The WINNIPEG GARDEN

Flower

Presented By The
Winnipeg Horticultural Society

1948

FOREWORD

By W. J. TANNER, *President*

To Our Members:

Once more your Directors take pleasure in bringing to you the "Winnipeg Flower Garden," and we hope that in this 1948 edition you will find much valuable material to aid you with your gardening problems. To Professor E. T. Anderson, Chairman, and other members of the Year Book Committee, many thanks are extended for their untiring efforts in making this publication possible. Only those who have worked on this committee know what a tremendous amount of work is involved in having a book of this kind successfully published.

Plans are under way for a number of meetings during the winter and early spring, notices of which will be mailed to all members. We hope that you will take advantage of attending as many of these meetings as possible, and bring others interested in gardening with you. We would like very much to have a large increase in membership this year, and this could be accomplished if you, our members, would interest your gardening friends in our Society, and bring them along with you to our meetings.

Plans are also under way for our annual Flower and Vegetable Show, and I would urge all members to make their plans now for having as many entries in the show as possible. A tentative prize list and entry form will be mailed to you around planting time.

I would like to take this opportunity of thanking you for the honor conferred upon me in electing me as your President for 1948. With the aid of a very excellent Board of Directors, and with the whole-hearted co-operation of all our members, I feel that we can make this year a record one for the Society.

I also wish to thank all those who, by their advertising or donations, and contributions of material, have made this book possible. Might I suggest to members that you take note of those firms who so kindly helped us, and patronize them whenever possible.

Your Directors would like you to know that your Society is purely for your benefit. If you have any gardening problems which have not been covered at our meetings or in recent Year Books, please forward them to our Secretary, and every effort will be made to have them answered.

In closing, I wish to extend to all our members my best wishes for a Prosperous Year, and the best Garden you ever had.

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LIST OF OFFICERS

The Winnipeg Horticultural Society

FOR 1948

President
MR. W. J. TANNER
518 Henderson Highway, East Kildonan

1st Vice-President
PROF. E. T. ANDERSEN
962 North Drive, Fort Garry

2nd Vice-President
MR. L. P. SPANGELO
109 Ambassador Apts., Winnipeg

Secretary-Treasurer
R. W. BROWN
675 Valour Road, Winnipeg

DIRECTORS

MRS. ROY MUNT	545 Basswood Place
MR. R. SKELDING	1097 Dominion St.
MR. O. A. OLSEN	158 Wildwood Park, Fort Garry
MR. J. C. WILLIAMS	644 Garwood Ave.
MR. J. H. NICHOL	159 Provencher Ave., St. Boniface
MR. C. E. LAW	26 Sherwood Place, St. Vital
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MR. HECTOR MacDONALD	Kildonan Park
MR. ROBERT H. HIKIDA	670 Spruce St.
MR. Q. C. MOFFAT	31 Sec. C, Guelph Apts.
MRS. WALTER GYLES	825 McMillan Ave.
MR. G. M. CHURCHER	169 Eggerton Road, St. Vital

ASSOCIATE DIRECTORS

PROF. F. W. BRODRICK	448 Greenwood Place
MR. A. C. CAMPBELL	222 Wellington Cres.
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MR. W. G. KOTCHAPAW	50 Guelph St.
MR. F. J. O'MALLEY	Winnipeg Tribune
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MR. H. SULKERS	44 Kelvin St.
MR. J. A. MacPHAIL	1000 Jessie Ave
MR. F. PUGH	449 Greenwood Place

Advertising Manager—Mrs. T. J. Foxcroft

Auditor—Mr. J. A. MacPhail

LIFE MEMBERS

DR. H. M. SPEECHLY
PROF. F. W. BRODRICK
MR. JOHN WALKER
MR. R. W. BROWN

PAST PRESIDENTS

1931	Mr. Henry Downing*	1939	Mr. J. A. MacPhail
1932	Mr. William Stubbs*	1940	Mr. Thos. O. Graham
1933	Dr. R. W. Kenny	1941	Mr. Thos. O. Graham
1934	Dr. Percy G. Bell	1942	Mr. Thos. E. Howard
1935	Mr. John Walker	1943	Mrs. Roy Munt
1936	Mr. R. R. Nichol*	1944	Dr. S. W. Edgecombe
1937	Mr. R. W. Brown	1945	Mr. Eric Sochting
1938	Dr. W. J. Riley	1946	Mr. J. C. Williams
		1947	Mr. J. H. Nichol

*Deceased.

The Winnipeg Horticultural Society

Statement of Receipts and Disbursements, for the year ending October 31st, 1947

RECEIPTS

Balance on hand, Nov. 1st, 1946		$ 537.33
Membership fees for 1947		406.00
Membership fees for 1948		23.00
Government Grant, Exhibition		272.37
Government Grant, Membership		53.70
Municipal Grant		100.00
Donations		302.00
Entry fees		37.00
Advertisements		1,235.00
Rent for floor space, Exhibition		110.00
Sale of Year Books		218.25
Miscellaneous		42.77
		$3,337.42

DISBURSEMENTS

FLOWER SHOW:		
Prizes	$491.75	
Entry tickets, ribbons, etc.	37.80	
Prize list	32.40	
Rent of building	50.00	
Help at show	20.00	
Cartage	45.05	
Other expenses	22.65	
		$ 699.65
Home Grounds competitions, cash prizes		53.00
Year Book		1,213.34
Printing		100.62
Postage and stationery		174.43
Honorarium		100.00
Telephone		42.00
Rent for room, University		10.00
Miscellaneous		57.94
		$2,450.98
Balance on hand, Oct. 31st, 1947		886.44
		$3,337.42

R. W. BROWN,
Secretary-Treasurer.

AUDITOR'S REPORT

To the President and Members,
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, 1947.

J. A. MACPHAIL,
Auditor.

Winnipeg, Nov. 24th, 1947.

President's Annual Report for 1947

J. H. NICHOL

The Society has brought the 1947 season to a successful close with the usual spirit of co-operation and interest from its directors and members.

The public meetings were well attended, although the membership is down slightly from last year. There are 440 members as compared to 468 the previous season.

There were seven meetings this past year with an average attendance of 121. The Annual Meeting on November 28th, 1946, at which Prof. E. T. Andersen was the speaker; January 10th, 1947, the speakers were J. Midwinter and A. M. Oswald; January 31st the speakers were E. Goldstraw and W. Hawcroft. February's meeting was in conjunction with the M.H.A. Convention. A special series of talks for Amateur Gardeners was sponsored by the Society, especially for the New Home Owners. They began on March 6th with: "Starting Your Garden Right," with Mr. J. Parker and Mr. L. P. Spangelo as the speakers; March 27th the "Vegetable Garden," with Mr. Charles Walkof as the speaker; April 10th, "Lawn, Development and Shrubs and Hedges," with Mr. M. R. Bevan and Prof. E. T. Andersen as the speakers; April 24th, "Annuals and perennials," with Mr. H. F. Harp as the speaker. Much instructive and interesting information was derived from these meetings and we hope we were able to give assistance to the new gardeners.

The Year Book was published once again and contained 144 pages of interesting and informative subjects. There were 1,693 copies printed, 993 distributed to other Societies and the balance to our own members. Proceeds from donations and advertising were more than sufficient to cover the cost. Many thanks to all those who made the printing of this book possible.

The interest in the Home Grounds competition was enlivened with the addition of a new section for perennials which was judged with the rock gardens the latter part of June. The balance of the competitions were judged the first week in August by Mr. Hector MacDonald and Mr. G. Churcher. Mr. Theo E. Howard stimulated new interest in the novice class by presenting the Victory Trophy. Our hearty thanks to Mr. Howard. A cup which was presented to Mrs. Banham in 1938 by Mr. McFadyen was donated to her by the Society. This cup is being offered for the highest aggregate in the Home Grounds competition. Details will be covered by Mr. Skelding's report.

The Annual Flower Show was held in the Civic Caledonian Rink once again with the usual keen interest. I wish to per-

sonally thank all donors, exhibitors and directors for their time and support so graciously given. Only through their combined efforts was the show a success. Mr. W. Tanner very efficiently supervised the exhibition and full details will be contained in his report.

The Society again supplied judges for the Free Press competition—R. Skelding and Prof. E. T. Andersen doing the final judging.

The Secretary-Treasurer's report is very gratifying indeed. A vote of thanks is due to Mr. R. W. Brown for his untiring efforts for the past several years, he has very ably attended to the affairs of the Society.

A second trip was made to the Morden Experimental Station on July 27th. Three buses were chartered in which 80 people were accommodated, along with fifteen private cars. Officials of the Station were on hand to extend a welcome. Mr. Cox acted as host in the absence of Mr. W. R. Leslie. Messrs. Walkof, Ure, Harp, Shewfelt, Hosea conducted groups around the various points of interest.

It has been a honor and a privilege to serve as your President this past year. May I take this opportunity to express my heartfelt thanks and appreciation for the support and co-operation I received from the officers, directors and members, without their help the year could not have been a success.

On behalf of the Society, I wish to express my thanks to the Department of Public Works for the use of the rooms in the Legislative Buildings.

In closing, I hope this coming year will be a big one for the Society and that each one of us will give the incoming President the support and loyalty to make it such.

International Peace Garden, Incorporated

D. G. McKENZIE

Astride the international boundary between Canada and the United States, in almost the exact geographical centre of the North American continent, lies a beautiful tract of undulating land, studded with sparkling lakes and little streams. This is the site of the International Peace Garden, Incorporated, in the Turtle Mountains.

Nature fitted it well to be hallowed ground. Beautiful stands of birch, evergreen and poplar clothe the hills, wild flowers of every description adorn the landscape, and flocks of wild birds wing their way overhead in full enjoyment of nature's paradise. In the glades may be seen the gentler wild animals following early morning trails to refresh themselves in the quiet lakes.

A simple cairn of stones gathered from both sides of the boundary on which it rests, proclaims to the world the significance of this spot. The words inscribed thereon read:

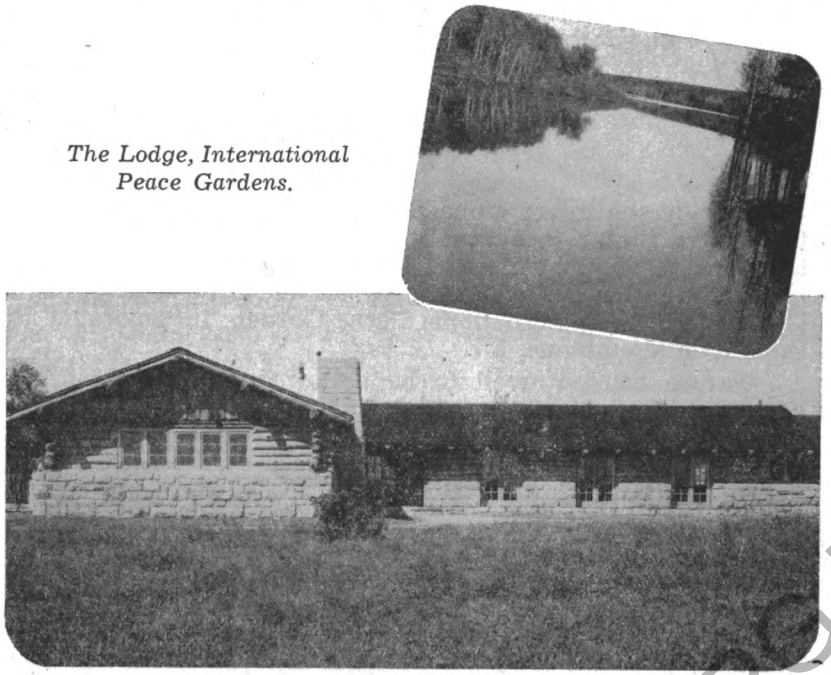
"To God in His Glory
We two nations dedicate this Garden
and pledge ourselves that as long as
man shall live, we will not take up
arms against one another."

This solemn declaration was made by a gathering of 25,000 people from Canada and the United States in July, 1932, as with bowed heads they formally dedicated the 2,200 acre area as a symbol of everlasting peace between them.

It was this vision of international brotherhood that inspired the creation of the Garden. Back in 1929, at a meeting of the Gardeners' Association of North America, held in Toronto, the idea was first discussed and enthusiastically endorsed, and a committee consisting of Dr. H. J. Moore, of Toronto, Ontario; Joseph Dunlop of South Euclid, Ohio; and Robert P. Bryden, of Cleveland, Ohio, was appointed to select a suitable site.

Diligently they surveyed many areas on the border, carefuly they weighed the merits of each, and finally they emerged unanimous in their decision that this site in the Turtle Mountains, at the centre of the continent, would be the most suitable. On September 17th, 1931, their recommendation was approved at a representative meeting held in Ashbury Park, New Jersey.

The Governments of the two nations, when approached, were glad to lend their support to the development of this project. The Province of Manitoba transferred 1,200 acres of



The Lodge, International Peace Gardens.

land to the International Peace Garden, Incorporated, and the State of North Dakota donated an area of 888 acres of land, making a total formal site of over 2,200 acres.

Plans were immediately launched for a program that was approved by the Governments of both countries. Roads and pathways were built and a landscaping program started. The Americans constructed a lodge of native stone from North Dakota, along with logs from the Riding Mountain National Park in Manitoba. It is 105 feet in length, with an "L" wing 60 feet long, equipped with an assembly room, kitchen and wash rooms. They completed a number of double cabins for tourists and cleared several picnic grounds. The Canadians created an artificial lake by building a great dam, dug wells, built gravel roads and did considerable landscaping. A Customs and Immigration Office on the Canadian side was also erected.

The depression of the '30's, followed by the Great War, however, intervened and as all the energies of the two nations were thus absorbed, the Peace Garden has been standing quietly by, awaiting the present hour when man might again have leisure to turn to the abiding things of life.

On October 27th, 1947, the international board of directors of the Garden held a meeting and banquet in Winnipeg, Manitoba, to which they invited many closely associated with the project. Here they launched a vigorous program for the pro-

secution of their objective. They carefully considered plans for 1948 and decided that a budget of $100,000 would be necessary to carry out these plans. Immediate capital needs include a gardener's residence, an implement and tool building, water installation, a small tractor, tillage equipment, garden tools, etc. Operating expenses are to provide for the salary of the gardener and his assistants, as well as all expenses incidental to the carrying out of the project. Playgrounds, paths and roads are being planned, and plots are provided for organizations desirous of developing their own part of the Garden. Already a number of organizations have appropriated money and signified their intention of becoming responsible for certain plots, such as the Women's Institutes, the I.O.D.E., the Federation of Business and Professional Women's Clubs, the Junior Red Cross, and the Manitoba and North Dakota Grand Chapters of the Order of the Eastern Star.

Plans are now under way for the erection of an American Customs and Immigration Office on the American side and adequate supervised tourist accommodation on both sides of the line. It is anticipated that the Governments of the two nations will shortly complete a hard surfaced highway to the Garden. Tourists will then be able to travel over one of the longest hard surface highways in the world, stretching from the northern hinterland of Canada, through the Garden, across the great central plain of the United States, and into Mexico, eventually connecting with the Pan-American highway to the South American countries beyond.

Further plans contemplate the erection of a Peace Tower to commemorate the century and one quarter of peace between the two nations. Plans are also being made for a suitable Memorial to those who gave their lives in the two great wars that we might enjoy liberty, justice, the Four Freedoms, and all those things that make life worth while. As a part of the memorial, it is proposed to erect a little Chapel, within whose sanctity loved ones may find consolation and inward peace.

It is also anticipated that some time in the future there will be erected a suitable building to house a permanent exhibit of wild life native to the two countries, including birds and fish life. In this way the charm of nature will be added to the attractiveness of the Garden and will make a further appeal to tourists to visit this oasis of peace. Thus, by the intermingling of the people of the two nations, there will be established a familiarity with and understanding of each other's customs, aims and ideals which will cement still more firmly the bonds of enduring peace between them.

These contemplated plans call for considerable expenditure of money and now is the time when the public generally, service clubs, women's organizations, boards of trade, horticultural associations and all who desire to have a share in the enterprise

can contribute. Now is the time when each citizen of both countries can have a share in the creation of a symbol that will stand as a beacon lighting the whole world along the pathway of peace. Donations will be gladly received by the Treasurer, Lt.-Col. A. J. Robbins, 496 Ash Street, Winnipeg, Manitoba, or by Mr. John Stormon, Chairman of the Board of Directors, Rolla, North Dakota.

The Garden is of easy access as arterial highways connect with the main highways running north and south, as well as east and west, through the Garden. It is about fifteen miles south of the town of Boissevain in Manitoba and twenty-five miles north of the town of Dunseth in North Dakota. The Turtle Mountains which encompass it, were so named by the Indians because of the turtle-like shape of the contours of the terrain, which rises to a height of approximately 2,500 feet above sea level or 1,000 feet above the adjacent area. The fertile hills abound in lakes, the largest being Lake Metigoshe, about five miles across. Many of the lakes provide good fishing, boating and swimming. There is abundant wild life, song birds, antlered deer, small game, wild fowl, and a luxuriant growth of small shrubs, wild fruits and wild flowers in this vicinity.

Nature has been lavish, indeed, in her bestowal of gifts within the area in which the Garden is located. It is for man to enhance them by works of his own creation. No limit can be set to the beauty and adornment that are possible. Only as the

Scenery and drives in the area are made interesting by the additional attraction of many lakes.

years roll out ahead will man see new visions and create new designs to enrich it. Instead of the anguish and sacrifice of war, it will stand as a symbol of brotherhood, goodwill, and all the ennobling arts of peace, and will forever commemorate more than a century and a quarter of peaceful and friendly relations between these two countries.

These harmonious relations are a complete answer to those who claim that peace between nations is only a dream and that disputes between nations can only be settled by resort to cruel, destructive warfare. The United States and Canada settle all their differences by compromise and arbitration, a procedure which has become so firmly established that the thought of settlement by warfare would appear as barbaric to them as the ancient custom of testing a man's innocence by making him walk over red hot plowshares.

The achievement of this attitude is all the more remarkable when it is realized that numbers of these people originally came from parts of the world which are almost constantly at war with each other. Blended with the democratic, peace loving British and Nordic races, are Slavs and Central Europeans, people from the Iberian and the Italian peninsulas, and from almost every country on the globe, all working harmoniously together in this new Western world. They came here to build homes where they could live their own lives, worship God in their own way, give boys and girls the best intellectual and moral equipment for life's battles, and shape a social life of friendly relationships with their neighbors. Differing greatly in temperament and racial characteristics, they had these things in common, a real desire for peace and goodwill, a passion for liberty, a willingness to give and take with their neighbors, and a determination that they would settle their differences equitably.

What a contrast with the conditions that prevail in Europe today where people live in an atmosphere of hate, suspicion, fear and distrust! Is it not possible that the time has now come that this Western world must give that lead to the Old World that alone can bring it into lasting peace based on goodwill and mutual trust? Surely we owe it to the world to give effective expression through some practical manifestation of those great ideals that have contributed to this lasting between our two countries! What finer symbol of such an intention could be conceived than that of an International Peace Garden!

Symbols have, all down through the ages, contributed much to influence and direct the course followed by peoples and nations. A symbol of peace typified in a beautiful garden is surely a challenge to all that is noble and generous in our people. Let each assume his full share, gladly and proudly, in promoting this great meritorious project, conscious that in so

doing he is making a rich and significant contribution to happier and more peaceful international relationships.

Five hundred, one thousand, five thousand years from now people will read the history of the nineteenth and twentieth centuries of the Christian era and will wonder how people, claiming to be sane, civilized and Christian, could fail to settle international disputes or differences except by the meaningless slaughter of men in war.

In the sad records nations are writing, here will be two nations that stand out in bold relief in that they agreed that a boundary of 3,987 miles between them should not be fortified and that they would not take up arms against each other.

It is to perpetuate this agreement and to instil the ideals of peace into the minds of those who in a few years will succeed us, that we are now seeking to develop this International Garden of Peace, embracing about 2,200 acres. The Creator made it an area of natural beauty. It is for us to give it added beauty, but above all, to help speed the day of Peace on earth, goodwill to all men.

Boulevard Adornment

W. R. LESLIE

The opportunity to make boulevards distinctive with a variety of plantings is but narrowly exploited in most of our prairie cities and towns. The request for this brief essay on the subject may indicate awakening thought in the situation.

The boulevard is community property. The home-owner opposite derives the major benefit of its being. In the interest of civic charm it is important that at least the stretch of avenue lying between two successive streets have uniform treatment.

A common experience is drive about a prairie city and encounter street after street with boulevards all studded with clean-boled elms which have their shapely tops fanned out like an umbrella, the ribs being neat branches covered with a canopy of leaves for nearly half the year. The effect is excellent. In fact, if Parks Boards were limited to one street tree in the territory lying from Washington, D.C., to Dauphin, Manitoba, the elm would excel all other possible candidates. For northern planting the shortcoming of the American elm is its neutral, uninteresting winter color. The chief error in their use often is the tendency to plant them so close together that they soon produce the effect of a groove row with the tops of neighbor trees inter-meshing rather than standing out clearly as an avenue of individuals. A minimum spacing of 40 feet is suggested for elms. Closer than that individual expression is considerably lost. Where elms grow thriftily, 45 to 50 feet distance between trees is desirable.

Elms are gross feeders and will attain stature in proportion to the moisture and nutriment available. They, and all other boulevard plants, deserve a generous cultivated space about their bases. Grass is a strong competitor. A parting observation on elms is that it is desirable to plant grafted trees to ensure vigorous, non-warping trees. Seedlings vary greatly in their habit, and often result in an uneven avenue. However, vegetative propagation of strong, vigorous, shapely selections will assure a stately boulevard.

TREES—Having indicated that the favorite elm tree lacks winter color, it is fitting to consider deserving substitutes. Among those displaying brightness during the dormant season are the Paper birch, Amur cherry, Swedish basswood, Russian olive, Mountain ash, Pekin lilac, Rosybloom crabapples, Amur maple, Silver maple, Black cherry, several willows with colorful twig bark, hawthorns and the various hardy coniferous evergreens.

The evergreens such as spruce, pines, junipers, fir and arborvitae impart greenery the year around. The unfavorable feature of these leaf-retaining trees for boulevards are two. Their foliage in winter is so dense and dark that some people claim the effect to be gloomy, and then there is the dog nuisance. Planting a flanking of low shrubs about the base of the evergreen keeps the canines at a protective distance. The virtues of evergreens are many and so important that they merit entering at least in a small part the civic boulevard scheme.

Then there is the consideration of adding variety in civic planting by using trees other than American elm on some of the secondary streets and avenues. Beyond those already listed as possibilities there are Siberian elm, Green ash, White ash, Black ash, Manchurian ash, American basswood, Mongolian basswood, Bur oak, Mongolian oak, Red oak, Tatarian maple, Silver maple, Amur lilac, Japanese Tree lilac, Manchurian crabapple, Siberian crabapple, Ussurian pear, May-day tree, Hackberry, Amur corktree, American hornbeam, Cottonwood, Northwest poplar, Algerian black poplar, Bolles poplar, Peachleaf willow, Siberian Regal willow, Daphne willow, Laurel willow, Amur maackia, Russian mulberry, Manchurian walnut and Black walnut.

Trees which shed meaty fruit, as the Mountain ash, in such manner as to muss up the sidewalk, could not be appropriately placed on narow boulevards. Other objections will come to mind about some of the trees here listed. Some have thorns and must be placed away from the walks and curbstone.

Tree planting on boulevards is restricted somewheres by the presence of low-level telephone wires. There planting of tall trees is folly. Instead of attaining majesty in free development they are subjected periodically to butchery by the wire lineman. The solution to those situations is to narrow choice of planting stock to trees of small stature and to shrubs which will undergrow the transmission wires.

A combination of trees and shrubs may be made into a handsome boulevard. Then the trees are widely placed and single or massed shrubs set as interplant islands. Here again, it is recalled we reside in mid-continental position and north of the 49th parallel. Wisdom direct electing shrubs which will have lively winter color and be interesting throughout the prolonged dormant season. Of course, each must first of all possess summer charm.

Among the tall shrubs eligible for consideration are hawthorns, Wahoo euonymus, tamarisk, nannyberry, Pembina or American cranberrybush, Silver buffaloberry, Schubert chokecherry, Amur honeysuckle, Carleton honeysuckle, Siberian apricot, Pagoda dogwood, cotoneaster, lilacs, Cherry prinsepia, seabuckthorn, Saskatoons, elders, Purpletwig dogwood, and

Redosier dogwood. Small shrubs include bush roses, mock-orange, spireas, leadplant, bush cherries, Cistena cherry, Sand cherry, Dwarf barberries, Ceanothus, Turkestan euonymus, Russian almond, Silvia almond, Clove currant and Daphnes.

In the rather surprising wide list of available hardy trees and shrubs wil be found much diversity. A number have red, purple, golden, grey or variegated foliage. Some have great glory of coloring in their autumn leaves. Others feature lively red, golden, tawny, silvery or purple bark on twigs and smaller branches during the winter season. Happily a goodly percentage are decorative in winter because of the retained berries, fruits or seed clusters. The winter garden aspect may well loom large among the characters valued when selection of nursery stock is being made. Examples of winter fruits are noted in bush roses, prinsepia, hawthorn, seabuckthorn, buffaloberry, Pembina, buckthorn and some crabapples.

The boulevard is at no time to be stuffed with plantings. The general impression of openness is to be maintained. Clear vision is imperative near corners of streets and alleys. "Safety First" is more vital with each passing year. The driver at the wheel of the car rightly expects to be confronted with a full view when approaching all junctions. Where snowfall is heavy, demanding plowing of sidewalks and pavements, thought of the winter activity is borne in mind in planning the planting. Having made full inventory of these modifying conditions, of the nature of the soil, and the care required for successful maintenance, then the scheme of planting proceeds with confidence. It is possible to make dozens of different tree and shrub arrangements, and every one attractive. Personal tastes and desires will decide the pictures to be developed.

Where citizens have christened their streets after woodland subjects, it is appropriate that the material in question be featured. For Ash street, choose ash, walnuts on Walnut avenue, oaks on Oaks road, birch on Birch Crescent, and certainly elms on Elm street.

Lawn Development and Care

E. T. ANDERSEN

The lawn provides the setting or the canvas upon which all other features of the home and landscape picture are arranged. It is the foreground and the court from which the flower borders, specimen plants, pools and rockeries are easily viewed from close range. It has been said that the well kept lawn adds more than any other single feature to the beauty of the home.

New Lawn Development

The lawn area should be brought to a gentle grade sloping slightly away from the house on all sides. A grade of one or two inches in 24 feet is sufficient. Depressions in the surface must be eliminated. Raking and rolling will help to provide a level surface. Where subsoil has been brought to the surface it should be covered with a minimum of 4 inches of rich black top-soil. Heavy soils will benefit from a liberal application of well rotted manure or 1 or 2 inches of acid-peat spaded into the top several inches. Such application will help to improve aeration and texture, and tend to reduce alkalinity of the soil.

After a smooth, firm seedbed has been developed the seed may be sown. Grass seed sown in late August or early September is likely to give best results. Spring seeding is also practised, and in many cases with equally good success. Two to four pounds of seed per thousand square feet should be used. With ideal soil and weather conditions the lighter seeding rate will be sufficient. Grass mixtures high in Kentucky Blue grass or pure Kentucky Blue are very well suited for use in Manitoba where lawns may be watered. Where a finer turf, or one more tolerant of shade is desired, creeping Red Fescue is more suitable.

Other grasses such as Creeping Bent are also used. Generally these are started by raking into the surface soil short pieces of Bent grass stems or stolons. These will take root quite readily in moist soil and soon become established. Creeping Bent makes an extremely dense, matted lawn and when closely clipped and well cared for is more attractive than most other grasses. For general use, however, it is not as well suited. A few of its disadvantages are: a shallow root system which means frequent watering in summer to avoid burning and brown patches; for the same reason it will not tolerate as heavy usage as will Kentucky Blue. More time is required in watering, mowing, and general care, and with most home owners time is scarce and Kentucky Blue the most satisfactory grass.

The seed should be uniformly broadcast over the surface. This may best be done on a calm day. A light raking of the surface soil after seeding will cover it sufficiently. After raking water should be sprinkled on lightly, if available, and the surface should be kept moist by repeated waterings till the grass is well established.

The grass should not be mowed till it reaches a height of about 3 inches and then only a light trimming or topping of the grass, which later will better tolerate close cutting.

In addition to establishing lawns by seeding or with short pieces of stems as pointed out above, many lawns are made by laying sod. To do this the surface soil should be given the same treatment as for seeding and the sod then laid in place over it. Most sodding is done by men under contract, who are experienced in cutting and lifting the thin layers of sod turf and who have the tools for the job. Lawns made in this way are seldom as uniform and even as are seeded lawns. It is difficult to find pure stands of Kentucky Blue grass or other lawn grasses and frequently some undesirable grasses are introduced. Similarly lawn weeds are easily introduced in this way. It does, however, provide a sure, quick method of obtaining a lawn. Generally it is far less costly to establish a lawn with seed.

Treatment of Old and Established Lawns

Kentucky Blue grass makes most of its growth in the fall and in the spring of the year during periods of cool, damp weather. Hence applications of fertilizers in early fall or early spring will be more beneficial to the grass than to weeds which make much of their growth in summer. Six to eight pounds of fertilizer per 1,000 square feet of lawn using ammonium phosphate or a complete fertilizer will do much to keep the grass in good condition. A dressing of well rotted manure applied just before freeze-up in the fall is also very beneficial.

Lawns will remain in better condition if not mowed too closely. Two to two and a half inches in height is close enough to keep the turf looking neat, and is not nearly as damaging to grass as cutting to about ¾ or one inch. It is especially recommended that grass be not cut too closely in the fall as this depletes the plant's food reserves and renders it subject to winter injury.

Watering will be necessary in midsummer to keep the grass in good color. Heavy applications every one or two weeks are much to be preferred to frequent or daily light sprinklings. Light sprinklings only moisten the surface and encourage shallow root development. Such shallow root systems are not

efficient in obtaining plant food, and are likely to suffer in periods of drought and during winters. One inch or more of water should be applied at a time. Such applications will penetrate several inches into the soil and will not be lost by evaporation within a short period of time.

The lawn weed menace is no longer a serious problem. Such common lawn weeds as dandelion, chickweed, and plantain are easily and permanently destroyed by spraying the lawn with a solution of 2, 4-D weed killer. This chemical weed killer should be used according to directions as formulations differ with various manufacturers. Care should be exercised in its use not to permit the spray to come in contact with foliage of flowers or shrubs near the lawn as it is very destructive to most plants of this kind. Sprayers used for its application should either not be used for spraying against insects and disease in the garden or should be thoroughly washed before doing so. Rinsing with gasoline appears more effective in removing 2, 4-D than does water.

Brown Patch and Snow Mold may appear in the lawn just after the snow melts in spring and the grass is beginning to grow. These diseases manifest themselves by the appearance of withered or dead areas in the lawn. Fair control can be had by applying Corrosive Sublimate in solution or mixed with soil or sand to the lawn in the fall and early spring. Two to three ounces of the chemical in 3 gallons of water will treat 1,000 square feet, or the same amount may be applied dry with sand. Corrosive Sublimate is highly poisonous and must be used with caution. A commercial preparation known as Semesan will also give good results.

European Garden Impressions

F. L. SKINNER

In the space available it is quite impossible to give an extended account of gardening as I saw it in Britain last summer, in fact the month and a half I spent overseas was too short to see more than a few of those gardening features that held special interest for me.

I did, however, have the privilege of seeing shows of lilies, roses and delphiniums at the Royal Horticultural Society's Hall in London, to see roses at their best in northern Scotland, and to spend some time at the Royal Botanic Gardens at Kew and Edinburgh and at the Royal Horticultural Society's gardens at Wisley.

I also had the privilege of seeing some well known private gardens, including one famous garden that had been badly neglected during the war and I came to the conclusion that much of the charm of English gardens was due to their neatness and orderliness and the great care taken to tend and feed the plants so that each might develop into the finest possible specimens of their kind. At Wisley (the R.H.S. gardens) the herbaceous border contained many plants that are familiar to Manitoba gardeners but I have never seen, in Manitoba, Cimicifuga, Nepeta and Sidalcea bearing the immense quantities of flowers that they were doing at Wisley.

With delphiniums, however, we can and do grow equally as fine specimens as the best of those under trial at Wisley. At the Delphinium Show in London though most of the varieties shown could be quite easily duplicated in Manitoba, still there were a few spikes that showed great skill in growing and handling them and certainly were better than any I had seen previously.

There are a few other things that we can grow in Manitoba at least as well and sometimes better than they can do in England. Though I did not see them in bloom herbaceous peonies do much better here than in England and when it comes to lilacs I am afraid that the lilacs at Kew would show up rather badly if compared with the Morden lilacs at their best, and the tree lilacs that reach a height of at least twenty feet at both Morden and Dropmore, at Kew are rather scrawny bushes not more than eight feet high.

At the time of my visit the great glory of Kew lay in its magnificent trees, larch, *Larix europea*, with branches spreading to 65 feet; basswood to 75 feet; and a poplar from Manchuria that would compare favourably with the finest in

cottonwoods in Winnipeg. A grove of beeches were among the finest trees in Kew, their three to four foot boles going up eighty to one hundred feet without branches and giving a decidedly cathedral like air to the spot.

Many of the trees that do well with us do not do as well at Kew, some twelve year old poplars at Dropmore are more than twice the size of their parent trees at Kew and our Scots pines are much better trees, for their age, than those I saw at Kew. The Rhododendrons, that are such a feature at Kew had only a few scattered blooms at the time of my visit and most of the rose species had also finished blooming.

Most of the garden roses had got over their first flush of bloom and were suffering a little from the dry weather in southern England but when I arrived in the north of Scotland in the first week of July they were at their best. In the city of Aberdeen, long famed for its roses, the severe winter of 1946-47 had cut most of the hybrid teas to the ground and this severe pruning had produced a smaller crop of exceptionally fine flowers, many of them of as fine quality as those seen on the show benches in London. In the cool, moist air of the north east coast of Scotland flowers last very much longer than they do with us in Canada.

Many old roses are still grown in cottage gardens in this part of Britain, and a double white form of Rosa alba was especially common; I had last seen this rose in a cousin's garden before we left Scotland and by a curious coincidence I have now secured plants of this rose from a man who knew this cousin many years ago.

Some varieties of lilies grow much more vigorously in England than they do in Manitoba and at a Mr. Bentley's garden near Newbury, I saw Miss Preston's Coronation growing to four feet high with stems as stout as my finger, that is at least twice the size that it has ever grown at Dropmore.

I was very pleased to see the interest that is being taken in England in the cultivation of the lily and in the raising of new varieties are are more suitable to cultivation than some of the species are at the present time.

Hardy Ornamental Shrubs

L. P. SPANGELO

It is the purpose of this article to describe and discuss the merits of some of the more suitable hardy ornamental shrubs. The following list includes only those shrubs which can be safely recommended for landscape planting in the Winnipeg and southern Manitoba areas. Common names are often misleading. Scientific names have been included in order to avoid confusion.

Caraganas

Many species are grown and as a group they are probably the hardiest and most drought resistant of the shrubs commonly used. The Common Caragana (*Caragana arborescens*) is considered a small tree or shrub, a very aggressive feeder, and although used effectively for windbreaks and to some extent in rural landscape plantings, has little value as an ornamental for the small city lot. Pigmy or Dwarf Caragana *(Caragana pygmaea)* with its showy yellow flowers and fine leaves rarely grows beyond a height of three or four feet and is useful for foundation planting, low hedges or in the front of taller border shrubs. Fernleaf Caragana *(Caragana arborescens Lorbergii)* is a graceful and distinctive shrub, hardy and grows to a height of six feet. The leaflets are narrow and feathery. It can be used as a specimen shrub.

Cotoneasters

The cotoneasters are considered as excellent material for shrub borders, foundation plantings or for hedges. The Sharp Leaf or Peking Cotoneaster (*Cotoneaster acutifolia*) is widely planted. It is very hardy, and will grow in sun or partial sun. It seldom exceeds five feet in height and the foliage is glossy and dark green in color turning reddish brown in autumn. The berries are black and remain on the bushes most of the winter. The European Cotoneaster (*Cotoneaster integerrima*) although not as attractive as the Sharp Leaf Contoneaster is also hardy and is useful in border plantings.

Crabapples

The hardy ornamental crabapples are valuable for specimen trees and in border plantings. The attractive blossoms in the spring followed by the varied foliage and fruit colors warrant their use in landscape plantings. Varieties like the Dolgo are recommended as being of particular value for their fruits which are excellent for making jelly.

CURRANTS

The Flowering Currant (*Ribes aureum*) is a hardy native shrub growing to a height of from four to six feet. It exhibits some drought resistance and also grows well in somewhat moist locations. The foliage is smooth and glossy and purple tinted in autumn. The fragrant flowers are yellow, tipped with red. This shrub is useful in mass plantings. The Alpine or Mountain Currant (*Ribbes alpinum*) is hardy, grows to two or three feet in height. The foliage is an attractive dark green. This shrub is tolerant of shade, has a compact habit and is useful as a low hedge or in foundation plantings.

DOGWOOD

Red Osier Dogwood (*Cornus stolonifera*) is a hardy native shrub growing to a height of about six feet. It has particular value in the winter landscape on account of its bright red bark. The flowers are small, creamy white and in clusters. The berries are also white and may be found in autumn on bushes still in blossom. It will grow well in shady areas and is useful in mass plantings particularly in contrast with evergreens.

ELDERS

In this group the most valuable one is the European Red Elder (*Sambucus racemosa*). It is hardy and grows to a height of from eight to ten feet and does well in full sunlight or partial shade. The creamy white flowers in clusters are followed by conspicuous red berries. This shrub is excellent for mass plantings. The variety Redman is recommended as being more suitable than the parent species.

HONEYSUCKLES

Several species are grown and the Tatarian Honeysuckle (*Lonicera tatarica*) is possibly the most useful. It will grow to a height of from six to ten feet and is considered one of the hardiest of the larger ornamental shrubs. It is drought resistant and tolerates some shade. The fragrant flowers vary from deep rose to pink or white in color and the red berries are prominent in the fall and winter. It is widely used in border plantings and has some value near large buildings in foundation plantings.

LILACS

Common lilac (*Syringa vulgaris*) is one of the most popular of all the flowering ornamentals. Several varieties with a range of flower colors are available. The common lilac grows to a height of from eight to ten feet and is hardy. The foliage is glossy, dark green in color and persists until late autumn. It is useful in border plantings, as specimens and in dominant locations in foundation plantings.

Prunus or Plum Species

The low growing forms in particular should be included in every landscape planting. Both the single and double forms of the Flowering Plum (*Prunus triloba*) are attractive as specimen shrubs. The double form is less hardy than the single. The flowering plums grow to a height of six feet or so. The Nanking Cherry (*Prunus tomentosa*) is a useful ornamental, approximately six feet in height. The fruit is an attractive red and may be used for making jelly. It is not altogether hardy but has value as a border shrub. The Siberian or Russian Almond (*Prunus nana*) a low growing shrub seldom exceeding three feet in height is hardy and drought resistant. Despite its somewhat drab foliage it has value as a foundation plant or in front of taller border shrubs.

Roses

Roses have long been an attraction for most gardeners. The growers of hybrid tea and hybrid perpetual roses are continually faced with the problem of hardiness. Only the hardy group commonly termed bush roses is recommended for the Manitoba climate. Roses have a place both in foundation and border plantings. The variety Betty Bland of the common native rose (*Rosa blanda*) grows to a height of six feet, has double pink flowers and along with its red branches is very attractive. The Dr. Merkeley Rose has double pink flowers. It is hardy and low growing, two feet or so in height. The Altai Rose (*Rosa spinosissima altaica*) is hardy, grows to a height of approximately six feet, and blooms profusely. The flowers are single and creamy white in color.

Spireas

This group of shrubs is widely grown. The spireas are low growing shrubs excellent for foundation plantings and in front of border plantings. They are very attractive in the spring with their clusters of white flowers and usually are planted in groups of two to three or more. Pink and red forms are also available. All the available species and varieties are not hardy and cannot be recommended. Of the white flowering types the Garland Spirea (*Spiraea arguta*) although it occasionally kills back is to be recommended. The Three Lobe Spirea (*Spiraea trilobata*) is generally recommended as being hardy. The Vanhoutte Spirea (*Spiraea Vanhouttei*) is considered by many as the most attractive. It is less hardy often killing back severely and should be planted in protected places.

Viburnum

The High-Bush Cranberry or Pembina (*Viburnum trilobum*) is native to Manitoba, a large shrub and has some value with other ornamentals in border plantings. It requires ample moisture and is ideal for shady locations. The rather large lobed leaves turn red in autumn. The red fruits are ornamental and useful for making jelly.

Cinquefoil

The Shrubby Cinquefoil (*Potentilla fruticosa*) is a drought resistant native shrub growing to a height of from two to three feet. The foliage is greyish green and more or less silky-pubescent. The bright yellow showy flowers are present from late spring until autumn. It is useful in foundation and in border plantings.

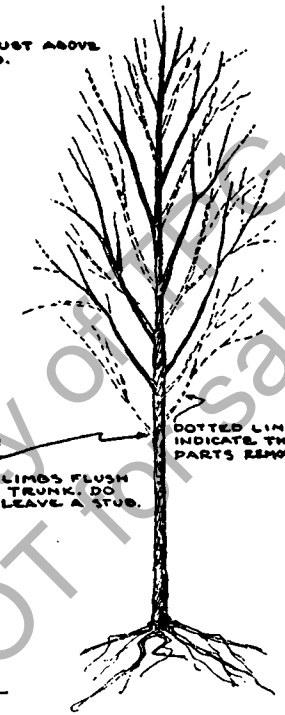
Evergreens

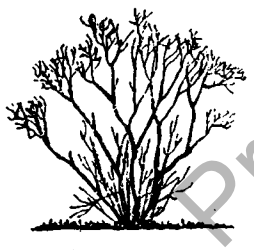
The evergreens should be considered in every landscape plan. They add colour throughout the entire year and are particularly useful during the winter months. The spruces and pines are tall growing evergreens and are commonly used some distance from the house. Low growing forms of the evergreens, sometimes more suitable for the small city lot, include the Junipers and Arborvitae. The Rocky Mountain Juniper, sometimes called the Western Red Cedar (*Juniperus scopulorum*) can be recommended although it is not entirely hardy. It is a very attractive and useful tree-like shrub. Low growing forms of Arborvitae (*Thuja occidentalis*) are available. They grow best when planted in partial shade.

HOW TO PRUNE

TWO WAYS OF PRUNING SLENDER, FLOWERING SHRUBS. LEFT: SPIREA AS IT CAME FROM NURSERY. CENTER: AFTER THINNING OUT. RIGHT: AFTER THINNING OUT AND HEADING BACK.

CUT BACK SEVERELY HEAVY-BRANCHED SHRUBS GROWN MOSTLY FOR FOLIAGE OR BARK EFFECTS.





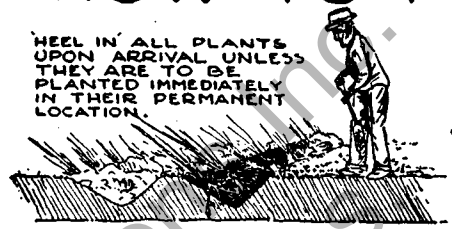
AN OVERGROWN SHRUB WITH NEW SHOOTS GROWING FROM THE BASE. THE SHRUB GIVES A BARE AND RAGGED APPEARANCE.

THE SAME SHRUB BUT PRUNED TO ALLOW NEW SHOOTS TO DEVELOP FROM THE BASE, THUS RENOVATING THE SHRUB IN TWO OR THREE YEARS.

CORRECT METHOD OF PRUNING A YOUNG TREE. 1/2 TO 1/3 OF THE TOP IS REMOVED WITHOUT DESTROYING THE NATURAL SHAPE OF THE TREE.

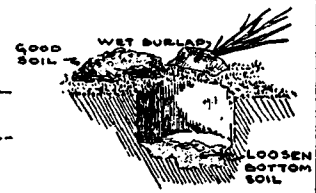
From Ext. Circular 164, College of Agriculture, Madison, Wisc.

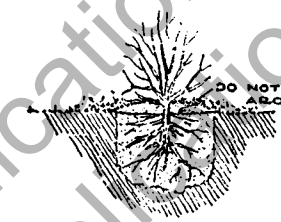
HOW TO PLANT



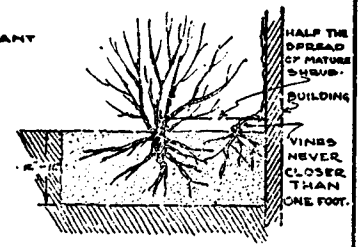
HEEL IN ALL PLANTS UPON ARRIVAL UNLESS THEY ARE TO BE PLANTED IMMEDIATELY IN THEIR PERMANENT LOCATION.

HOLES SHOULD ALLOW FULL SPREAD OF ROOTS.

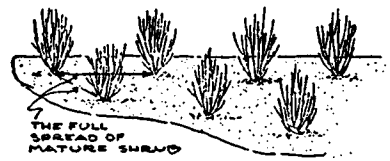




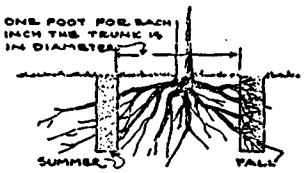
SET SHRUB THE SAME DEPTH AS IT WAS IN THE NURSERY. TAMP SOIL AROUND THE ROOTS AS HOLE IS FILLED.



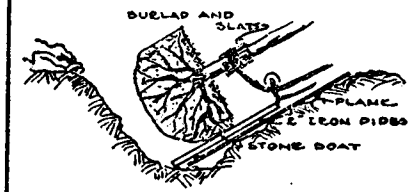
IN ALL PLANTING WORK ALLOW FOR THE FINAL SIZE OF THE PLANT. DONT CROWD FOR QUICK EFFECTS, USE LARGER SPECIMANS.



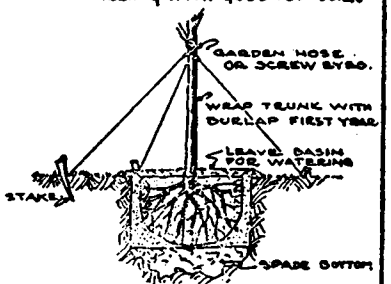
STAGGER OR ZIGZAG SHRUBS IN PLANTING BEDS. THE TALLER SHRUBS SHOULD BE IN THE REAR WITH THE SMALLER ONES IN FRONT.



PREPARE TREE IN THE EARLY SUMMER PRECEDING THE WINTER IN WHICH IT IS TO BE MOVED BY DIGGING TRENCH AND RE-FILLING WITH GOOD TOP SOIL.



DIG AND MOVE IN WINTER WITH A FROZEN BALL OF EARTH. IF MOVED AT ANY OTHER TIME THE SOIL BALL SHOULD BE WRAPPED WITH BURLAP TO PREVENT IT FROM BREAKING AND DRYING OUT.



GUY TREE TO PREVENT SWAYING BY WIND. LEAVE WIRES IN PLACE TWO YEARS.

From Ext. Circular 164, College of Agriculture, Madison, Wisc.

General Care and Handling of Shrubs

By GRANT CHURCHER

In selecting planting material for the home, only plants known to be hardy in this region should be chosen for ornamental planting, because of the extra care required and the unsatisfactory results obtained when species are used that are not adapted to local conditions. Those plants are most suitable that are native to the locality or to situations similar to that in which they are to be planted. Many native plants are as attractive as those brought from other places and have the added charm of seeming to belong to their surroundings.

In homesites, up to the 50′ size lot, many of the larger shrubs and trees demand too large a percentage of the area to be planted, especially if the boulevards are well treed.

Shrubs require a fairly rich, well-drained soil. A summer fallow, prepared the spring before planting, builds up a reserve of moisture and cuts down the weed problem. Well-rotted manure may be worked into the pre-prepared soil without danger to the new shrubs, whereas, manure placed about the roots during planting is generally detrimental to the plants. Much of our heavy Winnipeg soils are too compact for the trees to make new root growth. When the fallow is worked deep, it overcomes this difficulty to some extent and also makes planting much easier.

Shrubs should be removed from the packages as soon as they arrive. If the roots are in a moist condition, heel them in on the north side of a building if possible. If they are at all dry they may be placed in a tub of water. However, if resinous trees, such as spruce, pine, etc., become dry, no amount of water will penetrate the hardened resin, and the tree will die.

Holes to receive the shrubs should be somewhat larger than the extreme span of the roots and deeper by three or four inches. Top soil should be worked into the bottom of the hole and the shrubs placed down firmly with the "nursery soil line mark" about two inches below the ground level, and partly fill with good soil, tramping it well around the roots as you fill. When the hole is three-quarters full, water well, allowing this water to soak away before you fill up the hole. Prior to planting, trim off smoothly all crushed and broken ends of roots, as a smooth cut will heal much more quickly than a ragged wound. Also, prune the top back to compensate for loss of root during transplanting.

With the exception of Lilacs, Prunus triloba and a few others which begin bud formation for next year's flowers soon after or during the blooming season and so must be trimmed immediately after bloom falls. Shrubs should be trimmed in late winter or early spring. One other exception is the maple, which, because of profuse bleeding at this time, should be pruned during summer.

To keep young, healthy wood over a period of years, a good practice is to cut off about one-third of the old wood every year at ground level.

The practice of digging around the shrubbery every year is very good, although not necessary, as shrubs build up a natural mulch with their decaying foliage. Shallow digging around shrubs is often done for the purpose of neatness, control of weeds and insects, and moisture retention. However, once it is started it must be continued every year to prevent the young roots from becoming established in the top soil.

Soil should be kept moist but not wet for at least the first year, but watering should always be discontinued with cultivation in September to allow the shrubs to ripen off before the hard frost.

Some Useful and Interesting Annual Flowers

HECTOR MACDONALD

Plants which complete their life cycle in one year are true annuals. They germinate, flower, produce seed, and die in one season. However, there are a number of plants which, under more favourable conditions than ours, would start from the root each spring, but must be classed as annuals in our severe climate. For our purpose we can class all plants, that come into full bloom the same year as seeded, but will not survive our winters, as annuals.

As a rule annuals are very showy and remain in bloom over a long period of time. The blooming season can usually be prolonged if the dead blossoms and seeds are removed.

Most annuals are easy to grow, and develop growth very quickly. For this reason, the seedlings should have lots of room to develop in the beginning of the season.

Some annuals can be sown in the open ground and will bloom in a very short time. Others require to be started indoors and planted out after danger of frost is past. There is quite a spread in the proper times for sowing indoors, from February to April. Slow germinating and growing annuals require an early start, in order to be large enough to plant outside when the time comes. The quick growing kinds must be sown late, otherwise the young plants will be drawn and "leggy" when planted out. Many growers who have the facilities and time grow all their annuals in flats indoors. This method is very satisfactory as the young plants are under control at all times, and uniform sized seedlings can be planted in the beds or borders. Bedding out plants can also be purchased from professional growers.

Many home owners will find the annuals which can be sown in the open ground very satisfactory. This is the most economical method of growing them, but is by no means the most certain. Cold wet weather or very dry weather will retard germination. Some annuals do much better if sown where they are to bloom.

There are types of annuals for an endless variety of uses, for rock gardens, ornamental beds, mixed borders, climbers for trellises, etc., and window boxes to mention a few.

As a rule annuals are seldom attacked by insects, and the insects that do appear, with the exception of cutworms are easy to control.

The annuals listed below are some of the most suitable for our climate, and under normal conditions will provide a good show of bloom, with a minimum of attention. Descriptions as to color and form are brief, as this can be found in any seed catalogue.

Antirrhinum or Snapdragon—Height ranges from a dwarf trailing type for rock gardens to the tall types about three feet high. A showy bedding plant, good for cut flowers. Sow early indoors. The flowers are sometimes attacked by small caterpillars, which are easily controlled by Derris Dust.

Alyssum—The best edging plant for beds or borders. Sweet scented and free blooming. Sow indoors.

Ageratum—Another useful edging plant. Several varieties can be had, including a taller form for mixed borders.

Asters—One of the handsomest flowers, excellent for cutting. Start indoors. Wilt resistant strains are to be preferred.

Balsam—Brilliant colors, about two feet high. Best started indoors.

Calendula—Can be sown in the open ground, frequently self seeds. Various shades of yellow and orange.

Coreopsis or Calliopsis—Height range, one to three feet. Excellent cut flowers. Very showy. Will bloom if sown in the open.

Candytuft—An old favourite. Twelve inches. Delicate pastel shades. Should be sown where it is to bloom.

Cleome or Spider Plant—Two and a half to three feet. Attractive border plant. Best started indoors.

Centaurea—Twelve inches to four feet. Many types and colors. Can be seeded in the open, an old favourite for cut flowers. Sweet scented.

Cosmos—Does well sown in open ground, seeds itself freely. One of the loveliest cut flowers, wide range of colours in single and double blooms. Named varieties come true to color. Height three to five feet.

Eschscholtzia or California Poppy—Easy to grow in open ground. Likes a warm dry location. Yellow to scarlet blooms with delicate greyish green foliage.

Four O'Clocks or Marvel of Peru—Easy to grow in open ground. Upright bushy plants about two feet high.

Gaillardia—Annual forms of Gaillardias are highly decorative, single and double blooms in a wide range of shades and combinations of yellow, orange and red.

Godetia—Can be sown in open ground. Does not like drought or excessive heat. Likes a cool, partly shaded spot. "Satin flower" describes it well.

Helichrysum or Straw Flower—Ornamental in borders, when dried makes attractive everlasting bouquets.

Honesty—Sow in open ground. The seed pods when dried have decorative value.

Larkspur—For early bloom start indoors. Will bloom when sown in open ground. Splendid as cut flowers. Height from two to four feet. There are lovely strains of larkspurs available.

Kochia—The well known "Burning Bush" makes neat foliage plants two to three feet high. Foliage turns bright red in fall.

Lobelia—Sow indoors. The dwarf lobelias are neat edging plants. In hot weather water freely to maintain bloom. The trailing form is good for window boxes.

Marigolds—Popular as bedding out plants. The large African types are striking subjects in the border. Some of the dwarf French marigolds are ideal for edgings. Tagetes is a form of marigold with scented foliage and bright yellow flowers. Cutworms seem to prefer marigolds to any other plant.

Matthiola or Night Scented Stock—Sow this inconspicuous little plant in a corner of the home grounds, and enjoy its lovely evening fragrance.

Mignonette—Another plant whose merit is its perfume. Open ground sowing.

Morning Glory—A valuable climber, new improved varieties are very handsome. Sow outdoors in warm soil. Likes dry sandy ground. Sometimes germination is slow.

Nierembergia—Sow indoors early. Fine for edging. Continuous bloom over a long period.

Petunia—Possibly our showiest and most popular bedding plant. Start under glass. There are many varieties of Petunia to choose from. Single, double, fringed and frilled. Overwatering or excessive rain is harmful, while they withstand drought well.

Poppies—Delightful as cut flowers. An alpine form is good for rock gardens. Seed should be sown where the plants are to bloom.

Phlox Drummondii—For early bloom sow indoors, can be sown in the open. The annual phloxes come in a variety of beautiful color combinations. Height range eight to eighteen inches.

Portulaca—Does best sown outdoors, self seeds freely. The tinted foliage and stems make a carpet. The blooms are bright colored, double to single. Likes the sun and a dry location.

Salvia—Some varieties of Salvia are too late for our climate. "Blaze of Fire," a dwarf, early, scarlet type makes a brilliant show of color, when started indoors.

Stocks—An old favourite, delicate colors and sweet scent. Start indoors.

Statice—Annual forms of Statice are desirable as border plants, cut flowers and dried for winter decoration.

Scabiosa—Brilliant colors ranging from nearly black to pure white, excellent cut flowers. Height two to three feet. Can be sown in the open ground.

Verbena—Good edging plants, free flowering, good colors. Best sown indoors.

Zinnia—One of the most improved annuals in recent years. Wide range of colors, types and sizes. Probably the most satisfactory annual for our conditions. Showy, easy to grow, sow outdoors or inside. Good for cut flowers.

Sweet Peas

H. F. HARP

Seventy years ago Henry Eckford, an outstanding figure in the development of sweet peas in England, began the work of improving the forms of *Lathyrus odoratus*. The greatly enlarged flowers and improved form gave rise to the term "grandifloras" being used to designate these new sweet peas. Today the name grandifloras is loosely applied to all sweet peas that are not of the Spencer, or waved type.

From the grandifloras evolved the several distinct types representing modern sweet peas, namely: Early, or winter flowering; Cupid, or dwarf; and Spencer, or waved.

Grandiflora sweet peas are still grown where quality of bloom is not of first consideration. They make effective rows of color and their pronounced fragrance is particularly appealing.

Early, or winter flowering sweet peas, were developed by selection. A chance seedling of the old variety, Branche Ferry, provided the first early flowering sorts. They are now available in a full range of colors and are grown extensively in greenhouses in America and to a lesser extent in this country.

The Cupid, or dwarf sweet pea, originated as a bud sport about fifty years ago. Strangely, this "break" was simultaneously reported in several European countries as well as in California. Cupid sweet peas are characterized by the extreme dwarfing of the vine. They are said to be somewhat more tolerant to drought and less fragrant than the tall kinds. Plants are about one foot high, forming a dense mass. In prairie gardens they do not appear to enjoy much popularity.

PREPARATION OF SOIL

Only in open sunny positions and in soils that are well drained is it reasonable to expect good results in the cultivation of these delightful flowers.

The preparation of the soil for sweet peas must be thorough and the work is best carried out in autumn. Choose an open site—in the vegetable garden if need be—and take out a trench eighteen inches wide and about two feet deep. Shovel out all loose soil and fork into the bottom a liberal quantity of barnyard manure to a depth of a foot. Old garden refuse and the residue of a bonfire may be mixed with the manure or be substituted for it. Replace the soil, dusting a little air-slaked lime through it for its beneficial sweetening effect. Bone meal at the rate of four ounces per linear yard, lightly raked into the surface of the soil, will provide a source of phosphate.

Sowing the seed in the fall is not recommended for prairie gardens, but no time should be lost in the spring to get the seed sown as soon as the soil is in a workable condition.

The ridge of soil that marks the trench should be raked level and a saucer-sharped furrow about six inches deep taken out. Space the seed about one inch apart in the row and cover to a depth of not more than two inches. The trench may be filled in later by hoeing when the plants are established. Germination takes about ten days, and when the seedlings are a few inches high some support must be provided. Small twiggy branches will serve until they are able to attach themselves to the permanent supports. Good twiggy sticks make excellent support for sweet peas and present a pleasing appearance when the work of staking is well done. However, if suitable stakes are not readily obtainable, satisfactory and durable support may be had by the use of wire netting, and is preferred by many gardeners.

Frequent stirring of the soil will encourage good growth, destroy seedling weeds, and conserve moisture. A measure of relief can be afforded the plants during the hot days of July, by mulching with lawn clippings or peat moss. If watering is resorted to only a thorough saturation of the soil will be of real benefit. Spraying with water after hot days will do much to revive the plants and check attacks of red spider mite. Regular attention must be paid to the prompt removal of flowers if the plants are to remain in a flourishing condition, as the development of seed pods will be ruinously exhausting. Flowers are best picked in early morning and when the top-most individual flower is almost fully developed.

Culture for Exhibition

Where flowers for exhibition are required, and the gardener is prepared to devote the necessary time for the extra work involved, fine specimens of sweet peas can be grown by means of the cordon, or single stem system.

Soil preparation as previously outlined, will serve for this intensive form of culture, but deeper trenching and more generous supplies of manure will make for greater success. If plants can be conveniently raised in a cool greenhouse and well hardened so that transplanting may be done with the least possible check, earlier flowers will result than from outside sowings. However, unless sturdy stock is available open ground sowings are best. Take out two furrows about fifteen inches apart and two inches deep. Drop three seeds at intervals of a foot in each row. Select the strongest plant at each station and pinch out the centre when a few inches high. From the base of the selected plant several strong shoots will start. One of these must be retained and the others pinched out. All the plant's growth will be confined to this one

shoot and all side shoots and tendrils must be removed as they appear. Supports for the plants must be placed in position before there is any danger of damage by wind. Bamboo stakes or any straight sticks about finger thickness and six feet long can be used. They should be thrust into the soil to a depth of about four inches, and close to the plants. A wire about five feet above the soil level should be stretched and securely anchored at either end. To this wire are tied the stakes by means of twine or stove-pipe wire. No time should be lost in starting the plant growing up the stake. Almost daily attention to tying and the pinching out of side shoots will be necessary from now on. The earliest flower stalks are best removed (in the bud stage) to assist in building a strong plant. Stimulants in the form of liquid manure may be given when the plants are in full growth, but great care should be taken to see that the solution is mild in strength. An excess of high nitrogen manures will result in the dropping of flower buds and also invite trouble in the form of root rots and virus diseases. Unless experience has been gained in the use of liquid manures, feeding should be confined to commercial brands of fertilizers, made soluble by watering in. On no account should liquid manure be used when there is a danger of plants being dry at the roots. Often the appearance of the top soil is deceptive, as a few inches of moist soil may be hiding a dry condition beneath. When the plants have reached the top of the supports provisions must be made for their continued growth. By carefully cutting the ties, the plants are taken down and laid horizontally at the base of the row, and running parallel to it. Start the plants again on their way up the most convenient stake.

The same careful attention to tying and the removal of side shoots and tendrils must be given.

Insects and Diseases

The common green fly, or aphid, is the most troublesome, though fortunately, the most easily controlled insect attacking sweet peas. One teaspoonful of nicotine sulphate (Black Leaf 40), in one gallon of soft water to which is added a teaspoonful of powdered soap, gives complete control provided the offenders are contacted. A sharp look out must be kept for these pests, and no time should be lost in destroying them. Besides sucking out the life blood of the plant they are known to transmit deadly virus diseases.

Red spider mite is not easily controlled by insecticides. Where water under pressure is available effective control can be had by this means.

Root rot in one form or another can be responsible for serious losses. Sterilization of soil and seed will do much to lessen this danger. A fairly effective method of soil sterilization

by means of formaldehyde is as follows: Dilute one pint of commercial formaldehyde with fifteen gallons of water. Apply in the fall at the rate of one gallon per square foot of the trench surface. The treated area should be covered immediately with burlap and left for a period of a week or so. If sterilization is carried out in the spring a further period of a week or ten days will be required after removing the burlap so that the fumes will be entirely dispelled before seed sowing takes place.

Seed may be treated with Semesan or other commercial disinfectants to ward off fungus diseases. Mosaic disease is usually present when the foliage is mottled and curled, and the growth stunted. No satisfactory treatment is known. Clean cultivation with particular attention to the prompt destruction of green fly and the burning of all plants infected with virus is good gardening practice, and is especially applicable to the culture of sweet peas.

Further improvement in the development of the sweet pea is looked for in enlarged individual blossoms with five or six per stem and in increased vigor and resistance to disease. Especially is this required of some of the duplex or so called double varieties, which definitely lack vigor. All this must be brought about with no sacrifice of the unique fragrance long associated with these charming annuals.

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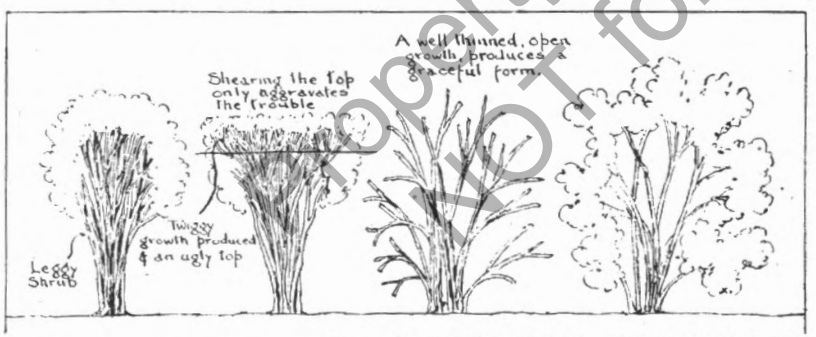
ADDITIONAL HINTS ON PRUNING



From Dom. Dept. of Agri. Farmers' Bulletin 100

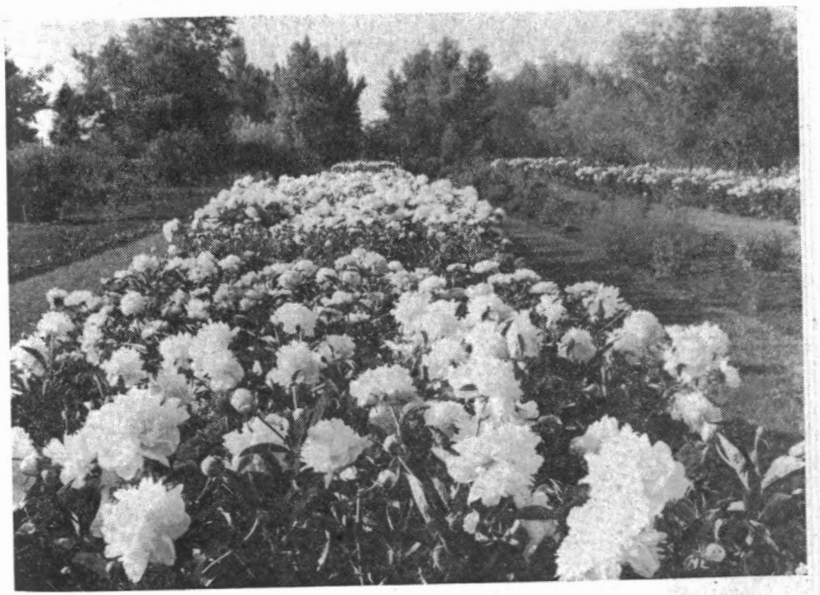
Perennials

WILLIAM GODFREY

In these dark days of strain and strife in the affairs of man, when the mind is disturbed and fearful of far-reaching changes there is need for relaxation. It is well to forget the world and its cares, and to seek comfort by giving thought to things of a permanent or lasting character. Of such a nature are the perennial plants. Although constantly changing in structure and appearance they remain constantly the same. Since time began they have provided man with food, raiment and beauty, and will doubtless continue to fulfill this purpose until time shall end.

A true garden is first and foremost a place or plot occupied by perennial plants. There will be trees and shrubs for ornament and shelter and in some cases food. For beauty and interest there should be those non-woody hardy plants which are separately and conveniently called perennials.

The many species of perennials grown in a garden vary widely in season and duration of bloom, and for this reason are perhaps best employed in the making of a perennial border. When grouped together each subject can make its individual

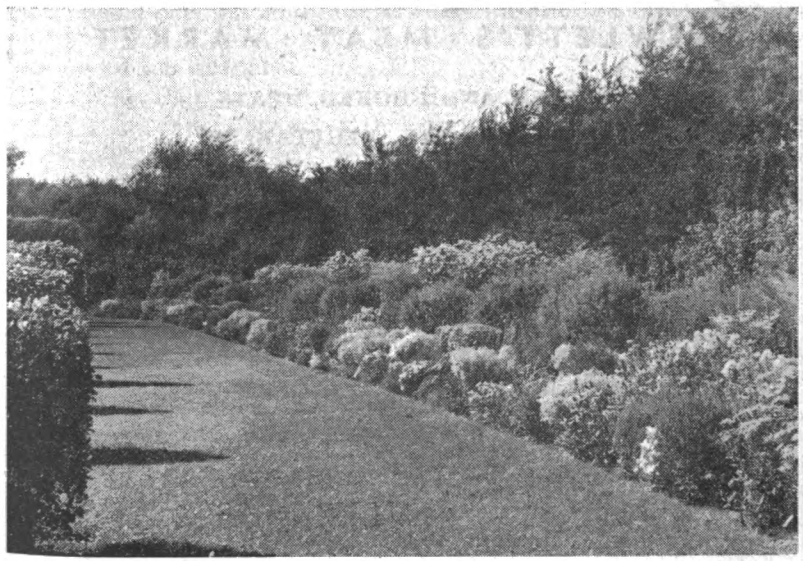


Peony border, Dominion Experimental Station, Morden, Man.

contribution to the whole and provide a succession of bloom throughout the growing season. A perennial border should be as large as can possibly be accommodated convenienetly. A width of eight to twelve feet is desirable and its length limited by environment. A background of trees and shrubs to give shelter and effect will be helpful.

When planting considerable thought must be given to the arrangement of the many subjects. To ensure continuous bloom from spring until fall, plants of each species should be disposed all over the planting. There are no special rules to follow in setting out the plants, informality should be the keynote. The very tall ones must be at the back and the most dwarf at the front, but those of moderate height may be placed towards the front, comparatively dwarf subjects may also be placed among the taller plants. Care is necessary to guard against placing dwarf plants immediateley behind tall ones, except for a studied and well considered purpose. The overall effect should be irregular and undulating in outline. This is schemed by planting the the more important subjects in groups rather than as single specimens. Three, five and even seven plants of a kind may be placed together each at its proper distance from its neighbor.

It is always good practice to plan all but the most minor garden operations on paper beforehand. This is simply done by using a sheet of squared paper on which an outline of the area to be planted is drawn to scale, and the various subjects



Perennial Flower Border, Dominion Experimental Station, Morden, Man.

are marked with a number corresponding to a list of numbered plants.

A perennial border will be at its best during the summer months, and the following is an attempt to describe its appearance at this period. It may also help as a guide in a choice of materials.

The dominant note will be the blue of Delphinium. The plants should be disposed in groups of varying size over the length of the border, large ones at the back, smaller to the front, with an odd plant here and there. In company with these should be the scarlet of Maltese Cross and various hollyhocks. The front area will be resplendent with pinks of the grass, maiden and moss kinds, pansies, sedums and dwarf iris. In the mid-section, Shasta daisies, columbine, Baby's Breath, Oriental poppy, lilies and peonies will be the most prominent. The last few mentioned subjects are exceptions to the general advice to plant in groups, and should be set out as single plants, for these special reasons. Baby's Breath makes a large head of bloom and a single plant is enough in a position. The foliage of Oriental poppy dies down soon after blooming and leaves a bare spot. Orange lilies should be used with restraint, as the color is aggressive and overpowering. Peonies are prominent after blooming, and although still ornamental in mass they occupy undesirable space.

For early spring flowers early and late tulips of Darwin type may be distributed freely between the plants and wherever space permits, and blue scillas in numerous colonies in the front rank. A very pretty association is blue scilla and the yellow of Iris arenaria.

To provide for fall bloom the various subjects mentioned should be interplanted with perennial asters, both tall and dwarf, lythrum variety Morden Pink, Golden Rod, Helenium Goldilocks and the new dwarf Baby's Breath, Rosy Veil.

Space forbids the mention of many more desirable plants and other items in the culture of these hardy subjects.

A perennial border, well managed, can be a very attractive and interesting feature of the home garden. Its care and upkeep will require constant care and attention, but its establishment will reward the owner.

Some Outstanding Lilies

A. M. OSWALD

The trumpet lily is perhaps the most distinctive flower that adorns our gardens. Its stately presence marks it as a masterpiece of beauty with a decorative value all its own.

This article will deal with a few selected and outstanding varieties of lilies which are seen only too infrequently in our gardens. The idea appears to be prevalent that these varieties are difficult to grow in this part of the country. This difficulty appears to be due rather to ignorance than to any weakness in the constitution of the plant. It has now been established that they will grow in our soils and survive our winters if due attention is given to their needs. The varieties hereinafter mentioned, as well as many others, have been successfully grown here by observing their particular requirements, and the performance may be repeated by any amateur gardener who follows them closely.

The suggested varieties for almost continuous summer bloom are:

Monadelphum or Szovitsianum—A Russian lily which bears in June four to twenty pendulous companulate flowers of a rich deep yellow. It is one of the easiest and handsomest of the European lilies in cultivation.

Regale—Blooms in July and has one to fifteen funnel-shaped, very fragrant blooms. Externally a rose-purple with white mouth and sulphur-yellow in the tube.

Pride of Charlotte—A Regale hybrid. Blooms a fortnight later than its parent. Trumpets are white within, suffused with sulphur, without the external purple.

George C. Creelman—A Princeps hybrid. Blooms in early August. Larger than the other trumpets, open at the mouth, white within, externaly a soft shade of brown.

Centifolium—Blooms late July or early August. The large trumpet shaped flowers thrust out horizontally, are white, pale yellow throat, with a slight purple or brownish ridge outside.

BULBS:

The bulbs of most of the desirable varieties of lilies may be obtained from Canadian growers. They should be freshly dug with a good stock of roots intact, firm to the touch, unshrivelled and free from disease. The shorter the time they are out of the ground the better chance they will have of thriving in their new environment.

PLANTING:

A safe rule is to plant bulbs at a depth equal to four times their width. Thus a bulb three inches wide should be planted twelve inches deep. The bulb should be planted on its side and surrounded by sand which affords protection against underground enemies, insures good drainage around the bulb and growing stem and is an easy medium through which the stem may work. The very important thing about planting is the time of year the operation is performed. In this part of the country the bulbs of trumpet lilies must be planted in the spring of the year. This enables them to become well established before the onslaught of heavy frosts and low temperatures. These lilies will survive our rigorous winters if they are given time to get settled in their environments before being subjected to extreme cold weather. Spring planting is contrary to the directions of the recognized authorities on lilies, but the writer has learned from experience that fall planting in this area is an almost complete waste of time and effort.

POSITION:

Lilies do best on sloping ground because it allows good drainage, and their location should give a full southerly exposure with some protection of shrubs from strong winds.

SOILS:

Any well worked garden soil that is fairly open is suitable for most varieties. However, the requirements of the ideal soil are:

1. Porosity, or free and open drainage.
2. Moisture for the root run.
3. Humus in the form of leaf mould, old manure or peat.

A good mixture for the lily bed should consist of equal parts of garden soil, well rotted manure, leaf mould and sand. The mixture should persist to a depth of about twelve inches and may be underlaid with a few inches of gravel or hard coal ashes. The bed should be fairly well settled before the bulbs are planted.

WATERING:

Dig a trench along side the lily bed and fill with water several times in an evening, every ten days or two weeks, or oftener in very dry weather. This permits the moisture to reach down to the roots, and the surface should also be watered and kept moist. Never allow it to become caked; aeration is important and can be achieved by hoeing. Remember the stem roots are only a few inches under the surface so do not work too close to the plant.

DISEASE:

The varieties mentioned are reasonably free from disease;

however, as an ordinary precaution they should be grown a distance of at least one hundred feet from the popular Tiger lilies which are notoriously infected with Mosaic disease. The Regales are susceptible to this disease while the Pride, Creelman and Centifolium are tolerant of it.

PROPAGATION:

The lily can be reproduced by more varied methods of propagation than any other genus can boast. It can be increased by seed, by bulb division, by scales from the bulb, by the bulblets which grow off the roots and by aerial bulblets which form in the leaf axils of certain species.

SEED:

This method is slow as few lilies bloom within three years, but has the advantage of being the cheapest way of raising a substantial stock, insures immunity from disease, gives a more vigorous stock and helps acclimatization. Home-grown seed is more likely to be fresh than the stale store variety, will germinate more rapidly and will produce more robust stock.

Sow in the open in the autumn when the seed is fresh and it will germinate in the spring, or in flats in the fall and transplant to permanent location in the spring.

SCALES:

Remove from fifteen to twenty scales from a full grown bulb when the bloom is fading and plant about two inches deep in a mixture with equal parts of peat moss, leaf mould and sand, and keep just barely moist. The scales will form small bulblets which will sprout the following spring.

ROOT BULBLETS:

These are produced on the stems just below the surface and may be left to develop a clump or removed and dealt with like seedlings.

A greatly increased production of stem bulblets may be obtained by planting any of the white trumpet lilies in deep shade.

WINTER MULCH:

Shortly before the first killing frost is due to arrive, remove enough garden soil from a space two or three feet from the lilies and cover them with eight or ten inches of the soil. Leave the depression created—it will help to drain off excess moisture in the spring. Remove the covering in late April or early May, after the danger of frost has passed.

Any enthusiastic gardener who has succeeded in establishing these lilies should experience no difficulty in multiplying them by any or all of the methods of propagation outlined. In due time his patience and efforts will be rewarded by a wealth of bloom almost beyond the power of words to describe.

Hybridization in Gladioli

J. E. MACHACEK

The production of new varieties of plants has always been the source of much enjoyment for the gardener, amateur or otherwise, and occasionally also the source of material profit. With gladioli, hybridization has become so attractive in recent years that a great many new varieties have been introduced. Some of these new varieties have been distinct improvements over older varieties, but the introduction of others appears to have been the result of a fond over-rating of a particular selection.

Hybridization of gladioli is extremely easy. First, the three stamens of each bloom to be pollinated are remvoed on the mornings the blooms open. The female organ or pistil of each bloom is then pinned back to the upper petals with an ordinary toothpick. On the next day, or when the upper part (stigma) of the pistil is receptive — indicated by a flaring of the three segments — pollen from another variety may be transferred to it, either by touching the stigma with the ripe pollen sac of the male parent, or by applying the pollen to the stigma with a fine, camel-hair brush. Several blooms on the same spike may be pollinated, either with pollen of one variety or individual blooms may be pollinated with different varieties. Pollination is usually most successful when performed in the evening when the air is relatively cool and moist.

Successful pollination is followed by the development of seed in the green ovary at the base of each floret. The ovary begins to swell shortly after the pollinated bloom has wilted, and continued to enlarge until it reaches a length of about 1½ inches and a width of ¾ inches. At maturity, the ovary or seed pod loses its green color, drying and finally splitting into three segments. The seed within becomes exposed and may be lost unless collected when pod-splitting begins.

The amateur only seldom employs the planned hybridization technique of the advanced amateur and the professional. This inexperienced enthusiast ordinarily attempts to mate only those gladiolus varieties that happen to appeal to him and which are in bloom at the same time. Owing to the extremely mixed parentage of most gladiolus varieties, this method usually results in a varied progeny possessing no particularly desirable characteristics. Perhaps only one in a thousand seedlings thus produced may possess real merit. Experience and training show, however, that considerable care is required in the selection of the parents. A study of their

ADVANCE IN GLADIOLI

FIG. A
Wild species, *Gladiolus tristis* (natural size).

FIG. B
Snowbelle, a 1947 Winnipeg introduction (x ⅓).

individual pedigree yields information relating to the characteristics of their progenitors and a study of records of wins in gladiolus shows should indicate to what degree the progenitors passed on their ability to win. In some varieties the desirable characteristics or qualities may not be fixed, and several generations of inbreeding may be required to develop "lines" that pass on the qualities most desired. Planned hybridization results in a large proportion of good seedlings from each cross, while unplanned hybridization usually results in mediocre progeny.

Each seed results in a distinct variety which may be maintained unchanged in character by growing the corms and cormels resulting from that seed. The grafting of corms of different varieties on each other will not result in new varieties. Occasionally, new varieties may arise through "sports" or mutant and these may also be propagated by corms and cormels.

The first gladiolus hybrid was produced one hundred and twenty-five years ago by crossing the creamy white wild species *Gladiolus concolor* (closely related to the wild variety illustrated) with the scarlet wild species *Gladiolus cardinalis*. This cross, and later crosses between other wild species have been the source of our modern gladioli. At first, progress was slow but, during the past quarter-century, it has been phenomenally rapid. Increases in size of bloom, improvement of color, the addition of ruffling, increase in number of florets opening, are only a few of the results obtained from a long and painstaking selection from a multitude of originally mediocre seedlings. Nevertheless, the quest for the "perfect" gladiolus is not yet ended and any ambitious gardener is invited to join the merry chase.

Fun With Flowers

LILLIAN B. ALLEN

Have you ever really had fun in arranging flowers? By fun, I mean the joy beyond that of going to your garden to pick an armful of blossoms. I've found the more I work with flowers, the most there is to know about their arrangement, and the more enjoyment I have doing it. Add to that the fact there are subtle changes in style as there are changes in clothes during the years, and you can see how your horizons are being widened continually.

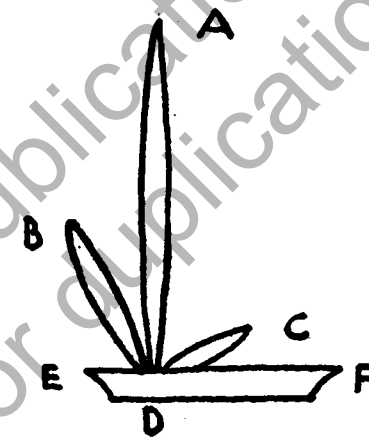
First of all there is the type of arrangement. These all fall into one of the three main groups.

The first is the Occidental. Color is of paramount importance here, and line counts for very little. Almost any mixed arrangement from your garden will be in this category. Sometimes it's referred to as Victorian, because there is a massing and profusion of blooms and colors.

The second is the Oriental. This is where subtlety begins. And it requires time, patience and knowledge of what are called the design elements of line, form, space, texture and color. The oriental uses few flowers or branches, but it's where he puts them that is important. The spaces between and around these lines and forms are vital factors in the three dimensional design itself. To begin with, Japanese gardens are singularly devoid of color, and stress form of growth.

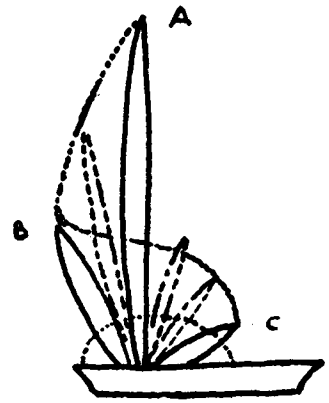
We modern occidentals can learn much from the oriental's way of working. To sum it up, he regards the water line as the ground line, so he rarely picks just the bloom and stem as is done for the occidental or Victorian arrangement. He picks a part of the plant. This could be best illustrated by the nasturtium. The blooms themselves are completely lost in an occidental arrangement and become a mass of color. Actually the nasturtium is a lovely and unusual form with its little tip curled at the back. A few of these blossoms along with their own round leaves, a delicately balanced bud, and a seed pod for interest show off these forms to best advantage. And these unusual shapes of flower, bud and leaf crate intensely interesting space intervals around and through the arrangement. Another important fact is the oriental uses three heights, heaven, man and earth, which gives a good basis for any unsymmetrical

flower arrangement. Finally, the oriental often places the arrangement in the container off centre. This creates a problem in balance that can only be solved properly by a feeling for the right length of branch and the right amount of weight. Weight is thought of in terms of color, as for instance red is heavy because it is so intense. These diagrams, which are modifications of the oriental system may serve to show what I mean.

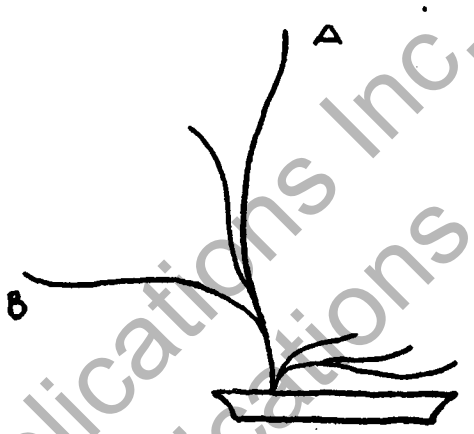


We'll use iris leaves, — always a useful leaf, by the way, — for the first series. We'll choose a low chinese type of container, and a needle holder, and we'll begin with leaf "A" which is about 1½ times the width of the dish. Your own judgment should tell you the height most pleasing for a low container. Then place the needle holder to one side, so the relations of "A" "D" "E" and "A" "D" "F" are satisfying. Place the iris leaf 'B" at an angle on the holder nearer to the end E." The height of 'B" should be about ½ of the height of "A," unless you are planning to use only three stocks, in which case it might be a little higher. Leaf "C is nearer to the horizontal line, and leads the eye into the dish itself. Normally this is about ½ of the height of "B," unless as suggested, it completes the arrangement, and could be a little higher.

Now comes the second stage. Add three more leaves as suggested in the diagram, and the path of your eye follows an "S" curve, which is pleasant to look at. And whether your start at "A" or "C," your eye ends in the container which is what you want.



The next diagrem show a curved branch arrangement. Line "A," which may or may not a separate branch, curves back over the center, thus establishing a good balance. "B" is about ½ the height and ⅔ the length of "A," and "C" is the same proportions in relation



to "B." You could leave branches on them, or add to the arrangement to establish the "S" curve.

Actually both of these might be finished at this stage by using branches or plants that lend themselves to this treatment such as iris, flowering or budding branches, or they could be the framework for flowers to be added later.

To these arrangements we occidentals add the rules that brilliantly colored or large flowers are placed nearest to the holders in the vicinity of the half circle, and lighter flowers or buds extend outside of this range and make a pattern around the perimeter. The oriental ruling that no foliage foreign to the flowers be added is a safe rule to follow, but in modern arrangements if you know what you are doing, additional leaves for texture or pattern might make the design more successful.

The third group of arrangements is modern or contemporary. These make use of the oriental feeling for design and knowledge of line, space form and texture, and combines it with our feeling today for designs of unusual forms and textures. Drama enters at this point, and our horizons are widened to their fullest scope. It's in this group we can use our ingenuity to its fullest extent. Here is the place where, if you are an apartment dweller and have no garden, you can save money, because so few flowers can be used to represent so many, by clever placing in the design. After all it's not how many flowers or how long stems they have that count, but how few you need. The test for any design anywhere is to keep taking away until each part left is there because it is essential to the whole design.

When you are arranging flowers you are actually in the role of a designer working with the three dimensions much as a sculptor does. And just as a sculptor arranges his planes and movements so they look well from any direction, you have to place your flowers so they do the same thing. It's only by moving around both of them you can fully appreciate the complete beauty of them. In this respect, too, flower arrangements are like musical compositions. The more you work with them you will find the space intervals between the parts are

so very important. They give new meaning to the arrangement as a whole as do rests or pauses in music.

This is the place where the fun begins. Up to this point the article has sounded like a lesson in geometry. But if you remember when you learned to drive your car, you had to learn about the accelerator, the clutch and the brake, and you didn't get the fullest pleasure out of driving until these things became automatic. That's exactly what happens in flower arrangement. Once the design factors become so familiar you don't think of them consciously, you proceed with the idea, you have in mind.

Probably the most useful flower to work with is the gladiolus. You can begin with it in a big sweeping formal or bisymmetrical arrangement in a large bowl. Then as the lower flowers wilt, cut them off and do a modern arrangement in a low dish following the idea in the diagram. When the spikes grow a little wabbly, they are good for another few days in a small glass bowl, held in place with split sticks across the neck of the bowl. And finally the last few blossoms can be floated on a plate.

Iris look their best in the modern arrangement of the diagram. And their leaves are often useful with other flowers which need the pattern of sharp spikes to break into a big space interval to create a rhythm and make an interesting silhouette.

Texture plays an important part in any arrangement. Some flowers as zinnias, marigolds, can be used in heavy glass, pottery, stoneware, and even metal containers, while sweetpeas, even the larger ones, must have fine pottery and glass, and so are restricted in suage. But even sweetpeas, by the way, providing stems are long enough, can be massed in colors to form dynamic and strong lines in an arrangement. I add this point because most people use sweetpeas in a sweet innocuous way that leaves them quite without distinction.

You need few flower containers once you've decided what types of arrangements you like to do, and what look best in your rooms. For general purposes, I find the best are the low containers, square, oblong, leaf forms, and chinese types. They are easiest for the modern and unusual arrangement. Some of the brick-like containers make almost any arrangement look modern. And I use chicken wire as a support for the flowers. Baskets and pitchers have structural lines in their handles that are hazards to overcome, and these lines interfere with the new lines in the flower design. However, the sky is the limit where containers are concerned. The only important fact is the container must harmonize with the flowers, and the setting. A friend of mine who has a dining-room decorated

Victorian fashion frequently uses a pink conchshell for pink petunias, and the table looks most effective.

Not only do you need containers with variety, but you need accessories to complete arrangements or to make compositions. These range from sticks and stones to shells and feathers, even pieces of coral and course figures. In fact the more interested you become in flower arrangement, the more fanatic and determined you become in acquiring items for your textures and compositions. Last summer I tramped the streets of Vancouver asking here and there until I found a little yellow and green earthenware of an old man sitting down chinese fashion with an arm draped over a knee. I want him for a springtime composition with popular branches. You know that moment in poplar growth when the leaves are bright and new, and the catkins long and yellow-green. I cover the holder with little pebbles especially collected at the lake and seaside for this purpose, and my little chinaman sits under his very chinese-looking tree and contemplates, and so do I, because he puts me in that mood. He also looks well sitting under branches of Manitoba maple when it is rosewood pink with long and delicate stamens or filaments.

My duck and geese figures are amusing when set on a plate, they watch some pert celery stocks with endive frilling at the base. A very sophisticated sleek white fawn shows up against the red and red and green leaves from house plants for a touch of color on my coffee table.

My draped figurine of white pottery towers over "Patience" blossoms of magenta and white, or scarlet geraniums clustered at her feet, while low "muffin dish" candles flicker about her. She takes on new drama with scarlet and white carnations massed behind and to one side of her to balance her drapery, and with more flowers at her feet.

Last summer one of the arrangements I liked best was that made with seedpods of what is familiarly known as the stinkweed plant. I used to pass by this clump of weeds, and I watched the little round seedpods change from yellow-green, to straw color — just right for my room. I brought them in, had to trim each branch to a single stem, then I set them up on a needle holder to one side on a low square white dish. To hide the holder and because the plant was a "broken" or "loose" type, I used my piece of shaggy finger coral. On a drive that evening, I found some wild tiger lillies and added five to the arrangement. It was amazinly beautiful.

One day a friend brought me lady slippers and forget-me-nots from Victoria Beach. I used the same container and the coral because the forget-me-nots is a "broken" flower. I chose only a few of the lady slippers, all of different stem lengths from the mass, and set them up so their shapes could be really

seen and enjoyed. Then I used the forget-me-nots around the coral. I hadn't realized before what harmony could be achieved through sea and land forms.

I have big yellow and purple sea fans and the insides of sea shells bleached white and made smooth. These shells look like modern sculpture, and even when I picked them up on a southern beach I marvelled at their beautiful shapes and tactile qualities. These, I set up on a reflector in a composition. In tiny bottles supported by plasticine and hidden by artillery plant I've set begonias or tiny petunias and other delicate blossoms. The result is an arrangement that carries me off in mood to a coral reef.

But shall I tell you of one of the many good arrangements by the students this years. It was to be used for a Mexican luncheon. The linen was pale gold, the container a long pewter tray. Laid over the tray were bumpy spinach leaves giving a lovely texture and a warm green color. At one end, and towards one corner was a prick holder with tall celery stalks, and there were five little mushrooms on their stems — as fascinating as a Disney cartoon, and a bit of a tomato peeping out from under more celery leaves. For interest a ceramic salt shaker like a barrel cactus and a Mexican ceramic somnolent figure sat. At the other end and opposite corner was a smaller cluster of celery, some tiny radishes and another sleepy Mexican. Here was good composition, excellent texture combinations even to the metal and linen. Even the colors looked like Mexico. It again was mood-provoking.

Of course it took time to set up. All these things do. But no one expects an artist to paint a picture in two minutes. Why should we regret a little time taken to create a flower arrangement. Nature has provided us with everything. It's up to us like it's up to the artist to use all these fascinating shapes, colors and textures to create new and interesting designs with them.

When you're at the beach or out motoring this summer, bring home some shells, little pebbles, mossy bark, or water smoothed roots, and then have fun in combining them to achieve worthwhile results. You may find yourself to be an artist.

African Violets

B. PETURSON

History and Classification

The African Violets, native shade plants of tropical East Africa, were discovered in 1890 by Baron Walter Von Saint Paul. These plants were named *Saintpaulia,* in honour of their discoverer by Herman Wendland, director of the Royal Botanic Garden at Herrenhausen, Germany, who probably was one of the first to cultivate these plants. Of the four species of *Saintpaulia* that are known to occur in Africa, two, *ionantha* and *kewensis,* have been brought under cultivation. The first specimens grown, according to early literature, occurred in colours ranging from deep violet to shades of light lavender. All our present day varieties of these plants are the result of sports from, or crosses of these two imported species.

African violet are not at all closely related to our native violets. In fact, they belong to an entirely different plant family. They, along with the Gloxinias, belong to the family *Gesneriaceae.*

The excellence of African violets as house plants and their suitability for commercial exploitation were apparently entirely overlooked for a long time by plant breeders, growers and seedsmen. In consequence of this lack of appreciation they remained, for the most part, unknown to the general public for some 40 years following their discovery. During that time few of these plants were seen outside botanic gardens and plant fanciers' establishments. Lately, however, plant breeders (both amateur and professional) and plant distributors have been developing and publicizing African violets and they now have become one of the most popular and prized of house plants, grown in Canada and the United States.

Culture

Owing to their ability to thrive well under conditions of high temperature, low light intensity and low air humidity, the African violets can be cultured successfully in the average Canadian prairie home throughout the entire year, provided that certain simple, easily carried out precautions are taken with respect to their encironmental requirements. They thrive well in light loamy, slightly acid soil (PH 6.0-7.0). When grown in a soil mixture composed of 3 parts garden soil, 2 parts leaf mould, 1 part acid peat, 1 part sharp sand and ½ part well rotted cow manure, African violets will produce a profusion of winter flowers. When using Red River Valley soil,

which is alkaline in reaction, as the basis of the soil mixture, it is most important to add acid peat to correct the natural alkalinity of our soils. It is advisable to allow each plant a generous amount of soil, for if that is done, fewer applications of fertilizer are required and frequency of watering may be reduced. Pots of 6 to 7 inch diameter are quite satisfactory. And since the plants reach a height of only 6 or 8 inches the pot should be low, not more than 5 inches high, otherwise size of plant in relation to size of pot will appear disproportionate. Plants growing in small pots will come into flower sooner than similar ones growing in large pots, but will have smaller leaves and flowers and a shorter flowering period than the plants in the larger pots. In about a year's time the plants become too crowded in the pots, owing to crown division. They should then be divided and repotted. One quarter teaspoonful of 9:18:9 fertilizer per 7 inch pot applied at bi-monthly intervals assures ample plant food.

Hard and fast rules cannot be laid down with respect to watering as the length of interval between waterings depends on the water holding capacity of the soil used and the amount of soil allowed per plant. However, the pots should be well soaked whenever the soil begins to show signs of dryness. It is not advisable to keep the soil continuously in a wet or soggy condition. It is preferable to water the plants from above, however, taking care not to wet the foliage. The water should be about 10°F. warmer than the air surrounding the plants. If that precaution is taken, any water spilled on the leaves will not mark or discolour them.

A temperature of 70°F. or a little higher is near the optimum for African violets. They are adversely affected by low temperatures and will stop blooming entirely if kept at a temperature below 62°F.

African violets do not tolerate direct sunlight. They can be kept continuously in a north window. However, greater growth and better flower production, particularly in winter, will be secured in an east or west window position if the plants are protected from direct sunlight by thin curtains. Direct sunlight will very quickly fleck the flowers and cause discoloured leaves.

Propagation

African violets can be propagated in several different ways. Although usually propagated by leaf cuttings or by division of crowns, they also come along quite well from seed. In fact, several seed firms list seeds of these plants in their catalogues. Plants usually can be started most easily and brought into flower most quickly by using root bearing crowns. In selecting crowns for propagation the ones with the best root development should be taken and potted in the

same manner as plants. For leaf propagation mature leaves are used. The petioles are left on. They can be rooted either in water or moist sharp sand. In either case the whole petiole should extend into the rooting medium, but not deeply enough to wet the leaf-blade or have it in contact with the sand. Such contact will frequently result in rotting of the leaf. It takes leaf cuttings quite some time to root, sometimes well over a month. The rooting period can be shortened if the leaves are kept at a temperature of about 70°F. in an atmosphere of high humidity.

Varieties

Thanks to the excellent work of plant breeders during the past 15 years or so, African violets are now obtainable in the following colours: Blue, mauve, lavender, pink and white. So far, no shades of yellow have been obtained and it is claimed that the first person to obtain a yellow variety will be richly rewarded. Several varieties having double flowers have been produced. Some of the good varieties now available in the different shades are Blue Boy, Blue Girl and Sailor Boy in the blues; Norseman and Amethyst in the lavenders; Pink eauty and Dupont Pink in pinks; and White Lady, the only white produced so far, in the whites.

Pests and Diseases

African violets are subject to attack by mealy bugs. These insects can be controlled readily if detected early. They congregate in the axils of the leaves where the young and eggs are covered with masses of cottony substance. The insects and eggs can be removed with a soft brush. Mealy bugs are very sensitive to alcohol and will die if touched with a swab dipped in 50 per cent alcohol. A handy swab for this purpose can be made by rolling cotton around the end of a tooth pick. Other pests reported as attacking these plants are a leaf infecting nematode (eel-worm) and the cyclamen mite. Both these pests are difficult to control and badly infected plants should be destroyed and a new start made with fresh, clean soil and healthy plants.

Peculiar light-yellowish spots, streaks and irregular patterns often develop on the leaves of African violets. This condition, usually referred to as chlorosis, was at one time thought to be due to a virus. However, it is more likely due to unfavourable environmental conditions, such as sudden temperature changes, abnormally cool temperatures at night or wetting the leaves with cold water. Diseases of bacterial or fungal origin occur rarely, if at all, on these plants.

The presence of very slight traces of coal or cooking gas will adversely affect African violets. The slightest trace of gas will inhibit blooming.

Grow More Strawberries

C. R. URE

It has been wisely said, "Doubtless God might have made a finer fruit than the strawberry but doubtless God never did." Few other fruits can boast of such general favor. Several attributes are responsible for its great popularity in rural and urban areas alike. The strawberry can be adapted to almost any area of ground from a few square feet to an acre or more in extent. A shallow root system enables conditioning of unfavorable soils to permit satisfactory growth and performance. Returns after planting are quicker than with other fruits. The first harvest can be gathered in a year's time, unless disaster befalls the venture; or everbearing varieties will give a light fall crop from spring-set plants. A little care and attention is rewarded by high returns per acre of a universally loved and appetizing fruit. Their culture is relatively easy.

Nutritive Value of the Strawberry

Strawberries, like other fruits, are classed with vegetables as protective foods. They supply very little of the energy requirements of the body, but rather help to keep the system functioning properly, and correct the deficiencies in diets composed largely of meat and starchy foods. They are very rich sources of Ascorbic acid or Vitamin C, the anti-scurvy vitamin, and Vitamin G or B2 (riboflavin). The latter improves growth, gives tone to the nervous system and sparks up health in general. Currants, and particularly the black currant, is the only other fruit cultivated on the prairies which exceeds the strawberry in Vitamins C and G content per volume of fruit. Recent analysis by Montana workers show two of our common varieties, Dunlap and Gem, to contain on the average 0.79 and 0.70 milligrams of Vitamin C per gram of fruit. At this rate 100 grams of fresh strawberries, about two-thirds of a cup, would provide 79. and 70. mgs. of Vitamin C, respectively.

Preliminary analysis of some 41 strawberry varieties at Morden show this fruit to be an excellent source of Ascorbic acid for Manitobans. The average for all varieties ran 77 mgs. per 100 grams of fresh fruit. While the daily body requirements of Vitamin C varies with age and degree of body activity, nutritionists recommend a daily allowance of 75 to 100 milligrams for adults and children over 12 years. It becomes evident that the strawberry could be used more extensively to supply, a portion at least, of Vitamins C and G now obtained through consumption of oranges and tomatoes.

SITE

Select the site with care. The first consideration is an area with good air and water drainage. In nature the strawberry will be found growing in moist cool spots in full to partial sunshine. Under cultivation it must have a plentiful supply of moisture but will not survive long while standing in water. Injury often occurs in low areas following heavy rains. Low spots are avoided for another reason. Cold air settles into these low pockets, often causing frost damage to blossoms at flowering time. A gradual and gentle slope generally surmounts both of these difficulties. A slope to the east or northeast is recommended, or even a gentle north gradient. All help to prevent too early blossoming and subsequent blossom killing by late spring frosts. Nor do they dry out as quickly as a southern or western exposure. An area in full sunlight most of the day is desirable. Besides promoting strong growth and large yields of fruit, the Vitamin C content of the berries is in direct proportion to the amount of sunlight received by the plants. Analysis show Vitamin C content of fruits from shaded plants to be lower than in fruits from plants in direct sunlight. Air and water drainage, plus sunlight, are the three principal essentials in a good site.

SOIL AND ITS PREPARATION

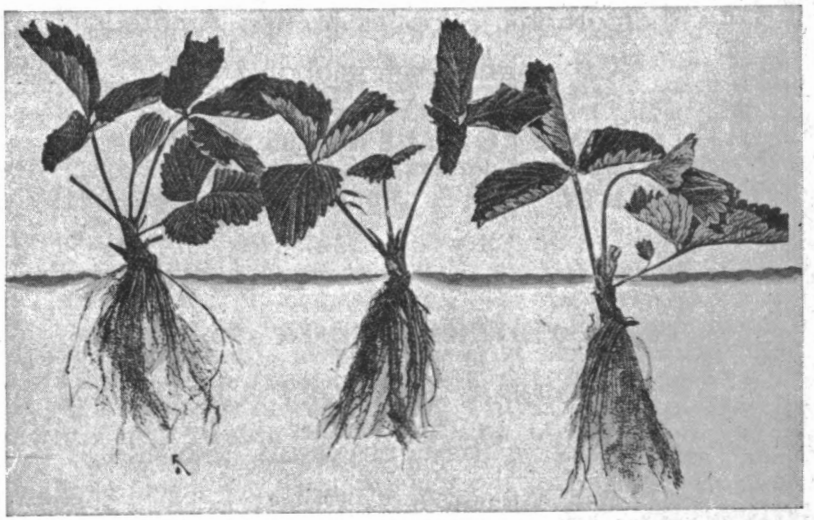
Strawberries generally perform best on a moderately fertile, friable loam, high in organic matter. Satisfactory crops can be grown on clay or clay loams and sandy soils after a little preparation. The humus or organic matter content seems more important than the actual soil type, important as it is. Organic matter improves soil aeration, increases the water holding capacity and supplies plant food, all important factors in successful strawberry growing in the Winnipeg area. The rather short, dense root system of the strawberry plant confined to the upper soil layers suggests the necessity for food and moisture within easy reach of the roots. While the plant prefers a slightly acid soil reaction for best performance, they grow well in most of the Red River valley alkaline soils. Some difficulty may be encountered on city lots where a large portion of the soil is basement clay. Here, chlorosis or yellowing of the foliage may be troublesome, due principally to the high lime content and a subsequent strong alkaline reaction. Under these conditions, incorporation of humus into the soil takes on greater importance. Application of 2 to 3 inches of acid peat moss in such circumstances wil help to correct the high alkaline reaction and greatly improve the soil texture.

Thorough preparation before planting is essential because little can be done after the plants are set and start runnering. Large areas should be summerfallowed for a year to kill weeds, store moisture and build up the humus by plowing in 20

to 30 tons per acre of fresh manure. In the fall apply another 20 tons per acre of partially rotted manure and plow deeply to 8 or 10 inches. In small areas, especially backyard lots, the ground must be utilized fully every year so summerfallowing is out of the question. After the crop is harvested, apply 2 or 3 inches of partially decomposed manure, leaf mould, grass clippings, or other plant material and dig it in. Where there is a preponderance of basement clay, add some acid peat as suggested previously. After plowing or spading in the fall, leave the surface rough over winter. The following spring, after the soil has dried sufficiently to work without puddling, rake or cultivate into a fine, friable condition before setting the plants. In cool backward springs an application of nitrogenous fertilizer will assist the plants in getting started. One or two pounds of ammonium sulphate or ammonium phosphate per 100 feet of row, trenched along the plants, is considered adequate. Place the trench about 3 inches from the plants. Another application of nitrogenous fertilizer in early August is beneficial to fruit bud formation.

Planting

Early spring planting is considered best under prairie conditions. As soon as the soil is dry enough to work easily and remain friable, the plants should be set. They become established more easily at this time because of the cool moist



(Courtesy of the Division of Horticulture, Central Experimental Farm, Ottawa, Ontario, and the Line Elevators Farm Services, Winnipeg, Manitoba).

Placing the strawberry plant. Central plant, with the middle of the crown at the soil line, is correctly set. Left, too shallow; right, too deep.

conditions, more runners are produced and next year's crop is generally greater. The strawberry is a cool, moisture-loving subject by nature.

Planting distance will vary depending on method of training, cultural practices, and moisture supply. For large plantations it is customary to grow the plants in the matted or continuous row. For this purpose the rows are spaced 3½ to 4 feet apart and the plants set every 1½ to 2 feet in the row. Small plantings can follow the same system or they can be grown in hills. In the hill system the plants are set at 12 inches apart in rows 3 feet apart. The latter method requires a lot of attention and has given only moderate returns under our vigorous prairie climate.

Plants ordered from a nursery are generally trimmed ready to set out. Should these arrive before the soil is ready, open the package and heel the plants in till they can be set permanently. Plants obtained from a neighbor or old patch require a bit of fixing up. First select only young, vigorous, healthy plants. This is indicated by an abundance of strong, disease-free, straw-colored roots and vigorous foliage. Dark roots suggest old plants and often disease. Remove all dead or injured leaves, allowing 2 or 3 young thrifty ones to remain. Trimming the roots back by one-third is thought to be of no benefit other than to facilitate planting. At planting time keep the roots from drying by covering with wet burlap. In planting *special care* must be exercised to set the plants at the same depth they grew originally or slightly deeper. Shallow planting leaves the crown exposed and it dries out. Deep planting sees the crown covered and likely to be smothered. Both cases result in heavy mortality to new set plants. Lastly, firm the soil well around the roots to prevent drying out. A trowel, dibble, spade or shovel are the usual instruments for setting a small number of plants.

Management

Flower clusters soon arise on spring-set plants. These should be removed as soon as they appear and kept off the first year in the case of June-bearing varieties. With everbearing sorts it is desirable to keep all flower stalks cut off till mid-July. The plants are generally established sufficiently by this time that the late flower clusters will give a late summer crop of fruit without injury to the plantation.

Training the runners assists in maximum production. Place the first runners along the row to form a mat 20 to 24 inches wide with individual plants at 6 to 9 inches apart, according to moisture supplies. After the runners are placed, encourage root formation by putting a little loose soil on the runner nodes to hold them in place and keep the root primordia moist. As soon as the row is sufficiently filled, keep excess runners

cut out to prevent crowding. It is important to give the first set runners every opportunity to develop into large, vigorous plants. There are two reasons for this, both associated with increased yield. First, it should be realized that blossom buds develop in the fall (usually September) for the next year's crop. Correlated with the foregoing is the fact that more blossom buds are formed on the larger plants than on the weak and crowded.

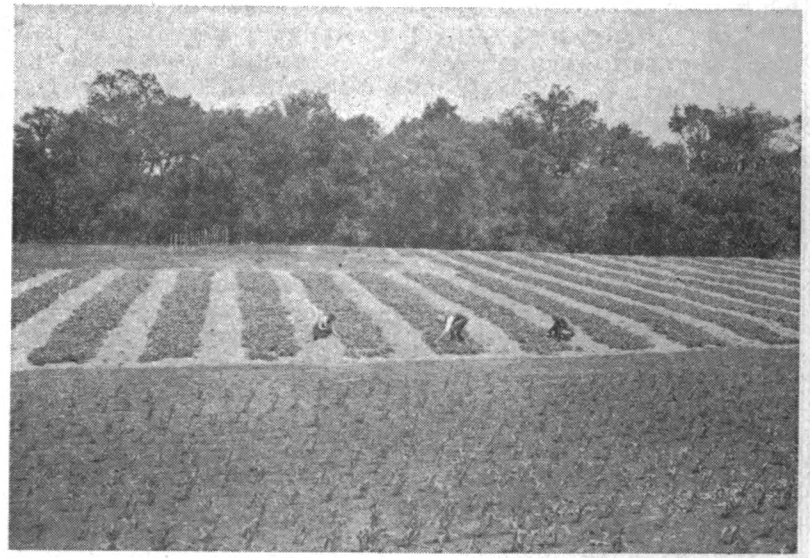
A regular and abundant moisture supply encourages a strong stand of plants. In city plantings it is easy to supply the necessary moisture by the occasional thorough watering.

Cultivation

Cultivation begins immediately after planting is finished. Practice frequent but shallow cultivation throughout the growing season. The object is threefold, to control weeds, conserve moisture and to keep the soil loose to facilitate the rooting of runner plants. Stop cultivation by mid-August to encourage maturity of the plants for winter.

Winter Protection

Some form of winter protection is necessary to ensure survival and emergence of strong plants for the next year's crop. A deep blanket of snow gives the very best of protection.



Matted row system of growing strawberries — showing also the straw-mulch used in the pathway between the rows.

Injury generally occurs in periods or seasons when there is little snow covering during low and fluctuating temperatures. Any kind of obstruction, such as picket fence, brush or snow fence which prevents the snow from blowing off the planting is desirable. To supplement the snow covering in northern gardens it is customary to apply a mulch. The mulch gives shelter in the fall from sudden changes in temperature, and in the spring holds the plants back from starting too early and thus be subject to late spring frosts. Clean wheat straw is one of the best forms of mulch. Marsh hay, millet, spruce boughs, and corn stalks have given good results. Leaves alone have a tendency to pack too tightly but can be used in conjunction with coarse material like corn stalks. A dry mulch is more effective than wet material.

Mulching should be done before the ground is frozen hard. A series of light frosts in autumn prepares the plants for winter by checking and initiating hardiness. Recent work done at the University of Minnesota shows that the "danger point" for well matured, well hardened plants lies close to 21 degrees F., and the actual killing point lies close to 10 degrees F. Though varieties differ considerably in their degree of hardiness, it is important to remember that mulching at the right time is more important than the exact degree of cold resistance. Late mulching after the temperature falls below 20 degrees F. at the crowns may result in severe injury and killing. On the other hand, plants covered too early may continue to grow slowly, and fail to harden off. Such unhardened plants, even of recognized hardy varieties, may be severely injured or killed at temperatures only a few degrees below freezing.

Three to four inches of a loose, fluffy mulch affords adequate protection. Some brush from prunings of trees or shrubs, thrown over the mulch, holds it in place and checks snow drifting off the area. The mulch is left on as long as possible in the spring, usually early May. It should be removed only when the plants begin new growth and the foliage color becomes slightly yellowed. When the mulch is removed, leave a thin scattering over the plants to aid in conserving moisture and to keep the fruit clean. The plants will grow up through it. The balance is pulled out into the pathway between the rows. All or a portion of it may be left here until after the picking season.

Renewing An Old Bed

The usual practice is to plant in April, take off one crop the following year and immediately plow the patch down. Plantations free of weeds and diseases and not over-crowded with plants are sometimes left to yield a second crop. Following harvest of the second crop it is generally necessary to renovate

the old bed in some manner. Renovation may take several forms. No matter what method is used they all stem from the principle of narrowing the present row to a 6 to 10 inch strip of plants. The new row develops from these. One system is to start at one side of the patch with a plow or spade and turn down ½ to ¾ of each row, leaving an outside strip of plants. Some growers favor the outside strip because the plants are younger and more vigorous. Another system plows down a portion on each side of the row, leaving a narrow strip in the centre. The plowed or spaced portion is thoroughly cultivated to fill in the open furrow and make the surface level. The remaining strip is thinned by removing old and weak plants. Leave only strong, vigorous plants spaced about every 12 inches to produce runners for the new row. As the new runners start they are handled as already described for a new planting.

Sometimes it is necessary to remove most of the mulch before starting to plow or spade. Leave only enough mulch, if it is straw or leaves, that can be turned under conveniently. Occasionally it is desirable to mow or scythe off the foliage (before plowing) if it is very heavy or when disease, such as leaf spot, is present. Care must be exercised to cut high and not injure the crowns. Diseased foliage is removed and burned as a sanitary measure.

Varieties

It is not proposed to discuss individual varieties at this time. It would require too much space and this outline has become too lengthy already. The picture with respect to varieties is changing rapidly. Newer varieties recommended today may be on the discard list tomorrow. Interested growers would do well to secure the latest list of recommended varieties from their horticultural society when they are laying plans to grow strawberries.

Strawberry varieties fall into two classes. There are the standard or so-called June-bearing varieties, which give only one crop of berries during the year, usually in July in Manitoba. Then there are the everbearing sorts which produce two crops, one in July and another in the fall during late August and September. The latter group fill a real need in the home garden. The present recommended fruit list for Manitoba suggests Senator Dunlap, Premier and Burgundy in June-bearing varieties, and Gem and Sparta in everbearing, as proven and dependable varieties.

Conserve Those Vegetable Foods

By KATHARINE MIDDLETON

Every good gardener knows that he just can't just plant seeds . . . and leave the rest to the Lord and the weatherman! The good gardener, whether professional or amateur, is well aware that flowers and shrubs and vegetables need attention all during the growing season, and that, among other things, there is considerable need for plant nutrients in the form of fertilizers, natural and/or chemical.

Yet, many of those same gardeners pay too little attention to their own body needs in food nutrients. Like the shoemaker who mends everybody's shoes but those of his own children, or the dairy farmer who sells all his milk leaving none for his own family, there are too many gardeners who may grow vegetables, but eat very few themselves.

The human body and its needs can be easily understood by comparing it with an engine. As the engine needs fuel (coal, gasoline, etc.), for energy, the body needs fuel (starches and sugar). As the engine needs materials for lubrication (heavy oils), so does the body (fats and oil). The engine needs materials for repairing parts which become worn out, or replacements for those beyond repair; so does the body, which gets this material in the form of proteins from meats, fish, poultry, eggs, cheese. Certain parts of the engine control or direct the workings of other parts. These are represented in body needs by vitamins and mineral, and vegetables are among our best food sources for many of these.

Many a man will take the utmost care of his automobile engine. Many a woman takes the greatest care of her stove or washing machine. Many a parent is fairly careful of the health and well-being of the child. Too many adults, however, overlook the importance of the choice of foods and their cooking, for both child and adult.

To no "family" of foods does this apply more directly than to that of vegetables.

Canada's Food Rules, established a few years ago for the guidance of all Canadians, recommends as to vegetables, "potatoes, one (1) serving daily, preferably cooked with their skins; citrus fruits or tomatoes each day; also at least one (1) other vegetable served daily, particularly green or yellow vegetables, and frequently served raw."

Fruits and vegetables are considered to be among our most important food sources of vitamins and minerals. In Canada, the vegetables are of particular importance at this time, in view of the emergency regulations established by the

Dominion Government in November to save U.S. dollars. Although we can and do produce many fruits in Canada, we cannot produce all our needs and do not produce any citrus fruits. However, we can produce ALL our vegetable needs, and, in fact, can increase our vegetable production to help meet our nutrition needs.

Yet . . . there is one final important factor too often overlooked by many Canadians, and that is . . . the cooking.

Dr. L. B. Pett, director of the Nutrition Division, Department of National Health and Welfare, Ottawa, says that there is a great waste daily in Canada of minerals and vitamins, through improper cooking of vegetables, and the throwing down the sinks of water in which they cooked.

There's plenty of evidence to support this statement. This evidence is based on literally dozens and dozens of experiments, some over a ten-year period, performed by agricultural and other scientists to discover the best methods of cooking vegetables. Here, briefly, are just a few facts culled from results of some of these experiments.

Beans: (such as green beans, bush or pole) cooking in a tightly covered pot with just enough water to prevent scorching, or in pressure pans, or by steam ,will save up to 75% of the Vitamin C, but cooking in an open pot in a large quantity of water will save only as much as 51%. Also, the liquid left in the pot after cooking in a very small quantity of water (tightly covered) or by pressure, or steam, shows very little Vitamin C, whereas, the liquid left in pot after cooking beans in liberal quantity of water may show as much as 20% Vitamin C.

Cabbage: When finely shredded and cooked in a large quantity of water cabbage loses as much as 66% of Vitamin C; cooked by steam, or pressure pots, in small quantity of water in tightly covered pot the loss may be no more than 33% in comparison. Also, it was found that, cooked cabbage should be served immediately, as, the longer it is left before serving after cooking, the greater will be the vitamin loss.

Peas: Will lose as much as 50% of their Vitamin C in the cooking water; cooking in a small quantity of water (just enough to prevent scorch) or by steam or pressure pots, were found to be the best methods.

Potatoes: Cooked in small quantity of water in their jackets in a tightly covered pot will keep almost all their Vitamin C; but peeled, then cut, and cooked in large quantity of water they will lose as much as 20% Vitamin C. Also, soaking, pared, cut potatoes in cold water before cooking will lose a further 24% Vitamin C in four hours.

Although these few examples are based only on one Vitamin, they are sufficient to indicate to the thoughtful

person that other Vitamins, and the very important minerals, can be, and doubtless are, lost by improper cooking methods.

It is generally agreed by all concerned that the greatest losses in vitamins and minerals in vegetable cookery occur from cooking in too much water, and that these losses can be reduced greatly by cooking in the new approved and recommended methods: (1) in a very small quantity of water in a tightly covered pot; (2) by pressure saucepans or pressure cookers; (3) by steam. It is further recommended that, even though vegetables are cooked by any of these methods, any liquid remaining in the pots from cooking be used as the sauce on the vegetables, or in soups, casserole dishes, etc.

Do's and Don't When Cooking Vegetables:

Do cook in as large pieces as possible; don't cut fine or mince.

Do use as little water as possible; don't drown them.

Do use boiling water; don't use cold water; don't soak for a long time before cooking.

Do cook in their skins whenever possible; don't scrape or pare unnecessarily.

Do use only the recommended methods; in a tightly covered pot in a small amount of water, steaming, or in pressure saucepans.

Do let them cook without disturbing; don't stir during cooking, don't add baking soda (both stirring and soda will destroy some of the vitamins).

Do cut carrots, parsnips, etc., lengthwise, if not leaving whole; don't cut crosswise.

Do save any liquid from cooking vegetables and use for soup, sauces, or on vegetables; don't throw it away—it contains valuable vitamins and minerals.

Do cook vegetables quickly, and only enough for one meal; don't overcook.

Do cook vegetables only until just tender—exact times cannot be given as much depends upon age and size; don't let them "cook to death."

Water Method: Place rapidly boiling water to depth of ¼ inch for very heavy saucepans, up to 1 inch for very lightweight saucepans; add ½ teaspoon of salt, cover pot tightly, bring water to furious boil, add prepared vegetables, cover pot tightly, let cook quickly.

Limited space here doesn't allow for the inclusion of directions for all methods of cooking vegetables, but here, briefly, in chart form for easy reference, are the directions for the water method for some vegetables grown in this area.

VEGETABLE COOKING CHART

Use no more than ¼ inch boiling water in very heavy pots; up to 1 inch in lightweight pot; ½ teaspoon salt; cover pot tightly.

VEGETABLE	PREPARATION	COOKING TIME
Asparagus 3 lbs.	Wash and scrub thoroughly. Snap off tough, bottom ends of stalks. Tie loosely in bundles. Use deep pot. Stand bundles upright, bottom ends in water. Cook, covered tightly, for 8 minutes, then turn bundles on sides, cover tightly.	20-25 minutes total time if stalks very thick; 15-18 minutes thin stalks.
Pod Beans (Green or Wax) 1½ lbs.	Wash well. Break ends off, pulling any strings along with ends. Leave beans whole, or cut once or twice crosswise, diagonally.	15-30 minutes, depending on size.
Broccoli 2 lbs.	Wash well. Remove and discard larger leaves, and tough ends of stalks. Soak in cold salted water 20 minutes. Drain. Slit remaining stalks in 2 or 3 places from botom almost up to heads. Stand upright, bottom of stalks in water, heads up out of water.	15-30 minutes, depending on size, thickness, of stalks.
Brussels Sprouts 1½ lbs.	Wash thoroughly. Discard discolored parts. Stand in cold, salt water 30 minutes. Drain.	10-15 minutes, depending upon size.
Cabbage 1-1½ lbs.	Wash. Remove discolored parts. Cut in wedges; or shred very fine just before cooking. For red cabbage add 1 tablespoon vinegar for every 1 cup cabbage.	Wedges; 10-15 minutes. Finely shredded, 5-7 minutes.
Carrots 1½ lbs.	Wash, scrubbing well with stiff vegetable brush. If necessary remove skins, scrape carefully, or pare very thinly. Leave small ones whole; if very large cut lengthwise only.	20-30 minutes (whole). 15-18 minutes (cut).
Cauliflower 2 lbs.	Wash well. If small and just picked from garden, small leaves clinging to base may be cooked with head. Leave small head whole; separate large head into flowerlets. Soak in cold, salted water 30 minutes. Drain.	Whole: 20-30 minutes. Flowerlets: 12-18 minutes.

Celery 1¼ lbs.	Wash and scrub well. Remove leaves, coarse strings, discolored sections. Cut diagonally in 1-inch pieces.	8-15 minutes, depending on thickness.
Corn 8-12 ears	Remove husks and silk only just before cooking. Remove tough ends, and immature tips.	6-10 minutes, depending on age and size.
Greens (beet greens, chard; turnip greens; spinach) 1½ lbs.	Wash in six or seven waters; if first water is lukewarm soil is more quickly removed; lift greens from each wash water so soil sinks to bottom. Clean well, remove root ends (except for beets) and decayed pieces. Shake from last water and cook only in water which clings to leaves unless saucepan is very lightweight material in which case use ¼ inch boiling water.	8-12 minutes (very young leaves). 15-25 minutes (older).
Onions 1¼ lbs.	Peel off dried outside layers; cook whole unless very large, in which case cut in halves.	25-50 minutes, depending upon size.
Parsnips 1½ lbs.	Wash and scrub well. Leave skin on, or scrape, or pare very thin. Leave whole, or cut in strips lengthwise.	25-45 minutes (whole). 12-25 minutes (cut).
Peas 2-4 lbs. in pods, depending on size	Shell, wash, drain .	10 minutes (very small). Up to 20 minutes (large).
Potatoes 2 lbs.	Wash and scrub well. (Suggest use only small or medium sized for this method, baking very large ones.) After thorough scrubbing, "draw" a fine line with tip of paring knife around potatoes. This slight slitting of skin will prevent potatoes from bursting. Use small amount of water as directed above.	30-50 minutes (small to medium size).
Squash 2 lbs.	Wash, cut open, remove and discard seeds and stringy portions. Cut in chunks, remove skin, cut meat in 1-inch cubes.	20-45 minutes (age and size of pieces).
Turnips 1½ lbs.	Wash well, cut in chunks, pare thinly, cut in small cubes.	20-40 minutes (age and size of pieces).

The Home Vegetable Garden

H. ROBERT HIKIDA

In selecting the location for a vegetable garden it should always be remembered that vegetables are sun lovers. They will not thrive in the shade. Well drained, moderately sandy soils are best for early season crops but heavier soils that can hold the moisture are better for summer and fall crops. Areas where water lodges during very rainy season should be avoided. Also areas too close to trees and hedges should be avoided. Competition for nutrients will be too great and the vegetable crops will suffer.

The soil should be ploughed or spaded in the fall previous to freezing. The effect of thawing and freezing will break the soil clumps so that only raking need be done in the spring at the time of seeding. For the heavy Manitoba soils fall preparation of the garden is recommended. It provides a seed bed which may be sown to cool season crops early in the spring. If the soil is heavy and difficult to work, an application of well rotted manure at the rate of 100 to 125 pounds per 100 square feet will help lighten the soil and make it easier to work. This will also increase the amount of organic matter in the soil.

Since the city garden lots are generally small, special consideration must be given in the selection and choice of the vegetables to sow. This selection must be such that there will be a maximum return from every foot of space used. Too often this selection is determined by the likes and dislikes of the family. Some vegetables having high nutritional values may be mentioned here: (a) Leafy vegetables, lettuce, cabbage, spinach, chard; (b) root vegetables, beets, carrots, turnips; (c) fruit or pod vegetables, tomatoes, peas, beans. The varietey from an approved variety list for the locality should be selected. Seeds of the highest quality or grade always should be used.

No matter how small the vegetable garden may be, there should be present some degree of orderliness. The rows should run in the same direction. Taller plants should not shade the lower growing ones. An early maturing low growing crop such as radish may be planted close to a taller growing crop such as sweet corn. Great pleasure will be derived if the plan of the garden is first drawn on paper. This plan must be made to give the greatest return per unit area without overcrowding the plants.

A general rule may be followed in determining the depth of seeding. This rule is to plant seed three times as deep as the diameter of the seed. Large seeds such as peas, beans and corn,

may be sown to a depth of one inch. Smaller seeds, such as lettuce, beets and carrots may be sown to a depth of one-quarter to one-half inch. After germination seedlings should be thinned out so that there will be no crowding. Some vegetables, such as beets, carrots and lettuce, may be thinned at an early edible stage and used. Watering or irrigation may be necessary during the dry periods. When watering, the ground should be thoroughly soaked once or twice a week.

The three essential fertilizers are Nitrogen, Phosphorus and Potassium. These are represented in abbreviated form as N, P, K, respectively. Thus, a fertilizer designated as 9:27:9 contains 9% N, 27% P, and 9% K. The order N:P:K is always followed. The most important factor of any fertilizer regardless of the trade names is the total availability of N, P, K. Nitrogen is a leaf and stem growth element. A lack of this element will produce poor growth and pale colored leaves. An excess will induce vigorous growth accompanied with poor quality. Phosphorus aids in the development of flowers and fruits. It also hastens maturity. Potassium is necessary for the formation of starches and sugars. An application of fertilizer such as 9:27:9 or 11:48:0 may be given to advantage at time of seeding. The fertilizer may be drilled in about 2 inches away and at the same depth as the seed or may be broadcast and then raked into the soil previous to seeding. A rate of application of 2 to 4 pounds per 100 square feet of area should suffice. Organic fertilizers, such as Vigoro or Gardenite or others may be substituted for the chemical fertilizers. Organic fertilizers become available to plants much more slowly than chemical fertilizers but the effects last longer.

It is imperative that there be a complete control of the weeds. These weeds compete with the vegetable crops for moisture, fertility nutrients and sunshine. Control may be easily had by hand hoeing at frequent intervals. Cultivation should be shallow so that the fine feeding roots near the surface are not damaged.

Various species of insects do considerable damage to the vegetable crops. Some of these insects such as flea beetles and cabbage worms may be controlled by Derris Dust or D.D.T. Cutworms require the use of a poisoned bran bait. It is important that control measures be applied as soon as the insects appear. The application of the insecticide should be even and thorough and at such intervals as to give effective control.

VEGETABLE PLANTING GUIDE

Kind of Vegetable	Seed per 100' row	PLANTING DATES Indoors	PLANTING DATES Outdoors	Depth of Seeding	DISTANCE Between Rows or Hills	DISTANCE Between Plants in Row or Hill	Approx. Yield per 100 ft. Row
Beans—							
Bush	¾-1 lb.		May 20-30	1½-2 in.	24 in.	2-4 in.	1½-2 bus.
Pole	½-¾ lb.		May 20-30	1½-2 in.	36-in. hills	30-36 in.	1½-2 bus.
Dry Shell	1 lb.		May 20-30	1½-2 in.	24 in.	2-3 in.	8-10 lbs.
Beets	2 oz.		May 10-June 15	½-1 in.	18 in.	2-3 in.	2-3 bus.
Broccoli	1 pkt.	April 1-10	*May 15-20	½ in.	24-30 in.	18-24 in.	
Brussel Sprout	1 pkt.	April 1-10	*May 15-20	½ in.	30-36 in.	24-30 in.	
Cabbage—							
Early	1 pkt. or ¼ oz.	April 1-10	*May 15-30	½ in.	24-30 in.	18 in.	125-150 lbs.
Late	1 pkt. or ¼ oz.	April 10-20	*June 1-25	½ in.	30-36 in.	18-24 in.	150-200 lbs.
Chinese	1-2 pkts.		*June 25-July 10	½ in.	18-24 in.	12-18 in.	90-100 lbs.
Carrots	½-¾ oz.		May 1-June 10	¼-½ in.	12-18 in.	1-2 in.	2-3 bus.
Cauliflower	1-2 pkts.	April 1-10	*May 15-25	½ in.	24-30 in.	18-24 in.	90-120 lbs.
Celery	1 pkt.	Feb. 20-Mar. 10	*May 20	⅛-¼ in.	36 in.	6-12 in.	150-200 stalks
Chard, Swiss	1 oz.		May 10-20	½-1 in.	20-24 in.	6-8 in.	150-200 lbs.
Corn	4 oz.		May 20-30	2 in.	30 in.	9-12 in.	150-200 ears
Citron	1 oz.	April 15	May 20-30	1-1½ in.	60-72 in.	48-60 in.	50-60 fruits
Cucumbers	½ oz.	April 15	May 20-25	½-1 in.	48-72 in.	12-18 in.	100 lbs.
Eggplant	1 pkt.	Mar. 20-Apr. 10	*June 5-10	½ in.	24-30 in.	18-24 in.	50-70 fruits
Lettuce—							
Leaf	½ oz.		Apr. 10-June 30	¼-½ in.	12-18 in.	4-6 in.	40-50 lbs.
Head	1 pkt.	April 1-10	*May 7-15	¼-½ in.	12-18 in.	6-12 in.	50-90 lbs.

NOTE: * = transplanting dates.

Melons—							
Muskmelon	1 oz.	April 15	May 20-30	1-1½ in.	60-72 in.	30 in.	60-80 fruits
Watermelon	1 oz.	April 15	May 20-30	1-1½ in.	60-84 in.	36-48 in.	40-60 fruits
Onion—							
Seed	¾-1 oz.		Apr. 20-May 10	¾-1 in.	12-18 in.	1-2 in.	1½-2 bus.
Sets	2-3 lbs.		April 20	1 in.	18 in.	2-3 in.	2-3 bus.
Parsley	1 pkt.	Feb. 20-Mar. 10	May 20	¼-½ in.	12-18 in.	4-6 in.	30-40 lbs.
Parsnips	½-¾ oz.		*Apr. 20-May 20	½-1 in.	18-24 in.	3-4 in.	2-3 bus.
Peas—							
Early	1 lb.		April 20	1½-2 in.	24-30 in.	1½-2 in.	30-50 lbs.
Mid-season	1 lb.		*Apr. 20-May 10	1½-2 in.	30-36 in.	2-3 in.	30-50 lbs.
Peppers	1 pkt.	Mar. 20-Apr. 10	June 5-10	½ in.	24-30 in.	18 in.	100-150 fruits
Potatoes	8-10 lbs.		May 15-25	4 in.	30-36 in.	14-18 in.	1½-2 bus.
Pumpkin	1 oz.	April 15	May 20-30	1-1½ in.	60-84 in.	36 in.	40-60 fruits
Radish	1 oz.		Apr. 25-June 5	¼-½ in.	12-18 in.	1-2 in.	75-100 bchs.
Spinach	1 oz.		Apr. 25-May 10	½-1 in.	12-18 in.	2-4 in.	50-70 lbs.
Squash	1 oz.	April 15	May 20-30	1-1½ in.	60-84 in.	30-60 in.	60-80 fruits
Tomatoes	⅛ oz.	Mar. 20-Apr. 10	*June 1-June 10	¼-½ in.	36-48 in.	36-48 in.	5-7 bus.
Turnip—							
Summer	½ oz.		May 1-24	¼-½ in.	18-24 in.	4-8 in.	1½-2 bus.
Swede	½ oz.		June 1-10	¼-½ in.	24-30 in.	6-10 in.	3-4 bus.

NOTE: Distances recommended above for spacing of vegetable plants relates more specifically to large garden operations. Under city and town garden conditions, where space is very limited and artificial watering may be practised, good vegetables may be grown with much less space than suggested. In many cases the distances are reduced by one-half or one-third with reasonably good results.

Insect Control in Manitoba Gardens

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In order to be successful a gardener must learn how to contend with the various agencies that reduce his yields, be they weather, disease or insects. This article will outline some of the principles of insect control.

Insects are cold-blooded animals that depend on an air temperature sufficiently high to warm their bodies before they become active. Unlike ourselves, they have their skeleton on the outside of their body. This exo-skeleton serves not only for support of the muscles but also as an armour to protect them from poisonous chemicals, except at the "joints" and breathing pores.

The manner in which an insect obtains its food is determined by its mouthparts, of which there are several types. As far as the gardener is concerned they may be divided into two general types, chewing and sucking.

Insects with chewing mouthparts bite off portions of their food, usually a portion of a leaf, and swallow it. They *can hence be poisoned by covering the leaf surface with a poison.* Potato beetles and cabbageworms are good examples.

Insects with sucking mouthparts pierce the plant tissues with their proboscis and suck up the internal juices. They *can only be poisoned by chemicals that kill by contact with the insect's body.* Plant bugs and aphids are examples of this group.

The gardener should hence first determine how the insect is causing injury to his plants and if possible the name of the insect by forwarding it to the nearest entomologist.

Chewing insects eat the leaves and one can readily observe the damage. Sucking insects, on the other hand, do not destroy portions of the plant. The plant, however, looks sickly and turns yellow or brown, often in blotches. The insects are usually found on the underside of the leaves, which are often curled.

Insecticides are grouped according to the type of insect they are designed to destroy.

Stomach poisons are used for insects with chewing mouthparts. Common poisons in this group are arsenate of lead, arsenate of lime and Paris green.

Contact poisons are used for insects with sucking mouthparts. Nicotine sulphate, derris and pyrethrum are commonly used.

Some insecticides act as both contact and stomach poisons. Although sucking insects cannot be killed with stomach poisons, chewing insects can be killed by contact poisons as well as stomach poisons.

The new insecticide DDT, which is so widely publicized, has some action as a stomach poison but is most effective in contact action. It is very effective when used against certain insects but is practically valueless against others. In fact the population of some insects or mites may actually increase by its use because DDT is very deadly against many insect parasites and predators of pest species.

Well in advance of the growing season the grower should have on hand equipment adequate for his needs, together with a supply of the more common insecticides. At the time he orders his seeds he should include an order for the necessary insecticides and equipment. Old equipment should be checked over to see that it is in good working order.

Garden insecticides are applied as sprays, dusts or baits. The use of a spray or a dust is largely a matter of personal preference; both are effective. Sprays are heavy, require water (which may be scarce), but stick well to most leaves and can be applied throughout the day. Dusts are lighter and make good coverage, particularly of cabbage leaves, but can only be applied when the air is calm and preferably in the morning or evening when the leaves are moist.

A small hand duster or sprayer is suitable for the man with a few plants. A rotary duster and knapsack or compressed air sprayer should be used by those with a larger garden. A larger type of sprayer comes conveniently mounted on a wheelbarrow. The large market gardener should have adequate power equipment, which can be obtained in various capacities.

A supply of 50% wettable DDT powder, derris, nicotine sulphate and arsenate of lime, will be sufficient for most needs. A few other insecticides may be required for special pests which will be discussed later. Paris green which has been used for so many years is now largely replaced by arsenate of lime and DDT. It is expensive, washes off easily, and tends to burn the foliage.

DDT is one of the most valuable modern insecticides for the home gardener. It, however, is not a cure-all and will not kill every insect in the garden. It is the best all-round insecticide for potatoes, either as a spray or dust. It combines well with the copper fungicides and wil kill potato beetles, potato flea beetles and leafhoppers. DDT is very effective against flea beetles which attack cabbage, cauliflower, radish and turnip. It also kills the imported cabbage worm and diamondback moth. On account of the residue which, when excessive, is poisonous to humans, it should not be used on cauliflower when

they come into head. At this stage, derris—which is non-poisonous to man—should be used. DDT can also be used very effectively for the control of the tarnished plant bug on celery. Recent residue tests have shown that this material is safe, when used in the recommended dosages, even in the later stages of growth.

Derris is non-poisonous to humans, is a good all-round contact insecticide and stomach poison. It is hence particularly valuable on leafy vegetables. It readily kills flea beetles, imported cabbageworms, leafhoppers and plant bugs.

Nicotine sulphate is used chiefly for the control of aphids and leafhoppers.

Arsenate of lime has been one of the main standbys for potato beetle control. It is now replaced by DDT, which is not only effective against this pest but against the other pests of potatoes as well. A supply, however, should be kept on hand for use in cutworm and grasshopper bait. One pound of this poison to 25 pounds of bran moistened with water makes an effective cutworm and grasshopper bait. For cutworms it should be broadcast on warm evenings. If cutworm damage is expected, it is well to apply bait before transplants are put out or before seedlings appear above ground.

The onion maggot is a serious pest of onions, particularly in the Winnipeg area where they are grown for sets. Professor W. S. McLeod, of the Department of Entomology, University of Manitoba, is carrying on investigations on its control. He has found some of the new insecticides very promising, but for the time being the old remedy of oil emulsion is recommended. It is prepared as follows:

Bordeaux Oil Emulsion:

Lubricating oil	1 gallon
Bluestone	2 ounces
Hydrated lime	2 ounces
Water	1 gallon

Pour the oil into a container or into the sprayer; dissolve the bluestone in half the amount of water, stir the hydrated lime into the other half and add both to the oil. Pump the mixture back upon itself through the nozzle under high pressure until all the oil is properly emulsified. The above amounts of stock emulsion should be diluted with 40 gallons of water. Agitate while the water is being added, then add 5 pounds bluestone and 7½ pounds of hydrated lime. Oil should have a specific gravity of 24 to 27 A.P.I., a viscosity at 100°F. of 100 to 200 seconds, and an unsulphonatable residue of 60% to 90%.

Water the rows of onions with this material as soon as the plants are high enough for the rows to show clearly. Do

not apply during the hottest part of the day, as the oil may burn the plants. The treatment should be repeated in a week and again in another week.

Mites are very minute. They attack a variety of plants, causing the leaves to lose their green coloring and turn yellow or brown. They are immune to DDT and are not readily killed by the common contact insecticides. Dry lime sulphur is moderately effective but injures the leaves of raspberries. The best material now available is a spray of 1% light summer oil. This is not stocked in Manitoba but can be brought in by the oil companies from the east, where large quantities are used in commercial fruit-growing areas.

Slugs have been causing considerable trouble in Winnipeg gardens. They, also, are not controlled by the common insecticides. Spraying the foliage with Bordeaux mixture or other copper dusts gives some protection. Hydrated lime dusted over the infested area in the evening will destroy many of the slugs which come in contact with the dust. The value of the lime is destroyed by rain or watering and it should be renewed fairly frequently. Probably the most effective material is a metaldehyde bait composed of 2 to 3 per cent metaldehyde, 5 per cent arsenate of lime, and the balance bran or boiled potatoes. The bait should be moistened and scattered or placed in small piles in the affected areas. Metaldehyde, however, is not commonly stocked and must be brought in on order.

Only in a few cases has the formula been given for the use of the above insecticides. The method of using is given on the container, and the manufacturer's directions should be followed carefully.

To get the greatest value out of his control measures, the grower should be prepared with material, equipment, and knowledge of how to use them. Early control prevents damage; delayed control may check the pest but the damage has been done.

In addition to chemical control, other methods are helpful. The use of good seed and proper cultural methods to produce vigorous plants, the destruction of weeds and rubbish which provide hibernating quarters, and the encouragement of insectivorous birds, all help to make gardening a success.

When the grower encounters pests and problems with which he is not familiar, he should forward specimens to the nearest entomologist. The Department of Entomology at the University of Manitoba and the Dominion Entomological Laboratory, Brandon, are ready to supply you with information and bulletins.

Some Common Garden Weeds

H. E. WOOD
Chairman, Manitoba Weeds Commission

When not held in check weeds often ruin a garden. Where present their eradication becomes a major problem, especially during late spring and early summer when growth is at its maximum. As weeds, common to the garden, vary considerably in habit of growth and the manner in which they cause damage, it may be helpful to look over a few of them and check on control methods.

Stinkweed that may have germinated in the fall or very shortly after the snow melted is likely to be the first weed to greet you as the soil is being raked over in preparation for the seed bed. Fortunately, at this stage it is easily destroyed with rake or hoe. If much stinkweed seed is in the ground more than one crop may be expected. Particular care should be taken to prevent plants from setting seed which starts to form while the plant is still flowering.

Several of the "pigweeds"—*lamb's quarters, Russian pigweed, prostrate pigweed* — appear shortly after stinkweed. These, in the two to four leaf stage, are easily killed by light cultivation.

As the soil warms up in early June, two other troublesome annual weeds make their appearance—*red-root pigweed,* characterized by its reddish root with rather broad leaf, and *green foxtail,* or wild millet, a grass-like plant. Both weeds coming as they do at the peak of the growing season, develop very rapidly. Both are very firm rooters ,and soon become difficult to eradicate. Pulling or hoeing soon after their first appearance is recommended.

In shaded borders *common chickweed,* a soft succulent rapid growing recumbent type of weed can soon take possession. Frequent hoeing or pulling is necessary to hold chickweed in check.

Another late spring annual is *purslane,* often times called wild portulaca. It is especially troublesome in light loamy soils, grows very rapidly and quickly takes over. Even under ideal weather for cultivating weeds this pest is difficult to destroy, as it re-roots readily if left on top of the soil. Where one has only a few plants of this or any of the more troublesome weeds, it is a good plan to dig a pit or hole at some central location and drop such weeds in as found, and picked from time to time.

Quite different in appearance, but not unlike purslane in habits of persistence, is *barnyard grass*—known by its coarse

Stinkweed—One of the earliest weeds.

These two weeds are often confused.

Quack Grass—Most difficult to eradicate.

Perennial sow thistle will take possession if not checked.

grass-like appearance with brownish flower spike. One plant of barnyard grass, given plenty of room, will spread and cover several square feet of ground. Like other annual weeds, it should be cultivated out, or pulled in its early stages.

Fortunately, members of the mustard family are not as a rule troublesome garden weeds; at times *shepherd's purse* and *peppergrass* are met with, however, neither are difficult to destroy. *Wild buckwheat* is often a problem in gardens. Being rather inconspicuous in the early stages of growth, it can become pretty well established before being noticed. It pulls out rather easily from among the garden plants that it may be entwined around, if the root can be located.

Three perennial weeds are worthy of special mention—*quack or twitch grass, perennial sow thistle* and *Canada thistle.* Quack can be, and often is a very real problem, especially as it is continually encroaching from the edges. Prevention of inroads of this pest should be given consideration. Sodium chlorate, or the application of used car oil along fence lines will be found helpful. A trench, or an eight or ten inch board put down along the garden edge is recommended. When quack grass becomes established in the garden careful digging and shaking out of the roots, while tedious, is effective, and about the only way of ridding the soil of this pest.

Large areas infested with any of the perennial weeds will require thorough summerfallowing. Both *sow thistle* and *Canada thistle* are best checked by frequent cutting off just below ground level with a sharp hoe. Before becoming well established sow thistle roots may be lifted out; this is not possible with Canada thistle as it roots very deeply.

Most of the weeds discussed are susceptible, especially in the active growing stage, to the newest of weed killers, 2, 4-D. However, as very few vegetables or flowers are resistant to the chemical, its use by horticulturists is much more limited than is the case with grain farmers. The use of land known to be reasonably free of weed seeds and the roots of perennials, together with care in using only well rotted manure and preventing weeds from ripening and shedding their seeds, will go far to reduce the problem of weed control in gardening.

Compost For Manitoba Gardens

By J. M. PARKER

Organic matter is a very necessary part of soil. Not only is it the source of some very necessary plant foods, and the media for (micro-bacterial) life, but it also improves the physical condition of our soils. However, organic matter, to be of use to plants, must be decomposed into the form of humus.

Under natural conditions this decomposition takes place within the soil, but it is possible for man to manufacture humus or to convert "fresh" organic matter (grass clippings, vegetable tops, etc.) into humus outside the soil. This process is referred to as composting.

Compost For Greenhouse Plants or Bedding Plants

This is basically a fibre soil and can be composted by piling alternate layers of sod and well rotted manure. A double layer of sod is used, laying it grass side to grass side — with about one-half inch layer of well rotted manure between each double layer of sod. This is repeated to supply the desired amount — the sides being squared and kept trim. The top layer of sod should be so piled to leave a dished centre on top and well watered. This should be kept for about 11 months to 1 year. It is then cut and screened and the course fibre remaining can be used in the bottom of seed flats.

The screened soil is basic fibre soil and leaf mould, acid peat, well rotted manure can be added to order, depending entirely on type of plants to be grown. The acid peat is used where a more acid soil is required — usually about one-quarter of the mix. Sharp, fairly coarse sand should also be added.

One Method of Making Compost From Grass Clippings, Leaves and Vegetable Tops

This type of composting can be done most satisfactorily in a box-like structure and is much tidier in appearance. A satisfactory box can easily be made — it should be about 4′ x 4′ and about 3′ high — no bottom is required, but some form of covering for the top should be provided. Three sides should be nailed solid and the fourth side should consist of loose boards that can be built up as the box is filled. The three sides should be slatted or, in other words, a half inch gap should be left between boards to allow for ventilation.

Making the Compost

A supply of well-rotted manure is necessary. The heap is made by piling in all vegetable wastes (vegetable tops should

be broken up in short pieces) and mixing this with manure at the rate of 3 or 4 to one. This should be mixed as added and watered till moist but not sodden. When approximately 6 inches of mixed vegetable wastes and manure have been piled in the box a thin layer of soil, about ⅛ inch thick) should be spread over this and the process repeated until the box is about half filled.

When the box is about half full, three or four vertical ventilation holes should be made by ramming a crowbar or hoe handle through the mass right to the ground beneath the box. The remaining mixed vegetable wastes and manure are added above until all are used up — the ventilation holes being maintained right to the top.

This compost method requires about 6 weeks or so in warm weather, but could be started in the fall and completed the following spring. Moisture is essential as the process will be very slow if the mixture is too dry, but too much moisture will be harmful and may quite easily cause offensive odors.

If the box does begin to smell, the heap should be turned at once. It should only require one turning (about six weeks after filling if the weather is warm and the rotting is well advanced). The turning should be done in such a way to thoroughly mix all the layers.

When the whole mass is well rotted it is ready to apply to the garden — it can be spread just like manure. If it is not to be spread for some time, further turning may be necessary.

What's New in Potatoes

O. A. OLSEN

The Irish potato, to most of us is just a staple food to be lugged from the store, cooked and eaten, or a plant grown in the garden as a matter of course. It may seem to be an uninteresting and unchangeable part of our food supply, but actually the potato has quite a changeable character. In the hands of the potato breeders and those engaged in research on potato culture the lowly spud is undergoing change, and is revealing the secrets by which it may best be grown and utilized.

New varieties have made one of the changes in the potato situation, but this change has not, as yet, been very evident in Manitoba. Due to the efforts of the State Agricultural Experiment Stations and colleges, which are participating in the National Potato Breeding Program, the United States has thirty-seven varieties that it did not have sixteen years ago. Several of these varieties, such as Warba, Chippewa and Katahdin are already familiar to Manitoba potato growers and others are likely to become more well known in the future.

Warba is too well known to need comment, except to note it as an established, first early, potato in Manitoba. However, Red Warba, a "sport" of Warba, deserves as much attention as its big brother receives. Red Warba is just as early, yields as well, tolerates disease to the same extent, has the same rough deep eyed shape and is the same as Warba in practically all respects except color and possibly yield. The color of Red Warba is a bright attractive red, occasionally splashed with creamy white. While Warba tends to assume a somewhat dull and dirty creamy white color after some time in storage, Red Warba remains bright and unfaded.

Pawnee, an introduction from the Colorado Agricultural College, is a newcomer which is worth a try, especially in home gardens. It is a mid-season, white variety, with a round but very flattened shape. It is extremely smooth and its shallow eyes are quite few in number. Its cooking and keeping qualities are very good. One disadvantage which has been noted at the University of Manitoba is an apparent tendency to develop areas of discolored brown tissue in the central part of the tuber. The condition seems to develop in storage and only a fairly small percentage of the tubers is affected. The variety is not a prolific bearer, but its attractive tubers should make it useful in the home garden where yield is not an all important factor.

Two varieties originated by Minnesota last year are quite promising. Chisago, the Chippewayan name for "white and fair" has been given to a midseason, white potato which is reasonably smooth. It yields well and is a fine quality potato. Waseca, the second variety, is a rusty red potato, as early as Warba and just as good a yielder. It has the advantage of being somewhat smoother, though more smoothness would be desirable. When seed of these two varieties becomes available, they may prove to be very useful in Manitoba.

Pontiac is a United States variety which appears to be an excellent yielder and quite drought resistant. It is, however, late and fairly low in cooking quality when grown in Manitoba. In appearance, it is light red and fairly smooth.

Practically all of the other recent United States introductions are of late maturity but many of them have valuable characteristics, which give them local adaptation. Ontario and Cayuga are both highly resistant to common scab. Ontario seems to be the better yielder of the two. Sequoia possesses resistance to leafhopper, an insect which does more damage to potatoes than is generally realized. It is moderately resistant to late blight. Menominee possesses resistance to scab, late blight and early blight. Sebago has the same good characters and is also resistant to mild mosaic. Eleven per cent of the acreage of certified seed potatoes in Prince Edward Island in 1947 was Sebago. Teton is resistant to bacterial ring rot. It might be mentioned here that Teton is not immune, it can be infected by and will carry bacterial ring rot but the plant does not develop the typical symptoms.

Dr. Reddick at Cornell University has been breeding potatoes for resistance to late blight and after many years of work he has achieved a large measure of success. Eleven varieties have been named, all of which are very strongly resistant to the strains of late blight found in New York State. The varieties are Empire, Virgil, Placid, Ashworth, Madison, Cortland, Fillmore, Harford, Essex, Snowdrift and Chenango. Only the last three are early enough to be of use in Manitoba and of these, Chenango is the only one about which much information is available at present.

Canada has also made its contribution to the varieties available. Columbia Russet, developed in British Columbia is a late but attractive russet potato. It has excellent cooking and good keeping quality. The variety seems to be adapted to areas of lighter soil, where it produces a smooth, pleasing tuber. Canus, selected by the Dominion Experimental Station at Lacombe is a fairly smooth, white, somewhat thin skinned variety which is well worth a try as a main crop potato. It is just below Irish Cobbler in cooking quality and is mid season in maturity.

In the way of culture, the biggest recent advance has

possibly been in potato insect control by the use of D.D.T. This insect killing wonder has proven itself to be sure death to all insects which attack the potato in Manitoba, with the exception of aphis, which are not fully controlled by D.D.T. Preparations containing D.D.T. are available in quantity and some are for dusting and some are for spraying. The 3% D.D.T. dusts may be applied at the rates of 12 to 15 lbs. per acre when the plants are young, increasing the application to 18 to 20 lbs. per acre as the plants increase in size. D.D.T. sprays are prepared by using micronized or water wettable D.D.T. mixed in such proportions that 0.75 to 1 pound of pure D.D.T. is applied to one acre.

By combining fungicides with D.D.T., an all purpose compound may be obtained for either dusting or spraying. In various States and in Ontario the addition of Dithane at the rate of 2 quarts to 100 gallons of spray, or the addition of Copper A compound (tetra copper calcium oxychloride), tribasic copper sulphate, yellow cupricide, and copper oxychloride sulphate to the dusts to give 7% metallic copper gave better control of late blight with less damage to the plants than did the standard fungicide, Bordeaux mixture. New insecticides are on the way and judging from the limited information available, they may prove as good as D.D.T. Soon such abbreviations as D.D.T., D.M.T. and Chlordane to denote various potato insecticides may become common.

Within the last few years, the use of chemicals to kill potato vines before harvest, has been adopted to some extent as an aid to potato production. If killing frosts do not occur,

Potato tubers treated with sprout inhibiting hormones stored at 55° from January till June, 1947. Box marked "Check" received no treatment. The products of three firms were included in the experiment.

the presence of a mass of heavy green potato vines makes harvesting very laborious. If late blight is present, spores spread from the living leaves to the tender tubers and cause late blight tuber infection. By killing the vines prior to harvesting digging is made easier, the possible spread of late blight is reduced, and in seasons of excessive moisture, the tendency toward second growth and oversize tubers is checked. The tubers are given a chance to harden their skins and mature. In districts where the late spread of leaf roll is a serious problem, killing the vines two weeks or so before harvest cuts down on the amount of virus infection.

Vine killing materials are generally caustics which kill by contact. They are available both as sprays and dusts. Dusts, such as Aerocyanamid, applied at the rate of 60 to 80 lbs. per acre, depend upon the presence of dews for their effectiveness and are generaly more slow acting than sprays. The spray materials used are sold mainly under trade names, such as Dowspray 66 Improved, Weed Killer A, Weed Killer XA, Sinox and other dinitro compounds. The effectiveness of most of these is increased by adding aluminum sulphate or diesel oil to improve the penetration. A consequence of the use of vine killers is sometimes an internal necrosis or browning in the tuber. It seems to be due to the sudden checking of growth and will also follow heavy frosts which occur when the vines are green. The necrosis disappears after a time and does not impair the cooking or germinating qualities of the tuber.

A recent development which will be of interest to those whose only potato storage is the basement with temperatures usually between 50° and 60°F. is the use of sprout inhibitors. Researchers have shown that the flavor and cooking quality is at its best in potatoes stored at 50° to 55°F., provided that the softening and shrinking due to sprouting can be avoided. And sprouting can be prevented. The sprout inhibitor is a hormone-like substance with a long name typical of hormones, the methyl ester of naphthalene acetic acid. It is now available from chemical companies in dust or liquid form. It is applied to the potatoes, at the rates recommended by the manufacturers, when they are placed in storage. The tubers should be in a tight walled bin or box which can be covered. The inhibitor owes its effect to volatization of the compound and the vapor should not be allowed to escape. Treated tubers may be kept in reasonably good condition until mid-May by this means. Treated tubers cannot be used for seed unless specially treated to break their dormancy.

A condition which appears to be new in 1947, but which actually is as old as the potato itself is the "hollow heart" which is so common in Irish Cobbler this year. It is not a disease in the sense that it is caused by an organism, but is merely a growth condition brought about by an excess of

moisture late in the growing season. This causes the tubers to grow unevenly and crack in the centre. The Irish Cobbler seems to have more of a tendency to develop this condition than any other variety. The food value of the tuber is not reduced in any way by the hollow centre.

A new development concerned with marketing Manitoba grown potatoes in the province was brought about when grading of table stock potatoes was introduced on October 1, 1947. After that date, all potatoes offered for sale are to be graded into four permanent grades, namely, Canada Fancy, Canada No. 1 Large, Canada No. 1 and Canada No. 2. A temporary grade, Manitoba Commercial, has ben set up for that part of the 1947 crop which contains more than 3% hollow heart. The purpose of grading is to bring about an improvement in the market quality of Manitoba potatoes.

More could be said about new uses for the potato and potato products in livestock feeding, in industry, etc., but that is a story in itself.

Keeping Vegetables for Winter Use

CHARLES WALKOF

Vegetables stored in the home for winter use are an important factor in healthful living. They possess many combinations of elements that are duplicated with difficulty in the synthetic counterpart designed to promote family health. More vegetables should be used. Hence, more should be stored.

Home storage of vegetables is not a difficult art. Yet many home gardeners that grow vegetables successfully will frequently lose their products by poor storage methods.

There are several important steps in keeping vegetables over winter successfully. Among these, proper ripening is paramount. Immature stock will not store properly despite favorable temperature and moisture conditions. With some vegetables ripening can be promoted by artificial stimulation. As a rule, it is desirable to wait until the season is far enough along to ensure normal ripening. Onions appear to benefit by pulling the plants during the third week in August. They are spread in the sun to cure and in 10 days to two weeks will develop hard protecting scales. The cucurbits, such as pumpkin, squash and marrow, are ready for harvesting when the skin or shell is too hard to be punctured by the thumb nail. This occurs by mid-September. Root vegetables, such as potatoes, carrots and beets, mature approximately a week to 10 days following the first killing frost in late September. Cold weather and light frosts favor maturity in parsnips, rutabagas and cabbage. Accordingly, harvest comes due in mid-October. Although celery is not a common vegetable in the home garden, it is easily grown and the harvest period occurs during the third week of September.

Proper harvesting and preparation methods are necessary for desirable vegetable storage. It is important to choose cloudy and dry weather for harvesting to prevent wilting and also to avoid storing wet specimens. A hot sun can be most harmful, with few exceptions, to freshly dug roots or cucurbits that have been removed from their plant vines. Surface moisture encourages rot-forming organisms.

Bruised vegetables may deteriorate very rapidly. It is of utmost importance, therefore, to prevent bruising or other mechanical damage. During root digging it is desirable to put the fork or shovel into the soil several inches back from the plant. Thus a cushion of soil shields the roots from digging injury. After the roots are dug or the cucurbits are cut from the vine they should be handled with care. Throwing them from place to place or handling them in rough containers scuffs the

skin or otherwise breaks the product and opens it for rot organisms. Some successful gardeners prefer to use cloth lined boxes or pails to handle their vegetable crops.

Most root vegetables should have their tops removed before storing. Onions are excepted if the tops are braided into ropes. This kind of preparation is considered most satisfactory for onion storage. The bulbs are thus permitted to hang free. Otherwise, the onion tops are removed for shelf storage. Carrots, parsnips, beets and rutabagas are trimmed of their tops close to the crown or top of the root. Some gardeners prefer to cut or trim off a part of the shoulder of the root near the crown especially if a green color is present. This is done in particular to rutabagas and carrots. Cucurbits also have a short 2 to 3 inch stem by which they are attached to the plant or vine. This stem should be left on for best results.

The place of storage is important. Onions and the cucurbits require a dry place. The root vegetables, especially potatoes and rutabagas, which are stored in open bins require a damp room. Most city and town homes have dry and warm basements which are not satisfactory for storing vegetables. Under such conditions it is desirable to section off a special corner in the basement approximately 5 feet wide by 10 feet long for this purpose. The inside walls of this room should preferably be insulated or tightly boarded up. A basement window leading to the outside is desirable for the room to provide ventilation. During the mild fall weather the window should be open all night to permit free flow of the cool air. If the days are warm the window is best kept closed. Throughout the winter careful regulation of the window to permit fresh air to enter is desirable for good storage. A temperature of 38°F. will produce best results.

The special vegetable storage room will serve to keep those kinds requiring moist conditions. The onions, pumpkins and squash would last longer if they were kept in the dry main room of the basement. A shelf set two inches off the floor is satisfactory. If the onions are braided into ropes, they should be hung along the wall. While a temperature of 38 to 45°F. is highly desirable, these vegetables will keep even at somewhat higher temperatures providing the room is dry.

Cool earthen cellars are considered ideal storage for the root vegetables and cabbage. The expense involved in making a special root cellar in the backyard may not be justified in view of the few vegetables the average family uses during the winter. An ideal plan is to make a small root cellar with the entry door into the basement of the house. Such a plan will obviously work only where ground water is not a problem. The earthen room could be excavated to the desired size leaving the soil layer above and outside intact. Supports of sturdy fence posts and cross beams are essential to hold up the earthen

roof. Ventilation could be provided by a 4 inch tile pipe sunk into the earthen roof.

The root vegetables vary in the type of storage they require for best results. Potatoes and rutabagas keep best without any protection around the individual roots. Carrots beet and parsnips retain their fresh and bright appearance if the roots are packed in damp and fine textured packing. Fine, sharp and damp sand has been used for many years and appears satisfactory for small lots of vegetables. In deep bins the weight of the sand tends to crush the lowest roots resulting in spoilage. For such conditions dampened fine peat moss and sawdust have given excellent results. The moss appears to have the additional value of an antiseptic quality to discourage rot forming organisms.

An economical method of storing carrots, beets and parsnips is to pack them together in one bin or large box. The vegetables are placed in layers with the beets below, parsnips next and carrots on top. As the need for these arises during the storage period, the roots are taken from one end and used progressively to the other end. Such a method saves making three separate bins and saves in the amount of packing material required. It also distributes the weight of the vegetables evenly thus eliminating undue pressure on the stored material.

The most satisfactory method of packing root vegetables with moss is to place a 4 inch layer of moss next to the floor of the bin. A 6 to 8 inch layer of roots is then put in, another 4 inch layer of moss, a second 6 to 8 inch layer of roots, moss again and so on until the bin is full. While the bin is being filled a four inch wall of moss is built around the inside of the bin for outside protection. After the last layer of vegetables is placed the entire bin is covered with moss.

A method of root storage of merit is the use of wax. The roots are covered with a thin film of wax and placed without further protection in an open bin. The method is particularly useful for carrots, beets, parsnips and rutabagas. It keeps the vegetables in excellent condition and appearance. Waxed vegetables can be stored in a dry atmosphere without difficulty. The temperature, however, must be held near 38°F. Waxing involves the use of a pail of hot water (near 140°F.) and melted parawax. The latter is poured on the hot water. The vegetables to be waxed should be free of mud or other excess dirt. They must be dry. A strainer is useful for dipping small vegetables but the large ones can be submerged by hand or with a pointed probe. They must be dipped with an even non-hesitant and continuous motion. It takes approximately 1½ to 2 seconds for each dip.

Cabbage keeps best in a cool and moist atmosphere. As a rule, the heads are stripped of their outer leaves and placed

on slatted shelves. It has been found that spoilage usually begins at the place where the heads lie on the leaves. Evidently the weight of the head gradually crushes the plant cells where they contact the shelf and thus opens a wound for rot infection. To overcome this difficulty the cabbage heads can be hung to the rafters of the storage room and are thus free of contact. The root is left on the head for this purpose. Most of the outer leaves are removed and a string looped around the root for hanging. Cabbage had kept excellently by this method in a cool room.

Celery can be stored successfully in the home by lifting the plants, including the roots, from the garden and replanting in a 4 inch layer of moist sand on the basement floor. Approximately one third of the plant foliage is cut back before digging. It is beneficial also to soak the soil thoroughly with water before the celery plants are dug. Thus the plants become turgid or full of water, which has been found desirable for indoor storage. Some gardeners keep celery for one or two weeks in crates. The roots are cut off, the tops cut back somewhat and the plants are then packed snugly in special crates. Cool storage is important.

A certain amount of care during the winter months helps considerably to prolong the life of stored vegetables. It pays to watch the temperature of the storage room and keep it near 38°F. It is important also to check the bins for decaying material and destroy this when first noticed. Certain diseases may show up in storage even though the vegetables appeared healthy when harvested. Onions may develop neck-rot. This will show up as a soft or spongy condition or as black warty knobs around the top of the bulb. Squash and pumpkin may become soft at point of contact with storage floor. Some fruits may shrivel because of immaturity at harvest. All such specimens should be removed as they are observed.

The success of vegetable storage in the home depends largely on a continuation of the care and attention that home owners apply in growing their gardens. The results are gratifying. These are particularly evident in providing the table with vitamin packed vegetables at a time of the year when human resistance to common disease is highly important.

Growing Bulbs For Winter Bloom

By JOHN WALKER

The purpose of this rather brief article is to give those essentials which will ensure success. There are a few points to take special note of, and if these are carefully followed you are bound to succeed. This article is not intended to cover the whole subject, or to recommend a great many varieties. The varieties mentioned herein are comparatively inexpensive, and will, without a question of a doubt, produce very lovely blooms. Once you have gained sufficient experience growing these varieties, you can then indulge your fancy for more extensive growing.

The bulbs must be of high quality. Get the best and largest bulbs even though you have to reduce the number. Large, mature, firm, heavy bulbs are the only ones that an amateur grower should bother with. For greenhouse work smaller sizes would probably be satisfactory. The larger the bulbs the better the blooms.

For your first year be content with the following kinds. They are mentioned in the order in which they will bloom:

Narcissus Polyanthus or Paper White Narcissi: Place bulbs close together in a flower pot. The bulbs can be almost touching. These can be grown in water and stones with good results. Coolness produces sturdy growth.

Hyacinths: White: L'Innocence; Pink: Lady Derby or Moreno; Blue: Grand Maitre or King of the Blues. They can be grown in shallow pots but do better in regular flower pots. Be sure that you put only the same variety in the one pot, as they may differ slightly in their development.

Daffodils: There is nothing better than King Alfred. If you want to try other sorts, grow Van Waveren's Giant, and, for a third, Golden Spur. Double Daffodils, grow only double Von Sion. These should be put in the ordinary flower pots, not shallow pots. The size of the pot will depend on the number of bulbs you want to grow in one container. The bulbs can be put close together.

Poetaz Narcissi: This type is unquestionably going to give you a thrill. They will look like a failure until they come out, because the flower stem comes ahead of the leaves. They throw a cluster of blooms like an enlarged paper white, are much more decorative, and very dependable. Laurens Koster, white with a small yellow eye, must be your first choice. Second, Admiration, pale yellow with the cup edged scarlet.

Double Tulips: These early flowering tulips are the only kind to grow inside. The Darwin tulips grow much too tall for house culture. Tulips will last six to nine days in the house, and as they come last of all, and some are sweetly perfumed, they are sure to please. The best is Mr. Van der Hoef, pure buttercup yellow; second, Tea Rose; third, Couronne d'Or.

Grow Daffodils, Poetaz Narcissi and Hyacinths in ordinary flower pots. Grow the tulips in shallow pots.

These bulbs can be planted any time in the fall — late September, October, or early November.

Now, as to soil. A fibrous soil is needed, and it is a good plan to put some leaf mould in the soil, possibly 25% in measure, also 15% sand. In planting the bulbs see that a quarter of the bulb is left exposed. Do not push the bulbs down into the pot, but place your bulbs and then pack the soil around them, otherwise, when the roots start to come you will find that your bulbs push up out of place because the soil underneath them has been firmed too much.

To water, be sure to stand them in a container and let the water soak up — don't water them from the top. If water gets in between the leaves it will damage Hyacinth bloom. Keep the soil moist.

Now we come to the one cause of failure, and the essential for success, and that is the necessity of storage after planting, in a cool part of the basement without light. If necessary put a box over the pots to keep out the light. The purpose of the storage is to cause root development before the leaves start to grow. The ideal temperature would be around 40 degrees. Keep as near to that as you can.

Store Paper Whites, if planted in soil, for three to four weeks; Hyacinths, not less than 10 weeks; Daffodils, 12 weeks; Tulips, not less than 16 weeks. These times can all be extended if the plants haven't developed sufficiently. Hyacinths should be 3 inches tall before being brought out; Tulips 3 inches; Daffodils and Narcissi 4 inches or more. From this cold storage and darkness do not bring the pots upstairs into a 70 degree temperature. Set them out in the basement where they will get light and a temperature of about 55 to 60 degrees. Keep them there for 7 to 14 days; longer, if the leaves are not a good green color. After that time they can be brought up into the house where they will develop properly, and you can look for as fine or finer bloom than can be obtained in the Florist Shops.

USING TULIPS FOR OUTSIDE PLANTING

(Contributed by Herb Sulkers)

Tulips planted outside can stay for several years, and annuals may be planted over the top of them. Besides the Darwin or early tulips, it is well to use Cottage varieties in the color you wish to plant. The Cottage varieties are in general later in coming to bloom, which is often an advantage in Manitoba. Tulips start growing very early in spring, especially if they are against the house or in a well sheltered bed. Sharp, late frosts can do some harm to them.

Also the Breeder tulip is excellent for open garden purposes; the colors differ from the Cottage and make a nice contrast. They bloom about the same time. There also are several smaller Tulip species. These are excellent for rock gardens, and if put well down will bloom for many years in clusters if so desired. Then there are double late tulips, which also are very good for bedding out. These double late varieties are not suitable for forcing. The best way to buy your tulip bulbs is to stipulate your colors, and whether you want them in bloom late or early; also whether you wish to plant them outside or use them for forcing. In that way you prevent many disappointments.

Recommended Vegetable Variety List

Approved by The Vegetable Committee of the Manitoba Horticultural Association

Asparagus	*Mary Washington, Vineland, Eden.
Beans	
Green Podded	*Tendergreen, *Stringless Green Pod.
Wax Podded	Pacer (very early), Webber Wax (early), Round Pod Kidney Wax, Pencil Pod Wax.
Baking or Dry Shell	Grainer (Gohns, Rainy River), Great Northern (large), Michilite.
Broad Beans	Broad Windsor (long and short pod varieties).
Pole Beans	*Kentucky Wonder (green and wax podded), Dutch Case Knife.
Edible Soybean	Agate (early).
Beets	Early Wonder (early), *Detroit Dark Red Types.
Brussels Sprouts	Improved Dwarf, *Long Island Improved.
Cabbage	
Green—Early	Golden Acre, Viking Golden Acre (very early), Jersey Wakefield.
" Mid-season	Copenhagen Market, Green Acre, Enkhuizen Glory.

" Winter	Danish Ballhead, Penn State Ballhead, Round Head (drier area).
Red	Red Acre (early).
Savoy	Chieftain Savoy.
Cauliflower	*Snowball types, Snowdrift.
Carrots	*Chantenay types, *Nantes (early, very brittle, not suitable for commercial washing), Danvers Half Long types.
Celery	
Golden	Golden Plume (early), Golden Pascal.
Green	Utah types (late).
Citron	Red Seeded.
Corn	
Sweet	Dorinny (very early), Gill's Early Golden Sweet (early), Gill's Early Market (for shipping), *Burbank Golden Bantam.
Hybrids	Marcross (early), Sugar Prince.
Cucumbers	
Slicing	Early Russian (very early), Straight 8, Marketer.
Pickling or Dill	National Pickling, Mincu.
Egg Plant	Blackie, Black Bountifull.
Leeks	Giant Musselburg, Giant Carentan.
Lettuce	
Leaf	Grand Rapids types, Early Curled Simpson.
Head	New York types, Great Lakes Improved, Imperial types.
Cos	Paris White.
Muskmelon	Far North (very early), Champlain.
Onions	
From Seed (yellow)	Sweet Spanish (transplants), Yellow Globe Danvers No. 11, Mountain Danvers, Ebenezer (also grown for sets).
Red	Red Wethersfield.
Perennial	White Welsh, Egyptian.
Pickling	Silver Skin.
Parsley	Paramount.
Parsnips	Intermediate Guernsey Half Long, Hollow Crown (roots rather long for heavy soils), Short Thick (for heavy soils).
Peas	
Early	*Little Marvel, Wisconsin Early Sweet (very early).
Mid-season	Lincoln (Homesteader), Merit, Onward.
Late	Stratagem, Alderman.
Edible Podded	Mammoth Luscious Sugar.
Dried for Soup	Arthur, Dashaway (yellow soup).

Peppers	
Sweet	Harris Earliest (early), King of the North, Merrimack Wonder.
Hot	Cayenne (early), Hamilton Market (mid-season).
Potatoes	
Early	Warba, Red Warba.
Mid-season	Early Ohio, Irish Cobbler.
Late	Green Mountain, Columbia Russet, Netted Gem.
Pumpkin	Cheyenne Bush, Small Sugar, Connecticut Field (table and cattle).
Radish	Sparkler, Comet, French Breakfast, White Icicle.
Winter	Black Spanish.
Rhubarb	Valentine, Canada Red, *Ruby (not possible to grow a specified variety from seed; grown only from roots).
Spinach	Longstanding Bloomsdale, *King of Denmark, Noble (flat leaved).
Swiss Chard	Giant Lucullus, New Zealand.
Squash	
Winter	Greengold, Bush Buttercup, Green and *Golden Hubbard types.
Tomatoes	
Non-staking	Early Chatham, Bounty.
Staking	Earliana (for home growing), Stockesdale No. 4, Bonny Best.
Turnips	
Swede or Rutabaga	Laurentian, Canadian Gem, Perfection.
Watermelon	Sweet Sensation (extra early), Early Canada (early).
Vegetable Marrow	Long White Bush.

Varieties first on the list are also in most instances first recommended. The foregoing list is recommended on the basis of quality, adaptability to Manitoba conditions, suitability for the farm garden, commercial growers, processors 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.

Chicory .....Witloof (for basement forcing).

Chinese Cabbage.....Chihli, Wong Bok (short head).

Corn—Pop Corn.....Tom Thumb (yellow), Pinkie, White Hulless.

Ground Cherry .....Novelties, Golden and Purple Husk. Tomato.

Herbs .....Anise, Balm, Borage, Caraway, Catnip, Chervile, 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.

Note: Varieties marked with (*) are suitable for quick freezing.

Boys' and Girls' Competition

The flower show committee would like to draw the attention of all members to the class for boys and girls between the ages of eight and fourteen years, who have, and cultivate a garden of their own. This competition was included in last year's flower and vegetable show, for the first time, and while not particularly large, the entries were very encouraging. We hope to continue with this class in future shows, and feel certain that sufficient entries will be made. Prospective flower and vegetable prize lists for the 1948 show will be mailed to all members before planting time, and we hope that all of the children who grow and attend their own gardens will make many entries, and help make this section one of the largest in the show.

The Winnipeg Horticultural Society Vegetable and Flower Show

Held August 27th and 28th, 1947
At the Civic-Caledonian Rink

Your Society held its annual Vegetable and Flower Show, in conjunction with the Provincial Fruit Show in the Civic-Caledonian Rink on August 27th and 28th. Growing conditions for flowers this season were not by any means good, owing to a late and cold spring, followed later by excessive heat and destructive winds. However, there was an excellent display of flowers in nearly all classes, and these, combined with a good vegetable and fruit display, made the show an outstanding success. Entries totaled 800, from 97 exhibitors, an increase of 49 and 7, respectively, over last year. Prizes were won by 79 exhibitors.

Total cost of prizes amounted to $491.75. Rent of rink, printing, cartage and other expenses amounted to $220.00, making a total of $712.15.

Several changes were made in the method of exhibiting flowers, which, I believe, were to the advantage of the exhibitors, and other suggestions were received from those attending the show, which will be turned over to the Show Committee for next year. The canning section, and House Plant section were omitted this year, as your committee thought

the interest in these sections was not large enough to continue with them.

A new section was introduced for the first time this year, a section for boys and girls between the ages of 8 and 14 years, who cultivate and look after gardens of their own. Entries in this section, while not very large, were very promising for the first year, and I feel that this section should be encouraged, as the boys and girls of today will be our members tomorrow.

The thanks of your committee are extended to the T. Eaton Co. for the loan of the tables; to the T. Eaton Co. and The Hudson's Bay Co. for advertising in the daily Press,; to the Winnipeg Electric Co. for radio advertising; and to the Winnipeg Free Press and The Winnipeg Tribune for publicity. We are also indebted to the following firms who rented space for display purposes: Swift Canadian Co., Burns & Co., Green Cross Co., Palco Peat Co., The Furnasman Stoker Co., Taintor Twomey Seeds Ltd.; and the Victoria Feeds, Ltd. The display of cut flowers by the Winnipeg Parks Board was very much admired, as was also the fine display of Manitoba grown fruits by the Sadok Nursery.

My personal thanks to all the directors and members who worked so hard to make the show a success. This report would not be complete without a special word of thanks to our secretary, Mr. R. W. Brown, who, with the assistance of members of his family, and several of our directors, very capably and efficiently handled the large number of entries.

In closing, I would like to ask all members of the Society to support the Flower Show by entering flowers, fruits and vegetables. Everyone cannot win prizes, but I am confident that all those who do enter will gain something from the experience that, even though they don't win a prize, they will have the feeling that their effort was worth while.

Respectfully submitted,

WM. J. TANNER,
Chairman, Flower Show Committee.

Report of Home Grounds Committee for 1947

The annual home ground competitions, for the year 1947, were very satisfactory. There were thirty-five competitors, of whom twenty-three won prizes.

We are indebted to the following, who very generously donated the prizes: Winnipeg Tribune, C. H. McFadyen Co., Wallace Nurseries Ltd., Patmore Nurseries Ltd., Morden Nurseries, Sadok Nurseries, Fort Garry Nurseries, Swift Canadian Co., Winnipeg Supply & Fuel Co., Burns & Co., H. Sulkers, Manitoba Hardy Plant Nursery, Dixon Reid Co., Dr. S. W. Edgecombe, The Winnipeg Hydro Electric System, J. H. Ashdown Hardware Co., and Traintor Twomey Seeds.

This year we have two additional trophies for our competitions, one donated by Mr. Theo. E. Howard, for annual competition for the winner of the novice competition and one presented to the society by Mrs. F. M. Benham, which we are offering for annual competition to the member having the highest aggregate number of points in all sections. This makes a total of five trophies which have been won by: Mr. T. J. Foxcroft, for lots up to 33 feet; Mrs. Roy Munt, for lots 34 to 66 feet; Mr. D. Campbell, for lots over 66 feet; Mr. C. G. Biggar, for novice home grounds; and Mr. T. J. Foxcroft, for highest aggregate number of points.

This year we added to our competitions a section for perennials for which we have twelve entries.

The judging of the rock gardens and perennials was done on June 25th, and the other eight sections on August 6th, by Mr. Hector MacDonald and Mr. G. Churcher. The winners are:

LOTS UP TO 33 FT.
(4 entries)
1st—Mr. T. J. Foxcroft
2nd—Mr. J. I. Huston
3rd—Mrs. W. W. Gyles
4th—Mr. A. Goodall.

LOTS 34 TO 66 FT.
(5 entries)
1st—Mrs. Roy Munt
2nd—Mrs. M. Harding
3rd—Mr. P. H. Hammond
4th—Mr. R. Preston.

LOTS OVER 66 FT.
(5 entries)
1st—Mr. D. Campbell
2nd—Mr. A. R. Burt
3rd—Mr. C. A. Goodall
4th—Mr. Peter Finn.

NOVICE, HOME GROUNDS
(5 entries)
1st—Mr. C. G. Biggar
2nd—Mr. H. V. A. Vael
3rd—Mrs. H. G. Bell

UTILITY GARDEN
(10 entries)
1st—Mrs. A. Gallo
2nd—Mr. C. A. Goodall
3rd—Mr. Peter Finn
4th—Mr. Wm. Baker

FLOWER GARDEN
(21 entries)
1st—Mr. T. J. Foxcroft

2nd—Mr. D. Campbell
3rd—Mr. H. G. Wawson
4th—Mrs. Roy Munt

WINDOW BOX
(10 entries)
1st—Mr. A. Goodall
2nd—Mr. R. Preston
3rd—Mrs. Roy Munt
4th—Mr. T. J. Foxcroft.

LAWN
(16 entries)
1st—Mr. R. Preston
2nd—Mrs. H. G. Bell
3rd—Mr. A. Goodall
4th—Mr. J. I. Huston

ROCK GARDEN
(16 entries)
1st—Mr. Brock Windsor
2nd—Mr. G. E. Walsh
3rd—Mr. R. V. Walsh
4th—Mr. R. C. Pragnell.

HERBACEOUS PERENNIALS
(12 entries)
1st—Mrs. Roy Munt
2nd—W. W. Gyles
3rd—Mr. A. R. Burt
4th—Dr. B. J. Ginsburg.

HIGHEST NUMBER OF AGGRERATE POINTS—Mr. T. J. Foxcroft.

R. SKELDING,
Chairman.

The Culture of the Dahlia

JOHN MIDWINTER

LOCATION

The Dahlia is not as particular as most flowers, and will succeed under a great many adverse conditions. There are, however, certain locations where Dahlias seem to outdo themselves. I have found that an east location will give best results, keeping away from the burning south exposure. Dahlias such as the purples and reds do much better in partial shade.

Dahlias are particularly adapted for seashore use, and not only do well, but thrive, for reason of the moisture from the heavy dews which collect during the nights.

Dahlias will grow and do well in any kind of soil, the only difference being that in sandy loam they are short, sturdy, compact plants and in heavy loam and low land they grow tall and rank, blossoming about a week later than those planted at the same time in sandy soil.

PREPARATION OF SOIL

The soil should be thoroughly cultivated, preferably in the fall and again in the spring, if possible.

FERTILIZER

Fertilization is one of the most important factors to be successful with Dahlias. We all know that a growing plant requires and takes from the soil certain properties, and in order to keep the soil in correct preparation, the materials the Dahlia takes from the soil must be restored. This is done by fertilizing, using a dressing of either cow or horse manure, or chemicals with a little lime to keep the soil sweet and fresh.

An application of manure (either liquid or ordinary form) several times throughout the growing season will prove very satisfactory. After the first bloom I stop fertilizing as too much has a tendency to soften the tubers and they will not winter as well.

When using strong fertilizers, see that it does not come too close to the plant, as it will burn and retard the growth.

PLANTING

Roots should be planted 2½ to 3 feet each way according to variety, except the Dwarf Dahlias, which can be planted more closely. Make a hole six or seven inches deep, lay the tuber on its side with the eye or sprout uppermost. Cover four inches deep, pressing the soil firmly. As a protection against cutworms place a collar around sprout. It is well to

place stake at planting time, so as not to injure the tuber later on.

For the benefit of those living on the prairies, I suggest starting your Dahlias in pots or boxes in the house or cold frame, two to four weeks before setting out in the open. In this way you can prolong your blooming season for nearly a month. In starting your roots or tubers, have a moderately warm temperature, also be careful to avoid excessive moisture for fear of rotting the roots. Unless the soil is very dry it is better not to water until the sprouts appear. Do not start roots in a hot bed, as excessive heat and moisture may rot them.

If you want large exhibition blooms, one or two sprouts only should be allowed to grow, the rest can be pinched out. A little liquid manure at this time will help to increase the size of the bloom.

Cultivation

It is of the utmost importance to keep the surface of the soil loose and mellow by frequent cultivating. This should be continued until the blooms start to show, then very shallow as the feeder roots are near the surface of the ground and cultivating deep you injure the feeder roots and retard the growing of the plant. A good drenching of water once a week or once a fortnight is better than constantly sprinkling the soil. Drench the soil in the evening and stir the surface of the ground the next day with hoe or rake to avoid the escape of moisture.

Harvesting

Dahlias should be harvested shortly after the foliage has been killed by frost, I find from experience that as soon as the frost kills the foliage, the strength of the stalk recedes into the root. By digging two or three days after frost your clumps are in a perfectly dormant condition, having no sprouts, will keep well all winter.

Dahlias may be dug with fork or spade. In digging or harvesting the clumps, great care should be taken not to break the necks of the tubers as they have a tendency to rot or dry out, giving you a plant the following spring that is far from being a healthy plant.

Storing

I store my roots in boxes in the basement packed in soil taken from the garden, covering well and not disturbing them until spring, when I take them out for dividing. Some of the growers divide their roots in the fall and store in peat moss with very good results, but I find over the years that I have a greater percentage of tubers coming through the winter than those with other methods.

DIVISION OF CLUMPS

In dividing you will notice that the tubers are formed at the base of the stalk and that each tuber has a crown, neck and body. The crown being the bulging portion where it is connected with the clump. Upon examining carefully, small eyes can be detected on the crown and stalk base. These eyes produce the new plants, so in separating, it is necessary that each tuber have an eye. Without an eye the tuber is worthless.

In separating, a sharp knife should be used and great care taken. The best way is to remove each tuber individually, but in cutting it is necessary that each tuber have a crown or a portion of the stalk, as it is upon this that all eyes grow.

First of all select the tuber that you think can be easily removed. With the point of your knife cut deeply into the base of the stalk, cutting so as to leave an equal amount of the stalk base for each tuber. By cutting deeply into the stalk-base on both sides the tuber becomes separated from the clump, leaving a "V" shaped portion of the stalk-base. The next tuber will then be removed without much difficulty.

Dahlias may be had in several ways. Roots, pot roots, green plants and rooted cuttings. From experience I find that either pot roots or divisions are the better for the prairies. Owing to our short growing season, green plants and rooted cuttings do not make very good tubers and when you store your roots away for 7 months one wants a real matured root.

Might explain here the difference between roots, etc. *First Roots* are divisions of field grown clumps. *Pot roots* are small clumps produced by plants grown mostly in 3-inch pots. This is the cheapest way of buying roots. *Green plants* are sprouts or cuttings taken from clumps, rooted in sand benches and transplanted to pots.

In conclusion, I might mention that there are several types and classifications.

TYPES

Anemone	Formal Decorative
Ball	Informal Decorative
Collarette	Dwarf
Incurred Cactus	Miniature
Straight Cactus	Orchid
Semi Cactus	Peony
Pompom	Single

The most popular types are the cactus, semi-cactus, formal decorative and informal decorative.

The following are a few of latter varieties:

D'Arcy Sainsbury (formal decorative), white.
Irene Dunne (semi cactus), phlox pink and rose.

Lynn Fontaine (semi cactus), red, carmine and gold.
Red Menace (formal decorative), crimson.
Virginia Rute (informal decorative), crimson.
Sun Rays (informal decorative), buff apricot suffion.
California Idol (formal decorative), lemon yellow.
Pop Harris (informal decorative), red. Best from Australia.
Pink Giant (informal decorative), bright Tyrian pink.
Gold Commissioner (formal decorative), gold.
Rosy Morn (informal decorative), rose pink.
Treasure Island Sunset (informal decorative), salmon pink and gold.
Croydon Glory (informal decorative), bright yellow.
Michigan Radiance (semi cactus), yellow and orange.
Murphy's Masterpiece (informal decorative), crimson.
Premier's Winsome (informal decorative), pure pink.
Doris Arleen (formal decorative), rose pink.
Magic Prince (semi cactus), lilac, rose and mauve.

The dahlia is one of the easiest plants to grow and will produce more flowers than any other plant in the garden if properly cared for. Trust that these few hints on the culture of the dahlia will be of some benefit to the novice, that he will have abundance of bloom during the season 1948.

New Varieties of Flowers and Vegetables For the Manitoba Garden

W. H. SILVERSIDES

Ardent gardners are always looking for bigger and better varieties to grow in their gardens and this year will be no exception. There have been some outstanding introductions within the last year or so that should be tried. Some of the introductions listed below have proven their worth here in Manitoba. Others have given outstanding performance elsewhere and warrant being tried in our province.

In my estimation the one outstanding introduction this past season is a new sweet corn called Sugar Prince. This outstanding corn is the result of many years breeding and is introduced by the Morden Experimental Station and is the result of Mr. Charlie Walkof's work. This new hybrid sweet corn is a cross between Golden Bantam and Sunshine and bears the best qualities of both. Its color and cob length are excellent and I am sure that it will be a favorite when the seed production becomes plentiful. It has been tested for canning purposes and has proven ideal.

Among the newer vegetables perhaps the next most important introduction is Early Great Lakes lettuce. Gardeners have always had some trouble with head lettuce in the average garden. Early Great Lakes has been bred to withstand drought and is a sure header. The outer leaves of this variety are almost as thick as a cabbage. This new variety will not bolt readily and is ideal both from the standpoint of a market gardener or the home gardener. There are various selections being made from Great Lakes under number but to date the Early Strain has proven the most satisfactory in this area.

One of the newest introductions of the United States Dept. of Agriculture is the Logan green snap bean. This variety has received enthusiastic applause from most Experimental Stations. The beans are round, tender and with little or no stringiness. Try this for sure this coming season.

Peas are a perennial favorite with gardeners and most seed companies are spending a lot of time in obtaining varieties suited to specific purposes, namely, quick freezing, home canning, or garden use. The variety Wando looks as though it may be a coming variety for this area. It is a bush type and bears peas over a long period. The pods are not large but it is so prolific that it is being received with enthusiasm by those who have tried it. Seed of this variety should be plentiful this season.

Among the radishes the varieties Comet and Cavalier are relatively new and are excellent for home use. Both of these varieties do not go pithy quickly and can be used over a longer period than the older varieties.

Tomatoes are at present in a state of flux. Here in Manitoba Early Chatham and Bounty are still proving excellent as far as yield and earliness are concerned. We have found that most of the staking varieties such as Stokedale and Fordhook Hybrid are a little too late for this section of the West.

Among the watermelons and cantaloupe there has been some selection. Early Canada watermelon is the variety that I usually recommend as it is relatively early and the fruit is bright red fleshed. Sweet Sensation is now back on the market in good supply and is even earlier than Early Canada. This should not be overlooked by the average gardener.

The cantaloupes vary greatly from year to year, depending on the growing season. Honey Gold and Farnorth are the only varieties that can be relied on to ripen here. The varieties of Hales Best and Early Champlain are a little too late and often give disappointment to growers.

One of the novelty varieties of vegetable that is attracting considerable interest is the Golden Midget sweet corn. This is the earliest corn that we have ever grown. The ears are very small and the plants are midget in size being only about 3-4 ft. tall. The ears of the midget can be obtained in either white or yellow. The yellow selection is the one that has proven most satisfactory here in Manitoba.

Before purchasing your seed for the garden it is wise to obtain the recommendations for the province either from the Horticulture Department at the University of Manitoba, or the Manitoba Department of Agriculture.

Some of the newer flowers that should be in every flower garden are the following:

Petunia—Colossal Shades of Rose. This large double frilled variety was bred and developed in Edmonton and has proven ideal for bedding and potting. The shades range from a delicate pink to a deep rose. The plant is compact and of a dwarf type. It is not rangy like most of the Japanese doubles.

Cosmos—Radiance. This introduction of the Bodger Seed Co. is really a deviation from the ordinary. It was awarded the Silver Medal in the All-American trials. Its colour is almost a cerise, with deep rose petals and a centre of rich crimson. This introduction is of the Sensation type and should be tried by flower growers this season.

While there are numerous other new flowers and vegetables offered this season, the reader can find them in any up-to-date seed catalogue. Be sure and try a few new varieties each season as it will add variety to your garden.

The directors of the Winnipeg Horticultural Society wish to thank the advertisers who have made this edition possible, also the following who kindly made donations.

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