	T
Drilea	C	H	T	T
White Nanking	C	H	T	T
Mongolian	C	H	T	T
APRICOT				
Scout	C	H	T	T
Anda	C	H	T	T
Robust	C	H	T	T
Morden 601	C	H	T	T
GRAPES				
Select Native	C	C	C	C
Beta (W)	C	C	H	H
Alpha (W)	C	C	H	H
Van Buren (W)	H	T	..	..
Fredonia (W)	H	T	..	..
Portland (W)	H	T	..	..
Lutie (W)	H	T	..	..
RASPBERRY				
Chief	C	C	C	C
Ruddy	C	C	H	H
Latham	C	C	H	H
Indian Summer	C	H	T	..
Bristol (W)	C	H	T	..
RED CURRANT				
Diploma	C	C	C	C
Red Lake	C	C	C	C
Stephens	C	C	C	C
Prince Albert	C	C	C	C
BLACK CURRANT				
Kerry	C	C	C	C
Climax	C	C	C	C

	Fruit Zones Zone 1	Zone 2	Zone 3	Zone 4
Boskoop Giant	C	H	H	T
Buddenborg	C	H	H	T
GOLDEN CURRANT				
Crandall	C	C	C	C
GOOSEBERRY				
Pixwell	C	C	C	C
Abundance	C	C	C	C
Thoreson	C	C	C	C
Clark	H	T	..	..
Ross	H	T	..	..
Charles	H	T		..
STRAWBERRY				
Dunlap	C	C	C	C
Premier	C	C	C	C
Gem	C	C	C	C
Burgundy	C	C	C	C
Sparta	C	C	C	C

VARIETIES FOR TOPWORKING (Double Working)

To Apples—Bedford, Adam, Columbia, Anaros.

To Pears—Ussurian

To Plums—Mansan, Mammoth.

To Apricots—Siberian, Manchurian.

SUGGESTED HOME GARDEN TREE FRUIT UNIT FOR DISTRICT No. 1

Crabs and Apples:
Florence, Dolgo, Trail, Moscow Pear, Breakey, Godfrey, Manitoba Spy, Haralson.

Plums:
Mina, Bounty, Tecumseh, Fiebing, Grenville, Kaga, Ember, Dura, Sapa.

Cherries:
Drilea, White Nanking, Coronation, Wragg.

Apricot:
Scout, Robust, Morden 601.

SUGGESTED HOME GARDEN TREE FRUIT UNIT FOR DISTRICT No. 4

Crabs:
Adam, Robin, Rescue, Heyer No. 12, Anaros.

Plums:
Northern, Bounty, Dandy, Mina, Convoy, Dura, Opata.

Sand Cherries:
Manmoor, Brooks.

Preparation of Soil for Victory Garden

By H. A. GREEN

The vegetable garden soil should be properly prepared before seeding. No amount of care and cultivation afterwards can make up for proper attention at this time. It is much better to dig the garden in the fall of the year, but for those who have not done this the following instructions will assist in getting the best results from your garden. Heavy clay soils can be made more friable and ighter by the use of finely ground acid peat and sandy soils are improved in texture and their water retaining capacity greatly increased by the use of the same material. A heavy dressing two inches or more deep should be spread over the garden before digging and should be thoroughly mixed with the soil to a depth of from seven to eight inches b ymeans of a digging fork—a fork is preferable to a spade because the soils falls through the tines as you dig and the peat is mixed much more thoroughly with the soil. A good dressing of well-rotted barnyard manure (about ten tons per acre) may also be dug in if this is avaiable, or a complete commercial fertilizer may be used. This may be spread over the garden after digging and should be worked into the top soil with a rake or cultivator. About four pounds of a good complete fertilizer per 100 square feet will give good results. Care should be taken in the use of commercial fertilizer because if it comes in direct contact with young, tender roots, it will cause burning of the plants.

After digging the garden, the surface should be worked with a rake and the soil properly pulverized so that the small seeds may be evenly covered in the drill rows. This will not be very difficult if the soil is only worked when it is dry, but heavy cal soil becames almost unworkable when wet.

Pruning of shrubs and trees may be finished before the buds begin to swell. Pruning of trees and shrubs is done for two main purposes: First, to produce more or better bloom or fruit and secondly, to keep or make the plant shapely. In the case of ornamental shrubs, it is not usual to prune for the purpose of producing better bloom, as the more flowers there are on a shrub the more it is appreciated even though the flowers may not be extra large, so in pruning this type of plant it is

advisable not to thin out more than necessary to give the branches room to produce their bloom and a needed amount of leaf growth. Shrubs usually fall into two classes for pruning purposes. Late blooming shrubs may, as a general rule, be pruned during the winter or early spring, because most of them flower on the new wood and careful pruning will encourage more bloom. In the case of early flowering shrubs the main pruning should be done after the flowers have gone. It has been the policy of many amateur gardeners to clip some of the stronger growing shrubs as you would a hedge. This may take less time than careful pruning, but forms mats of young branches which spoil the general appearance of the bush and sometimes totally destroys the flowering buds.

The habits of shrubs should be studied before pruning. It isn't possible to produce lots of bloom on tall-growing shrubs if they are continually cut back and plants of a bushy or vigorous branching habit should not be too severly pruned. Those pants which send up new growth from the base or from the roots may be controlled by cutting necessary growth below the ground line.

The perennial border may be cleaned up in the spring and a dressing of finely ground acid peat spread over the soil, this may be worked into the soil with a fork or garden cultivator. Be very careful when you do this not to disturb plant roots.

The annual beds should be as carefully prepared as the ground in which the vegetables are to grow and should present a finely pulverized friable surface so that the small plant roots will be snugly packed by the surrounding soil. Do not leave this until the plants are ready to transplant. The soil should have time to settle before planting time, otherwise, when the setting of the soil occurs, some of the plants may be left with roots exposed to have to be re-set.

A Wild Flower Garden

By PROF. C. W. LOWE

If you wish for greater pleasure from our native flowers, try making a wild flower garden. Such a garden is of great interest and can be very attractive. Many of our native plants improve with culture and when away from competition with other plants may produce larger and more numerous blossoms. A wild flower garden should duplicate as far as possible the environment under which the plants grow naturally. Some plants are very sensitive to changes and those from acid peaty soils will not thrive on the rich, limey soil of the Red River Valley, nor will plants from the dry sandy region do well in wet clay soils.

A garden with a soil which is approximately neutral, or only very slightly acid or alkaline, is the easiest to prepare, particularly in the Red River Valley. It should be well spaded and drained, and if heavy, given a dressing of forest humus or peat and a little sand.

In and around the woods of the prairie, and on the prairie itself, are a number of plants of beauty and interest which should be given space in the garden: herbs, shrubs and trees. In most gardens there is not sufficient room for many trees, so I will mention only one tree which is much neglected in cultivation — the Basswood tree. It is graceful in form and bright in its dense foliage, making it a splendid shade tree. Its flowers will fill the air with a sweet perfume which attracts the bees for its nectar. Its blossoms appear in the early summer when all other trees have finished flowering and is the only one of our bigger trees that is insect-pollinated Unfortunately, its seeds are hard and slow to germinate. Some of our native shrubs have already earned a place for themselves in the garden, and some, like the shrubby cinquefoil, the Dogwood, the high-bush Cranberry, and the lead plant, are now appearing in nursery stock.

Of the herbaceous plants there are at least one hundred different species which can be given prominence in a wild flower garden. First and foremost should come Manitoba's emblem, the Prairie Anemone. With sufficient soil around its roots it may be transplanted at almost any time. Do not attempt to remove the grass or other plants that are mixed with it until it has been planted for several days, then pull a few of them at a time. If in a properly drained situation and exposed to the warm spring sunshine, the prairie anemone will continue to give you a number of lovely blossoms for many years. Next in favour would come our delightful orange-red prairie Lily. It is best to transplant this lily by the bulbs in the fall after the seeds have been shed. It will have a chance to flower the following season. You can also gather its seeds but you would likely have to wait three years for a flower. It will thrive in almost any garden. It grows chiefly around the drier woods but is frequently found on the open prairie that is not too dry. In the wild state it usually bears one, or occasionally two flowers, but in the shelter of the garden it may have three or four blossoms, each a little larger than those in the wild state.

The next attractive flower for our garden might well be the Canadian Columbine whose pendulous flowers of scarlet and gold are so well known. At its side should be the smaller blue Columbine which has in recent years invaded Manitoba from the West.

Both the orange and the paler yellow Pucoons should be given a place in this garden. Not only are their flower clusters attractive but their fragrant perfume lingers long in your memory. There are a few pink Primulas in northern regions and on the western prairie which could well be tried out in this garden for they have a beauty all their own. Related to the Primroses also is the Shooting Star, a prairie flower. Quite frequently in the places where you find the Shooting Star you may also find the little yellow Star-Grass, Manitoba's only native members of the Daffodil family. If its tiny bulbous rootstock is moved carefully after flowering, it will likely flower year after year. Other bulbous plants easily transplanted are the pink and white wild onions. They too will add charm to the garden. No wild flower garden could be considered complete without some of our native Violets. White, yellow, lilac, blue, and violet, all can be found in Manitoba and moved to the garden.

Sweet Peas

(Ontario Department of Agriculture)

Many sweet pea seeds are very hard and germinate slowly, if at all. It has been found wise to give them some sort of treatment to insure prompt sprouting. Some soak the seeds in acid for a half hour, but the simplest method is to cut off a small piece of the seed coat on the side opposite the growing point. When such seeds are sown ½ inch deep in sand, they will germinate readily because they can soak up water readily. When so treated they germinate in a week and may then be placed in small pots to grow. Light colored seeds which usually produce the white and paler tints and the mottled seeds (usually of the Lavender, blue and mauve sorts), are apt to decay when the soil conditions are not favourable. It is the red, crimson and scarlet sorts that bear the hard seeds, which it is well to germinate before sowing.

It is considered an advantage to sow the seed quite deeply so that the roots will penetrate the cooler subsoil. It would not do to cover the seed so deeply when sowing, however, as only a small portion would come up through such a heavy covering, so that for this deep sowing, a trench or furrow four to six inches deep and six inches wide should be prepared. The seed is scattered in the bottom of the furrow as evenly as possible and covered with about two inches of soil, which is firmly pressed.

The insects which are most injurious to sweet peas are plant lice. They may be controlled by spraying with a nicotine solution such as Black Leaf 40. As there are many generations of plant lice during the year, continual spraying is necessary and the insects must be actually hit in order to kill them. The diseases of sweet peas are not easily controlled, if they are at all serious. For that reason, no spraying would be advised. If disease appears try the standard fungicides, such as sulphur or bordeaux mixture.

As a fertilizer for sweet peas, bonemeal woudl be the best all-round fertilizer to use as a dressing along the sides of the rows. When the flowers come into bud you might give them some nitrate of soda or sulphate of ammonia, which would increase the size of the blooms.

Peonies

(Ontario Department of Agriculture)

Peony species, though numerous, are not commonly known and very few of them are seen in our gardens. **Peony tenuifolia,** of which there are both single and double forms, has finey dissected foliage and rich red flowers on fifteen-inch stems. It is beautiful but transient as is also **Peony** officinalis, the old-fashioned "Piney Rose" with its red or pink blooms whose petals fall so quickly, that is found still in nearly all old gardens. The Peonies of today offer us a wider wealth of colour and a longer season of bloom. **Peony albiflora,** commonly known as the Chinese peony, gives us the hundreds of varieties of different types and colours and perfumes that rival the rose in our gardens and in our hearts. There are early, mid-season and late-flowering varieties in almost every shade of white and pink and red.

Peonies should be planted only in the autumn, preferably during the month of September. In late autumn peonies put forth slender feeding roots which should never be disturbed. To transplant them in the spring causes shock from which they must recover before they can begin to grow again. Special care should be taken in planting peonies. Dig a hole large enough to accommodate the plant without crowding—dig it deep enough to allow for a liberal amount of nourishment to be placed in the bottom of the hole. A mixture of bone-meal and soil has been found acceptable. Hold the peony plant in position and firm in well. As extra protection for the first winter, a spadeful of earth should be mounded over the plant. Manure should not be used for this purpose. In the spring the extra earth should be removed carefully before the shoots appear. After the first year or two peonies may be given a handful or two of bone meal, immediately after the flowering season to insure good growth the following year. Do your peonies fail to bloom? The common reason is too deep planting. A peony should not have more than an inch and a half or two inches of earth between the eyes of the peony and the surface of the soil. Many people plant their peonies properly and then forgetting this rule have some nice new loam put on their borders and their peonies stop blooming. Adding the extra loam has planted the peony too deeply.

Iris

(Ontario Department of Agriculture)

During the last quarter of a century much time and thought has been devoted to the improvement of the Iris and as its beauties have increased and expanded, it has attained great popularity, until today Iris enthusiasts are found everywhere and willing to discuss their hobby and extol the merits of their own special pets. Hydridizing Irises is very much the fashion and noted hybridists send out into the world each year many new varieties until we are completely bewildered and intoxicated and cannot make up our minds which we like best or which of all the countless new and old ones we can do without. The culture of these Irises is simple, but it must be borne in mind that to produce an abundance of good bloom certain rules must be followed. Bearded Irises must be planted in well-drained soil in a sunny position. They are not exacting about the kind of soil but it should be well worked and, if very poor, enriched with a moderate amount of fertilizer, **before** planting. Bone meal, or any other slow acting fertilizer, is suitable and a small amount of lime added to some soils has been found beneficial.

Bearded Irises will not tolerate barnyard manure, so it should not be used as a fertilizer and never under any circumstances spread over the Iris rhizomes in the autumn in the pomiscuous and lavish manner too often seen. It is necessary for proper development that the sun should reach the Iris rhizomes during the summon months. The popular fashion of planting annuals close to Irises so that there may be a wealth of bloom in the borders later, it's a mistake as the annuals will, in most cases, shade the Irises and prevent the sun ripening the rhizomes with resulting loss of bloom the next year.

We must not omit from our list the fibrous rooted Irises that can be grown here. Iris siberica, which blooms at the same time as the tall bearded varieties, has narrow, grass-like leaves and smaller flowers held on stiff, upright stems. They are excellent for planting in the perennial border and can be depended upon to give very little trouble and a wealth of bloom. There are a number of other Iris species which can be grown in Manitoba.

Bulbs for Winter Blooming

By JOHN F. CLARK

The desire for flowers out of season during winter, when our gardens are deep in snow and frozen over, has led to a very wide growing of bulbs in the house. This forcing of bulbs for winter flowering prolongs our gardening activities well into the spring. The treament of bulbs for this purpose is so simple that every amateur gardener should have no trouble in flowering Hyacinths and Daffodils, together with other species such as Narcissus, Tulips, Freesias, Crocus, etc. There are certain simpe rules which must be followed to insure success.

Bulbs planted in the garden during September or October make no visible growth of top that season, but they do make a slight root system and all through winter they go on making active preparations for spring's work. As soon as spring appears they will send up tops and the vigor of growth and excellence of bloom will depend on the condition of the roots It is therefore important that bulbs be planted as soon as possible.

In potting bulbs for winter flowers, it is necessary to imitate the process of nature, so immediately after potting, the bulbs should be put away in the dark to make a strong root system before they are brought into the light. If put in the light when potted, the bulbs will proceed to make both root and top growth at the same time, and as there will not be sufficient roots to build strong foliage and flowers, the result will be disappointing. By putting them in the dark, we imitate the planting in the garden in autumn. The DARK place where the bulbs or grown should also be a COOL one. Growth of leaves and tops is encouraged by warmth and light, for this reason the growing chamber should be both dark and cool. Root growth is promoted by darkness and low temperature, hence, if you want fine plants give them ample opportunity to complete the root growth first and then place them in a position which will stimulate the development of leaves and flowers. This method of forcing bulbs is as close to nature's way as it is possible to obtain under ordinary conditions in the home during winter.

The Romance of Garden Seed Production

By S. W. EDGECOMBE

Gardening always has had a romantic attachment. Nearly everyone is thrilled when they read about the famous hanging gardens of Babylon. The Garden of Eden is one garden that famous men have searched and searched for and several spots on this earth claim to be the site. Still, man did not always garden. The first men lived off the country. They killed the wild animals, ate the meat and used the hides and wool for clothing. No doubt man ate plants as he found them in the wild. As man grew is wisdom and cunning he began to domesticate animals. Pasturage became a problem so he had to move from place to place to insure a food supply for his animas. Eventually he found that he could plant seeds and remain in one place all or part of the year since he had a year around supply of animal food. Hand in hand with this development he must have planted seed of plants which would produce food for this own use. No doubt in some instances he moved plants of perennial types and had them fruit year after year.

As the centuries passed and he learned to record events we learn that he built up a considerable fund of information on plant culture. The more adventurous traders and travellers brought new plants from other countries. He tried them out and if they proved valuable they were incorporated into his economy. These new introductions are eagerly sought for now, as well as in the past, since they often are extremely valuable.

During the more recent centuries, man has tried hard to find superior varieties, species or genera of plants. In most instances he has been working very much in the dark since he did not have any insight into the science of genetics or cytology. This information could not be made available to him until the compound microscope was discovered and modern advances in chemistry, phyics, botany and allied sciences were made. He could not accurately understand the true effects of environment, or the processes underlying fertilization and its possible effects on the seed obtained from any given plant. He had to learn that plants from self-pollinated

crops general breed true to the mother parent. He also had to learn that seed from cross pollinated plants like corn produces plants which vary greatly from the mother parent (in most instances) since pollen from another parent is involved in fertilization.

Most gardeners today know that seed from a bean or pea plant (self-pollinated plants) will produce plants which are similar to the mother plant. On the other hand, gardeners know that when seed is saved from sweet corn (cross-pollinated plant) which is grown close to another variety, that the seed produces plants which are likely to be very different in many characteristics from the mother plant.

Similarly, when one selects a plant in a bean field, in general, seed from this plant will produce similar plants although the pant from which the seed was selected was somewhat different in growth habit from the great mass of plants. In self-pollinated plants we know that generally the slight differences noted in the field are due to environment and not due to the inherent genetic capacity of the plant.

In spite of this difficulty in making individual plant selections in the garden or field, considerable progress has been made through this method. A good example of securing a new variety in this way is the Burpee Bush Lima Bean. An old truck gardener, Mr. Palmer at Kennett Square, Pennsylvania, was growing a field of pole lima beans for market. In that field he noted that one plant refused to climb the pole as a self-respecting lima should do. Instead, it was a bush type. He saved the seed and it was introduced in **1890.**

A change in plant habit which occurs in this fashion is termed a mutation. Mutations are known in plants and animals and are often very valuable. Plant and animal breeders are continually on the outlook for them. Until very recently we did not know how to produce them so the breeders were continually searching for them. The seedsman with large acreages of one variety had an excellent opportunity of finding them since he grew such a large number of plants of one type.

People who are familiar with apples know that we have mutations in many varieties. Usually these mutations are color variations in the fruit—this is the source of Starking, Richards and other so-called budsports of th evariety Delicious. However, a more careful searching of the plant material reveals

that mutations also occur in the length of stem, the date of maturity and in other factors. (We recognize now that mutations must be looked for and that they are valuable but that they do not offer the best method of producing new varieties that we want.)

Among vegetables, Sweet Potatoes provide many mutations, some of which are valuable. Another very outstanding mutation of interest to gardeners is the Crown of Gold Marigold. A Chinese missionary, Rev. Carter D. Holton, sent in seeds of a marigold, which he found in western China near the border of Tibet. This marigold had odorless foliage (although the flowers were small and scrawny and far from beautiful). The seed was planted on the Floradale farm in California and the first year one plant in the field was different from all the others. It came into bloom very early, was larger flowered, had a shape like a chrysanthemum with a collar around it. This mutation was true breeding from the very start and was introduced as the **Crown of Gold Marigold.**

Earlier in this paper I mentioned that only in recent times have we been able to induce mutations. We have learned that mutations may be induced if the seeds are X-rayed. **Glowing Gold** and **Orange Fluffy** are two Calendula varieties which were developed from material treated in this manner.

Mutations can also be secured through the application of certain chemicals to plant tissues. Usually, the young growing tip of a plant is treated with a colchicine solution or salve. The colchicine treatment interferes with the normal method of cell division. Occasionally new growth develops from the treated area with the number of chromosomes doubled. When this happens we have a tetraploid plant which may be more vigorous, large flowered and desirable in other respects.

Gladiolus varieties are now on the market that were developed by colchicine treatment. The tetra Marigold is another instance of a variety developed in this manner. Many new varieties of both vegetables and flowers are now being created by th use of the drug colchicine and will be introduced in a few years.

Another method which is widely used to produce new varieties is hybridization or crossing. The procedure is simple as far as the actual crossing is concerned. The pollen secured from the male parent is applied to the stigma of the

female parent. The important point in making the cross is to know what cross to make and what we plan to get out of the progeny from the cross. If we have a mutation such as a marigold with odorless foliage, we have a new characteristic which we want to transfer to standard varieties. The cross is made with this objective in mind and when the seed is grown in the F_2 and following generations we select only those plants which we think will breed true for the odorless foliage characteristic and the desirable flower type that we are trying to combine with the odorless foliage character. In order to do this intelligently, we have to know how th various plant characters are inherited. That is, are they dominant or recessive characters? Are they dependent on on factor or more for their expression and are they the result of complementary inhibiting, duplicate, or modifying factors? These questions are often complicated and not fully understood. However, the plant breeder must acquire this information as rapidly as possible in order to plan the crossing program.

Hand in hand with the knowledge of the science of genetics, must go a thorough knowledge of the science of cytology which deals with the cell and its activities. The plant breeder is particularly interested in the processes of cell division and needs to know the behaviour of the chromosomes during this division. Sometimes this behaviour is what we call normal—other times the behaviour is abnormal and results in seeds which develop into plants unlike either of the two parent plants in chromosome constitution.

Hybridization and selection within the plants developed from crossing is probably the most useful method in the development of new varieties. It is used widely with modifications in all vegetable and flower plant breeding programs.

Most people are familiar with the value of hybrid vigor as demonstrated in the new hybrid corns. The increased yields are due to a recombination of factors in the hybrid which result in a larger plant which is capable of producing larger yields than open pollinated varieties. More recently, several investigators and commercial concerns have become interested in the possibilities of using the same principle with other vegetables and flowers.

Hybrids of both tomatoes and cucumbers have been developed and they will be offered to the public for the first time in 1945. The new hybrid tomato is early and keeps producing all summer long. It produces more good-sized tomatoes than any other early variety of tomato. It has a stronger vine with more foliage than other early varieties so the tomato fruits are protected from sun-scald. The new hybrid cucumber is early, very productive, good quality, and is highly rsistant to the worst three diseases that attack cucumbers—Mosaic, Downy Mildew and Wilt.

It is almost a certainly that additional hybrids will be offered by the seed trade in the near future. As the techniques are refined, the cost of producing the seed will be lowered. Hybrids of special value for each demand and region are very likely to be available in the coming years.

From our discussion, so far, you can readily see that there is no single method of plant breeding that can be used to produce new varieties. Mutations, single plant selections and hybridization with subsequent plant selection are all used when needed.

Once a new variety is developed, special techniques must be used to increase the seed. The stock of seed must be increased and kept pure. This is relatively easy with self-pollinated crops but more or less difficult with cross-pollinated crops. The actual mthod of pollination in the field and the manner of cross pollination in cross-pollinated crops must be fully understood. To show how different some crops are: Pea varieties may be planted 25 feet apart since they do not naturally cross pollinate. Beet varieties which are cross-pollinated and largely by the wind must have around three-quarters of a mile isolation between varieties. Beet pollen has been found as far as 12 miles from the field and at least a mile up in the air. The pollen is very small and light and is carried great distances by air currents.

During this war, we have found it necessary to grow all vegetable and flower seeds in North America. Much of this development has taken place under the stimulus of Lease-Lend program, but much has been done to furnish material for the domestic market. Whole new areas of production of bulbs in the Pacific Northwest, vegetables in California, Idaho, British Columbia and elsewhere have come into being. What will happen to these areas when the war is over? Will we go back to buying seed from the older foreign sources or will we have mastered the art and science of growing these items so that we can compete with foreign sources? In some instances

we think that we can hold the items while in other cases we think that the foreign sources will regain their markets since they have long years of experience and have cheap labor and favorable climatic advantages which will offset any advantages that we may have in methods of production. Sometimes, as in the case of cabbage seed production in the state of Washington, we encounter insect and disease problems which may make the production of seed unprofitable under post-war conditions. However, we may be able to overcome these difficulties and, by thoroughly modernizing all our operations, still be able to produce high quality seed at competitive prices.

There are many romantic aspects in garden seed production. Trained plant breeders are working tirelessly year in, year out, to try to maintain America's position of preeminence in vegetable and flower varieties.

Fall vs. Spring for the Planting of Nursery Stock

(Country Guide — July, 1943)

There are several advantages to the purchaser from ordering nursery stock early in the fall. Some time ago we queried W. R. Leslie of Morden, F. L. Skinner of Dropmore and Dr. C. F. Patterson, University of Saskatchewan, Saskatoon, as to present opinion of this method and all were agreed that it is very desirable for practicaly all woody plants. Dr. Patterson entered a reservation with respect to evergreens and larches. Evergreens, of cours, if purchased in the fall, must be planted then, as they cannot stand "heeling-in." August planting of evergreens is a fairly generally accepted practice, but Dr. Patterson suggested that for the ordinary person, early spring transplanting was preferable to fall planting. If fall planting were attempted in Saskatchewan, early September would be preferable to mid-August. At Morden, on the other hand, for spruce and some other conifers, Mid-August is the favorite transplanting season, no loss having been experienced when such planting is done under moist soil conditions. It is the opinion of Mr. Leslie that growth during the following seasons tends to be much more lusty than when the evergreens are not moved until the following April.

Many purchasers of nursery stock, especially of named varieties of fruit trees, are sometimes disappointed when they fail to receive all the varieties they have ordered for spring planting. If nursery stock is ordered early in the fall, this disappointment is not likely to be met with. First come, first served is the general rule; and the first orders received are the first ones filled. Furthermore, nurserymen are not as busy in the fall as they are during the rush of spring orders and the fall shipments are quite likely to contain better trees; and, in spite of every effort to treat all customers alike, fall orders are likely to be given better attention. During the spring season the nurseryman has only a very short time, just a few weeks, in which to ship all his orders, do his own planting, grafting and other spring work. Consequently those purchasers of nursery stock who wisely lay their plans in advance are bound to benefit by the fall purchase of the nursery stock they want.

There is no difficulty about carrying this nursery stock over winter after you receive it, if it is not to be planted in the fall. It will keep perfectly if carefully heeled-in. There are, in addition to evergreens, a few exceptions, such as apricots, Tom Thumb and double-flowering plums. The process is quite simple and is a regular practice of commercial nurserymen who did and heel-in a substantial quantity of nursery stock in the fall in order to save time during the rush season. As soon as possible after plants are received from the nurseryman in the fall — this means right away — they should be heeled-in by digging a "V" shaped trench, with one side at a wide angle. The roots of the plants are placed in the trench so that the stem will be lying at an angle of about 30 degrees. Each parcel of plants should be cut open and the plants spread out, one layer deep, so that they will not be crowded. The earth should be well worked in around the roots so as to avoid any danger of moulds and spoilage. The entire root and about one-third of the stems or stalks of the plants should be covered with earth to a depth of at least one foot and preferably a foot and a half. When about half the earth has been worked in between and over the roots, it would be wise to soak them thoroughly with water. A few hours later they should be covered with the remainder of the earth. If this heeling-in is carefully done, the plants and trees will go through the winter in perfect condition, provided the earth around them is not allowed to dry out before freeze-up. They should be kept moist, but not wet.

There are other reasons favoring the fall purchase of nursery stock, one of which is that weather conditions are generally more favourable to the successful shipment of stock than in the spring. Another very important reason is that all spring shipments of nursery stock cannot be made at the same time and a substantial proportion are bound to be later than others. This means that they are often received later than the purchaser desires and go into the ground a little later than they should.

For most parts of the prairie, while nursery stock is ordeed early in the fall, it is advisable to request that it be shipped about the first of October. This will allow trees to reach their destination and be heeled-in a short time before freeze-up normally occurs.

A final advantage of fall purchase of nursery stock is that some of the stock received can be planted in the fall to

better advantage than if heeled-in until the following spring. If fall planting is to be done, however, October 1 will be too late for shipment. Generally speaking, flowers and shrubs that come into bloom fairly early in the spring, are the ones that may be successfully planted in the fall. According to Mr. Skinner, the planting of lilacs, currants, gooseberries, flowering almonds, cherry prinsepia and other very early flowering plants will be more successful if planted in the fall than in the late spring. Mr. Skinner also advises that as the result of numerous trials made in recnt years, it has been shown that if an adequate moisture supply is secured, most medium and small-sized trees and shrubs, including one and two-year-old budded fruit trees as well as hardy roses, spirea, cotoneasters, maples, caragana, hawthorn, honeysuckle, mountain ash and elm can be planted with equal satisfaction in fall or spring and need not be heeled-in over winter. Where large-sized specimens have been received, they will be better for heeling-in, and for early spring planting. If trees or woody plants are set in the fall, they should have their leaves stripped off but they should not be cut back until the following April. Any cut surfaces will not heal readily in the autumn since there is very little sap flow. Open wounds also tend to dry out in the wind and from winter freezing which results in dead stubs the following spring.

Notwithstanding the fact that such a wide variety of fruits, shrubs and perennial flowers can be planted in the fall, especially if done by experienced persons, it seems advisable to suggest to the average person the greater safety of early spring plant from stock heeled-in over winter, for most shrubs or ornamental and fruit trees, unless they are of small or moderate size.

Of course such perennials as Irish should be planted as soon as possible after they are out of bloom, say from late July to September 15th. Peonies do best when planted during the first half of September although they may be planted later. Lily bulbs and tulip bulbs are also best planted soon after the first of September. Only very hardy lily bulbs should be planted after October 1. Those herbaceous perennials whose tops die down every winter can be planted from the middle of August to the first of October, but Dr. Patterson recommends spring planting for all but iris, peonies, tulips and lilies in Saskatchewan, notwithstanding that in the hands of a good gardener, fall planting is reasonably satisfactory.

Mr. Leslie recommends the first week in September for setting out new plantations of raspberries, currants and gooseberries, the plants being stripped of their leaves and not cut back, as previously mentioned. It is possible to set out strawberry plants in August under very favourable conditions but the last of April or the first week in May in southern Manitoba and the second or third week in May at Saskatoon will prove generally more satisfactory.

Whenever woody plants are planted in the fall, it is advisabe to set them a little deeper in the ground than they were in the nursery; and it is a good practice to hill-up around them with ear to about two-thirds their height. This earth then should be levelled away as early in the spring as possible.

It is just as important for fall planting as for spring planting, to have the ground prepared in advance and also to water thoroughly at planting time. Avoid repeated watering, but if, some time after planting, the season has remained opened and the sub-soil appears to be getting dry, give the trees or plants another thorough soaking before freeze-up occurs. If the plants are in an exposed position a mulch will help gather snow and provide some protection against the cold. If a mulch is used, however, some precautions must be taken against mice, and in any case against rabbits where they are numerous.

All nurseries are glad to have fall orders. By midsummer they will always know what they have to sell and can quote on it. Many of them prepare fall lists and some quote a discount on fall orders. It is a good idea to write the nurseries for prices on what you want, about the middle of July; and we believe that the more widespread fall buying and fall planting or heeling-in for spring planting becomes, the more satisfied everyone will be with their horticultural experience.

Flower Arrangement

By MISS LILLIAN ALLEN

The idea that flowers are the words and phrases of a sensitive language, is an old one. We not only express ourselves by the flowers we choose, but by the way we arrange them. A fortunate few seem to know by instinct how to use flowers creatively, but the rest of us have to learn. The secrets, if there are any, in arranging flowers, are good taste and originality. Both of these are based either consciously or unconsciously on knowledge of texture, color and design. Everyone knows that the simple little frock worn by the fashion model is designed and cut by experts. So it is with flowers. The fewer you use, the more expert you must be in handling them to achieve the right effect. Perhaps all this sounds as if it were going to be difficult, but it isn't really, because you can have so much fun in doing it and learning about it.

A quick analysis of flower arrangements gives us three main types. First, there are those based on line — pussy-willows in the spring, bittersweet, seed pods and branches in the fall. Some flowers lend themselves to line arrangements particularly well — tulips, narcissi, some lily types like the calla lily and nasturtiums when used with part of the plant. Second, there are the massed bouquets. These types are often referred to as Victorian or occidental. Most flowers can be used this way effectively; and some, like sweet peas and other fragile thin-stemmed varieties, always used in this manner. The third type is the geometric or stylistic arrangement. This is sometimes referred to as modern, but it is based usually on an oriental idea of flower arrangement which uses three lengths of stem, the tallest being in the middle. This also involves some knowledge of the use of line and mass.

Of the three types, the arrangement familiar to most people is the second, the mass bouquet. This is the one that depends mainly on color; and the colors may be scattered or concentrated into pattern areas, depending on the effect to be achieved, though one color should predominate. Some of the loveliest of these massed types are built up in low containers. The flowers are carefully put into the holder from all around

—their stems don't cross, but they radiate out from their centre point. Naturally this kind is perfect for the dining-room table where it is to be seen from all sides. To get the best effects with these, keep your larger flowers low, and most of the strong colors near the centre.

The other two arrangements, the line and the modern type, depend for their effectiveness on some knowedge of design. Line arrangements suit modern interiors perfectly, and often give a dramatic touch to a room. These groupings are nearly all set up in shallow containers, some almost like trays. They also depend on a certain kind of of holder, a heavy piece of metal with small closely set spikes, to pierce and hold the stems. With a couple of these you can do almost anything in the way of a modern arrangement or composition. Try one of these set-ups sometime with nasturtiums. The delicately shaped nasturtiums loses its beauty entirely when used en masse as most people pick them; but several flowers left on the heavy stock along with the circular leaves and perhaps a rounded seed and a pointed bud give a variety of lines and shapes that you rarely find in other plants. After all, it's not the amount of flowers in a container that count, but the effectiveness.

At the beginning I mentioned the words of harmony of texture. I might extend that to include harmony of idea. Most people run into trouble when they try to introduce green. Rarely are fine asparagus and Boston fern suitable, but other greens may be. Here is where you can call on your Victory garden to help you. If the foliage from the lowly turnip will help you to give your arrangement more character and beauty, then use it. But the leaves must suit the flowers. I have seen sanseviera spikes used to dramatize a gladioli setting; but the sanseviera is simply an over-emphasis of the leaf allotted to the gladiolus by nature in the first place.

Harmony of idea should exist between the container and the flowers. Copper harmonizes with autumn flowers and leaves. Colored stone jars are lovely with certain heavy blossoms like Zinnias. Deep glass bowls look best with non-leafy stems.

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