

**THE
1980**

PRAIRIE GARDEN

Western Canada's Only Gardening Annual

THE PRAIRIE GARDEN . . . 1980

SPECIAL COLOR SECTION

Mostly Trees and Shrubs!

\$3.00

The Prairie Garden

WESTERN CANADA'S ONLY GARDENING ANNUAL

WRITTEN BY AND FOR WESTERN GARDENERS AND
HOMEOWNERS

A non-profit publication dedicated to the advancement of horticulture in
the prairie provinces.

Published by
WINNIPEG HORTICULTURAL SOCIETY

Winnipeg, Manitoba 37th Annual Edition, January, 1980

1980 THEME —
MOSTLY TREES AND SHRUBS

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Table of Contents

An Ag Society by P. J. Peters	44
Antique Ash by M. Elliot	28
Awards of Merit, Recent, by W. G. Ronald	8
Beginner's Guide to Houseplant Survival by J. Osborne	34
Birds in My Grande Prairie Garden by Y. MacAlister	27
Black Spot of Rose by Dr. K. Mortensen	98
Books for Junior Gardeners by A. Brock	103
Bugnet, Georges — A Horticultural Pioneer by H. Welling	10
Cedars by S. Sheard	62
Chemical Grass Control Around Established Trees by M. R. Carter and L. K. Alspach	99
Chlorosis of Fruit Trees and Ornamentals by Dr. K. Mortensen	90
Common Elm Diseases by Dr. G. Platford	41
Containerized Nursery Stock — Why? by D. E. Vanstone	112
Daylilies by T. H. Machin	31
Direct Seeding of Annual Flowers by K. Dunsmore	115
"Don't Take a Pill, Take a Plant!" by C. Penny	25
Exhibiting Annuals by K. Walpole	117
Flower in a Vase by M. Elliot	13
Follow a Plan in Landscaping the Home Lot by J. Walker	81
Force Branches for Winter Bloom by C. G. Hard	132
Friendly Flower, The, by D. Dinzey	7
Gardening in the Fourth Dimension by C. Nisonger	29
Gardening in the Shade by J. Osborne	119
Gardening on the Rocks by R. Stadnyk	123
Greening of Potatoes by D. H. Dabbs	111
Growing Experience, A, by C. Warren	88
Growing Large Foliage Plants Indoors by S. Oliver	137
Growing Nut Trees in Brooks by S. Mahadeva	108
Harp, H. F. by Dr. W. A. Cumming	16
Home Landscape in the Prairie Region, The, by C. H. Thomsen	46
Horticultural Horizons by F. L. Skinner	87
Horticultural Uses for Peat Moss by J. Portree	57
How Winnipeg Loses Its Trees by M. Benum	101

Manitoba Maple by E. Kent	26
More with Snapdragons by L. M. Lenz	43
Nature's Designs by L. Allen	94
Ornamental Trees, Shrubs, Climbers and Ground Covers for Manitoba	18
Patmore, Mr. Richard H. — Pioneer Plantsman 1903-1979 by W. G. Ronald	12
Plant Evolution by A. Beaven	140
Powdery Mildew of Fruit, Vegetables and Ornamentals by K. Mortensen	130
Seed Package File Box by A. Leskiw	93
September Meditation by P. J. Peters	64
Simonet, Robert — Grower by F. Fellner	14
Snippy Tips by M. Dove	84
Spring Pruning Should be Done with Care by M.D.A.	22
Spruce Budworm by J. McCullough	110
Transplanting Container Grown Trees and Shrubs by W. Emerson	86
Trees and Shrubs for Effect	60
Trees by E. Kent	24
Trees for Your Future by M.D.A.	49
Unusual Perennials for Your Garden by H. Skinner	134
Wintering Miniature Roses by B. J. Porter	133
Winter Injury (Dieback, Sunscald) and Leaf Scorch of Fruit and Ornamental Trees by Dr. K. Mortensen	92
Hooty Hortus by G. Reycraft	

COLOR PHOTOGRAPHIC CREDITS

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Reference List for 1980 Edition

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Edition	Page	Title	Author(s)
1967	8	Centennial Plant Introductions	W. R. Leslie
1967	9	Let's Talk About Trees	F. L. Skinner
1967	24	Management of Garden Soils	A. O. Ridley
1967	42	Growing Roses in Calgary	Mrs. W. H. Dowling
1967	52	Trees on Lake Saskatchewan	F. Flavelle and D. Lockwood
1967	78	Hints on Landscaping Around the Home	F. J. Weir
1967	93	Junipers	R. E. Harris
1967	98	The Wild Rose	P. D. McCalla
1967	99	Lime — Induced Chlorosis	L. J. LaCroix
1967	102	Fertilizing Trees	A. R. Buckley
1967	106	Saskatoon — A Valuable Native Fruit	R. E. Harris
1967	108	Woody Plant Test Arboretum The University of Manitoba	Louis M. Lenz
1967	112	Ornamental Trees and Shrubs grouped as to Hardiness and Usefulness	—
1967	120	Care of Nursery Stock	—
1969	38	Weed Control for Home Grounds	J. O. Forbes
1969	50	Muckle — A Plum — Almond Hybrid	P. J. Moran
1969	61	Shrubby Cinquefoils	W. A. Cumming
1969	62	Birches for the Prairies	R. H. Patmore
1969	65	The Planned Home Landscape	W. C. Shelmerdine
1969	68	Low Growing Junipers of Merit	W. A. Cumming
1969	70	Some Caraganas are Useful Ornamentals	H. T. Allen
1969	71	Ten Hints for Wintering Roses	W. J. Emerson
1969	74	Assiniboine and Cuthbert Grant Roses	H. H. Marshall
1969	81	Dwarf Evergreens for The Prairie Garden	George Krahn
1969	101	Garden Roses	H. F. Harp
1970	4	Seldom Grown Ornamentals Hardy in Calgary	Al Golden
1970	66	Poplar Galls	A. M. Harper
1970	106	Landscaping a Corner Lot	F. J. Weir
1970	119	Use of Native Trees and Shrubs	D. Martin

1971	10	Shelter with Beauty and Fruit	W. R. Leslie
1971	14	The Landscaped Garden Compared to the Living Room	J. W. Sondershausen
1971	18	Principles of Landscape Design	O. M. Hammer
1971	23	Trees for Urban Home Grounds	D. R. Robinson
1971	24	Shade Tree Research at the Morden Research Station	W. G. Ronald
1971	36	Controlling Wood Borers	A. J. Kolach
1971	94	Wintering Tender Roses in Manitoba	J. H. Nichol
1972	28	Small Flowering Shade Trees for the Prairies	Garry G. McCullough
1972	30	Aspects of a Shade Tree	Garry G. McCullough
1972	52	My Shrub Rose Border	H. H. Marshall
1972	60	Pruning Trees	S. H. Nelson
1972	64	Tree Planning and Selection	F. J. Weir
1972	68	Pruning Evergreens	R. H. Knowles
1974		Special Edition "Landscaping" majority of articles pertain to Trees and Shrubs	A. M. Harper
1975	18	Insect Galls	J. P. Dewet
1975	96	A Hundred Years of Horticulture	Darlene Donaldson
1975	122	Light in the Night	G. Noden
1976	12	Growing Roses in Calgary	Diane Beaven
1976	28	Arbor Day	V. Hildahl and G. Platford
1976	98	Dutch Elm Disease in Manitoba	Mrs. Adele Pyziak
1977	26	A Farm Home in Fisher Branch Manitoba's Interlake	John Walker
1977	39	Trees and Shrubs — Uses other than for Farm and Field Shelterbelts	Martin Benum
1977	110	What's Wrong with My Tree?	J. Walker
1978	42	Flowering Trees and Shrubs	W. B. Hutchison
1978	58	Midsummer Planting of Container Stock	K. I. Taylor
1978	121	Shrub Roses Which Are Hardy in Northeastern Alberta	John Dietz
1978	61	So You Want to Plant a Tree	L. V. Gusta
1979	55	How Plants Survive Freezing	H. R. Nelson
1979	113	Weed Control for the Homeowner	Allan Dawson
1979	124	Life After August	

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"Floral Artistry for Beginners" may be obtained from most of the local Horticulture Societies, or by writing Floral Artistry, P.O. Box 517, Winnipeg, Manitoba R3C 2J3. The cost is \$2.00 a copy which includes postage. Orders of ten or more books may be obtained for \$1.50 each.

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Prairie Garden Index, 1967-1977

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The index is a complete listing of articles, grouped under common headings, which have appeared in The Prairie Garden from 1967 to 1977.

The Friendly Flower

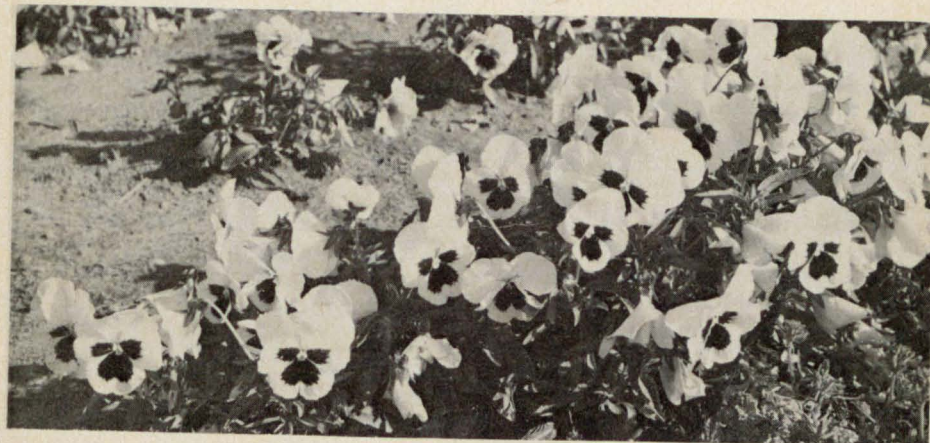
When God first planted Eden,
He made the flowers all
Of varied shapes and every size
From large to very small.
He gave them many kinds of leaves,
And stems to raise their heads;
And all were anchored well with roots
Deep in the flower beds.
To some of them He gave perfume
To scent the summer air.
When God looked on His garden,
He saw that it was fair.

But He was not quite satisfied,
Although He'd made so much;
For there was one thing lacking still —
A warm and friendly touch.
So God chose bits of velvet fine,
In richest, deepest hues
Of purple, russet, mauve and wine,
Of yellows and of blues,
Some delicately ruffled trims,
And little leaves of green;
Then He fashioned flower faces,
The sweetest ever seen.
Since these were very special blooms,
He gave them colors three,
That they might be His symbol,
The flower of Trinity.

He moulded them and set them out
On rather shortened stalks,
With scalloped leaves about them,
Beside the garden walks.
He watered them and blessed them,
And to His great surprise,
They looked at Him in worship with
Their little golden eyes.
He smiled, "They look so friendly there,
I'm sure that they would please
The loneliest and saddest heart;
They shall be called "Heart's-ease".

Though people call them pansies now,
Their sweet, appealing faces
Still charm the hearts of visitors
In parks and public places.
But in our private flower beds
For many months each year,
These lovely velvet blossoms are
The ones we hold most dear.
On days when life is overfilled
With too much toil and care,
Our hearts are cheered and lightened by
Their friendly presence there.

— Doris Dinzey,
Wembly, Alta.



Recent Awards of Merit

W. G. RONALD

Agriculture Canada, Morden, Man.

It is just over twenty years ago that the Merit Trial test garden was initiated at Morden under the sponsorship of the Western Canadian Society for Horticulture. Dr. W. A. (Bill) Cumming was the first and only chairman, until his retirement in 1976. Up until that time 198 different entries had been received for evaluation. In 1976 the chairmanship was passed on to Dr. Wilbert G. Ronald who has overall responsibility for the evaluations.

Dr. Bill Cumming has twice before, in 1968 and 1974, written about the Merit Award winners for 'The Prairie Garden'. This year's article will update us again for a six year period, to 1980.

The total number of entries received from numerous prairie sources now stands at 230. Of this number 21 or slightly less than 10% have received an Award of Merit. This means that only the outstanding plants are recognized with this award. Commercial nurserymen who take advantage of the Merit Award publicity often draw attention to these superior plants. You can study your prairie nurserymen listing and look for these catalogue notes.

Award of Merit Review

Perhaps you are asking what does an Award of Merit signify? To briefly review this, we could look at the

development of the system and the Awards. Numerous plant breeders, both in private practice and public institutions, have been involved in improving ornamentals adapted to the cold dry conditions of the northern plains. The Merit Trial test garden provides a uniform evaluation of these many new, relatively untested, plants so that superior entries can be distinguished and promoted. The Award of Merit is intended to give recognition to plant breeders who have made significant progress in breeding ornamental plants and to provide incentive for others to continue in this valuable work. It was with these aims that the Merit Garden was developed at Morden. Why Morden? Probably because this site had the most extensive collection of ornamentals to serve as a standard for comparison, and had the interested personnel. One recent change in the Merit Garden involves development of a separate test site for herbaceous entries on the landscaped grounds, while the trees and shrubs remain in the original arboretum site. This development has facilitated maintenance and evaluations.

Recent Awards

Since Dr. Cumming's last article, seven cultivars have received an Award of Merit and two more are in line to receive this distinction at the

February 1980 Western Canadian Society for Horticulture meeting in Winnipeg.

In 1975, two Saskatchewan-bred lilies received Awards of Merit. 'Honey Queen' developed by Dr. E. A. Maginnes, of the University of Saskatchewan, is a tall, out-facing yellow flowered Asiatic lily while 'Red Carpet' developed by Mr. A. J. Porter of Parkside, Saskatchewan, is a dwarf, up-facing red flowered Asiatic lily. Both of these cultivars are available from specialized prairie lily growers.

Crataegus mordenensis 'Snowbird' is a double white flowered seedling of the well known 'Toba' hawthorn. The 1976 Award of Merit recognized the superior hardiness and stem strength of this cultivar developed by Dr. W. A. Cumming of the Morden Research Station.

In 1977, *Caragana arborescens* 'Walker', a fine-leaved weeping caragana from the cross *C. arborescens* 'Lorbergii' x *C. arborescens* 'Pendula' received the Award of Merit. This plant can be grown as a ground cover (own-rooted) or as a weeping shrub when grafted to a standard. 'Walker' caragana was bred and selected by Mr. John Walker and was introduced for him by the Morden Research Station. It recently received further recognition in 1979 when it was given the highest award of the Boskoop Horticultural Society.

'Hazeldean', a hardy shrub rose developed by Mr. Percy H. Wright of Saskatoon, received an Award of Merit in 1978. Developed from a cross between *Rosa spinosissima altaica*

crossed to 'Persian Yellow', 'Hazeldean' combines increased hardiness of the female parent with the bright yellow semi-double flowers of its male parent.

In 1979 *Sambucus racemosa* 'Sutherland Golden' developed by Mr. W. L. Kerr of Saskatoon and *Lilium* 'Golden Princess' developed by Dr. E. A. Maginnes of the University of Saskatchewan received Awards of Merit. 'Sutherland Golden' is an outstanding golden foliage ornamental adapted to prairie conditions. 'Golden Princess' lily is a vigorous plant with small down-facing flowers and reflexed sepals.

Two cultivars are to receive Awards of Merit in 1980. These are 'Morden Delight' chrysanthemum developed by Dr. H. H. Marshall of the Morden Research Station and 'Patmore' green ash developed by the late Mr. R. H. Patmore and Mr. Jake Driedger of Patmore Nurseries, Brandon. 'Morden Delight' with its bronze red flowers and exceptional hardiness represents an advance in its class. 'Patmore' ash is winning wide acclaim for its glossy green foliage, seedless flowers and improved growth form.

This summarizes the recent developments in the Merit Garden program. Many excellent plants remain under evaluation and may in the future receive recognition. Anyone who has superior selections is encouraged to enter them in the Merit Garden. Most of us can find a home in our garden for the superior plants which have already received an Award of Merit.

Georges Bugnet — A Horticultural Pioneer

HELGE WELLING

Department of Plant Science
University of Alberta, Edmonton, Alta.



Georges Bugnet was born in France on February 23, 1879, at Chalone Sur Saone, Burgundy, and educated at the University of Lyons and Sorbonne. He told me when he was a young man a girl in Burgundy predicted he would go on a long voyage and he would live to be 104. Well, Georges Bugnet did go on a long voyage with his wife Julia, when Georges quit the newspaper work to come to Canada. They had heard they

could make a lot of money very quickly in Canada, so they wanted to do just that and then return to Burgundy.

On October 25, 1905 the Bugnets came to Canada and settled on N.E. 28-56-3W5 (near Lac Majeau, 50 miles north of Edmonton). This area was later named Rich Valley.

Georges and Julia missed the vegetation of France and started planting trees and plants obtained from ex-

perimental farms and eastern nurseries. By 1912, Georges realizing the need for hardier plants, studied books on plant geography and wrote to botanical gardens around the world, asking for plants growing under similar conditions to the Rich Valley area. He soon had a number of plants growing and sent those he had tested to Morden, Brooks and Beaverlodge for further evaluation. By about 1925 Georges was hybridizing stone fruits and apples. He has introduced the Paul Bugnet apple, the Claude Bugnet sandcherry plum, the Julia Bugnet sweetberry honeysuckle, Georges Bugnet sweetberry honeysuckle, as well as a very valuable timber tree — the Ladoga Pine. He had obtained the Ladoga Pine from seed from a strain of *Pinus sylvestris* growing near Lake Ladoga in Finland. This pine has been of much interest to the Lands and Forest Department in Alberta, and part of the Bugnet homestead was purchased by the Government of Alberta and was declared a "historical plantation."

Georges Bugnet turned his attention to rose breeding and if the name Bugnet sounds familiar, it will likely 'ring a bell' when you hear the name "Therese Bugnet" Rose. This rose is, no doubt, the best known of Georges Bugnet's work with roses. Among others are: Lac la Nonne Rose, Julia Bugnet Rose, Nipsya Rose and Marie Bugnet Rose.

Julia and Georges Bugnet had ten children. One daughter, Martha, is continuing the work on roses her

father started — the big dream being to develop a hardy climbing rose.

Georges Bugnet was active in education. For thirty years he was secretary of the Rich Valley School District and a school trustee at Lac St. Anne for thirteen years. He was also one of the founding members of the Alberta French Canadian Association, and worked for five years editing issues of *L'Union*. Georges Bugnet was a prolific writer, his best known novels are "Nipsya" and "La Foret"; his last book of poems was printed in 1938 and reprinted in 1978.

In 1970, Georges Bugnet received a major literary award, the French Chevalier dans l'Ordre des Palmes Academiques.

Georges Bugnet was made an honorary member of the Western Canadian Society for Horticulture in 1967 and for his 100th birthday, W.C.S.H. sent a birthday greeting with signatures of 100 members.

On June 3, 1978, in St. Emile Church at Legal, Alberta, the then 99-year-old Georges Bugnet received an honorary Doctor of Laws Degree from the University of Alberta, in recognition of his accomplishments in the fields of Literature and Botany.

I had the pleasure of visiting the now 100-year-old Georges Bugnet, at the nursing home where he resides. His sharp mind and sense of humor were evident, though his sight and hearing are bothering him. I thoroughly enjoyed the time spent with Georges Bugnet.

Mr. Richard H. Patmore — Pioneer Plantsman 1903-1979

W. G. RONALD



mail order and local nursery business, the Patmore family was involved in a garden-seed business, florist shop and greenhouse. The nursery became a major employer with up to one hundred men on payroll in its early years, and numerous employees gained valuable experience at the nursery. Among the horticulturists who worked at Patmores were Mr. Bert Harp and Mr. Stan Westaway, both well known to gardeners of Western Canada. Personally, it was my privilege to have known Mr. Patmore and to have discussed with him developments of new plants for the prairie region.

The contributions of Mr. Patmore and his nursery were significant and reached far beyond the borders of Manitoba. The Brandon pyramidal white cedar is known as a standard for hardiness in its class. This tree was propagated from a hardy tree discovered by Mr. Patmore on the grounds of the Brandon Research Station. The Patmore ascending elm is an excellent elm which would still be very popular if not for Dutch elm disease. The Patmore seedless ash, selected by Mr. Patmore in northern Alberta, is becoming more popular each year. Numerous other plants were brought into the nursery trade through propagation and promotion by Patmore

A life devoted to horticulture and the nursery industry came to an end with the passing of R. H. 'Dick' Patmore former owner of Patmore Nurseries, Brandon. This nursery, founded in the 1890's by the senior Mr. Patmore, and later managed by Dick Patmore, developed into a major nursery for prairie Canada. The challenge of the cold prairie climate was met by the Patmores who had emigrated from the scenic region of Essex in England. As well as an extensive

Nurseries. Mr. Patmore's long association with the Canadian Nursery Trades Association dated back more than fifty years. Similar support was given to the younger Manitoba Nursery Landscape Association. Following the sale of his nursery in 1970, Mr. Patmore continued his interest in horticulture and new plant development.

Many honours came to Dick Patmore in his lifetime. In 1974 he received a Recognition award from the Brandon Parks Board where he served as chairman for two terms and member for 23 years. Also in 1974, he received the Good Citizenship award from the Lieutenant-Governor of Manitoba in recognition of community service. One of his highly cherished awards was the 1978 pre-

sentation of an Honorary Life Membership in the Manitoba Nursery Landscape Association in which he had been active since its founding in 1957. In 1980 Patmore green ash will receive an Award of Merit from the Western Canadian Society for Horticulture. This award recognizes the significant advancement made in Mr. Patmore's development of this plant.

One event which gave great satisfaction to Mr. Patmore was to see his nursery operation carried on as a successful commercial company by Mr. Jake Driedger. He was pleased to see valuable plants and seed sources continue to be offered to the prairie trade. Certainly he left his mark on Brandon, on Manitoba, and on most prairie gardeners.

Flower in a Vase

Why did you fall!
So straight and tall.
Head so beautiful;
Each petal, an amulet.
Why did you fade!
Stems bent and dead.
Once held happiness;
Leaving but sadness.
All has past —
Memories, linger on.

— Mark Elliot

Robert Simonet — Grower

A tribute by
FRED FELLNER,
Vermilion, Alta.

My own interest in growing flowers started in the late sixties. We were getting 65 cents a bushel for barley and it occurred to me that it would be easier to grow a plant or bulb for \$1.00 rather than grow a bushel of grain for \$1.00. To learn about lilies I did much reading, and started to write to lily growers on the Canadian prairies, among them men like Bert Porter, Percy Wright, Fred Tarlton, and Robert Simonet. All were very very helpful, but I am most in debt to Robert Simonet.

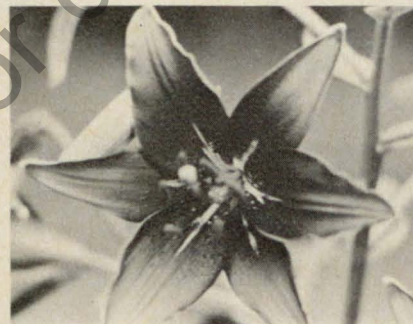
Robert Simonet was born in Paris, France, and came to this country with his sister, who was to marry a Canadian soldier after the First World War. He worked at various jobs, but his interest in growing plants prevailed and in 1930 he started his own market garden, growing fresh vegetables, gladioli, cut flowers, bedding plants, etc. He was interested in early sweet corn, early tomatoes, parsnips, squash and red rhubarb, hardy runnerless strawberries, and many hardy fruit, shrubs and trees.

Petunia Seed — During the Second World War all trade stopped with Japan, and as the Japanese people were the only people who knew how to breed 100% double petunia seed, growers could not get supplies. Robert Simonet went to the University of Alberta library and studied plant breeding and genetics. It took him three years to produce the 100% double petunia, and become the first person to do so outside of Japan. He produced the double petunia in nine colors, and later, the large double blooms.

Lilies — Robert's first interest in lilies was with the *Lilium philadelphicum*, which is native to Alberta. He obtained his first Trumpet lilies from Fred Tarlton. His first work with Asiatic lilies began with seed he obtained from Percy Wright of Saskatoon, Sask. This was Nubian seed which produced the 'Black Butterfly' and, later, 'Summernight', the darkest near black-red lily I have ever seen. It holds its deep color until the

petals dry up. Through Bert Porter and Percy Wright he obtained lily seed of the *L. cernuum* breeding which goes back to the world famous Dr. Patterson crosses of the *L. cernuum*. These seeds then produced lily, 'Embarrassment', a pinkish, out-facing lily, fairly tall, with many blooms. It received its name because it is purported to be the color of a lady's blush. It was sold in Canada as 'Pink Scotiae' before it was registered.

In the fall of 1972 I finally visited Robert Simonet and was shown around the twelve acres of fruit bushes and trees, perennials, strawberries and lilies, both Asiatic and Trumpets. When I left, he gave me a dozen of the Asiatic seedlings and a dozen Trumpets. I named my first lily



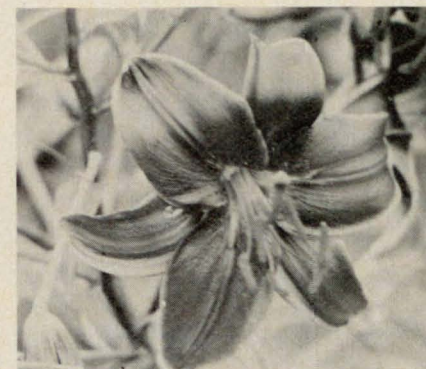
Lily — "Robert Simonet"

from the Asiatic seedlings, 'Robert Simonet'. It is purplish-pink, down-facing, 3 - 3½ feet tall, with up to 36 blooms.

Robert later told me he was planning to plough under part of his lily plot as he had already taken out the seedlings which interested him. He

gave me about 200 bulbs of the dark red cross and *cernuum* hybrids, and a washtub of Trumpets, and I got a few breeding seedlings from these. When they bloomed, they were a great improvement over any lily that I had!

Later, I asked if I might mark lilies which interested me before he ploughed them down, and I marked about 70 plants. In the fall of 1973 he dug these up and brought them to me. I am now using his lilies and their seedlings in my breeding work in many of my own crosses. I call these lilies the 'Rescue' series, as they were rescued from the plough.



Sally Jo Anne

There are now eight of the lilies named and about three more to be named. Most are now being grown and tested by growers in Canada and the United States. A few are being tested in Holland for possible cut flowers and pot flowers. I feel that these lilies will be a stepping-stone to many better lilies in the future. Robert Simonet's work will be remembered.

H. F. Harp

DR. W. A. CUMMING

Mr. H. F. "Bert" Harp will be presented with the prestigious "Stevenson Memorial Award" by the Manitoba Horticultural Association at its Annual Meeting in February 1980. This international award is presented periodically for outstanding service to horticulture in Manitoba, particularly in the field of the development of new plants suitable for the climate of Manitoba and the prairie region of Canada.

Mr. Harp spent more than thirty-six years at the Morden Research Station. His research endeavours included — plant breeding to develop new hardy varieties, testing many thousands of ornamental plants for their adaptation to the climate of the Canadian prairies, and developing cultural methods for growing a wide range of plants under adverse conditions.

His work in the breeding of hardy ornamentals culminated in the introduction of six hardy shrub roses, over twenty hardy outdoor chrysanthemums, seven perennial asters and three popular Morden lythrum cultivars. His "Prairie Dawn" rose and "Morden Cameo" chrysanthemum were both accorded 'Awards of Merit' by the Western Canadian Society for Horticulture. His Morden lythrums are known and grown internationally.

Mr. Harp was best known in the prairie provinces of Canada and adjacent states of the U.S.A. as the C.B.C. "Prairie Gardener". Beginning in 1961 he wrote the scripts for these weekly talks over a period of fifteen years. During the last six years he was also the voice of the 'Prairie Gardener'. These informative and practical garden talks, mixed with bits of his own philosophy of life, benefitted thousands of listeners every Sunday morning.

In the course of his work he prepared numerous manuscripts and project reports covering recommended varieties of hardy plants and methods of their culture. These were published by both the governments of Canada and Manitoba. He willingly shared his knowledge and experience with the public and was in constant demand as a speaker.

The publication of his book, "The Prairie Gardener" filled a real need and has become a popular reference. It is the only complete and authoritative book on gardening specifically written for prairie gardeners. It was published in 1972 by Hurtig Publishers of Edmonton.

Mr. Harp is an Honorary Life Member of the Manitoba Horticultural Association and served as its president in 1962-63.

Share your Experiences — Write for the Prairie Garden!

Do you love gardening? Have you had lots of experience? And would you like to share some of your joys and sorrows with other lovers of growing things? Just write, in your own words, and tell us about anything you think would interest, or help other gardeners. It may cover any phase of horticulture, such as vegetable and flower gardening, house plants, ornamentals, fruits, etc. Articles on nature, wild flowers, birds and insects will also be considered. Pictures help to enhance a story, and black and white photos reproduce the best. Your pictures will always be returned to you.

The Prairie Garden is a labour of love. Authors receive a complimentary copy of the Prairie Garden issue in which their article appears. But they will also have the satisfaction of knowing they have contributed to the value of this publication.

If you would like to share your experiences, or know someone who has something to tell, let us hear from you. Please type or write clearly on one side of paper only when sending in material. Send your contribution to: The Editor, The Prairie Garden, P.O. Box 517, Winnipeg, Manitoba R3C 2J3.

Ornamental Trees, Shrubs, Climbers and Ground Covers for Manitoba

When you landscape your property this spring and summer keep this list in mind. Nurseymen and provincial horticulturists agree that these trees and shrubs can grow well in Manitoba under routine care.

DECIDUOUS TREES

a) Tall (over 40 feet high)

Silver maple
Birches
 Water
 Paper
 Weeping
 Young's weeping
Hackberry
Ashes
 Black
 Green
Nuts
 Butternut
 Manchurian walnut
 Black walnut
Siberian Larch
Poplars (large trees)
 Berlin
 Plains Cottonwood
 Manchurian poplar
 Columnar European aspen
Bur oak
Willows
 Sharpleaf
 Redstem
 Silky white
 Golden
 Laurel
American basswood
Elms
 American
 Siberian

b) Smaller Ohio buckeye



Rosy Bloom Crabapple

Ornamental crabapples
 Siberian
 Manchurian
 Hybrids - 'Pink flowered'
 - 'White flowered'
Hop hornbeam
Chokecherries
 Amur
 Shubert
Pincherries
Ussurian pear
Mountainash
 American
 Showy
 Greenes

Japanese tree lilac
Linden
 Littleleaf Linden
 Dropmore
 Mongolian

c) Low Shrubs (3 to 5 feet high)

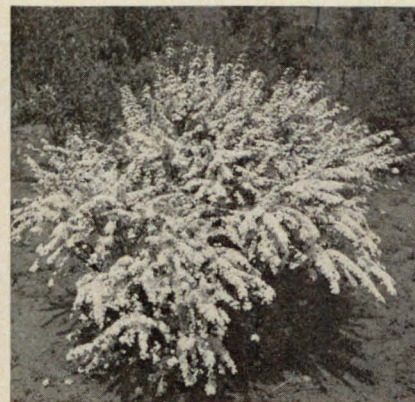
Leadplant
Pygmy caragana
Winged euonymus
Hydrangeas
 Snowhill
 Peegee
Sweetberry honeysuckle
Dwarf ninebark
Potentilla
Cistena plum
Currants
 Alpine
 Golden
 Dakota dwarf
 Siberian
 Clove
Roses
 Hardy shrub
Dwarf purpleosier willow

Spireas
 Oriental
 Korean
 Threelobe
 Snowwhite

Dwarf Littleleaf lilac
Compact highbush cranberry

d) Dwarf Shrubs (less than 3 feet high)

Globe caragana
Brooms
 Austrian
 Prostrate
 Spike
 Purple
Daphnes
 Rose
 February
Euonymus
 Dwarf
 Turkestan
Woodwaxens
 Swordleaf
 Common
Albert thorn honeysuckle
Dwarf fly honeysuckle
Canby pachistima
Roses
 Shining
 Dr. Merkeley
Spireas
 Dwarf European
 Cranberrybush



Garland Spirea

EVERGREENS

a) Tall
 Balsam fir
 Siberian fir
 Rockymountain juniper
 Spruces
 Norway spruce (Finnish form)
 White
 Blackhills
 Colorado
 Pines
 Swiss stone
 Swiss mountain
 Ponderosa
 Red
 Scots
 Arborvitae (white cedar)

b) Low
 Junipers
 Golden Pfitzers
 Common
 Creeping
 Savin
 Nest spruce
 Mugho pine
 Canada yew
 Arborvitae (white cedar)

DECIDUOUS SHRUBS

a) Tall or Tree-like Shrubs
 (over 10 feet high)
 Acanthopanax
 Amur maple
 Saskatoon

Caraganas
 Common
 Tidy
 Hawthorns
 Arnold
 Blackfruit
 Downy
 Snowbird
 Toba
 Ontario
 River
 Common Seabuckthorn
 Honeysuckles
 Amur
 Tatarian
 Coyote willow
 Silver buffaloberry
 Lilacs
 Amur
 Japanese tree
 Chinese
 Early
 Common
 Late
 Nannyberry

b) Medium Shrubs
 (5 to 10 feet high)
 Indigobush amorpha
 Dogwoods
 Creamedge
 Siberian
 Yellowedge
 Pagoda
 Gray
 Redosier
 Yellowtwig

Hazelnut

Cotoneasters
 Hedge (Peking)
 Redbead
 Silverberry
 Maack euonymus
 Siberian salttree
 Sakhalin honeysuckle
 Mockoranges
 Ninebarks
 Common
 Golden
 Cherry prinsepia
 Plums and almonds
 Mucle plum
 Russian almond
 Flowering (single and double)
 Prairie almond
 Smooth sumac
 Slender purpleosier
 Willow
 European red elder
 Aurora falsespirea
 Pacific mountainash
 Red amur tamarisk
 Viburnums
 Wayfaring
 Downy
 American cranberrybush
 Weigela

VINES

Bittersweet
 Clematis (woody)
 Bigpetal clematis
 Dropmore scarlet trumpet
 Honeysuckle
 Virginia creeper
 Riverbank grape

GROUND COVERS

Bearberry
 Clematis
 Prostrate broom
 Rose daphne
 Euonymus
 Dwarf
 Running
 Swordleaf woadwaxen
 Junipers
 Arcadia
 Common
 Creeping
 Skandia
 Canby pachistima
 Virginia creeper

*Editor's Note: Refer to Colour Section
 for several of the above.*



Spring Pruning Should be Done with Care

MANITOBA DEPARTMENT OF AGRICULTURE

Pruning shears in the wrong hands can be damaging, even lethal weapons, say provincial horticulturists with the Manitoba Department of Agriculture.

Trees and shrubs can be permanently injured or killed by indiscriminate cutting of branches and shoots. Properly used, a set of pruning shears can both enhance and salvage valued specimens.

Precautions

Two main precautions must be taken by anyone doing his own pruning:

- a) all cuts must be made so that natural healing processes can work and the growing bud does not die
- b) extensive pruning is done *before* July.

Spring Pruning

A routine spring pruning job is thinning of shrubs by cutting out the weak, old or entangled branches. On spring-flowering plants the job should be done after the flowers fade. On plants and shrubs, such as hybrid-tea roses that produce flower buds on the wood grown over the

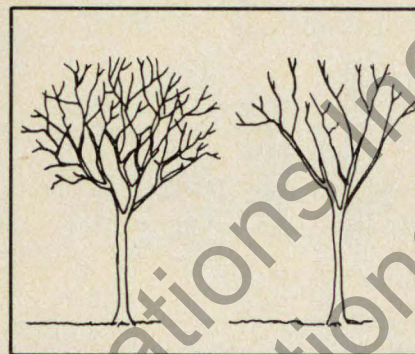
season, pruning can be quite severe. Such plants can be trimmed in the spring to within six inches of the soil surface.

Pruning of transplant shrubs and trees is a normal practice in order to balance the root area to the above-ground portion. In the digging, roots have been cut off, so the branches should be cut back to compensate. Often nurserymen who sell the tree or shrub will do this job.

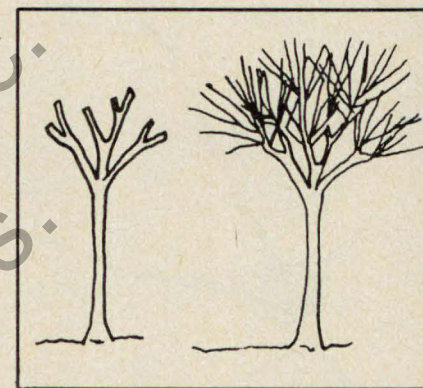
One pruning job to avoid is the extensive cutting back of trees to bring them down to size. This type of mutilating is known as pollarding and horticulturists consider it plant abuse. When buying trees in the spring, home owners are urged to be certain of the final size, so they won't have to cut them back a few years from now.

Pruning of evergreens such as spruce, pine and fir, must be completed shortly after new growth has started in the spring. Only new growth should be trimmed. Branches will not grow back if removed.

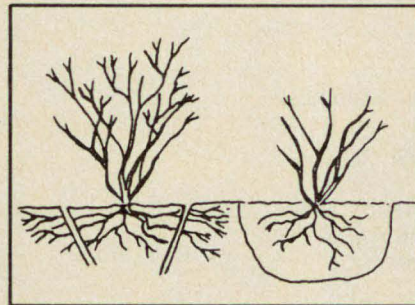
Junipers act much as broadleaved trees, so a branch may be cut back to a healthy lateral without spoiling the appearance of the tree.



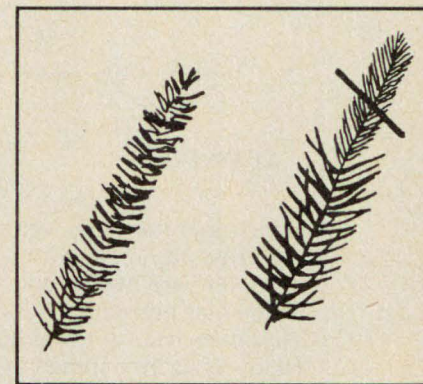
Left — Unpruned tree. Right — Properly pruned tree; much wood removed but natural shape maintained.



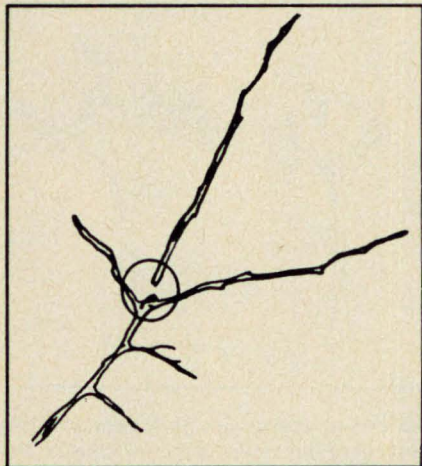
Pollarding and its unsightly results. Cutting back to very old wood causes an abundance of new vegetative growth to be produced in broom-like clusters. Horticulturists consider this as mutilation.



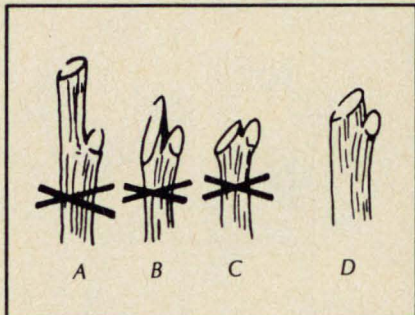
Pruning at planting time. Left — What happens to the root system when plants are dug up for transplanting. Right — Proper pruning to compensate for root loss. The amount of heading back and thinning depends on whether or not the plant is in active growth. If buds are beginning to grow, then amount of wood removed should be greater than is required for a plant completely dormant.



Pruning of spruce and fir. Although shearing is commonly practised with these trees, it is not recommended unless confined to new growth just after growing points have begun to elongate. Left — normal terminal growth at the end of the growing season. Right — To control quantity of growth, prune as shown early in growing season. This allows new shoot buds to form normally. Pruning later than this may remove buds that have started to develop.



Proper way to prune a branch. Make cut close to branch, leaving no stub; trim edges of cut surface with a knife. Treat all cuts over $\frac{1}{2}$ inch in diameter with tree paint.



Right and wrong ways to make a pruning cut. A — Cut made too high above a bud; wound does not heal. B — Angle of cut too oblique. C — Angle of cut satisfactory, but too close to bud; loss of bud a possibility. D — Good angle of cut and good position relative to bud.

Trees

Standing in the snow with your branches,
stretched out in the cold.

In winter bare, within you sleep.

In summer greenery,

Your branches stretched out to give shade.

To lovers as they spread their picnic fairs,

Children climb to hide and seek.

You built a house in its limbs,

You are a scout looking to the east for a troop.

Or alone who wants to hide in the clouds,

To dream away the day.

Till someone comes along and ask if they too can stay.

Trees, Trees are so strong and big.

— Elinor Kent,
Winnipeg

“Don’t Take a Pill, Take a Plant!”

CHERYL PENNY
Assistant Park Naturalist

Elvin McDonald, a noted gardener, states that working with plants promotes an alternative way of coping with life. The care and feeding of plants offers a way out of our everyday worries and lets us involve ourselves with living, growing things that need our attention and care to survive.

Workshops

With this in mind I created and presented fall and spring workshops on “House Plants — Propagation and Care” in various Winnipeg senior citizen drop-in centers. Programs were created at the Manitoba Museum of Man and Nature on requests from recreation directors, and people interested in learning more about plants that they could nurture in their apartments or homes. The workshop was run on one afternoon or morning per week on three consecutive weeks and involved a field trip to the University of Manitoba greenhouses or the Assiniboine Park Conservatory. Both facilities will give one-half hour or longer ‘behind the scenes’ tours which, when combined with a tour of the facility and a tea break, make an extremely pleasant half-day jaunt.

People brought in problem plants, slips to trade or requests for plants. A number of people did not want to procure any more plants due to lack of space or long winter vacations, but everyone was interested in the repotting and propagation techniques, the varieties of plants that are available

and the different care methods.

A Winter Hobby

The program was well received. I greatly enjoyed my participation with the groups and the plants and hope the participants did as well. People of all ages have an empathy for plants for many reasons. It could remind them of summer and previous larger gardens. It is a definite accomplishment of which to be proud, for to produce and nurture a beautiful living organism requires a great deal of skill, knowledge and luck. The whole variety and propagation of plants provides an often much needed topic of conversation or ice-breaker between people who otherwise would have nothing in common. Thus it leads to potential friendships and a feeling of comradeship among often isolated people. Also, the workshops were a lively, interesting social event to shorten the winter with color and the hope of spring and summer beauties.

Everyone forgot their own troubles and immersed themselves in the problems of their leafy green friends and new acquaintances. This is what it was all about — offering a method of stepping out of one’s routine into something new or at least different and thus lifting the weight of the world off our shoulders for that time.

I would heartily recommend a similar workshop series or outings for any group looking to counteract the chill of winter or to combat loneliness.

Manitoba Maple

(A tribute to the Manitoba maple tree by one of our readers — Ed.)

ELINOR KENT

Gardeners call the maple a dirty tree because it sheds, but children thrive among its warm and hospitable branches. The Manitoba maple trunk often divides near the ground into a few long spreading, rather crooked, limbs which branch irregularly to support a broad uneven crown.

It grows throughout southern and northwestern Manitoba and southern Ontario, usually along the lake shores, and the banks of streams.

The maple has established itself far beyond its natural range in many parts of Canada. It can attain a height of seventy feet and diameters of three feet. But more often it is small-to medium-sized forty-fifty feet high and one to two feet in diameter.

Leaves — This is the only Canadian maple with leaves divided into several parts. The leaf is composed of three to seven leaflets, six to fifteen inches long, light green above, greyish green on the under surface, usually without hairs, and turns yellow in the fall.

Flowers — There are two kinds of flowers on separate trees, the male in separate flowers on slender stalks in loose clusters, the female arranged along a central stem. The bark is light grey, smooth becoming furrowed into narrow firm ridges, darkening with age. The wood is moderately light, soft, low in strength, close-grained, nearly white. The wood of this tree is used mostly for rough construction and boxes. Its fast growth and hardiness and suitability to the Manitoba climate has made it popular for planting in farm shelterbelts to provide early shelter.

Fruit — Its fruit matures in the autumn and remains on the trees well into winter. The fruit is one and half inches long, two to three times the length of the seed portion and is broad and markedly wrinkled. There are several varieties, the common one being "ACER NEGUNDO VAR". INTERIUS (BRITT) SARG. We must look after this tree for posterity.

Birds In My Grande Prairie Garden

YVONNE MacALISTER
Grande Prairie, Alta.

For over twenty years we have fed the birds that come to our garden. As the garden started to develop, the birds became steady visitors. One family (Eastern Phoebe) had their nest along the old log house we lived in at the time. Sometimes they would have two families (if the weather was right for them.)

After we built a new house, we soon had the Phobes looking around the house trying to find a spot to make their nest (they really like human company), so up went a small shelf for them.

Dusts

The garden flowers began to get established, more varieties, etc., two hardy roses that were not bothered by anything. Then the Peace rose took my eye so in it went, but it also became host for aphids. So one sunny day I went and dusted the rose with insecticide. Mrs. Phoebe was on her eggs on the wall closest to the garden. I came indoors quickly as I cannot take the smells of these powders myself. Then all at once I heard Mrs. Phoebe calling, she looked upset. I thought perhaps another bird was around bothering her, I watched

for her to return but she did not come back. I went out to look around to see if I could see her. What a smell from the rose! Then I thought, maybe she does not like the smell either! I went back into the house, and began to wonder and watch and saw there was not a bird or insect flying. That was it, she was off her eggs too long already, so out came the watering can, the rose was washed off, and I worked up the soil to bury the rest in the ground. Mrs. Phoebe finally returned after the air cleared. The rose dust was destroyed and I never used it again. The Peace rose could not stand the winters anyway so I only got hardy roses for this area after that, which aphids do not bother.

Control

The use of sprays and powders in order to get rid of a few insects on any one plant or yard often puts our birds, and good or bad insects, in danger, as well as ourselves. I will put down a few hints that might help:

1. Watch the birds for insect control. If you see a number of birds going into a certain tree, take a close look at the underside of the leaves for aphids. If there are not too

many, let the birds clean them up. But if the tree may suffer, hose it down with cold water. If that does not get rid of them, then use the sprays.

2. Good insects that feed on others are dragonflies, green-lace-wings, ladybugs, etc.
3. Many flies and wasps also feed on insects like aphids. Too much over-all spraying puts the whole garden out of balance.
4. The hummingbirds depend on small insects in the honey of the flowers to give them the protein in their diet.

Species Noted

We have a check list of 63 species of birds seen in the farm yard. Some live

on just insects (the phoebes, yellow warblers, robins on the earth worms, some come to the feeders for beef suet, chickadees, woodpeckers, also the whitebreasted nuthatch (never recorded in this area, that we know of). Sunflower seeds bring the blue-jays, nuthatches, evening rose-breasted and pine grosbeaks. They all have their own taste buds. Then of course when they come with the new babies to feed, we stop whatever we are doing to watch. The young are so demanding and such a danger to themselves with their noisy demands for food which also alerts their enemies. We record the number of young and can only hope they withstand the dangers of their environment; the same as we must, as babies (the stairs, cars, poisons).

Antique Ash

I remember that tree,
Branches so free.
Bold — —
Against the sun.
Bending with the heat;
A leaf is choked —
With shortening of days.
As Autumn creeps in,
Each leaf —
Red, yellow, orange or brown;
Drops and drifts down.
Gone is the warmth of the sun.
Branches waving and breaking.
Another season has gone,
To maintain life.

— Mark Elliot

Gardening in the Fourth Dimension

CLAIRE NISONGER

Fort Garry Horticultural Society

Along about the end of May and the beginning of June, most of the vegetable gardens are planted in this area in their totality for the entire season. Along about August, vast patches of naked soil appear where early-bearing crops once thrived. Even worse, pea vines, lettuce gone to seed and shrunken beans are left to wither and decay, creating a superb haven for invading bugs.

This type of gardening is a waste of two precious commodities — time and space. Since time is at a premium for all of us, and while many are lucky enough to have plenty of space, this article will address the problem of making the best use of the short growing season available to us here in the prairie provinces.

Planning

With careful planning, your family can have vegetables fresh from the garden for up to five months of the year, and at the times when these items are most appreciated and most expensive to buy.

Nearly all of us have flower beds at our doorstep. Instead of just waiting eagerly as the snow begins to disap-

pear from them first, scratch the surface gently and sprinkle a few seeds of your favorite lettuce and push in a few green onion sets, just as you might put in spring bulbs, such as crocus. You will be the first in your neighborhood to enjoy a garden fresh salad, even though the weather may still be chilly! Some years it may take many days for the first brave little green leaves to peek out, but the shelter provided by the house and the step, plus heat radiated from a basement window or the house itself, will be just enough to provide the few extra heat units necessary to give a harvest up to three weeks ahead of gardens planted in more exposed areas.

These same flower beds will have already yielded up their early crops, which can include spinach, mustard greens, or whatever cool-weather crops your family like, in plenty of time to set out your bedding plants among the last vestiges of your spring salad. By the time these flowering annuals need more room to grow, the salad will be coming from your main garden, planted by necessity in a more exposed location.

Herbs

Autumn seeding in these sheltered spots also works very well. I discovered this quite by accident, when, the second spring we owned a house, I found the flower beds filled with mustard greens and fresh dill, from plants which had been left to go to seed the previous fall. In gathering their seeds for my winter spice cupboard, I had planted the next year's crop.

My entire herb bed is close to the house, too. Not only is it handy to go out and snip that tablespoon called for at the last minute as you prepare a meal, but the warmth and protection of the house again aids the perennials, such as chives and thyme, to come up much sooner. When our winter-weary appetites crave their fresh taste so much, even a teaspoon sprinkled over cottage cheese tastes like spring.

Second Crops

Another reason many gardens meet their demise on the first chilly night, is that the vegetables planted most recently in them were those which had to wait until after the final frost of the preceding spring. Many people seem to plant their entire garden for the whole year within a couple of weeks time. Second crops such as swiss chard, beets or bush beans could be planted in empty spaces. In such a short growing season it is a shame to leave any empty space in your garden until frost kills your tomatoes, cucumbers and squash. In fact, these late planted crops do well if set between rows of peas. When the peas are finished in July, pull the vines and use them to mulch the

squash or tomatoes which mature in August. The nitrogen from the pea vines roots will actually make this crop better than plants growing alone.

Save some onion sets in your refrigerator to have fresh green onions all summer long. Endive is the only lettuce I have found to survive the heat of summer. Bitter at first, it becomes sweet and delicious just as other varieties of lettuce turn tough and bitter. The light colored inner leaves are a delicacy which command high prices in gourmet markets in the fashionable areas of large cities.

Containers

And as a last defense against the approaching ice and snow, plant some vegetables in containers to be brought into the house with the first threatening night. A large number of varieties have been developed recently for the 'balcony gardener', many of which have been developed at the Morden Research Station. Their small size often makes them mature faster, so you might want to start some in July outdoors, to bring into the house several weeks later. One of the most successful vegetables grown in pots are ordinary green peppers. They provide beautiful, bushy dark green "houseplants", with interesting colorful peppers and fresh vegetables in your home as the first snows begin to fall. One year, my pepper plants bloomed and bore a second time in the house before succumbing to old age — rather than meeting fate by freezing to death!

With a little careful planning, gardening can be enjoyed more than three months a year.

Daylilies

THOMAS H. MACHIN
Sherwood Park, Alta.

WHAT IS A DAYLILY? This is a question I am usually asked when I mention them to someone who is interested in perennials. In my four years of growing this versatile, herbacious perennial at my nursery, I have found that a very small percentage of home owners know what a daylily is. An even smaller percentage know that *Hemerocallis* is the botanical name for the daylily. It is a pity that so few people are acquainted with the *Hemerocallis*, or 'hems' as they are called by growers.

The reason for the name daylily, is because each individual bloom lasts only one day. Each scape or flower stem on a good quality daylily may have as many as twenty or more buds. A count of ten or more buds per scape is classed as being good quality.

Once a plant is established and forms a good clump, you can expect it to bloom for three weeks or more. Some of the very early blooming cultivars only last for about the three weeks, but some of the cultivars I have start to bloom in July and still have blooms when the frost comes in the fall. They will stand a light frost, which quite surprised me, as they look so delicate.

The daylily is not a lily, but is so called because the blooms look very much like those of the true lily. The *Hemerocallis* has a fleshy root system and the leaves are sword-like. As the plant becomes established, new fans are formed, similar to the iris, but in a much closer group, close to the main crown. The fleshy roots are edible, as are also the flower buds, and are used in some Oriental dishes. So you can grow your flowers and eat them too!

Some of the present day daylilies stand up well to wind and rain, while others do not do too well. The sun



Daylily Marse Connell

affects some blooms which fade in the heat. They will grow in sunny locations or partial shade, but will not bloom in full shade.

SOIL REQUIREMENTS — Soil requirements are quite varied, but the more fertile the soil, with an adequate amount of moisture, the better the quality of bloom. A soil with organic material worked in is ideal, such as compost or leaf mould. My soil is a "grey wooded" type, which is sandy clay. Some of the plants are in a fairly heavy clay and still do well. The ideal soil would be an organically fertile loam. The daylily is relatively pest and disease free.

HYBRIDS— The present day hybrids come in the most beautiful colors and forms — originated from the old types of yellow and orange. Some of the older types are more familiar to the people on the prairies. One reason is that hardly anyone grows the modern hybrids commercially in Canada, and most outlets have unnamed yellows listed. A few do have some of the older named cultivars.

CULTIVARS — The list of named cultivars is quite long — over 20,000, and new ones are added each year! The colors, shades, markings and forms just about match the cultivars, as each named cultivar has a slight difference in marking, color, shape or size. Some are tailored flowers, while others may be wide-petalled, ruffled and crêped. Individual blooms can be from two and a half inches up to seven or eight inches in size. However, quite a number of these cultivars will not survive our winters, and some bloom too late in our shorter summers. But there are many that *will* do well. People who live in the more southerly parts of the prairie may

have a greater choice of variety than those living in the north.

TYPE AND TIME OF BLOOMING — There are two factors limiting the kinds of daylilies you can grow successfully. First, the type — whether it is dormant, semi-evergreen or evergreen. Some of the most beautiful are the evergreen type which grows in the more southerly states like Georgia, Texas, Florida. Some of the semi-evergreen, I believe, may survive with mulch in winter. Apparently, some also have a tendency to acclimatize, if you can get them through the first winter. Factor two — is the time of blooming, from extra early to late. They are usually listed in six time-of-bloom categories, and the latest for the Edmonton area would be "late mid-season", and that would be in a protected location. Out in the open, "mid-season" is about the latest. These take you to August and into September. "Extra early" bloom means the latter part of May or first of June; "early", bloom in June and "early mid-season" in July, with the "late" not until September or October.

COLORS — The colors of some of the hybrid daylilies match that of some of the orchids. The yellows range from very pale yellow to lemon, to golden, and then into tangerine. The reds range from a black-red up to bright red. Others are pink, melon, orchid-mauve, lavender, purple, and even chartreuse. Some are entirely the same color, while others have a different throat color that makes them outstanding. Can you visualize a large ruffled velvety-red bloom with a bright orange throat? Others have a darker halo between the throat and the main petal color, such as gold with

a mahogany halo and a green throat. With the many colors and sizes available, the daylily looks well with other plants in the perennial flower bed.

Beauty in Gardens

I feel that the *Hemerocallis* could be used a lot more to beautify home flower beds, if people were more familiar with them. The daylily gives a long season of bloom, starting with the 'very early' and ending with the 'late mid-season'. This provides blooms from the first of June to late fall, and they can be used as cut flowers, as they keep blooming indoors if the water is changed in the vase! The spent flowers have to be removed daily. They are also a great attraction for humming birds, as are the true lilies. Institutions and commercial establishments could use daylilies in their landscaping as they come in so many colors and shades, and in size of bloom as well as the height of leaves and height of scapes. They are a very bright and showy flower and need very little care, other than regular cultural practices. I have 35 varieties that came through the winter of 1978-79, and are blooming beautifully. This spring, 1979; I purchased twelve more from the United States, which have to be tested for winter hardiness. I would say that there are hundreds of daylilies that will come through our winters.

I am doing some hybridizing myself, with the hope of developing new cultivars that will add to the variety suitable for our climate, with all the qualities of an exhibition bloom.

Growing and Hybridizing

Since starting in daylilies, my enthusiasm has increased and also my desire to see more people on the prairies come to know this lovely perennial. There are lots of opportunities to develop cultivars that would be more suited to prairie conditions. There is quite a large number of hardy cultivars available from growers in the United States for a start. Anyone who has a plot of ground can start hybridizing, as the daylily is one of the easiest flowers to work with. For those with extra time, and interested in gardening, the hybridizing of daylilies makes a very good hobby. There is just as good a chance for an amateur to develop a prize winner, as there is for a professional breeder.

More Information

For anyone interested in learning more about the growing and breeding of daylilies, even as a hobby, I would suggest, join the American Hemerocallis Society, which is an international, non-profit organization, working for the advancement and popularization of daylilies. A yearly membership includes a subscription to "The Hemerocallis Journal" — a quarterly, and new members receive the "Beginner's Handbook", which gives information on growing and hybridizing. A yearly membership is \$7.50 in U.S. funds, payable to American Hemerocallis Society, c/o Joan D. Senior, Route 2, Box 360, DeQueen, Arkansas 71832.

Beginner's Guide To Houseplant Survival

JANET OSBORNE
Winnipeg, Man.

All of our hardy houseplants will stand some neglect, in fact, more die from overwatering than from any other cause. The first rule is start with healthy plants. Before you take any plant into your home, whether from a store or from a neighbour, check for possible pests or diseases. It is better to avoid any of which you are unsure, than to introduce a fungus or troublesome insect infestation into your other houseplants. Water only when the surface of the soil feels dry, and do not leave a plant sitting in water. Use lukewarm water. If you are a beginner it is better to use a pot with a drainage hole.

Fertilizing

If you decide to use fertilizer, it is better to be stingy than generous. Use half the amount stated on the container. The slow-release granules are the easiest to use, and only need to be repeated every three months—except that you should not fertilize at all during the winter, therefore, time the last dose so that it will just about run out by the end of September—then do not apply any more until about mid-March. Two applications a year, one in mid-March and one in

mid-June, would be all that is needed. Another advantage with the slow release granules, is that you don't have to make sure the soil is damp before you apply them, as you do with regular houseplant fertilizers.

Humidity

You will find it very difficult to grow houseplants if your rooms are very dry, so if you do not have a humidifier, mist your plants twice a day: an old 'Windex' bottle is ideal.

Repotting

When a plant needs a bigger pot, move it up only one size at a time, as too much soil will hold too much water and may cause rootrot. Also, some plants will just sit and grow roots until the pot is filled, so that you will be disappointed by the lack of top growth. Commercially packaged soils are good, but usually tend to pack down too hard, so I prefer to add some peat moss or perlite or vermiculite to the mix.

Light

Light is important to plants. Choose plants to fit in with the light that you have.

Low Light: The most popular houseplants in the low light category are Dieffenbachias, Dracaenas, rubberplants (*Ficus*), spider plant (*Chlorophytum*), False Aralia, Philodendrons, aluminum plant (*Pilea*), prayer plant (*Maranta*), Boston fern, Norfolk Island Pine (*Araucaria*), and the grape and devil's ivies. These plants will do well in a north facing window.

Good Light: The next category of plants do well with reasonably good light, about four hours of indirect or direct sunlight a day: Hawaiian ti plant (*Cordyline*), umbrella plant (*Schefflera*), purple passion plant (*Gynura*), and most ivies, such as English ivy.

A Lot of Light: Flowering plants and other foliage plants such as cacti and succulents, need all the sun they can

get. The popular jade plant falls into this category.

Office Plants

I have indicated in the descriptions which follow, the plants which I suggest may be tried in an office under fluorescents. They may not put out much new growth, and may become spindly after a while, but if you like plants around you, they are worth trying. If your office has a sunless window, try any of the low light non-flowering plants, but keep them as close to the window as you can, bearing in mind that in winter they may have to be moved back a little because of cold drafts. With a sunny window, you can grow anything you can grow at home, if there is enough humidity in the air. Since offices tend to be dryer than homes, you may



Sedum Purple Passion Plant Swedish Ivy

have to use a mister once or twice a day; if you do not have time for this, select the toughest plants.

African Violet: The old-fashioned purple single variety does quite well in low light conditions, but I have not had any success with the double-varieties under these conditions. Of course, the single purple variety also will flower much better with a good light. Ideal conditions are: a good bright light with some filtered sun. This plant will not do well in a very dry atmosphere. Note that too much sun will burn the leaves. It seems to be better when potbound. Do not spill water on the leaves as this will leave marks.

Aluminum Plant (Pilea): Low light, plenty of water, but let the soil dry on the surface between waterings. I have not had success with this plant, it probably needs more humidity than I have supplied.

Amaryllis: These need a sunny window sill during the winter and do better if they are put outside in the summer. I have had mine since 1969, and have found that it is not necessary to give them a rest period every winter. The plant itself will let you know when it is ready to "sleep" for a while. The leaves turn yellow and die back. When this happens, do not water, and put the plant in the basement for three months in a dark spot. Then put in a warm location, such as the top of the hot water heater, and give a little water once a week until growth starts, then bring them into the best possible light. When in full growth they need plenty of water, so check the soil often, but do not overwater to the extent that the soil is soggy.

If you are starting a new bulb, do not give a lot of water at first, as the

bulb needs to send out lots of roots to fill up the pot before it can use a lot of water. I put mine outside as soon as the nights stay above 50°F., first in halfshade and later in full sun. When they are in full sun during the height of the summer, they need water every day. I bring them in during the first week of September, but first I water them with a solution containing 'Black Leaf 40' to kill any pests that may have moved into the pots. My bulbs flower in spring and sometimes again in the summer or fall. I fertilize on a regular basis except when the leaves start to turn yellow for a rest period. After a rest period, I start fertilizing again when the leaves are half grown.

Angelwing Begonia: I have had my plant since 1967. I have seen some very poor specimens around in offices and homes where not enough light is available. This plant will burn in direct sun, but needs a brightly lit spot if it is to flower. It also needs quite a lot of humidity; in a very dry home its leaves will drop off. But too much humidity will cause mildew. My home has about 40% relative humidity in the winter, and this seems to be fine for this plant. When it gets too tall and leggy for my liking, I cut it back and root the cuttings in water, either to make new plants or to fill out the base of the old one. Mine is in a north window, and it flowers in early summer. I think it would flower longer with filtered sunlight. Let the soil get dry and then water well.

Arrowhead (Nephtytis or Syngonium): This is a plant that can be grown in a vase of water (as can philodendron, pothos, Chinese evergreen, and Dieffenbachia), to which charcoal chips have been added. If you prefer to grow it in soil, re-



Easy to grow house plants.

member that *arrowhead* is a vine. It can be allowed to trail but grows better upwards. It will survive in very low light, and will grow in poor light; in good light, it will grow very fast. A good plant to try in an office.

Aspidistra: This plant can be grown in the same pot for years and years and will tolerate very low light. This is about the only plant that will survive a hot, dry, dark, or drafty basement apartment with northern exposure. It is a good beginner's plant, being very tolerant regarding watering, but, as with most plants, it is better to underwater than to overwater. While it will survive adverse conditions, it will grow better, and make a nice glossy healthy plant, with better conditions. In a north window it can grow three feet tall and bear handsome green

arching leaves three to four inches wide. Plants can be increased by separating the roots, and this plant does not have to be repotted in the spring. The only difficulty you may have with this plant is in obtaining one, since stores do not often carry them. This is a pity. It would also be a good plant to try in an office.

Boston Fern: Needs a good light or filtered sun. Will get very big. Do not allow to stay dry for long, but let the surface of the soil become dry between waterings. It will need water about twice a week. It is important not to have this plant in a place where it will be brushed against as this will injure it. Unfiltered sun, except in the early morning or late evening, will also kill it, as will neglect (just once) of watering. Do not allow to sit in

water, however, as this too will kill it, as it will almost any plant.

Chinese Evergreen (*Aglaonema*): Will grow in poor light and is very hardy. Besides the green type, there are variegated ones. Most grow to two feet in height. It will also produce a small calla lily-like flower, followed by seeds which turn red and stay on the plant for several months. This plant is one of the better ones if you have a very dry home. It needs quite a lot of water, but let the soil dry out between waterings. This plant is sometimes mistaken for Dieffenbachia, and is a better choice for a lowlight area. It would be a good plant to try in an office.

Coleus: Will grow quite well in a north window, though it will get "leggy" after a while. Keeps a better shape and better colour in filtered sun. Direct summer sun will burn the leaves, but winter sun is good. Even in a good light it will eventually get too tall and spindly. When this happens, take six inch cuttings, remove lower leaves, and root in water, to start a new plant by planting three cuttings in a six inch pot. In spring, you can take a lot of cuttings from your old plant to set outside in a shady spot.

Cuphea (cigar plant): is good if you have plenty of sun. In a less well-lit spot it will not flower so heavily. It is easy to grow from seed. In a good location it will flower all year round. It does not like to be disturbed so cannot be grown in the ground in summer and then re-potted; however, small plants can be moved up to a larger pot if you do not disturb the roots. Prune now and again with a sharp pair of scissors.

Dieffenbachia: If the leaves are eaten, the tongue of the person (or

animal) who eats it will be painfully swollen for a few days, and they will be speechless, hence the common name, "dumb cane". It will grow in low light, but for best growth, a little sun is required. If it gets spindly, cut off the top and root in water — this may take six months or more. In the meantime, a new growth will probably start from the old cane, which you should have cut down to a height of about six inches. The plant can also be air-layered. Unfortunately, a lot of people, especially in offices, allow the plant to get to a ridiculous height with a few leaves stuck to the top, so that it looks quite awful. With good treatment this is an attractive houseplant. I know someone with two specimens in a slightly sunny window which are about six feet tall and covered with large, glossy, mottled leaves.

Dracaena: The most common form is *Dracaena fragrans massangeana*, and can remain in the same pot for years, and will do well in almost any kind of light, including fluorescents. Allow soil to dry well between waterings.

False Aralia: Medium or low light, does not need sun.

Impatiens: A good flowering houseplant, but very prone to spider mite infestation. If you notice small webbing where the leaves join the plant, the plant is infested. Either throw the plant out, or isolate it from other plants, and use a houseplant spray at ten day intervals until no more webs appear. Keep the plant isolated until it has been free of pests for at least three weeks, as some eggs will be slow to hatch out, and your whole houseplant collection will swiftly become infested by this little pest if you are not careful. Personally,

I prefer to throw the plant out rather than risk contamination.

Ivies: Do well with medium light. English Ivy likes a cool temperature. I have one on a narrow window ledge where it is right up against the glass and gets quite cold in winter, but it thrives. Mine also gets some indirect sun, which it likes. Water when dry or the leaves will drop off, but do not overwater, especially in winter.

Jade Plant: This is a very slow grower, and needs plenty of sun and not much water. Water only every ten to fourteen days in summer, and about every three weeks in winter. If you have to repot it, add sand or perlite to the mix as it must have good drainage. Never try to grow it in a pot without a drainage hole.

Neantha Bella or Parlor Palm: This is a little palm, growing to about 18 inches. It requires less light than other palms, and will do well in a north window. Sun will burn it.

Norfolk Island Pine (*Araucaria*): Needs low light to survive, medium light to grow. Allow to dry between waterings, then water well. The needles are soft and fragile, so do not place it in a position where the plant will be brushed against.

Philodendron: There are a lot of varieties of this houseplant, but the hardiest is the most common one that everyone knows, with the heart-shaped green leaves. They can grow up a bark stick or be allowed to trail. They do well in quite subdued light, and cuttings will root in water. If the leaves get smaller and smaller, the plant is not getting enough light: cut it back and move to a better location. If you are growing the "Swiss Cheese" variety and the new leaves refuse to split, probably it is not getting enough light. Allow to almost dry

out, then water well. This plant hates to be waterlogged. It is suitable to try in an office.

Pothos: Often mistaken for philodendron. Pothos will stand dry air better than philodendron but it needs better light than philodendron to grow well. Pothos grows quickly. Vines can be cut back and rooted in water. Be very careful not to overwater this plant. If you do, the leaves will turn yellow and fall off.

Prayer Plant (*Maranta*): Needs low light and plenty of humidity. Give plenty of water, but allow to dry in between waterings. I have not had success with this plant, probably my home is not humid enough for it.

Rubber Plant: The rubber plant is a member of the fig (*Ficus*) family. It will grow in sun or shade, although good light is preferable. It does not need direct sun. Fiddle Leaf Fig (*Ficus lyrata*), needs good indirect light. Suitable to try in an office, if you have plenty of space.

Sansevieria: Commonly known as snake plant or mother-in-law's-tongue. This plant is almost as hardy as aspidistra. There is a dwarf version as well. To start a new plant, cut off a leaf and divide into sections about six inches long, push halfway into a rooting mixture of perlite and peat moss, and water lightly; but make sure you get the pieces the right way up. Do not overwater this plant. In summer, water when the soil feels dry to the touch, and in winter, wait four or five days after the soil first feels dry. This plant can be repotted at any season. It will survive quite a long time in a dark corner, but will not grow there. Perhaps you have seen only neglected, dusty specimens, and consider it not worth having. But well grown, it is a glossy plant with spears

up to a yard long, and is a good contrast among a group of broad-leaved tropical plants. Suitable to try in an office.

Screw-pine (*Pandanus*): Will stand neglect. Allow to dry out thoroughly between waterings, and give hardly any fertilizer — too much will cause the leaves to become mushy. It will survive in the same pot for years. Medium light is best.

Spider Plant: This plant will survive in poor light, but needs better light to grow. The plain green variety will grow with less light than the striped varieties. Unless your home is very humid, the tips of the leaves will turn brown. I do not worry about it; however, if they get too unsightly, I trim off the tips with a pair of scissors. Allow the soil to dry, but not overdry, between waterings. The plant is easy to propagate: just take some of the "babies" from their long stems and place them on top of a pot of planting mix — secure with a bent paper clip, and water lightly. They will soon develop roots. Before the "babies" appear the plant will produce small, white, star-shaped flowers, which are often not noticed as they do not last long.

T-Plant: I have had my common green variety since 1960. Every now and then it gets too leggy and I cut it back to a height of about six inches, and it has always regrown into a nice plant with rather stiff, shiny leaves. It presently has two shoots and is about four feet tall in a 12-inch pot. A neighbour has one about nine feet tall in an 18-inch pot. Too much water will quickly cause the lower leaves to turn yellow and drop off. It will survive quite a while in poor light, but needs good light to grow. Mine has

been slow-growing as it only gets two-three hours of evening sunlight in the summer, and no sun at all in the winter. The colored variety will not survive without lots of sun. Since I have two shoots, I only cut back one at a time and still have a plant while the cut-off shoot is regrowing. The old stem can be cut into three-inch logs and set on their side on a peatmoss-perlite mix to root. Set a glass over the top for humidity. As soon as some top growth is evident, move into a good light, and when about four inches tall, set in some sun; then, when it is about 12 inches tall, give it as much sun as you can. The plant can also be airlayered.

Umbrella Plant (*Schefflera*): Needs medium light, and makes a big plant. Can be tried in an office if you have space. Do not overwater.

Waffleplant: This plant has dark purplish-red quilted leaves when kept in sun. In shade it loses the dark color and becomes mottled yellow-green. It is very easy to root in water, which is a good thing as it tends to lose the lower leaves quickly and become straggly. However, by rooting cuttings on a regular basis, the plant can be kept full. It is a semi-trailing plant. It needs plenty of water, but allow the soil to just dry between waterings.



Common Elm Diseases

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Although Dutch Elm Disease is the most serious elm disease in Manitoba there are several others. Some are important, others are of little consequence, although they are quite noticeable.

Damage Due to Non-Living Agents

Winter Injury:

The failure of branches to leaf out in the spring can be the result of winter injury. A dry fall can result in trees going into the winter with a critical water shortage and, as a result, buds which are formed in the fall dry out and are killed. This type of injury occurs more commonly with Siberian elm than with the native American elm. In Siberian elms a dry fall appears to promote heavy seed production the following spring.

Salt Injury:

The use of road salt has caused injury to boulevard trees, particularly adjacent to intersections where salt use is heaviest. Symptoms of salt injury are yellowing, followed by browning of leaf margins. Repeated annual injury and salt build-up in the soil can result in dieback or even death of trees. Dry soil conditions tend to accentuate salt injury. Salt damage can be reduced by leaching

or heavy watering to wash the salts out of the surface soil zone.

Damage Due to Living Agents

Black Leafspot:

Black spot of elm occurs almost annually. The disease, caused by the fungus *Gnomonia ulmea*, usually occurs in late summer when the foliage is nearly senescent and is, therefore, of little or no importance. However, this disease can appear in early spring if prolonged cool wet weather has occurred during May or early June. Severe defoliation and twig mortality can occur on all elm species but is common only on Siberian elm. Spraying affected trees with captan fungicide may be warranted in cases where the disease is severe.

Sooty Mould:

The presence of a dark coloured mould growth on elm leaves is quite common in late summer. The mould growth is that of an Ascomycetous fungus which in nature grows only on the excrement (honeydew) of aphids and other sap sucking insects. While this fungus is not parasitizing the tree directly, it does reduce the amount of light available to the leaf surface. Since the fungus is dependent on the insect for its food it is controlled by controlling the insect.

Elm Wilts:

In Manitoba elm wilt has been found to be caused by fungi, however, in the eastern United States a virus has also been associated with elm wilt. Two common wilt diseases caused by fungi are *Cephalosporium* wilt (*Dothiorella ulmi*) and *Verticillium* wilt (*Verticillium albo-atrum*). These diseases usually cause only a partial wilting and dieback. The symptoms of all wilt diseases are very similar and a positive diagnosis can be made only by laboratory isolation of the causal fungus. There are areas in Winnipeg where *Cephalosporium* wilt is causing considerable damage to elms, although this disease is found only rarely in rural Manitoba. Heavy fertilization to promote new growth and removal of dead and dying branches may help to reduce the damage by *cephalosporium* and *verticillium* wilts.

Wetwood or Slime Flux:

Elms, especially Siberian elms, often suffer from a chronic "bleed-

ing" from crotches and wounds. This disease is caused by a bacterial infection of the sapwood. The bacteria ferment the sap releasing gases which cause pressure to build up within the tree. This pressure often causes the fermented sap to flow out at tree crotches or at wound sites. Because the fermented sap is toxic, "bleeding" wounds do not heal over and the bark tissues under the flowing sap may be injured. The fermented sap often attracts insects but these insects do not cause any injury. Injury to bark tissues can be avoided and wound healing promoted by boring an upward slanting hole one-quarter to one-half inch in diameter into the tree trunk and inserting a pipe into the hole. The hole should be bored below the bleeding site. The purpose of the pipe is to carry the toxic sap away from the tree and drop it on the ground.

These are some of the other problems of elm trees that are at present overshadowed by the Dutch Elm Disease.



More with Snapdragons

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The Common Snapdragon *Antirrhinum majus* is an herbaceous perennial which is not winter hardy on the Canadian prairies. Thus, it is cultivated only as an annual. The result is a widely adapted annual flower, producing a colorful show of bloom over an extended period from June until severe autumn frosts. They are useful for garden plantings and as cut flowers.

The snapdragon is a sun-loving plant which will grow satisfactorily in most good garden soils. The seed should be sown indoors during late March or early April for transplanting outdoors during May. If adequately hardened, the plants are frost tolerant. The seeds are small and will germinate in about five to six days. Direct seeding outdoors is not recommended.

Cultivars

There are numerous cultivars available in plant sizes ranging from six inches to 36 inches, and a color range of white, yellow, orange, red, rose, salmon, pink, mauve, purple and including bicolors. Two flower types are now available, the regular snap-type and the newer butterfly-type (open-faced, azalea or hyacinth flow-

ered) which occurs in single and double flowers.

Some cultivars worthy of consideration are:

Tall: 24 to 36 inches

Bright Butterflies — single butterfly-type, mixed colors only.

Madame Butterflies — double butterfly-type, mixed colors only.

Rocket series — snap-type, separate or mixed colors.

Spring Giant — snap-type, mixed colors only.

Medium: 12 to 18 inches

Carioca series — snap-type, separate or mixed colors.

Sprite series — snap-type, separate or mixed colors.

Small: 12 inches

Little Darling — butterfly-type, mixed colors only.

Sweetheart series — butterfly-type, separate or mixed colors.

Promenade series — snap-type, separate or mixed colors.

Dwarf: 6 to 8 inches

Floral Carpet series — snap-type, separate or mixed colors.

Magic Carpet — snap-type, mixed colors only.

Pixie series — butterfly-type separate or mixed colors.

AN AG SOCIETY

What noble purposes, what goals?
 (I ask with some anxiety)
 Are realistically true
 For you, the Ag Society?

The fairs that yearly blossom forth
 Are often beautiful to see.
 They are a medium through which
 You mirror your community.

A fair, it should reflect the past
 And honor our great heritage.
 We owe a debt of gratitude
 To folks who shaped the bygone age.

A fair should show the best there is
 In produce of our verdant plain:
 Of barley, oats, of wheat and rye
 And all the newer seeds and grain.

A rooster crowing in its cage,
 A pen of sheep, of boars and sows,
 A lineup of the best of beef
 And a parade of shiny cows.

It should reflect the best there is
 Of the great culinary art:
 The best of bread, the finest cakes,
 The tastiest in butters tart.

The fairest work in needlecraft,
 Of knitting and embroidery
 Should be displayed at country fairs,
 Of every Ag Society.

And don't forget the garden fair
 There's naught that brightens up a
 show
 As vegetables and fresh fruit
 And flowers with colors bright aglow.

And don't forget the 4-H clubs
 Tomorrow's hope and this day's
 pride;
 Their aspirations and their goals
 Need our support, our gentle guide.

The din and noise of girls and boys
 Of fiddlers playing at the fair
 Create a setting and a mood
 And spirit that's beyond compare.

A spirit of community,
 Of pride of country and of soil,
 That fosters solidarity
 And kinship with the folks who toil.

But is a fair the only thing
 An Ag Society's only goal?
 Is it not just a show window
 Reflecting a community's soul?

An active Ag Society
 Does not lie dormant through the
 year
 But finds an input must be made
 To problems as they may appear.

It's roots that keep a plant alive
 And farmers give this land its roots
 When times are tough our farmers
 pull
 This country up just by their boots.

An Ag Society can help
 To serve the whole community
 With programs of so wide a range,
 What wondrous opportunity.

Most farmers are a stubborn lot
 (It is their work that made them so.)
 When they unite that stubbornness
 They'll reach the goals for which they
 go.

To build a better land for all
 By building their community,
 Pray, tell me, is not that the goal
 Of every Ag Society?

— P. J. Peters
 October 1977

The Home Landscape in the Prairie Region

CHARLES H. THOMSEN
Winnipeg, Man.

When we moved into our present home we were faced with an entirely barren landscape. Not a blade of grass or weed was evident for it was a brand new house in one of the recently developed subdivisions at the south end of Winnipeg. As with most new subdivisions in the Winnipeg area, the first thing the developer did before beginning construction was to scrape off the top twelve inches of good topsoil and sell it. The remaining heavy clay subsoil compacted during construction is what we had to deal with in establishing any kind of a new landscape. We have been living there for three growing seasons now; digging, sweating, and planting, and I would like to share with you some of our interesting discoveries.

Unlike many of our neighbors who immediately set about hauling in topsoil, spreading, rolling, laying sod, and then sitting back and watching it grow, we took a different route. Before starting any work we developed an overall master plan for both front and back yards. We asked questions of ourselves; who was the yard to serve, and what was it to be used for? We quickly decided the last thing we wanted to do was to fuss over fertiliz-

ing, watering, and mowing a lawn. It's a complete waste of energy, both mine as well as the fragile resources of this earth. Lawns are nice on golf courses and football fields, but not in our yard! We chose instead to develop a landscape more fitting to our own needs and ideals. The back yard suits our immediate functional needs, while the front yard will become a microcosim of the natural prairie landscape which occupied this space long before we or our house arrived on the scene.

As most of our planning and energy to date has gone into the development of the backyard, it is with this area that I will focus my comments. It was decided the backyard must serve three major functions: 1) a children's play area, 2) a storage area for both auto and miscellaneous equipment, and most important 3) a vegetable and herb garden.

Over time we realize that changes will be occurring in our use of the yard and these must be anticipated and planned for. Eventually the kids will no longer have a need for the sand area and play structure and will be spending their time elsewhere. Also many of the young trees and

shrubs we planted will grow larger and begin to shade out parts of the yard now fully bathed in sunlight. As this happens, the play area will become an ideal place in which to expand and establish a new herb and vegetable garden. It is the change over time which makes 'gardening' such a challenging and enjoyable art. A change not only seasonal with color, texture and fragrance, but change in form and use over the years.

The first major task we undertook in the yard was to work on the soil to make it more friable and suitable for gardening. We ordered ten yards of sand and five yards of well rotted manure. Half the sand I left in a pile for kids to play with and the other half I rototilled into the soil, along with the five yards of manure. Even with these efforts the soil remained heavy. Despite this, the first year's garden produced well beyond our expectations. In order to make any real change in the soil texture you have to add considerably more sand than I did. A better method is to develop a program of continually adding well rotted organic matter to the soil. Each year we now turn into the soil material from our compost pile which consists of last year's garden wastes, neighborhood grass clippings, kitchen wastes, hair clippings, fireplace ashes, and wood shavings from the home workshop and firewood cutting. We still add a little sand each year, but only in the areas of the garden where plants such as spinach and leeks are more desirous of sandy soils. Now as we move into our fourth planting season the soil is beginning to respond to our efforts. In some areas it crumbles to the touch!

One major mistake we made was to add 2 yards of commercially bought

unsterilized topsoil to a low spot in the garden. In doing this we introduced a whole range of uninvited weed and insect pests into the garden. During our first season weeds and insects were not a serious problem. This we concluded was the result of our program of heavy mulching and companion planting. The second year, despite the same program, we were bothered with a larger than usual number of weed and insect pests. The weeds were easily pulled, but the insects got more than their share of the crops.

Another mistake we made was to allow the more aggressive plants to reseed themselves in the garden. At the beginning of the third season we noted that tomatoes, sunflowers, dill, savory, parsley, chives, lobelia, nicotiana, yarrow, johnny jump-ups, and marigolds had started to come up on their own. We didn't want to disturb the new plants so we decided against rotatilling and instead turned the soil over by hand in select areas. It was a lot of work and not really worth it. As the season progressed we began to consider these plants as virtual weeds as they dominated the garden. This past fall we were careful to remove these plants before they had completely ripened and dropped their seeds throughout the garden.

Rather than plant in the typical row pattern, we have developed a system of integrating the plants into beds. This makes the garden more visually interesting as well as easier to maintain. The massing of plants tend to choke out the weeds. The plants are further organized according to height, color, texture, and compatibility with their 'neighbors'. The beds are then bordered with nasturtiums and marigolds to discourage insect pests.

This companion planting is an important aspect of the garden. While our neighbor's beans were completely devoured by bugs, we were able to can our successful crop thanks to an interplanting of petunias. The beans in turn aided the growth of the adjacent cucumbers. Flea beetles which invaded the garden fed on the nasturtiums and borage while leaving the rest of the garden alone. We have been generous in our planting of such herbs as yarrow together with

onions and garlic in order to discourage insect pests.

Each year we continue to experiment and add new plants to the garden. This year we added more color with annuals and perennials. The real joy though comes when we sit down to a dinner of garden grown vegetables in the middle of winter when the garden lies deep with snow cover. These joys of gardening last well beyond the long hours of sunlight and warm summer air.

— PRUNING TREES AND SHRUBS —

The most important thing about Fall pruning is knowing why you are doing it, says Roger Brown of the Manitoba Department of Public Works. The two major reasons are to shape the tree or shrub and to improve its health by removing dead or diseased wood.

Remove branches that are crossing and rubbing against each other and any that are growing toward the centre. Keep the tree open. When pruning young growth, always prune to an outside bud. Remember, most

shrubs produce blossom on the previous year's growth. Keep old and dead wood pruned out of shrubs to encourage new growth.

When pruning diseased wood, disinfect the equipment after each cut by using methylehydrate or a household disinfectant.

Always make clean cuts, these will heal much faster than cuts which are left rough. Use a piece of glass or a pruning knife to smooth the edges of the cuts.

Trees for Your Future

MANITOBA DEPARTMENT OF AGRICULTURE

Looking for a shade tree for your yard or boulevard? There is a wider range of choice than you may have known if you are looking for a specimen tree suited to most moisture, soil and temperature conditions occurring in southern and central Manitoba.

At one time the most popular selection would have been an American elm, but you will notice that elms — whether American or Siberian — are not among the trees listed. Dutch elm disease is now present in Manitoba, so there is little point in supplying more potential victims by planting more young elms.

There are a number of excellent alternative trees that are either relatively new or have finally gained the recognition they deserve. Trees pictured and described here are resistant to or tolerant of most destructive diseases. They also fit the normal town and city lot without overwhelming the house or the lawn.

Dr. Wilbert Ronald, research arborist at the Canada Agriculture Morden Research Station has made the

selection. He bases his choices on performance, not only at the research station, but on city and town boulevards and in home grounds across the prairies as far north as Edmonton.

Talk to your nurseryman and look over his material. The choice is yours to match or mix, and it's a broad choice!

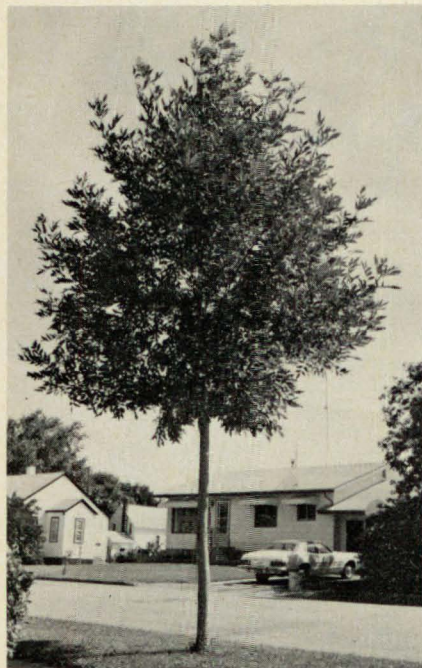
Ashes

Ashes are dependable landscape, park and boulevard trees that deserve serious consideration as alternatives to elm trees. They are hardy, generally heat and drought resistant and tolerant to a wide range of soils. Disease and insect problems are minor.

Native Green Ash

Long underrated. A good specimen tree. Can be pruned to a single, straight stem with elliptical-shaped crown.

Moderate growth rate. Mature height to 70 feet (usually around 50 feet) and trunk diameter of up to two feet.



Native Green Ash

Leafs out later in spring and drops leaves early in fall. Very tolerant to drought, salt, excess moisture and heat. No nutritional problems.

No apparent disease problems. Insect problems minor.

Widely available.

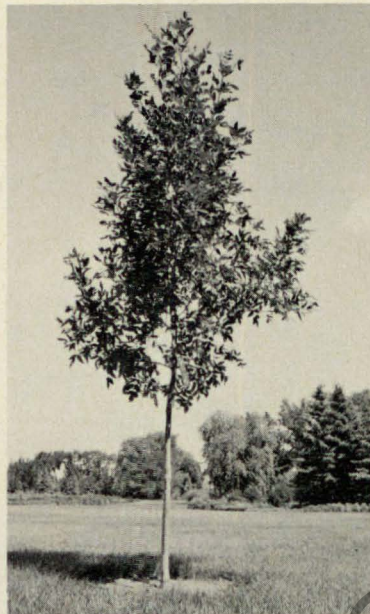
'Patmore' Green Ash

Grafted cultivar of native green ash. Attractive shiny leaves. Pleasing form. Seedless.

Height about 60 feet. Single stem. Elliptical crown.

Extremely hardy. No disease and only minor insect problems.

Available at limited number of nurseries.



'Patmore' Green Ash

Black Ash



Black Ash

Native of Manitoba. Single stem, elliptical form. Height to 60 feet (usually around 50 feet). Strong branching.

Adaptable to wide range of soil conditions. Less drought tolerant than green ash.

No disease problems. Few insect problems. 'Fallgold' selection has pleasing upright form and bright yellow leaves in fall.

Native black ash easily obtainable. 'Fallgold' less available currently.



Manchurian Ash

Manchurian Ash

Native to northern Asia but adapted well to Manitoba. Well formed with a dense round-shaped crown. Height about 45 feet with trunk 1½ feet in diameter.

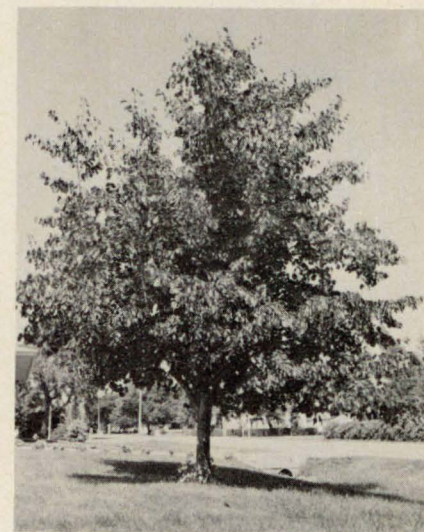
Easily transplanted, moderate growth rate. Tolerant to wide range of soil conditions. Drought and excess moisture tolerant.

No disease problems. Ash plant bugs occasionally partially defoliate trees, otherwise no major insect problems.

Availability increasing; deserving of wider use.

Basswoods

Basswoods or lindens are attractive shade trees which have small yellow flowers valued for honey production. They are particularly valuable for home landscapes and as boulevard trees in residential areas. They are generally tolerant to insects and diseases but are intolerant of salt conditions associated with heavily used city thoroughfares.



American Basswood

American Basswood

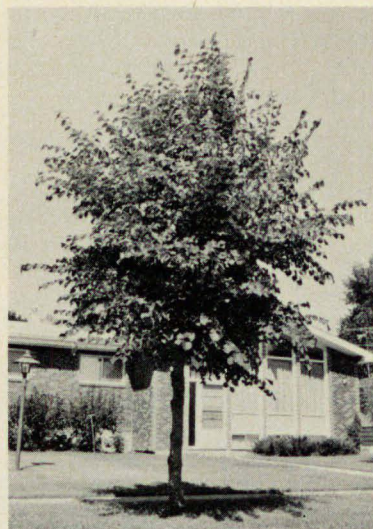
Native to eastern and central Manitoba and rates high as a property shade tree.

Large, dense, fast growing to 50 to 60 feet. Single or multiple stem. Leaves large. Broad globe crown. A coarse, but attractive tree.

Adapted to wide range of soil conditions, but **not** drought tolerant. Should be watered occasionally. Not tolerant to salt conditions.

No serious disease problems. Insect problem not major — bladder gall mites in unthrifty trees can be unsightly.

Readily obtainable.



Littleleaf Linden

Littleleaf Linden

A medium-sized tree 30 to 40 feet high. Upright spreading in shape with dense oval head. Leaves somewhat leathery and lustrous dark green.

Moderately hardy. Slow growing. Not drought resistant so needs watering.

No serious disease problems. Insect problems of minor nature.

Readily obtainable. A good specimen tree for smaller space or group plantings.



'Dropmore' Linden

'Dropmore' Linden

A larger leaved hybrid of the littleleaf linden and American basswood. Similar shape and height but hardier and faster growing than littleleaf linden.

Readily available.

Paper Birch

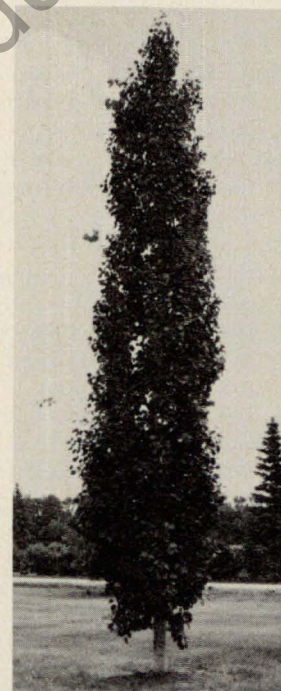
Native to Manitoba. Multi-stemmed growing to 45 feet. Single stemmed to 60 feet. Moderate growth rate. Oval shaped and branching. Bark is white and attractive after four to six years. Catkins profuse.

Prefers cool root zone and plentiful moisture. **Not** drought resistant. Susceptible to roadside salt.

Diseases not a limitation. Insect pests include birch twig borer and



Paper Birch



Columnar Aspen

leaf miners. Insect control may be necessary. Birds (sapsuckers) may damage trunks.

An attractive, popular tree. Excellent for small lots and group plantings. Readily available.

Columnar Aspen

Native of Sweden. Adapted to a range of soil and moisture conditions. Extremely hardy.

Related to native trembling aspen, but tall and very slim in shape. Dark green foliage. Mature height about 30 feet. Growth rapid. Suited to narrow space as accent plant or for narrow hedge.

Insect and disease problems minor.

Availability increasing.



'Shubert' Chokecherry

'Shubert' Chokecherry

A striking cultivar of the native chokecherry introduced from the Oscar H. Will Company of Bismarck, North Dakota.

Small, coarse textured, dense pyramidal tree. Grows to 20 feet. Leaves green when young, turning



Amur Chokecherry

dark purplish as summer progresses. Usually grafted to non-suckering European bird cherry root.

Some minor disease problems. No insect problem.

Readily available.

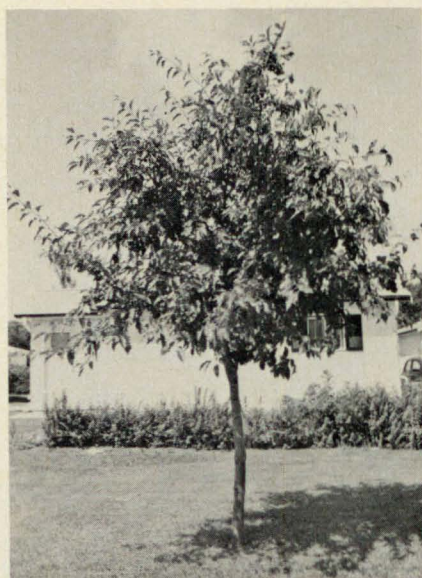
Amur Chokecherry

A close, but more attractive relative to the common pincherry.

Hardy. Medium height to 20 feet. Broad pyramidal shape. Attractive coppery-orange bark. Can be trained to a single stem. Non-suckering. Not tolerant of excess moisture.

No disease or insect problems. Rated highly by arborists.

Moderately available.



Selkirk Flowering Crabapple

Flowering Crabapples

As a group, flowering crabapples sold by Manitoba nurseries are hardy and well adapted to the climate and soils of the province. Chlorosis can be a problem on heavy, poorly drained, calcareous soil types.

Most are small trees with mature height around 15 to 20 feet and about 12 to 18 feet in breadth. Trees can be trained as either multi-stemmed or single stemmed specimens. Transplant readily. Selkirk, Red Splendor, Rosthern and Thunderchild are best suited for training as single stem, small trees.

Flowers range from white to reddish purple in color. Several pink-flowered cultivars and white colored cultivars are recommended for Manitoba.

Foliage color ranges from green to dark purple. Fruits small and decora-

tive and often hang on tree during winter.

Apple scab and fireblight infect crabapples, although most recommended cultivars are tolerant to resistant. No insect problems.

Recommended are:

'Almey' — Clear red bloom. A broad spreading irregular form. Moderately blight resistant. Moderately scab susceptible.

'Radiant' — Flowers pink, dense round headed crown, moderately hardy, fireblight resistant.

'Rudolph' — Flowers deep pink. Round, spreading crown. Very hardy.

'Rosthern' — Flowers white, foliage green, broadly ascending crown, very hardy, slightly susceptible to fireblight.

'Tanner' — Flowers white, foliage green, round crown, very hardy.

'Thunderchild' — Flowers deep rose, foliage light purple, very hardy, oval shaped crown, resistant to fireblight.

'Kelsey' — Flower double pink, fruit dark purple, moderately hardy, fireblight resistant, oval shaped crown.

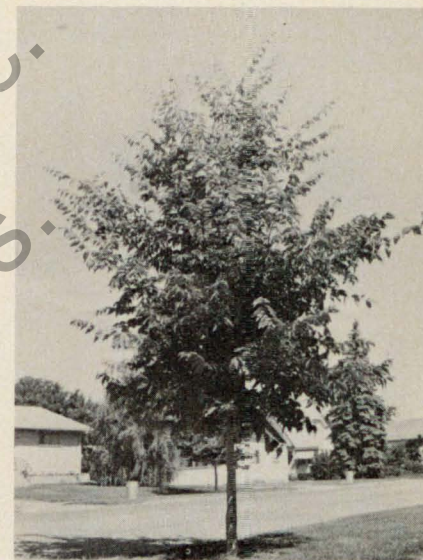
'Red Splendor' — Flowers bright pink, fruit red, very hardy, spreading crown, resistant to fireblight.

'Garry' — Flowers bright pink, fruit dark purple, hardy, oval shaped crown, fireblight resistant.

'Selkirk' — Flowers pink, foliage glossy green, fruit bright red, fireblight resistant, hardy and suited for training to a single stem shade tree, dense round-shaped crown.

Hackberry

Native to Manitoba and adaptable to a wide range in climate and soils.



Hackberry

Vase shape similar to American elm. Mature height to 45 feet. Coarse, dull green foliage. Vigorous growth. Fruit is small, nutlike drupe. 'Delta' seed strain is recommended.

No disease problem encountered. Leaf galls a minor problem.

Increasing availability. Deserves greater demand as a replacement for elms in boulevards and residential landscapes.

Japanese Tree Lilac

Highly recommended as a small tree for home landscapes. Hardy. Single or multiple stemmed. Mature height to 25 feet. Foliage glossy. Round head. Blooms with creamy white flowers in late June. Cherry-like bark.

No disease or insect problems. Moderate availability.



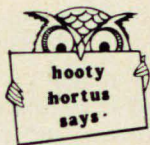
Japanese Tree Lilac

Silver Maple

Large tree to 50 feet with broad spreading crown. Fast growing, transplants well, prefers moist conditions. Chlorosis susceptible on calcareous soils. Moderately hardy.

Widely available.

Editor's Note: Refer to Colour Section pg. 77a.



Drying with glycerine can work wonders in doing what no other drying or preserving operation can do — it can hold and preserve the leaves on small branch stems cut from foliage materials.

Start with mixing one part glycerine in two parts water. To get a good mix the water should be about 50°-70°C (120°-150°F). Now stand the foliage stems, with berries or seed pods, if they have them, to a depth of at least five inches in this glycerine and water

solution. You will have to refill the container. All your material should be freshly cut and those branches of a woody nature should have their ends shattered.

The result is that this plant material respire and absorbs the water and becomes saturated with the glycerine. This process will take some ten days or more. Take the stems out of the solution when you can feel an oily slickness on the materials being processed.

This glycerine-dried material will last indefinitely. It can be used in fresh arrangements in water as well as with other dried materials because placing their stems in water will cause no deterioration in their condition.

Horticultural Uses for Peat Moss

JIM PORTREE

Research Greenhouse
Thompson, Manitoba

There are a hundred and one horticultural uses for peat — but that is not news for most plant buffs. Peat moss is playing a greater role in horticulture than it did a decade ago, especially since the advent of artificial plant soil mixes.

Basically, there are two physical forms of peat found in the natural state — the coarse, stringy light brown peats found on the surface, and the dark brown-to black-textured peats located at greater depths. Depending on its horticultural use, peat can be used in the unamended form or can be modified, both physically and chemically. Coarse, unmilled sphagnum is fairly common around the eastern part of Manitoba and north of the 54th parallel. Coarse peat has been traditionally used for lining woven baskets. Since the advent of the mass-produced hanging plastic pot, more and more plant enthusiasts are realising the benefit of peat-lined baskets versus the plastic pot. This layer of peat provides greater aeration and drainage to the internal soil, as well as adding decorative color contrast to such plants as fuchsia and begonia. The only disadvantage is that this system requires a little more frequent watering. The increasing demand for more exotic forms of plants has resulted in the debut of the staghorn fern. An ideal habitat for this

fern is created by using a one-square foot board with several handfuls of peat, fastened to it with chicken wire.

Coarse Light-Brown Peat

Coarse, light-brown peat makes an ideal decorative top dressing for a large potted tropical, especially those top heavy rubber plants and dieffenbachia that have lost their lower leaves and are exposing a large soil area. Tired of those old foliage plants? Select a group with contrasting foliage, form and color and insert them, pot and all, in a large container. Spread the surface with coarse peat moss to conceal the individual pots as well as to add a decorative touch.

Green Coarse Peat

For the serious indoor-light gardener or those with hobby greenhouses, trays or benches lined with poly and one inch of milled sphagnum moss make an efficient capillary water matt. Pots watered by this method provide more buffering time between waterings. Slightly green, coarse peat, pre-moistened with tepid water, then squeezed tight to remove excess water, is an ideal method for starting cuttings by the 'jar method'. I've found the green living peat works slightly better than the more decomposed brown forms or even the milled sphagnum, in preventing fungus rots of the cuttings.

Cuttings

Cuttings of philodendron and dieffenbachia are simply cut into 1.5-to 2-inch sections (included in the stem section is a node), and placed in a jar with several handfuls of slightly moistened peat. The jar is shaken slightly to ensure partial coating of the cuttings with the peat. The jar is then placed in a moderate light location and left on its side for three to four weeks for sprouting to occur.

Seedlings

The peat and 'jar method' is also ideal for starting a wide range of seedlings, ranging from the coarse cucumber seeds which can be treated the same way as the philodendron sections, to the fine gloxinia or petunia seeds which require a finer seed bed of milled sphagnum (firmed with the flat edge of a ruler). Sun-dried or oven-dried green sphagnum, which has been crushed to a powdered form makes an excellent top dressing for fine seedlings, and also aids in preventing damp off.

Coarse peat can also be used for air layering tall tropicals, such as the rubber plants, dieffenbachia or dragon tree. I have also found peat an excellent medium for storing bulbs, such as dahlias, gloxinias and hosts of others. If the peat is fairly dark in color, I usually mix a little bit of 'Captan' or 'Benelate' fungicide powder on the bulbs before sealing in a plastic bag. The main secret is to ensure the peat is not too moist, for this in turn can lead to rot problems. Moist green peat has also been reputed to be an excellent medium for preserving root vegetables, such as carrots, turnips, and beets. I have tasted a year-old carrot stored by this method and I can testify that it tasted just as sweet and crisp as on the day it was

picked. The procedure is to store the clean vegetables in layers of green sphagnum, alternated with layers of moist sand in a cool, dark environment.

Peat moss in any form, coarse or fine, has been found to be an ideal composting material, especially with fish remains, (alternate layer approach). The use of straight peat as a soil amendment cannot be over-emphasized, especially for the heavy Red River clays as well as the northern clay belt. A two to four inch layer of peat added to the soil and worked in during the spring or the fall, will improve aeration, water holding capacity, and the soil biology, and improve the soil texture in general.

Dark Brown Peat

Milled sphagnum or dark brown peat is an excellent potting medium for azaleas, gardenias, dwarf lemon or orange trees. The key to growing acid-loving plants in a pure peat medium is to remember that peat tends to dry out and is extremely difficult to re-wet by top watering. It is recommended that pots containing a peat medium be allowed to sit in a container of water for several hours to allow total saturation of the root ball. Fine dark humified peat is an excellent top dressing for lawns. To rejuvenate old lawns or small sections that may have succumbed to winter kill or heavy foot traffic, all one needs to do is to add one to two inch layers of peat in the spring. This does wonders to build up a thick, healthy thatch layer.

The preceding paragraphs have shown that there are many uses for the different grades of peat in an unaltered form. However, the whole area of modifying peat physically and chemically opens the possibility of

more horticultural uses. When peats are used in fairly heavy concentrations of four to six inch depths, it becomes necessary to add horticultural grade lime at the rate of five to ten pounds, per 100 square feet. Heavy rates of 10 pounds per 100 square feet are recommended for acid peats of the north which range as low as 4 to 5 pH.

Artificial peat mixes, although available commercially, are easy to make and provide uniform consistency for a growing medium for starting seedlings, cuttings and growing everything from foliage plants to African violets. Formulations vary, however, and they generally produce the same results. One recipe includes the following:

- 4 qt. vermiculite
- 4 qt. sphagnum peat moss
- 1 tsp phosphate (20%) or
- ½ tsp triple super-phosphate (45%)
- 2 tsp ground limestone
- 4 tsp 5-10-5 fertilizer or
- 2 tbsp. 10-30-10 fertilizer.

Perlite may be substituted for the vermiculite and 14-14-14, slow release, may be substituted for the 10-30-10, for making a general purpose foliage mix. It is important to use an all purpose fertilizer such as RX 20 or RX 15 with trace elements for supplementing the base dressings to the peat moss. A more exacting formulation for the seedlings consists of the following:

- ½ cu. ft peat
- ½ cu. ft vermiculite
- 2¼ tbsp calcium carbonate
- 2¼ tbsp dolomitic limestone
- 1¼ tbsp 20% super phosphate
- 1 tbsp potassium nitrate
- 2 tbsp 20-20-20 with trace elements
- ¼ tsp borax.

A more suitable mix for vegetables such as English cucumbers and greenhouse tomatoes includes the following:

- ½ cu. ft vermiculite
- ½ cu. ft peat moss
- 9½ tbsp calcium carbonate
- 2½ tbsp 20% super phosphate
- 2 tbsp potassium nitrate
- 1 tbsp magnesium sulphate
- ¼ tsp chelated iron
- ½ tsp borax (sodium borate)
- ¼ tsp fritted trace elements.

When making the mixes it is extremely important to ensure adequate mixing. Small amounts of chemicals, such as borax, should be dissolved in a little water and sprinkled over the soil mix as opposed to incorporating it in the mixture in dry form.

Lush, vigorous high-yielding tomatoes and cucumbers have been produced in large plastic bags or two gallon pails using the peat mixes. Varieties like English long "Toska" cucumber or "Vendor" greenhouse tomato do very well in this system. Two tricks to obtaining high yield is to ensure that the peat mix is kept moist and also to feed with an all purpose soluble fertilizer containing trace elements, on a weekly basis. An easy way to ensure an adequate moisture level is to take a handful of the mixture and squeeze tightly — only a few drops of water should drain out.

Peat is truly a magic medium with its ability to hold maximum water and still retain good aeration. Its consistent uniformity and its ability to be tailored physically and chemically to meet the needs of specific plants will make it the growing medium of the future.

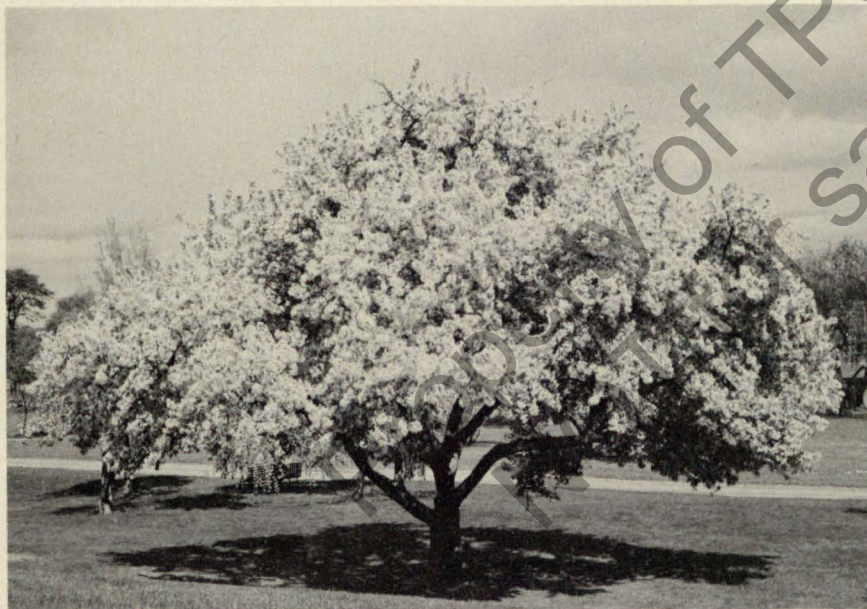
Trees and Shrubs for Effect

MANITOBA DEPARTMENT OF AGRICULTURE

Do-it-yourself landscapers know what appearance they are trying to achieve with trees and shrubs, but they are confused about what to plant to give the desired effect.

Manitoba Department of Agriculture horticulturists and the Manitoba Horticultural Council agree that the following Manitoba-hardy trees and shrubs will display these features.

- a) *Silvery Foliage* — Common seabuckthorn, Coyote willow, Leadplant (*Amorpha*), Rockymountain juniper, Silky White willow, Silverberry, Silver buffaloberry.
- b) *Red or Purple Foliage* (throughout the season) — Cistena plum (own roots), Shubert chokecherry.
- c) *Golden and/or Variegated Foliage* — Sutherland Golden elder, Col-



Siberian Crabapple

- den ninebark, Creamedge and Yellowedgedogwoods.
- d) *Colored Autumn Foliage* — American cranberrybush, Amur maple, Dogwoods, Downy Viburnum, Early lilacs, Euonymus, Mountainash, Paper birch, Hedge cotoneaster, Pincherry, Shining rose, Nannyberry, Siberian currant, Siberian larch, Smooth sumac, Snowwhite spirea, Ussurian pear.
- e) *Showy Fruit* — Acanthopanax, Amur maple, Bittersweet, Cherry prinsepia, Common ninebark, Common seabuckthorn, Cotoneasters, Crabapples, Euonymus, Hawthorns, Honeysuckles, Mountainash, European red elder, roses, Silver buffaloberry, Viburnums.
- f) *Showy Bloom* — Crabapples, Daphnes, False spirea, Hawthorns, Honeysuckles, Hydrangeas, Lilacs, Mockoranges, Mountainash, Potentillas, Prunus, Tamarisk, Roses, Saskatoon, Spireas, Ussurian pear, Viburnums.
- g) *Attractive Bark* — Amur chokecherry, Common ninebark, Maack euonymus, Birches, Red Osier and Siberian dogwoods, Golden and Redstem willows. The dogwoods should be cut back periodically for best effect while the willows should be trimmed each spring.

Nursery stock grown in the province should best survive the shock of transplanting and the variable Manitoba climate. Provincial horticulturists suggest that home owners enquire about the source of nursery material if they are not certain it is Manitoba-grown.

Editor's Note: Refer to Colour Section for many of the foregoing.

Autumn Color at Home

When designing your yard for its autumn colors include in your plans evergreens and other shrubs, such as lilac, which remain green late into the season and provide a good background for fall colored plants.

According to Reg Curle, MDA horticulturist, there is an unlimited supply of both low growing shrubs and taller trees to provide a variety of color combinations. Currant and spirea are shrubs which, used in mass, can result in a good show of color.

Red Shades are provided most vividly by Amur or Ginnala maple, a widely used 15-20' (4.5 to 6 m) tall tree. Amur maple can be used as a specimen shrub or tall hedge.

Cranberry, nannyberry and Cotoneaster *acutifolia* are other shrubs which provide excellent red fall color.

Yellow colors of autumn are provided by green ash, basswood, paper birch and weeping birch.

Siberian larch is an excellent needle-bearing tree which provides brilliant yellow color and then later drops its needles.

Autumn is the season for color contrast in the landscape. Observe it in September and plan for it on your own property.

Editor's Note: Refer to Colour Section pages 69 & 79.

Cedars

(Things You Should Know When Growing Cedars)

STAN SHEARD

Horticulture Specialist, Province of Saskatchewan

Western Canadian nurserymen offer several varieties of cedars for planting in prairie gardens. It is well to keep in mind, however, that cedars which can be grown here are probably the most sensitive of all the evergreens to the condition known as sunscald or winter browning. For this reason, anyone using them in a landscape planting should do so with the full knowledge that they may be damaged on occasion or discolored by warm sun and drying winds during late winter and early spring.

Planting

Cedars are best planted on the north or east side of the house where they obtain at least some protection from the sun. They will also do better if planted at least four feet from the foundation wall. Regardless of location, they must have an abundant supply of moisture throughout the growing season, and will be less prone to sunscald if given a thorough watering just before freeze-up and again as soon as the frost is out of the ground in the spring.

Varieties

Among the most reliable ones for prairie conditions are the **Brandon Pyramidal** Cedar, a hardy, upright-growing plant with dark green foliage; **Wares Siberian** Cedar, which has a broad pyramidal habit of growth, up to five feet in height; and the **Globe** Cedar, an attractive, compact, globe-shaped evergreen, dark green in color and which grows three to four feet in height.

One variety not commonly grown, but which has performed extremely well for me for almost ten years, is the **Holmstrup** Cedar. In the disastrous spring of 1977, when a high percentage of cedars in this area suffered severe sunscald damage, Holmstrup came through with only a minor amount of browning. I now have three plants of this variety, all doing well. Holmstrup has a fairly compact, pyramidal habit of growth and should grow to a height of about six feet. Its rather slow rate of growth is indicated by the fact that the tallest one I have is only just over four feet, after ten years. I like the variety enough that I plan to put in another one next spring.

SEPTEMBER MEDITATION

Were you ever out in the woods alone
When fall was in the air?
When leaves that floated down from the trees
Had colors beyond compare?

In brightest shades of the purest gold
The leaves of the birch float down;
And to match the color of berries so red
Is the cranberry's carmine gown.

The trembling aspen adds brown to the gold,
The dogwood's a mauvy shade
The woodland scene is a fairyland
In all its beauty displayed.

As I walk on a carpet of rustling leaves
And stop by a spruce so green
And munch on a nannyberry's dark fruit
My heart is content and serene.

The sky above is autumnal in haze . . .
A canvas that artists desire . . .
And the little rivulet's tinkelling rune
Lends music as sweet as the lyre.

My questions of life and its burdensome load
Float down with the shimmering leaves:
There is no room in this setting so fair
For a heart that worries and grieves.

And I am enthralled by the beauty of death . . .
Though I know that the leaves must decay
I also know that they'll give a new life
To the plants of another day.

(over)

And so though my years at a quickening pace
Give warning that winter's ahead,
I feel the rapturous beauty of fall
And the spirit within me is glad.

And as I leave the darkening woods
I yet more beauty behold:
The prairie sunset has gilded the west
In colors of red and gold.

Did you ever "feel" a sermon so rare
Without ever hearing a word?
That touched your innermost being with song?
Whose chords are felt and not heard?

Yes winter will come and with it the snow,
But winter is followed by spring:
That is the essence of fall in the woods,
A truth worth remembering.

The sun must set to rise in the morn,
And we like the sun must go . . .
But after the night comes eternity's morn
With its beautiful sunrise glow.

— P. J. Peters
(Written at Petersfield on
September 16, 1979)



*Mostly Trees
and Shrubs!*

65a. Ohio Buckeye Flower

65b. Mostly trees and shrubs.





66a. *Siberian Avens*

66b. *Meadowsweet*



67a. *Bracketed Spiderwort*

67b. *Double Lilac Geranium*

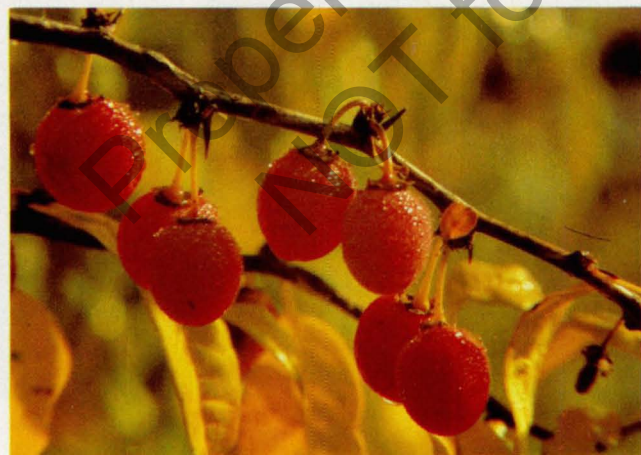




68a. Nanking Cherry



68b. Highbush Cranberry



68c. Prinsepia Cherry



69a. White Spruce



69b. Siberian Larch



69c. Siberian Larch



70a. Mountainash



70b. Chokecherry



71a. Buckthorn

71b. Nature's feeding ground.





72a. Rosabella Spirea — summer blooming.



72b. Walker Caragana — fine textured, good ground cover.



72c. Sister Justina Lilac



73a. Elder — Goldenlocks (left) and Sutherland Golden (right).



73b. Potentilla — Coronation Triumph



73c. Littleleaf Lilac — makes a nice hedge.



Geraniums from seed. Heidi (above 74a.) and Ringo (below 74b.).



75a. Oriental Poppy



75b. Heuchera — Northern Fire



76a. Medora Juniper.



76b. Mugho Pine — winter damage above snow line.



Bark—method of identification and valued colour in the landscape.
Paper Birch (above 77a.) and Silver Maple (below 77b.).





Hardy fruit — More in demand than ever. Pear
(left 78a.) and Crabapple (below 78b.).



79a. Weeping Birch

79b. Weeping Birch — winter form.





80a. Nature's landscape



80b. Prairie scene

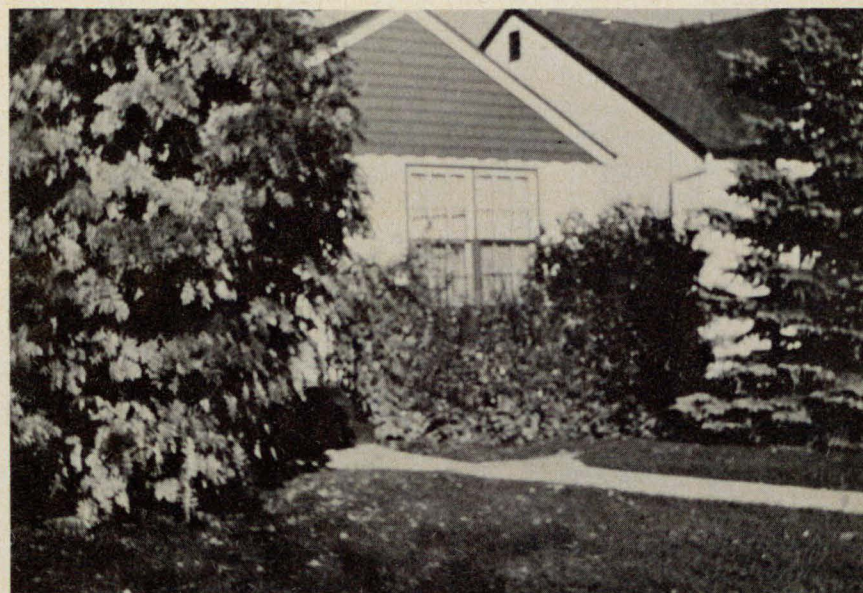
Follow a Plan in Landscaping The Home Lot

JOHN WALKER (Retired),
Dept. of Plant Science,
University of Man., Winnipeg

Whether for a modern home or for an older home, the purpose of planting materials in the home surroundings is to provide a pleasing balance and association of trees, shrubs, vines, and flowers joined together by stretches of lawn, and making an entity that is completely satisfying to the aesthetic senses. This association must be evaluated by its appearance from within the house on the one hand, and from street, sidewalks, and

beyond, on the other. One must visualize a unified effect with all plantings AT MATURE NATURAL SIZE in proportion to the garden and house, the house being the central feature.

The large three-storey house has given place to the low, often brightly-colored one-storey home, with many having living quarters in the basement. Such a home requires quite a different and specific type of planting and embellishment as com-



pared with the former. In fact, one can hardly dare allow a modern-type home to stand on an untidy and unattractive lot. The neighbors are likely to object very strenuously for one thing, and, what value has a picture window if the view through it isn't pleasing? Purpose of the picture window is to more closely associate indoor living with outdoor living!

Woody Ornamentals

Under prairie conditions the enjoyment of the garden area is necessarily restricted by climate, and for many months the ground is under a blanket of snow. This fact emphasizes the importance of, and need for using woody ornamentals which can be seen and provide interest, enjoyment, and attachment for every member of the family, not only in summer but during the winter months as well.

By making a careful selection of species and varieties, woody ornamentals contribute the following values to the home landscape:

- (1) They help to beautify the home surroundings year after year with the least amount of work and expense.
- (2) Only by such plantings, including vines on trellis or other support, can distinct and desirable spaces be created.
- (3) If only annual and herbaceous plants are used, the garden is bleak and without interest and structure for too many months each year.

Foundation plantings of woody ornamentals extend the foundation of the house horizontally, provide a setting for the house and make it seem to "belong". For example, shrubs at the corners soften the vertical lines of the house and tie them to the horizontal lines of the ground.

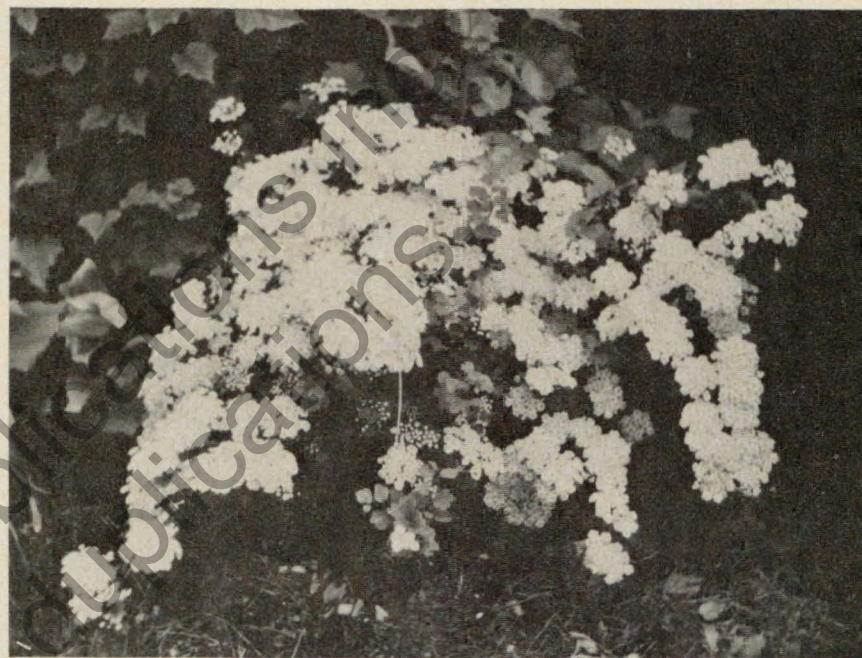
A corner planting for a smaller home may consist of a one-shrub group, or a two-shrub composition of Peking cotton-easter and pygmy caragana, height ratio about 2:1. For a larger and taller growing grouping the selection might contain a three-shrub composition, such as Persian lilac, sweetberry honeysuckle, and shrubby cinquefoil, height ratio 3:2:1. Species with the finest foliage are planted furthest from the corner.

Group planting as against linear or spot planting is especially desirable for low-growing species so that branches may interlace to give a tapestry-like design and weeds and weeding may be eliminated.

In other parts of the garden, woody ornamentals constitute a setting for statuary, sundial, bird bath, and winter-feeding station, provide a background along the margins of the property for groups of herbaceous flowers and for borders of other flowers, and form a dividing feature between parts of the home lot.

Direction of House

For the house facing south or west, conditions will be warm and dry in summer and changeable in winter as far as sunshine, temperature, and snow cover are concerned. In such an exposure alтай rose, cherry prinsepia, cotoneasters, junipers (common, creeping, rockymountain), potentillas, pygmy caragana and red amur tamarisk are sure to succeed. For the house facing north or east, conditions will be cool and moist in summer and uniform in winter as far as sunshine, temperature, and snow cover are concerned. In such an exposure arborvitae, aurora falsespirea, dogwoods, dwarf euonymus, hydrangeas, serviceberry, and viburnums would be the best choices.



Spirea — Fibrobata bloom

For the average home lot the choice of smaller trees to provide shelter and some shade and lend distinction to the home surroundings should perhaps be confined to chokecherries (amur and shubert), Japanese tree lilac, littleleaf linden, mountainash (American and European), nannyberry, ornamental crabapples (Manchurian and rosybloom), Russianolive, Ussurian pear.

It is not difficult to visualize the development and care of the home

surroundings as a unifying family interest, as a healthful hobby and playground and, to the newly established home owner particularly, a satisfying accomplishment.

There is also a saying that if we plant for the winter, the summer will take care of itself!

Editor's Note: Refer to Colour Section pages 72 & 73.

Snippy Tips

MARGARET E. DOVE
Toronto

Hardening

All plant material being used in arrangements must first be hardened. "Hardening" means placing in a deep wide-mouthed container of warm water and keeping them there at least four hours, longer if possible. All foliage should be removed from the lower half of flower stems before soaking in the water. During the hardening process keep in a cool, dark, humid, draft-free place.

Conditioning

Some cut flowers and various kinds of foliage also woody materials find it difficult to absorb water; these require an extra treatment before they are hardened, called conditioning. "Conditioning" means standing in a suggested solution for 2 to 6 hours or dipping stem ends in boiling water, or charring the ends, hammering, splitting, scraping woody stems, complete immersion, stripping off foliage and any thorns, pumping water into hollow stems, spraying, also the use of chemicals.

Flowers that exude a milky sticky sap when cut (Oriental Poppies) will not last any time unless specially treated; their stem-ends must be immediately charred. All such "bleeding" stems require this special treatment each time they are re-cut.

Flowers with woody stems (lilac and

buddleia) have the leaves stripped off the stems leaving only those near the flower heads; they also require their stem-ends hammered or slit.

Bulbous flowers having white stem ends should have a vertical cut made up through the white portion into the green area; this makes for better water intake. These flowers are an exception to the deep-water hardening rule; they harden in water 3 inches deep.

Cutting

Take a pail of warm water into the garden.

Cut garden flowers in the cool of the evening or in the early morning. With sharp cutting shears or knife cut stems cleanly on a slant. Dull cutting tools crush stems making it difficult for them to absorb water. Keep cut material out of sun at all times. Flowers from the florist require their stem-ends re-cut before hardening and arranging.

Drafts, wind, heat and sun cause rapid evaporation from cut plant material, shortening their keeping qualities.

Cutting stem-ends under water prevents air bubbles entering stems and blocking water intake. Such bubbles may be the cause of an iris head wilting; to remedy, make several pricks along the stem and near

the blossom with a needle. This allows air bubbles to escape and water intake to reach the flower head.

For lasting qualities there are certain stages at which some flowers should be cut:

Tulips — for straight stems, first opening of blossom.

Roses — when buds are on the verge of unfolding the outer petals.

Rudbeckia — in the evening in full bloom.

Dahlias — in the evening in full bloom.

Iris — when first and second bloom are the size of an egg.

Poppies — the night before they open.

Peonies — as outer petals unfold.

Gladioli — when first bud opens fully.

Most other flowers just before reaching full bloom.

Grooming Tips

Keep containers and holders clean. The use of table salt (not iodized) helps some flowers absorb water more readily. Sugar acts as a nutrient and prolongs the life of cut flowers.

Wilted fresh flowers may be revived by placing 3 inches of their stem-ends in hot water; leave there until cool then add tepid water up to flower heads and leave until material has revived. Protect blossoms from any steam by covering with a towel.

Special florists' conditioners such as Floralife are useful to prolong the life of most cut flowers. Aspirin is of no value.

To keep the stems of spring-flowering bulbs and calla lilies from curling back, wrap with raffia or string. As soon as garden lilies are cut carefully remove the stamens bearing pollen; such pollen stains petals, clothes or skin. Tuberous begonias, carnations, roses, lilacs, gardenias,

violets and many other flowers like a fine mist spray of cool water before hardening. Never allow a drop of water to touch the petals of camellias, delphinium, sweet peas, orchids, lilies, or petunias; these will become spotted if sprayed. Materials which wilt rapidly once cut need total immersion in cool water, preferably overnight. Tender new tips of rose foliage, calla lily foliage, ferns, hosta, chard, broccoli and rhubarb, all useful in flower arrangements, will along with many others benefit from complete immersion overnight.

Snapdragon, stock and lupin placed at an angle when being hardened will turn their end tips upward; resulting curves offer greater opportunities for arrangers.

Fresh pussy willow stems take desired curves readily if first soaked a few minutes in tepid water before shaping.

To repair the drooping heads of hollow-stemmed flowers such as zinnias, plunge the pointed tip of a toothpick straight through the middle of the bloom down into the stem.

After pruning and shaping cut branches or stems for desired lines in an arrangement, rub the cut surface with a piece that has been cut off; this darkens the cut and makes it inconspicuous.

Wash broad-leaved evergreen foliage in lukewarm soapy water, rinse in clear water; then dry rub gently with a piece of crumpled florist's wax paper to produce an attractive dull gloss. Florist's liquid wax applied to foliage will clean and polish at the same time.

Tie fine-stemmed flowers such as clarkia, pansies and violets in small bunches rather than using them singly in arrangements.

Transplanting Container Grown Trees and Shrubs

WILLIAM EMERSON

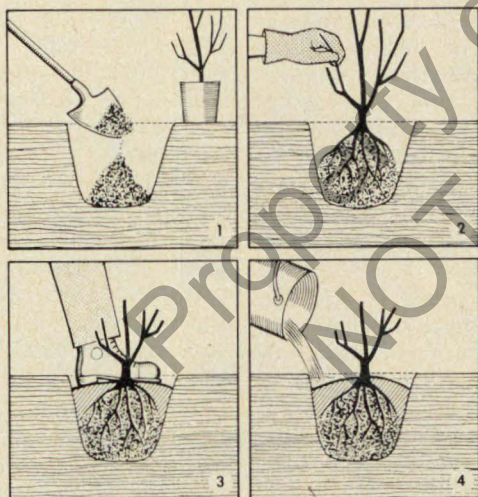
Trees and shrubs are more often purchased growing in containers now, rather than the bare root of earlier days. This has an advantage in that transplanting can take place anytime of the year, with little or no shock to the plant providing reasonable care is taken.

Containers are made of many materials such as paper, tar paper, plastic, tin, wood. Many of the ones made of paper are touted to have the property of disintegrating in the soil. In some soils, this may be so, but in the heavy clay soil of the west this is not always the case, as the surrounding

soil has the habit of shrinking away from the containers, thus the plant is prevented from spreading its roots into the surrounding area.

In transplanting container growing material, as with bare root, the hole should be dug larger than the container size or root spread, also a little deeper.

Remove the plant from the container, either by knocking it out or slitting the sides, and spreading the container material so as to remove the soil ball with as little breakage as possible. Place plant in prepared hole. A little of the soil around the rim



of the soil ball can be removed, if need be. Plant should be set about an inch or two lower than in the container. Orient plant so that best side is forward and/or to the front. Work loose soil around ball firming it as you fill the hole. When nearly full, form dam or collar of soil around plant outside the hole area so as to form a depression to hold water. Fill with water, allow to drain and refill. After this has drained, loose soil may be added to fill to the required level.

Tall trees should be supported with strong stakes or guy lines to prevent the wind whipping the plant out of the soil, or twisting it at soil level. Trees and shrubs, (in leaf) when transplanted, should never be allowed to dry out completely the first year. Good soakings are much preferred to sprinkling, which is wasteful of water and does more harm than good to growing plants.

Some plants, particularly evergreen, come with the soil ball wrapped in jute sacking. In transplanting these to the garden it is not necessary to remove the sacking as with container growing trees. The hole should be much larger than the ball to be planted — also deeper. Try plant in hole for size. Raise or lower plant until it will be about an inch or so lower than the original level. After orienting best side, forward, cut or untie sacking from around base of plant. Fold back slightly. Fill as above, soak well with water. If it is a large tree, support with guy line. Evergreens may require to be protected the first winter by wrapping loosely with sacking; never — never use plastic to protect evergreens.

All trees, shrubs, evergreens may require to be refirmed and watered well the first spring after planting as some frost heaving often takes place.

Horticultural Horizons

F. L. SKINNER, M.B.E., LL.D., F.R.H.S.

All gardeners, professional and amateur alike, are indeed fortunate that the late Dr. F. L. Skinner, of Dropmore, Manitoba, was able, before he reached the end of his most useful career, to record for future generations, in *Horticultural Horizons*, his own account of his remarkable life's work.

W. A. Cumming, head, Ornamentals Section, Canada Department of Agriculture Research Station, Morden, Manitoba, wrote in his review of *Horticultural Horizons*: "The average reader will find Dr. Skinner's book fascinating, for it contains a mixture

of adventure, philosophy, personal anecdotes and major experiences of his life and work. The amateur gardener will find much sound advice on his gardening problems, particularly on hardy and adaptable plants. The professional horticulturist will marvel at Dr. Skinner's knowledge of hardy plant material throughout the Northern Hemisphere."

Horticultural Horizons (150 pages, 48 colored illustrations) may be obtained at the low price of \$3.00 from the Queen's Printer, 200 Vaughan St., Winnipeg, Man. R3C 1T5.

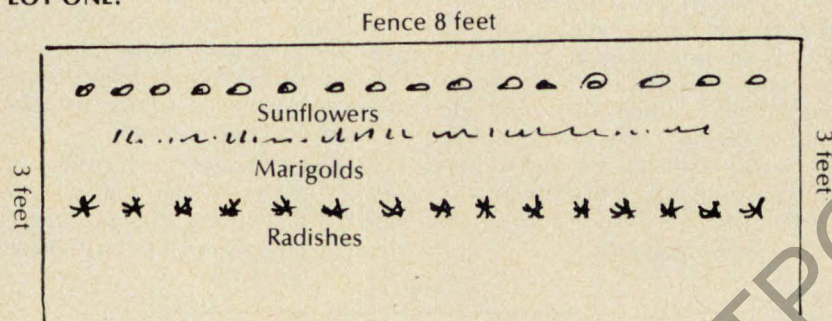
A Growing Experience

My Garden Diary

CLINT WARREN

HOW I STARTED:

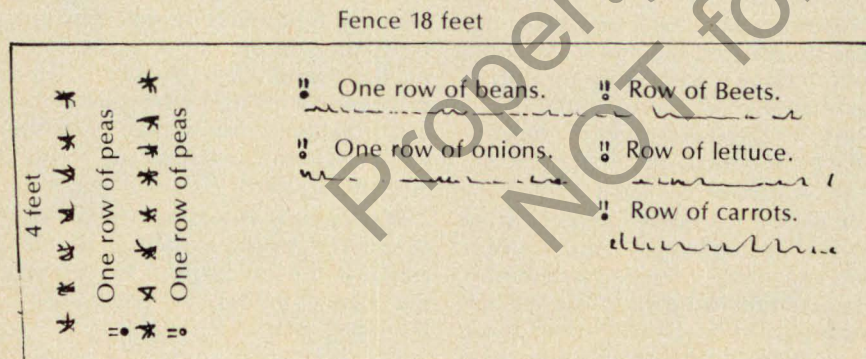
PLOT ONE:



PLOT TWO:

I started, with my Dad, by putting the seeds in the ground on May 20th.

We then gave them a good watering.



May 30th

After heavy rain before, I noticed the radishes popping their heads through the ground.

June 2nd

The beans and sunflowers survived the hail storm last night.

June 5th

Everything is showing now. The beans and green onions are the tallest. Today, we thinned lettuce and beets.

June 7th

Today, we planted the three cabbages I brought home from school and gave them a good watering.



July 10th

The lettuce and the spring onions were the first vegetables to come up.



... then the weeds started to come up and my Dad and I had to start weeding the onions every weekend.

July 23rd

My tomato started growing very well in July, but it needed a lot of water.



August

The best crop I had was green beans (shown here).

The sunflowers did not grow very well, because we planted them in the wrong place.

Chlorosis of Fruit Trees and Ornamentals

(non-infectious)

DR. KNUD MORTENSEN,
Saskatchewan Department of Agriculture

This non-parasitic disease is common on fruit trees and on certain ornamentals in Western Canada. The leaf symptoms suggest the cause is a deficiency of available iron. Although iron is an abundant trace element in soil, plants may have difficulty in absorbing enough in high lime or calcareous soils. Other conditions also favor iron deficiency such as high soil pH (alkalinity), excess phosphates in soil, excess moisture along with low soil temperature, and excess quantities of copper and manganese in acid soils.

Symptoms

Intervinal yellowing is characteristic of iron deficiency. Symptoms first occur on new leaves where tissue between the veins gradually turns yellow, while the veins remain green. If unchecked, this condition may advance throughout the plant and the tips and margins of some leaves may turn brown, then become dry and brittle. Only a branch of a tree, or perhaps only a few trees in an area, may be affected. It is possible to have an affected and healthy tree of the same plant species growing side by side. In severe cases, when the entire tree is affected, the plants will lose their leaves, and if the condition is not corrected plants become unproductive and die.

Control

Because of the complex nature of iron nutrition, treatments are not always successful. In soils where iron deficiency is a problem, control involves treatments to alleviate the conditions and the use of tolerant plant species.

1. Foliar sprays:

Spraying plants with a solution of iron salts is often effective as a temporary measure but not for complete control. At the onset of symptoms, spray leaves with a ferrous sulphate solution (one ounce ferrous sulphate in one gallon of water plus 5 to 6 drops of lemon juice). Spray as a very fine mist, otherwise leaves may be damaged and, in this regard, addition of several drops of mild detergent per gallon would be beneficial. On a field scale one gallon would cover 1,000 square feet and 40 to 50 gallons one acre. Successive treatments may be needed during the season whenever leaves start showing symptoms. If the treatment was successful, plants should begin to green up about ten days after spraying.

2. Soil applications:

a) The most effective control is by the use of iron chelates (Fe-EDTA). These are available from some seed supply stores, hardwares and gardening supply stores under the trade

names of Tru-Green and Sequestrene. Apply iron chelates to the soil in early spring at rates of approximately one tablespoon per inch of tree trunk diameter or according to directions on the container. The compound should be applied around the base of the tree or in small holes around the base and then liberally watered in.

b) Because iron chelate is expensive an alternative, but not as effective a treatment, would be the application of one pound of ferrous sulphate per gallon of water added to the soil around the trunk of the tree twice a year. This is done by pouring the solution in holes which have been punched about 20 centimeters (8 inches) deep as far out as the drip line of the tree.

c) Working powdered sulphur into the soil is sometimes helpful but slow in action. Elemental sulphur applied to the soil as a pre-planting treatment is effective when establishing trees. For older trees in a lawn the treatment

may require lifting the sod, applying sulphur, working it in and replacing the sod.

d) The presence of grass cover or decomposing organic matter seems to improve iron uptake in the plant. Also acid fertilizers such as ammonium sulphate may help in mild cases. The use of nitrogen fertilizers on trees is not recommended as this will tend to increase iron chlorosis.

Please Note: Iron chelates, although more expensive initially, will result in consistent control, while the other methods described above could give inconsistent or no control of iron chlorosis.

3. Resistant varieties:

When the condition is known to persist one should consider using plant species which are more tolerant of iron deficiency such as Russian olive, lilac, cotoneaster, spruce and honeysuckle. Susceptible plants are raspberry, currant, apple, high bush cranberry, mountainash, poplar, gold elder and rose.



Here is another idea for handling plant materials for use in arrangements for winter home enjoyment. It is known as drying by absorption. This is done by placing the freshly cut stem ends of fresh material in a vegetable dye and water mixture. This is to bring

back or add color to flower heads and other parts of plants that usually lose some of their natural colouring and brightness after being air-dried. Stronger dye solutions will give deeper colourings when placed in red dye, goldenrod, for instance, will turn an interesting bronze colour. Pick plants in their less mature stages. Other countryside plants that are ideally suited to absorption-drying are cereals and grasses.

Winter Injury (Dieback, Sunscald) and Leaf Scorch of Fruit and Ornamental Trees

DR. KNUD MORTENSEN
Saskatchewan Department of Agriculture

The harsh winter weather, and early fall and late spring frosts cause injury to many species of trees and shrubs. The damage is usually first noticed in the spring when it shows up as crown dieback and blackheart, or as dead areas on the main stem (sunscald). Much of the damage is caused by drought or desiccation, when water cannot be replaced as fast as it is used.

DIEBACK AND BLACK-HEART

Dieback is the killing of tips of branches backward for various distances while black-heart is the discoloration of heartwood in branches and in trunks. The exposure of the injured area will allow infection by rot causing fungi which will lead to further damage and even death of the tree. This type of winter injury occurs on fruit trees and on many ornamentals.

Control

1. Plant winter adapted species and varieties. Trees like Lombardy poplar, weeping willow and red maple are not winter hardy.

2. Plant orchard trees in a sheltered spot and plant only recommended varieties.

3. Avoid watering in late summer so that proper hardening off can

occur, but give a good watering just before freeze-up to counteract desiccation damage in the winter.

4. If slight symptoms are noticed, watering in early spring may prevent further damage.

5. Grow trees in shrub form.

6. Wounds should be covered with a wound dressing such as Braco, shellac, Bordeaux paint (Bordeaux powder plus linseed oil mixed into a paste) or other reliable wound dressing products available from seed and garden supply dealers. This will prevent further damage by not allowing the wounded area to become infected by rot-causing organisms.

SUNSCALD

Sunscald damage occurs in late winter or early spring on the south side of trees, especially smooth-barked species. The tissue just beneath the bark on the south side becomes active during the warm sunlight hours but the sharp drop in the temperature at sunset freezes and ruptures the tissue. The inner bark is severely damaged and often the bark will split and peel. The injured area soon appears sunken, since no growth occurs in this area while the rest of the trunk continues to expand.

Control

1. Grow trees in shrub form.
2. Use sun shields of boards or heavy, light-colored paper to reduce the temperature increase.
3. When sunscald occurs, steps can be taken to prevent further injury. The loosened bark can be tacked back in place before splitting and peeling occurs. Regardless of when the injury is detected, further damage from drying out and invasion of rot organisms can be avoided by treating

the injured area with grafting wax or some tree wound compound like Braco to further seal the area.

LEAF SCORCH (DROUGHT)

This damage occurs during the hot, dry, windy weather of July and August. Upon drying out, foliage (needles or leaves) will appear brown or scorched.

Control

1. Keep the trees well watered during hot, dry periods.
2. Grow trees in a sheltered location.

Seed Package File Box

ANNE LESKIW
Director, Regina Horticultural Society

Do you look endlessly through your left-over seed packages to check what varieties you have? How many times have you wondered how much seed was left in your used re-sealed packages? I have found the following method eliminates this confusion and frustration:

Mark the year of purchase on every seed package as you receive them, and file the seed packages in a chip-board or cardboard filing box. The size of the filing box is as follows: 8 inches high, 5 inches deep, 15 inches long, (20.9cm x 13.2cm x 38.7cm).

Two complete sets of index cards are needed, one set for flower seed packages and one set for vegetable seed packages. Also one package of

colored cards to fit the filing box. I use these colored filing cards for the varieties that need to be ordered the following year. The empty and the near-empty seed packages are attached to these colored cards with a paper clip. Information can be recorded on the cards. This way a person can see at a glance what variety of seeds need to be ordered!

I recommend this method of filing seed packages because it is a tremendous time saver, and it certainly is much more relaxing, as a glance is all that is needed to see what seeds are or are not at hand. It is much better than sorting through a box full of seed packages strewn in all directions!

Nature's Designs

LILLIAN B. ALLEN
Winnipeg, Man.

A whole world of beautiful designs for the artist and craftsman, or just to enjoy.

My on-going interest and love affair with nature began where I grew up. My father just happened to have built the first house on Harvard Avenue near to Harrow Street, a new development on the south-west edge of Winnipeg. Frog swamps and bushland were a part of my off-property experience. There were literally orchards of all the prairie fruits, berries and hazelnuts, to say nothing of all the prairie varieties of wildflowers. There were birds and butterflies in profusion. Mother had her flower beds with colorful annuals and per-

ennials, and father his thriving vegetable garden — if we kept the bugs at bay.

There was always something to do or to see. Even in winter Hoar Frost made curled leaves and evergreen branches into glittering ornaments. Father brought home from his university office a micro-telescope, and we children were able to extend our knowledge of plant and insect life. We became familiar with other environments too, since father sometimes rented a cottage in summer at Lake of the Woods, or we visited grand-



mother beside the sea in New Brunswick, or grandfather at his home by the edge of a mountain-rimmed lake in British Columbia. It was an exciting life.

Time moved on. After studies in art and architecture, I found myself teaching art in the faculty of Home Economics at the University of Manitoba. Two of my courses had to do with design, particularly applied or pattern design for block and screen printing, stencilling, types of dyeing and, latterly, embroidery and the fibre arts. Where should we look for pattern ideas? One source used throughout the centuries, was nature. And this is where my interests and profession came together.

My development of these courses occurred just at the time of the blossoming of contemporary art. As I travelled abroad to absorb these new ideas for my teaching, I found that designers, especially from Scandinavia, were looking at nature in new and exciting ways. They manipulated their subject as all good designers have done through the centuries, but their resultant designs differed greatly from those of the past.

Why the change? New structural shapes of familiar artifacts were evolving and pattern design for these shapes had to change too. This is the stage where the botanist and designer part company. The botanist's plants must be accurately portrayed. The designer's plants must suit the shape, material and color of where they are to be used. The designer must be familiar with his subject, but his plant doesn't have to grow. It is now purely in the realm of art, stylized, modified if necessary, but now expressing the ability and character of the artist.

Here is a whole new world.

Many years ago I suggested to my students to go to nature for ideas, adding they should study the available illustrations of plant cells and biology, and to really see what they were looking at. People have to learn to see. Right at hand was my camera. I would delve as much as possible into this new world too. Light of course was the important factor here to reveal structure and to bring out color.

Nature Photography

My plunge into nature photography really began in earnest suddenly one mild and snowless November afternoon as I was relaxing in mellow sunlight by the river. I was bemoaning the fact there was no green or color anywhere, a dead world. I happened to look on the ground around me. There were at least a half dozen

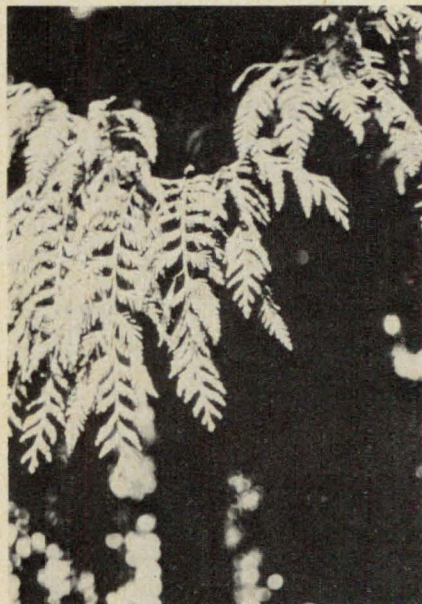


different species of leaves lying about, and the angle of that golden sun brought out their structure and the pattern of their veins. I raced for my camera, and soon was in business recording these fantastic shapes. The colors ranged from golds and rust-browns to greys. There were also little sculptural leaves still hanging on the branches here and there. I was alerted now to a whole new range of design.

Light

Light of course is the creating force, especially light at an angle, or exciting

when it backlights the subject. This means getting out in the early morning, or the late afternoon. And I have slowed down my spring and fall walks through the woods. It makes travelling more interesting, too. In the rain



forest of Vancouver Island I found shafts of sun spot-lighting individual cedar fronds. In a shaded garden, one shaft of light dramatized just one white chrysanthemum.

I can't pack into the mountains or carry a tripod into a bog, so I have to be content with a hand-held camera, and usually I have no one handy to cast a shadow behind a subject to eliminate unwanted highlights on back growth, but with care I can surmount some of these difficulties, and I'm able to get enough results to entice me to continue to explore 'my world'. Familiarity is the name of the game, and to proceed slowly. One favourite spot is the woods in As-

siniboine Park between the English garden and the footbridge.

Because I associate closely with people who weave, embroider and work with crafts, those needs often guide me into taking many of the pictures I do. Before civic improvement and development took place around some of the outskirts of the city, I had my favorite morning and

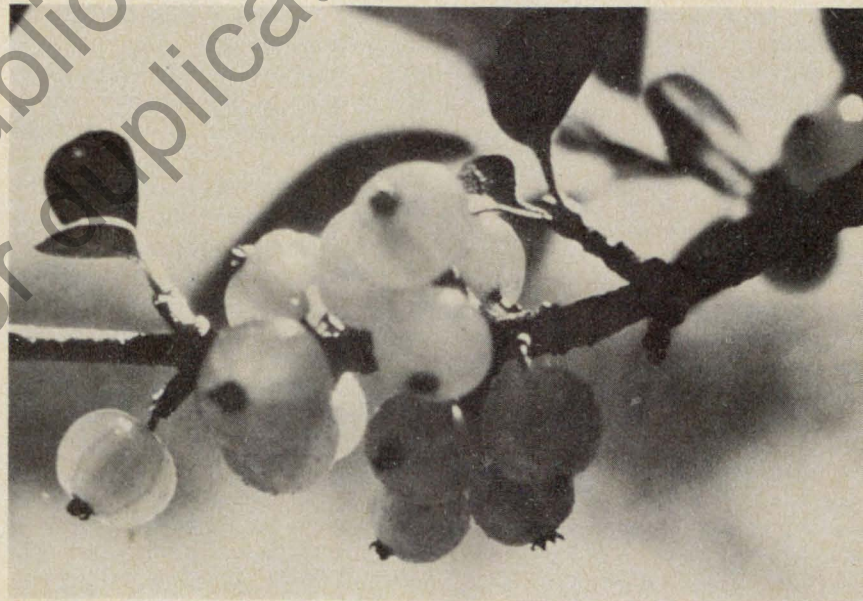


afternoon ditches. My morning ditch provided back-lighted reeds with tension rings shining, or on a grey day, the alisma with its big leaves made lovely patterns in subtle hues; while my afternoon ditch, if the sun was right, gave me gold reeds to match a goldsmith's work. At the lake I could turn to tree barks with subtle or vivid lichens or moss. Some pine trees have bark that peels off in modern abstract designs. The artist Miro himself couldn't create more beautiful shapes. Out at the west coast there are some of my favorite bark trees, like the colorful *Arbutus* with smashing patterns of curled bark. Here at home, peeling birch bark provided the inspiration for a wall hanging woven by a friend. Another friend used one of my bark and lichen slides for a delightful abstraction embroidered in a variety of yarns and beads.

In the film, "Sound of Music," there is a song about 'a few of my favorite things'. I could sing about mine: reeds becoming visible through morning mists, a shaft of sun spotlighting leaves in the shaded woods, a tiny cluster of cranberries all alone on a twig late in November in Little Mountain Park.

In my experience, what happens and what I see along the way is often more rewarding than reaching a final destination planned for a walk or a

drive. Naturally, this depends on the nature of the terrain. If the light is right, it means pausing or stopping here and now because on the return trip the effect might have vanished. Today most of us are accustomed to moving so quickly from place to place that we miss a lot of the beauty which often surrounds us on our way. This brings to mind something from another age which I once read, 'what is this life if we have no time to stand and stare.'



Black Spot of Rose

DR. KNUD MORTENSEN

Plant Pathology Specialist

Saskatchewan Department of Agriculture, Regina

Black spot caused by the fungus *Diplocarpon rosae* is a widespread and an occasionally serious disease of roses in Saskatchewan.

Symptoms

On leaves, black circular spots about 2 - 12 mm ($\frac{1}{8}$ - $\frac{1}{2}$ inch) in diameter are formed. The irregular and fringed margins of these spots are a characteristic symptom of black spot. Yellow haloes may surround the spots and, in severe infections, plants will become defoliated. On canes reddish-purple lesions occur.

Life Cycles

The fungus survives from year to year on diseased leaves and canes. The spores of the fungus are spread mainly by rain splash and the disease is favored by cool and wet conditions.

Control

1. Grow resistant cultivars. Of the Hybrid Tea cultivars Bewitched, Ena Harkness, Miss All American Beauty, Peace, and Tiffany are resistant and Red Devil moderately resistant. Of the Grandiflora cultivars Comanche and Queen Elizabeth are resistant and Scarlet Knight moderately resistant. Most of the Floribunda cultivars are resistant. Of the shrub roses Cuthbert

Grant is resistant and Prairie Princess moderately resistant.

2. Gather and burn fallen leaves as this is the way the fungus overwinters. Also prune out and burn infected canes.

3. Avoid excessive wetting of the foliage as this favors the disease.

4. If black spot has become a problem on your roses use a protective fungicide spray. Begin spraying in early summer before spots occur and spray at 10- to 14-day intervals throughout the rose growing season. The interval between sprays can be lengthened during prolonged dry periods. Lime-sulphur (concentration 1:9) can be used as a dormant spray followed by sprays of the following fungicides: captan (Orthocide) at 2 grams (50% wettable powder) per litre of water ($\frac{1}{2}$ tablespoons per gallon) or benomyl (Benlate) at 0.6 gram (75% wettable powder) per litre water (2 teaspoons per gallon). Also other fungicides like sulphur, folpet (Phaltan), zineb (Dithane 2-78), ferbam (Fermate) or chlorothalonil (Daconil) can be used. When using chemical control read the product label carefully since it shows the purpose for which the chemical is sold, direction for use, and handling precautions.

Chemical Grass Control Around Established Trees

M. R. CARTER AND L. K. ALSPACH

PFRA Tree Nursery

Indian Head, Saskatchewan

In the garden control of unwanted plant species, commonly known as weeds, is usually accomplished by a combination of hand weeding, mulching and cultivation. Due to the persistent nature of many weeds, however, specifically grasses, and the positive relationship between size of garden and tediousness of hand weeding, the use of herbicides in certain situations, such as for grass control around established trees, becomes an attractive alternative.

Tolerance of trees and shrubs to herbicides is an important factor when considering the use of chemical weed control in the garden. Due to the diversity of species usually present close to one another, the use of any one herbicide on a basis of inherent selectivity is not possible. Therefore, selectivity of the herbicide is achieved by directing the herbicide spray to the weed only, thereby avoiding any contact with the tree. Selectivity, by placing the herbicide in contact with the weed only and pre-

venting any contact with green or immature bark, suckers and foliage, prevents injury to the tree species.

Herbicides

Three herbicides commonly used for grass control are paraquat, glyphosate and amitrole. All three can be used safely around trees if applied as a directed spray to the weed only. Paraquat will provide only top growth control of grasses, therefore repeated applications will be required. Both glyphosate and amitrole are absorbed by the leaves, then moved throughout the plant to give control of both top and root growth of grasses. All three herbicides, at the rates recommended, have little or no residual activity in the soil, due to rapid breakdown or adsorption by clay and organic matter. For maximum kill, herbicides should be applied when the grasses are actively growing and have a large leaf surface area. This ensures rapid uptake and adequate interception of the herbicide.

Time of Treatments

Consideration given to the type of grass and timing of the herbicide treatment can determine the success or failure of chemical weed control. For instance, to control perennial grasses (e.g. quackgrass) three treatment times are possible: amitrole applied when the grass is six to eight inches in height; glyphosate applied at the early head stage of the grass; and for top growth control only, paraquat applied as required throughout the growing season. Annual grasses may be adequately controlled using paraquat. In general,

most other annual and perennial weeds can also be controlled by the above treatments.

Rates

Specific rates for use on small areas, plus other information, are given in the table below. All three herbicides can be applied easily using a garden sprayer. In all cases consult the herbicide label for manufacturer's instructions and recommendations.

Further information concerning herbicides for trees and shrubs, specifically shelterbelt species, can be obtained from the PFRA Tree Nursery, Indian Head, Saskatchewan S0G 2K0.

Common Name	Trade Name	Active Ingredient Per Imp. Gal.	Fluid Ounces* of Product	Comments on Application
paraquat	Gramoxone	2 lb.	1.0	Wet foliage of grass thoroughly.
amitrole	Amitrol-T	2 lb.	3.0	} Spray foliage of grass until visibly wet (do not spray to the point of runoff).
glyphosate	Roundup	3.6 lb.	1.6	

*Amount of product to be mixed with one imperial gallon of water; 2 tablespoons equals 1 fluid ounce.

Watering and Mowing Your Lawn

A real good soaking once or twice a week is much better than a little each day or two, as this causes the roots to develop close to the surface. In dry hot weather these roots will soon be damaged and dry out. A good root system will develop if the roots have to look for moisture, which they have to do if watering is only done every three or four days.

Most lawn grass should be left about one and one half inches long after mowing. It is not necessary to mow on a regular basis, only when the grass needs cutting. The most important thing to remember is that your mower is sharp, if it is dull it will leave the blades of grass rough at the tops causing your lawn to look dry and brown.

How Winnipeg Loses Its Trees

MARTIN E. BENUM, Director
Regional Parks and Operations
City of Winnipeg Parks and Recreation Department

Trees are Winnipeggers most valuable aesthetic attributes. Since 1900, large numbers of trees have been planted in parks, on boulevards, on corporate properties and on home sites. An arbor of green softens the sterile architecture of building, home and vehicular routes. It is an environmental "plus" which costs hundreds of thousands of dollars to maintain on an annual basis, but which imparts to the citizenry untold millions of dollars of benefits, such as to our health as well as in realty value.

But it is a constant struggle to keep the trees alive, growing and surviving. The factors against the trees are overwhelming. The increasing stress descending upon the trees through pollution, starvation, desiccation and physical abuse shortens the life of each tree. Disease and insects provide a final hazard to weakened trees. The lack of care, or the over-zealous care, both play an important part in shortening the shade tree's existence.

There are many introduced factors that continually cause annual depletion of the city's trees. The most obvious is the automobile. It is relatively new because of the increased numbers to be now found in our cities. An



icy-street day can realize 50-100 street trees damaged or destroyed. The salt utilized to reduce the slippery conditions on our streets insidiously kills the boulevard trees over the years as salt deposit builds up in the soils along the thoroughfares. Utility installations and emergency repairs can destroy large numbers of trees through necessary removals. Street

widening, curve roundings, realignments, etc. all affect the tree population.

In the older areas of the city, boulevard trees were planted too close together and are now too large for the narrow streets. Heavy pruning is required to open up these areas and to make the trees structurally safe. But the natural beauty of the tree's form is ultimately lost and the vitality is reduced. Thus, the tree becomes unsightly, unsafe and consequently is removed.

Annual infestations of insect defoliations have reduced the ability in many street trees to fight back the ominous threat of stress. City trees are usually sprayed for insect control where required, but adjacent private trees seldom are so treated. Hence, the city's trees are ultimately defoliated by the invasion from outside.

The incidence of Dutch Elm Disease (D.E.D.), fire blight, diebacks, winter-kill, wind and storm damage, etc., coupled with the human factors, create an on-going program of replacement, maintenance and additional tree plantings. New development areas are well stocked with new tree plantings, but poor soil, vandalism, small stock, snow removal accidents, all take a heavy toll of the public and private trees in these developments.

It may be stated that the overall tree population within the City of Winnipeg remains relatively static — losses compared to plantings. The overall age bracket is slowly descending as the mature and larger stock is lost through the previously described myriad of causes. This may be a blessing in disguise, however, as an average tree seldom reaches the average mature age of its specific specie within the city environment.



Books for Junior Gardeners

AL BROCK

Vice-President, Manitoba Horticultural Association

The accompanying list of titles has been compiled in response to a request for books for junior gardeners. Those listed are currently in print and may be ordered through book stores. All titles listed may be obtained through the Winnipeg Public Library System.

A Beginner's Book of Vegetable Gardening

Author: Sigmund A. Lavine

Illustrated with photographs and with drawings by Jane O'Regan

Publisher: Dodd Mead and Co., New York — 1977

- a book ideally suited to the mature beginner
- likely of only limited use to any younger than high school
- discusses planning, tools, soil and its preparation, planting specific varieties, gardening chores, container gardening and harvest time
- of particular interest are tables listing recommended planting dates for a long list of vegetables by area on the basis of latest and earliest frosts

A Gardening Book: Indoors and Outdoors

Author: Anne Batterberry Walsh

Illustrated: Anne Batterberry Walsh

Copyright: 1976 Anne Batterberry Walsh

Publisher: McClelland and Stewart Ltd. (Cda)

- an uncomplicated "How to" book for beginning gardeners that assumes no previous knowledge or experience
- project oriented for year-round gardening
- suitable for 8-10 year olds with guidance

Apples — A Bushel of Fun and Facts

Author: Bernice Kohn

Illustrated: Roland Rodegast

Copyright: 1976 Bernice Kohn

Publisher: Parents Magazine Press, New York, N.Y.

- deals with the history, growth, varieties, myths and legends regarding the fruit. Includes several recipes using apples
- suitable for 9-12 year age range

Apples — All About Them

Author: Alvin and Virginia B. Silverstein

Illustrated: Shirley Chan

Copyright: 1976 Alvin and Virginia B. Silverstein

Publisher: Prentice Hall Inc., Englewood Cliffs N.J.

— describes the history and legends about the apple, its cultivation, the different varieties, and games and crafts and recipes that include apples.

— suitable for 10-12 year age range

Bulbs, Corms, and Such

Author: Millicent E. Selsam

Photographs: Jerome Wexler

Copyright: 1974 Millicent E. Selsam

Publisher: William Morrow and Co. New York

— a beginning botany book on the bulb family of plants describing their structure and growth into such flowers as daffodils, dahlias and gladiolus.

— well illustrated

— suitable for 8-10 year olds

Easy-To-Grow Vegetables

Author: Robert Gambrino

Illustrated: Anne Marie Jauss

Copyright: 1975 Harvey House Publishers

Publisher: Harvey House Publishers

— a good basic introduction to gardening for the young beginner

— deals with most if not all of the basics including suggested size measurements and quantities in both English measure and metric

— a very good basic book

Farming in Boxes

Author: Peter and Mike Stevenson

Copyright: 1976 Peter Stevenson

Publisher: Charles Scribner's Sons, New York

— details how crops can be grown anywhere by raising them in wooden planter boxes

— includes directions for building the boxes and a simple "barn" of boards and plastic for creating a compost pile

— good for 13-15 year age range

Good Bugs and Bad Bugs In Your Garden — Back Yard Ecology

Author: Dorothy Childs Hogner

Illustrated: Grambs Miller

Copyright: 1974 Dorothy Childs Hogner

Publisher: Thomas Crowell Co., New York

— describes various beneficial and harmful insects, discussing their characteristics, their importance to ecological balance, and ways in which man can coexist with them

— suitable for 12-15 year age range

Growing a Green Thumb — Gardening for Children

Author: Lorraine Surcouf

Copyright: Greey de Pencier Publications, 1975

— an uncomplicated handling of the fundamentals based on principles of organic gardening

— suitable for children 8 years and older

How to Grow House Plants

Author: Millicent E. Selsam

Illustrated: Kathleen Elgin

Copyright: 1960 Millicent E. Selsam

Publisher: William Morrow and Co., New York

— what the author provides in this lively and informative book is a sense of the fun and excitement of growing house plants, and a thorough account of everything you need to know about them, from the basic structure of a plant to the latest developments in plant research

Indoor Gardening — A First Book

Author: D. X. Fenton

Illustrated: Howard Berelson

Copyright: 1974 D. X. Fenton

Publisher: Franklin Watts Inc., New York

— instructions on successfully growing such indoor plants as the hibiscus, orchid, passion flower, African violet and velvet plant

Kids Gardening — A First Indoor Gardening Book For Children

Author: Aileen Paul

Illustrated: Arthur Hawkins

Publisher: Doubleday and Co., 1972

— clearly written in language suitable for approximately grade 5 level

— deals with a variety of aspects of horticulture including terrariums, floral arrangements and growing plants under lights

— suitable for junior gardener who has had some experience, ab

Look, Mom, It's Growing

Author: Ed. Fink

Illustrated: Louise J. Mueller

Copyright: 1976 A.B. Morse Co., Countryside Books, Barrington Ill.

— theme developed on the "Learn by project" approach

— excellent for beginners — quite young might need some assistance, ab

Outdoor Gardening — An Early Craft Book

Author: Lydian Casey

Illustrated: George Overlie

Publisher: Lerner Publications Co., Minneapolis, 1975

— similar to "The First Book of Gardening"

— also deals briefly with herbs and trees. ab

Plants For Kids to Grow Indoors

Author: Adele Millard

Illustrated: Photographs by Glenn Lewis and Bud Millard

Drawings by Gregory Thompson

Copyright: 1975 Sterling Publishing Co. Inc., New York

- project oriented
- window boxes, dish gardens, herbs, succulents, terrariums
- well illustrated
- suitable for 12-15 year age range
- moderate to advanced. ab

Plants We Live On — The Story of Grains and Vegetables

Author: Carroll Lane Fenton and Herminie B. Kitchen

Publisher: The John Day Company, New York, 1971

- an historical account of the origin of many of our common grains and vegetables
- suitable for junior high school level. ab

Queens Tears and Elephants Ears — A Guide to Growing Unusual House Plants

Author: Jack Kramer

Illustrated: Drawings by Michael Valdez and Robert Kramer

Copyright: 1977 Jack Kramer

Publisher: Nelson, Foster and Scott Ltd.

- instructions for growing more than thirty unusual and fascinating house plants
- suitable for 10-14 year age range

The Seed

Author: Ann Cameron

Illustrated: Beth Cannon

Copyright: 1975 Ann Cameron

Publisher: Pantheon Books

- conversational — the seed-to-reader-in-story approach
- suitable for very young readers

Soybeans: The Wonder Beans

Author: Leonard S. Kenworthy and Laurence Jaeger

Illustrated with photographs

Copyright: 1976 Leonard S. Kenworthy and Laurence Jaeger

Publisher: Julian Messner

- introduces the soybean and its many uses
- suitable for 10-12 year age range

Understanding Hydroponics — Growing Plants Without Soil

Author: George Sullivan

Illustrated

Copyright: 1976 George Sullivan

Publisher: — Frederick Warne, New York — London

- a discussion of the history and technique of hydroponics

- deals with the advantages and disadvantages, tools, home application, care of plants and formulas
- suitable for 12-15 year age range

What's In the Names of Flowers

Author: Peter Limburg

Illustrated: Heidi Palmer

Copyright: 1974 Peter Limburg

Publisher: Coward McCann and Geohagan, Inc.

- stories of how more than fifty types of cultivated flowers were named
- mixture of information and humor
- suitable for 12-15 year age range

Wonders of Herbs

Author: Sigmund A. Lavine

Illustrated with photographs

Copyright: 1976 Sigmund A. Lavine

Publisher: Dodd, Mead and Co., New York

- discusses the history of herbs, their cultivation indoors and out, individual herb facts and lore, and their use today in beauty aids
- suitable for 12-15 year age range

— Aphids and Mites Can Cause Damage —

Aphids and mites can have a very noticeable effect on trees and shrubs, but are seldom fatal, according to Jay McCullough, Manitoba Department of Agriculture entomologist.

Aphids, small pear-shaped insects, come in a variety of colors. The majority of aphids are not harmful but several species can cause damage.

They feed by sucking sap from the leaf, stem or root of a plant. This causes dappling and curling of leaves or a wilt-like appearance and discolored spots on the foliage. If control is necessary, apply malathion according to label instructions, repeating when necessary.

Mites are very tiny creatures which cause deformed leaves or irregular

shaped growths on leaf surfaces. Some mites can cause deformities or galls on the stem or branches.

The apparent injury caused by mites usually far exceeds the real damage. Control of mites is very difficult and requires critical and careful timing of insecticide application. Since control is seldom necessary for the health of the tree, no recommendation is given.

One very noticeable gall seen in poplar trees is the poplar budgall mite. Characteristic woody galls are formed on the poplar branches. Heavily infested lower limbs may become less vigorous and eventually die. There are no chemical control recommendations for this pest.

Growing Nut Trees in Brooks

S. MAHADEVA

Alberta Horticultural Research Center
Brooks, Alta.

There are trees and shrubs that produce edible nuts in the prairies, however, the climatic conditions are such that only a few nut producing plants grow well. Some have possibilities in the backyard garden — especially where the soil and micro-climatic situation is favorable.

In the past at Brooks, we have been growing a few specimens with varying degrees of success. However, starting this spring, (1979), we have begun a systematic effort to grow all known kinds and cultivars of nut shrubs and trees, and to learn more about their performance under our conditions.

Some of our observations, based on limited data on the different nut trees and shrubs, are discussed below.

The North American Hazelnut (*Corylus americana*) is known to grow wild in Northern Canada, from Ontario through Saskatchewan and into the Peace River districts. It does well under cultivation and prefers light soil with humus and plenty of moisture. It has produced some nuts at Brooks which are good to eat. It should be hardy in non-chinook areas.

The names hazelnut and filbert have been used interchangeably, however, filbert is most commonly associated with European varieties

which are not hardy in the prairies. It has been more successful as a nut producer in south coastal British Columbia. It is important to interplant other varieties to ensure pollination.

The Butternut (*Juglans cinerea*) has not been hardy at Brooks and winter injury to one year old wood especially has occurred annually. We have grown them under clean cultivation at Brooks and, without any competition, current season's growth does not ripen or mature before the onset of frost and subsequent cold conditions. The butternut has done well in private backyards where there has been competition from grass and in protected locations. The butternut is a lovely spreading ornamental with attractive leaves.

The Manchurian Walnut (*Juglans mandschurica*). Plants have just been established at Brooks. They should develop into rugged looking trees and are known to be hardy in other regions of the prairies. They have ornamental type leaves and produce large ovoid and pointed husked fruit. As the name indicates — this walnut originates in Manchuria (a region of China). This plant is certainly worthy of trial when grown in competition with grass.

The English Walnut or Persian Walnut (*Juglans regia*) is the common

walnut of commerce. These are not hardy in the prairies and may be tried only in the warmest parts of Canada.

The Black Walnut (*Juglans nigra*). A few specimens have been grown at the Research Center and in backyards in Brooks. They appear to be doing reasonably well in adequately sheltered locations — especially where there is competition from grass which helps mature the new growth in time to go through the winter. The Black Walnut could certainly be tried in backyards. Our trees at the Center have produced some nuts this year.

The Horse Chestnut (*Aesculus hippocastanum*) has not proved reliably hardy at Brooks but the closely related Ohio Buckeye (*Aesculus glabra*) is hardy and forms a splendid, long-lived, ornamental tree. The nuts of this tree, however, are not edible, but are poisonous.

The Heartnut (*Juglans seiboldiana cordiformis*) has not been hardy and hence not successful at Brooks.

Filazel was developed by Mr. J. U. Gellatly in Westbank, B.C. by crossing

the best of his filberts with the native Peace River hazels. It was thought that this combination was the best bet to produce a nut requiring only a short growing season and able to withstand adverse climatic and other growing conditions frequently met in the Canadian prairies. These plants were established in Brooks in 1968 but did not prove to be hardy enough. It is quite possible that these plants were not hardy in the chinook belt.

The Russian Almond (*Prunus tenella*). Some strains do produce large fruit but the nut is very bitter and not edible.

Many of these nut trees are not easily obtainable. Gaybird Nursery, Box 42, Wawanesa, Manitoba is the only prairie nursery to list Butternut, Horse Chestnut, Manchurian Walnut and American Hazelnut for sale.

Editor's Note:

Refer to color section page 65a.



House plants that have been outdoors in summer, or annuals dug up from the garden for a touch of late fall bloom, should be carefully inspected for signs of insects before bringing them into association with plants that have remained in the home during the season.

Also, when bringing these potted houseplants back into the home, it is advisable to knock the plants gently out of their pots without removing too much of the soil, and look closely at the root system for traces of root and soil-borne pests.

Then too, if these plants have developed considerably, both in root and top growth, during their summer vacation outdoors, they may need to be re-potted into one size larger pots, and may possibly need a bit of top pruning.

Spruce Budworm

JAY McCULLOUGH,
Manitoba Department of Agriculture

The spruce budworm is the larval or caterpillar stage of a small brown moth. The larvae feed on the expanding buds of spruce trees, if the infestation is heavy they will feed on old needles as well. This is the same spruce budworm which has been a serious problem in the commercial forests of Eastern Canada where large scale spray programs have been the practice for many years, the intention being to control budworms until the forest can be harvested.

The problem in Manitoba is considered aesthetic rather than commercial as the timber industry here is not as large as in the eastern provinces. The damage caused is serious, however, to the owner of the property as



Spruce budworm larvae in early spring.



Mature Spruce budworm larvae.

four or five years of severe defoliation may kill a tree. In Manitoba the preferred native species are white spruce and balsam fir.

The small, brown spruce budworm moth emerges from the pupa in July and August and lays 15-50 apple green eggs in a cluster on the undersides of needles. In about ten days the larvae hatch and overwinter in hibernation shelters spun in crevices in twigs and bark.

The young caterpillars usually emerge in late April and early May, the actual time being dependent on spring weather. Upon emergence they mine old needles and then begin to feed on the expanding buds. Feeding continues for three to five weeks during which time severe damage

may be inflicted upon the new growth.

The caterpillar goes through five molts, at the end of which it is approximately $\frac{3}{4}$ inch long. It then pupates and ten days later a new generation of moths emerge.

Control

There are several chemicals recommended for control of spruce budworm. The timing of application, however, is important, consequently more than one application may be required. This is not difficult with a few small trees, but it becomes quite a problem as the size and number of the trees becomes great.

Where cottage lots, farmyards, etc. are concerned, the size and number of trees may preclude the relatively simple method of using a hand sprayer. It may be that aerial application is the only reasonable way.

Where you wish to undertake control measures on a few small to medium sized trees the insecticides malathion and dimethoate are recommended. The rates are as follows, malathion 50%EC at two teaspoons per gallon of water and dimethoate 2E at four teaspoons per gallon of water. The trees should receive a thorough spraying when the budworms are first noticed and one or more follow-up sprayings may be required. The biological insecticide *Bacillus thuringiensis* is also registered for control of spruce budworm; use this material according to label instructions.

It is important to remember that control will be required annually as long as the present infestation lasts. Although there are various parasites, predators and diseases which affect spruce budworm populations, the main factor which causes a collapse, is starvation.

Greening of Potatoes

— D. H. DABBS
Dept of Horticulture

A number of instances are reported each winter of potatoes becoming green or "sunburned" in storage. The only way in which this can occur is for the tubers to be exposed to at least some light and even a very weak light will cause greening eventually. This

greening is detrimental to the eating quality of the tubers. At the very least, they must be deeply peeled in order to remove the green flesh and normally the remainder of the tuber will cook yellowish and will likely also have a bitter taste.

Containerized Nursery Stock — Why?

D. E. VANSTONE, Research Scientist
Agriculture Canada, Morden, Man.

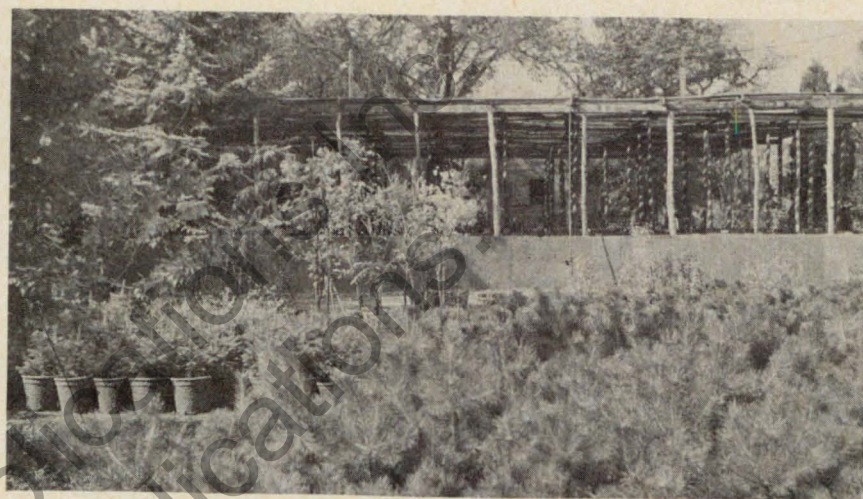
It is a common thing today to walk into a nursery or garden center and to find hundreds of trees and shrubs growing in containers. A few years ago containerized nursery stock was practically non-existent. Nursery stock was dug bare-root from the field and stored at a cool temperature with roots in peat moss. When a tree was sold, its roots would be packaged tightly in moist peat moss and given to the customer. There has been a change in marketing of nursery stock associated with containers. The trend has resulted in an increase in department store merchandizing and a decrease in mail order business. What are the pros and cons of containerized nursery stock? You see, there must be some advantage to the producer and the purchaser for a new

technology like this one to be successful.

Production of Container Plants

Nursery stock which is truly containerized is grown and marketed in a container. The container operation is much more intensified than a field operation. Containers are placed close together enabling the growing of thousands of plants per acre. High-density planting is a real advantage to the grower whose land is priced high. Since nurseries are often located close to cities for marketing reasons, intensive use of land is essential.

Not only is container growing intensified spatially, but it requires intensified management as well. Containers are placed on the ground so



that the plant roots receive no water from the soil. Furthermore, considerable moisture loss takes place by evaporation from the container. Irrigation of container stock must be frequent and regular. Allowing the roots to dry excessively by failing to water more than once or twice throughout the growing season can result in marked growth set-back and even loss of salability. On the other hand, if containers are managed carefully, optimal soil moisture and fertility can be maintained more easily than in the fields.

Since most of the irrigation water comes in direct contact with the plant roots due to close spacing, it becomes feasible, in fact, highly efficient, to fertilize through the irrigation line. Soil fertility can be maintained at a high level through frequent applications of a weak fertilizer solution. Such highly controlled soil fertility is impractical, if not impossible, in the field.

Weed control is a major expense in the production of nursery stock. This

problem can be minimized through container production. The production area is covered with black plastic and/or crushed rock so that no weeds grow from the ground. The only potential source of weeds is from the containers themselves. To reduce the weed problem in the containers the soil mix to be used is pasteurized prior to planting. If the soil is not pasteurized, any one of a number of granular herbicides may be conveniently applied to each container prior to weed emergence. Several herbicides are recommended for use in containers which would be too costly in field operations.

The soil mix used for containers is specially designed for containers. It must have good water holding capacity, provide adequate aeration, be readily available at an economical price and be light weight. It would contain various proportions of peat moss, sand, loam, sawdust, perlite or turface. The mix can be tailored to the specific requirements of each crop. Since the soil mix is prepared in this way, the soil type on which the nur-

sery is located is not important. The nursery may be located on stony land or on heavy clay gumbo. For field-growing of nursery stock the proper soil type is paramount to the success of the nursery. Containerization thus allows flexibility in the actual location of the nursery, while at the same time makes possible the optimal soil mix for growth.

One major difficulty with the use of containers on the prairies is how to overwinter plants. Plant roots are not nearly as cold tolerant as plant stems. The root temperature in an uncovered container will be almost as cold as the air temperature. Only a very few ornamentals are able to tolerate such cold temperatures. Various methods of protection can be used, including snow cover (that is a bit risky), straw cover (that is a bit messy) and indoor storage (that is a bit costly). Whatever method may be chosen, the fact is that overwinter storage of containerized nursery stock is a problem on the prairie.

Marketing of Container Plants

What are the marketing considerations related to containerized nursery stock? I believe that question can be answered by saying that containerized nursery stock provides an extended sales season and a convenient way of handling. That's right. If a tree or shrub is growing in a container it can be sold to a customer and planted anytime from spring through to fall. The roots are contained so that the transplanting does not shock the plant. This long sales season is a real boon to nurserymen, homeowners, and landscapers. On the other hand, bare-root deciduous material can only be transplanted in spring or fall while it is defoliated.

Imagine the convenience of buying

or selling in containers. The nurseryman is able to simply hand his customers the salable product. No wrapping, no muss, and no wasted time is involved. The customer in turn takes his product home and plants in his yard at his convenience. The tree or shrub could stay in the container for several weeks or months if need be, whereas bare-root material must be planted promptly if it is going to survive.

One question ought to concern the customer who is buying containerized nursery stock and that is, how long has the plant been growing in the container? If the roots are not sufficiently established in the container, the root ball will fall apart upon transplanting. Excessive shock may occur to the plant, especially if it is in full leaf. It would normally take three weeks to a month of active growth after containerization for the roots to be well established. Nursery stock should not be sold during establishment. When a plant is grown in a container for too long, the container becomes root-bound. That is a condition where roots grow laterally around the container and actually intertwine and girdle themselves. Upon outplanting root development will be abnormal and the subsequent vigour of the tree will be impeded. Normally a plant should not remain in the same container for more than one growing season. It would be good for both grower and customer to be aware of this potential problem.

Nursery stock will likely be available either with or without a container for years to come. Containers essentially open up a new option for growers and customers. They in no way detract from the merits of bare-root handling. The choice is yours — container or not.

Direct Seeding of Annual Flowers

KEN DUNSMORE

Maple Leaf Horticultural Services Ltd., Winnipeg, Man.

The oldest and easiest method of propagating annual flowers is by sowing the seeds where they are intended to grow. For the gardener, this method has the advantages of being slightly less expensive than purchasing bedding plants and less time-consuming than starting plants indoors. There are limitations, however, in that our short prairie season does not allow all types of annuals to develop to maturity or to provide satisfaction for a period of time that justifies their use. The list of annuals at the end of this article includes only those types which are likely to give satisfactory results when seeded directly in the prairie garden.

Seeding Hardy Annuals

Seeding of hardy annuals such as poppies, bachelor buttons, and calendula can be done in the late fall. This practice can help to reduce the pressures of the hectic spring rush in the garden. Fall sown plants also have the earliest possible start in the

spring. Any fall seeding that is done should be well marked so that the seeded areas can be avoided during spring cultivation. Seeds should be placed slightly deeper when sowing in fall than in spring.

Spring seeding has the advantage that it can be used for both hardy and tender annuals. Spring-seeded areas also need to be marked, but not as carefully as those seeded in fall.

Procedure

Soil — Whether one sows in spring or fall, the procedure is basically the same. The soil must be prepared so that there is a fine seed bed with no large lumps of soil. A high phosphate fertilizer can be added and should be mixed well with the soil to a depth of at least six inches (15 cm). The crusting which occurs on many of our heavy prairie soils can be reduced by incorporating a generous amount of peat moss or compost into the top two inches of the soil.

Planting — Before seeding, one should make a planting plan based on the arrangement of varieties according to flower colour and ultimate size. Seeds may be sown either in rows or on a grid pattern, made by marking the soil with a stick. Planting in rows is the easier method. It can be used either to produce single rows for borders or to produce mass effects. For mass effects, several parallel rows should be sown at right angles to the direction from which they are to be viewed. Straight rows can be marked by a taut string, curved rows simply by making a furrow of the desired shape with a hoe. Space seeds as evenly as possible in the furrow. Do not sow too thickly or seed will be wasted and there will be more thinning to do.

The depth to which seeds are sown is important. It depends mainly upon their size. Large seeds (nasturtium, four o'clock) should be sown at a depth of around one-half to one inch (2 cm). Seeds of medium size (marigold, zinnia) should be sown about one-quarter to one-half inch (1 cm) deep. Small seeds can be sown shallower, or may be broadcast on the surface.

Watering — After seeding, cover the seeds and press the soil down on top of them using the back of a rake or hoe. Water thoroughly using a fine spray, and repeat watering regularly until the seedlings have emerged. The watering must be more frequent if the seeds are small and near the surface.

Seedlings — The seeds will emerge in one or two weeks. After they have produced their first true leaves (the two little leaves that come up first are not true leaves), they can be thinned out. Pull out the extra seedlings, tak-

ing care not to disturb the roots of the ones that are to remain. Some of the extra seedlings can be transplanted to areas where germination was sparse. Plants should be spaced at the same distance as bedding plants of the same types. Eight inches (20 cm) is a good distance for many annual flowers.

In the list that follows, "hardy" refers to annuals that can be sown outdoors in early spring and may do well if sown in late fall. "Tender" refers to annuals that should not be sown until the middle of May.

Hardy annuals for direct seeding:

Bachelor Buttons
Bartonia
Bells of Ireland
Calendula
California Poppy
Calliopsis
Candytuft
Clarkia
Cynoglossum
Evening-scented stock
Godetia
Gypsophila (Baby's Breath)
Larkspur
Lavatera
Linaria (Toadflax)
Linum (Scarlet Flax)
Nigella (Love-in-a-Mist)
Poppy
Sweet Pea

Tender annuals for direct seeding:

Balsam
Canary-bird vine
Cosmos
Four O'clock (Marvel of Peru)
Marigold (early varieties only)
Mignonette
Nasturtium
Scarlet Runner Bean
Sunflower
Zinnia

Exhibiting Annuals

KEVIN J. WALPOLE BSA

Past President, Fort Garry Horticultural Society

The climax of the gardening year for many is the horticultural show. The show affords each grower an opportunity to display the fruits of his labor and compare the results of his endeavors with those of other gardening enthusiasts.

Annual flowers suited to the prairie provinces are numerous and can produce a wealth of color in a comparatively short period of time after seed is sown. The exhibitor of annual flowers can have blooms ready for exhibition as early as five or six weeks after planting. While the home gardener's new plantings of perennials establish themselves, the gardener can gain much experience in exhibiting from a few crops of annuals. By the time the grower's perennial flowers have begun to produce exhibition quality blooms, the grower will likely have no problem in selecting the best specimens and preparing them for the show.

Start Planning Early

Potential exhibitors should consult the rules of the show well in advance of the show day. Ask show directors to clarify the schedule or any rules that are not clear. It may be necessary

for the gardener to grow some varieties which may mature earlier or later than the ones he would normally be growing, or to have successive sowings of some varieties in order to produce flowers in the peak of condition for the date of the show.

Review published information and advice from other gardeners about time tested exhibition-quality varieties, and information about new ones. Today, new varieties are regularly being introduced and we owe much to the patience and skill of plant breeders in all parts of the world, who by their detailed work are constantly creating new strains. Strength of growth, size of flowers, increase in color range, length of stem and general improvements in constitution are continually being made. Winners at the flower shows are usually the people who took time to consider carefully varietal differences and choose the one best suited to the purpose in mind and the growing conditions the gardener could give the plants. Choose a reliable dealer who offers quality plant material of named varieties. Even the best of showmanship will come to nothing without a product of quality.

Summer Care — After planting, the potential exhibitor's job continues on. It is usually necessary to tend the plants all season to ensure that specimens are in flawless condition at exhibition time. The gardener should have an insect and disease prevention program that involves appropriate measures before the plants are damaged. Periodic applications of fertilizer and water are usually necessary to keep the plants growing at their potential. The natural habit of a plant often does not produce flowers that are of the quality that can result from a controlled growth habit. The grower must manage the development of the plant so as to control the timing, distribution and numbers of flower buds on the plant. Cultural practices vary depending on plant type and even plant variety.

Exhibit Preparations — In selecting specimens for the show, it is wise to remember that quality is the most important single factor to be considered. Spikes of individual blooms should be just approaching maturity. The flowers are judged at the show considering factors like freshness, uniformity, size, trueness of color, substance, and stem and foliage quality. The specimen should have healthy attractive foliage that is of good color and free from any signs of disease, insect or mechanical injury.

Selection — A few precautions should be taken when picking the flowers. In hot weather it is best to pick when the plants contain the most moisture. Although morning is best for an abundance of moisture, early evening is perhaps as good for cutting because the transpiration rate of the

plants should have slowed down by that time. Flowers cut in early evening are additionally good because food reserves are high.

Use a sharp knife or pruning shears. The flowers should be placed immediately in water, preferably at or slightly above room temperature. Plants with milky or sticky sap usually benefit from searing the stem end in a flame or in half inch of boiling water for several seconds.

It is wise to pick more flowers than the number required in the show entry in case some damage occurs in transit.

Labelling — Exhibitors should label their entries with the correct variety name even though the rules of the show may not ask for it. Often the exhibitor can pick up extra points if the display is properly labelled. Most gardeners know the varieties they are exhibiting but can forget that many visitors are not so familiar with them and will want to know the names. A successfully staged show is an educational event where the public obtains useful information.

Be sure to understand what is required of the exhibitors at the show. Any deviation from the rules with respect to the numbers of specimens or method of display could lead to a less favorable placing or even to disqualification.

After the suspenseful wait for the judge's appraisal, travel back to the show to enjoy the flowers and the warmth of friends. Go prepared to tolerate a few tall stories and to share your enthusiasm for gardening with others.

Gardening in the Shade

JANET OSBORNE
Winnipeg, Manitoba

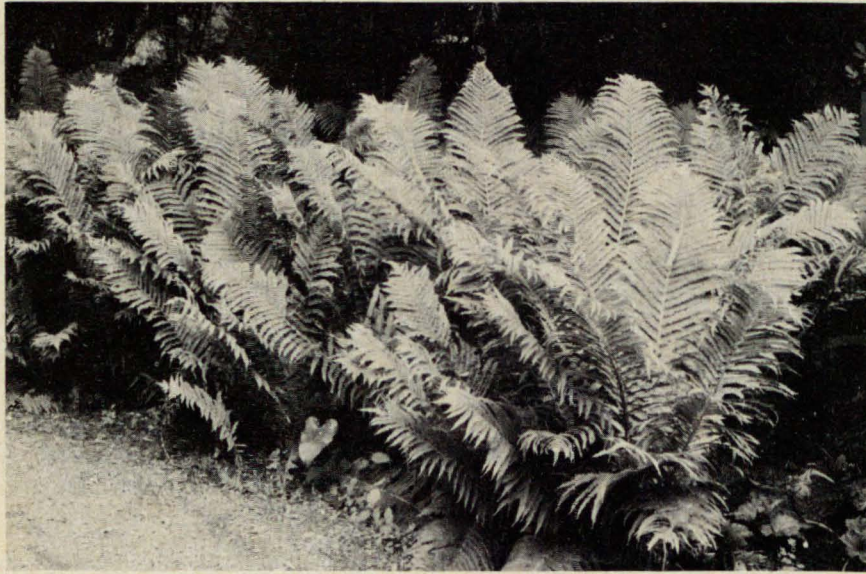
Are your marigolds and zinnias not doing as well as usual? Perhaps you have not noticed that your shrubs and trees are growing, and the borders you have always planted with marigolds are now in too much shade for them to do well. We are creatures of habit and tend not to notice when conditions in our garden change. When I bought my place a few years ago, it was a glaring, sunbaked lot, with not a leaf in sight, and I started planting some trees and shrubs with a lot of sun-loving annuals to fill in the spaces. Now, not only have a lot of the spaces gone, which makes gardening easier, but I also have shady areas which demand a different kind of planting plan for flowers.

Shade

The first thing to do, is to consider what kind of shade you have. Is it deep shade with no sun all day long? Sun for part of the day — and which part? Dappled shade? Is the ground parched by roots from shrubs and trees, or is it loose, water-retaining leaf mulch? Gardening in the shade is not very difficult, providing you give some thought to these different kinds of areas and, personally, I prefer it to the harsh sunbaked lot with which I started out.

Deep Shade

However, there is one kind of deep shade where you are unlikely to be able to grow anything, and that is if your house is closely surrounded with old overgrown trees, especially evergreens, that cut off light and air and require you to burn lights inside even on summer days. If you want to change this kind of situation, you just have to remove some of the trees, or if they are not evergreens, have them pruned. A drastic pruning such as this should be done over the course of three years, and needs an expert — it really is easier to remove some of them. I know it is difficult to bring yourself to do this, after you have waited so long for them to grow, but if you planted too many in the first place, or bought an overgrown lot, you either have to put up with having no flowers or steel yourself to correct the problem. Do not rush. It is essential to consider carefully which trees to remove, so that you don't remove too many, or the wrong ones. Your choice will have to depend on the variety and location of each tree, as well as which ones are family favourites. If you have a huge, truly noble tree with bare ground underneath, and you do not wish to pay to have it pruned to open up some dappled



A good planting of fiddlehead ferns.

sunlight, then about the only thing you can do is to improve the ground underneath and grow native ferns. Personally, I love ferns, but you will have to remember that a big tree might parch the ground and that even though the ferns are in deep shade they may need regular supplies of water in hot weather. You could also try transplanting some moss from the woods.

Light or dappled shade is the easiest to garden in, as everything, except the daisy family, will do well, even petunias will grow. I have a border which gets dappled shade all day with some late afternoon sun, and even shasta daisies do well there. But, as a rule, daisies of all types, including marigolds and zinnias, need sun. Another type of light shade is one where there is no sun at all, but plenty of "sky shine". I do not believe petunias would grow here, but the

following will do well and will also thrive in your border with light or dappled shade: ferns, Hosta, violas, Impatiens, fibrous-rooted begonias (but not the big ones, they need a bit of sun), mint or bishop's weed (but restrain these two), daylilies, lily-of-the valley (which needs thinning out every two or three years so that it does not get too overcrowded), bleeding-heart, forget-me-not, speedwell; and near the house, periwinkle, but it will not survive away from the warmth from the foundation walls. Try Sedum golden acre, it will probably grow, although it will have fewer flowers than it would in a better light, but it does not need full sun. Also columbine, (I do not have any luck with them), ageratum, lobelia, maiden pink, wild violets, snapdragon, coleus, Browallia, Nicotiana, alyssum, caladium, and with a little sun, pansies and coral-bells. Not all of these plants will

grow well in every location, but you could experiment with a few new ones each year. It is usually easier to grow plants in the shade when they have already been started by a nurseryman, but experiment with seed too, especially for quick growing flowers like alyssum. Incidentally, alyssum is an exception to what I said about started plants, as it is easier to grow from seed than to transplant, unless you can get young plants. The ones sold are usually too mature to transplant easily from the baskets where the roots are crowded and interwoven. I have given up starting slower-growing types from seed, as our summers are so short.

Buying Plants

When buying plants, don't get the biggest. Look for strong, sturdy ones, and if they are in bloom, select ones with not too many flowers but plenty of buds; you want plants which will give you quick color but are not too mature to settle in easily.

Planting

When planting under trees, or close to shrubs, you will get better results if you fill the planting hole with new top soil, or compost, or at least mix some peat moss with the old soil.

I have so far been writing about dappled shade. If your border has shade for half the day and sun the rest of the day, then most annuals will do well, so will perennials such as peony and iris as well as those mentioned earlier, although they will flower a little less profusely than in full sun.

Shrubs

The majority of shrubs will grow well and flower with half a day of sun,

or less, especially if they were planted *before* the trees over-shadowed them. However, if I wanted to plant shrubs in already existing dappled shade, I would certainly go ahead and try the various dogwoods, nannyberry, Missouri currant, elder, to name a few: pay particular attention to varieties which you see growing wild in stands of trees, and note whether they are growing only around the edges, where some sun or good "sky shine" reaches, or whether they are growing well in heavier shade.

You may not have bothered to remove the lower branches of your trees, and in some cases tree-like shrubs. If you do this, it may open up enough dappled shade for you to grow some nice splashes of colored annuals. Or like me, you may like the effect of white flowers in the shade.

I had an awkward, narrow strip of bare ground, about 12 inches wide, between the driveway and the house, in an area which gets a bit of early morning sun and a lot of "sky shine", and about half a day of fairly heavy shade. I planted this area to Bishop's weed, in fact I only bought a container of three plants to start with, to see how they would do, and in three years the whole area was filled (about 12" x 18') and various neighbours had taken rooted plants for similar locations. The fresh green and white is attractive in such an area, but never plant it where it can "escape", or it will become a terrible nuisance. This area is also very dry, but I only water it very occasionally — in spells of drought — but I do give it some lawn fertilizer in the spring. This seems to give it a faster start. A friend did try it in some really dense shade, and it died out. If you decide to grow it, do water it when the plants are

young, until they are well established. It would probably fill a strip 12 inches wide, in one season if you set plants 12 inches apart.

If you have a shady border which is hit by the hot, early-afternoon sun, coleus and ferns and lobelia will be fried, but they can take morning or evening sun.

Patios

I like to grow a large tub of pink *Nicotiana* on my shady patio, the kind which stays open all day, not the older kind which only opens in the evening. Then in the evening, the whole patio is scented.

Among the nicest additions to the garden are hanging containers, or patio pots, and I have no trouble at all filling them with suitable plants for shady locations. In fact I have the opposite problem — with what can I fill them in a *baking hot* location other than geraniums? Some houseplants can be used in protected locations, even your favourite Boston fern, by a north-facing front door with not too much overhead obstruction; generally, if it will grow in your front window it will grow beside your front door, if it gets no direct sun and if you remember to check it for dryness every day. In fall, *all* container plants should be checked every day, as even in the shade they can dry out very fast. I always add peat moss to the

soil, to hold more water: but make sure the pots have good drainage for, whereas plants outdoors need plenty of water, they do not like to sit in water any more than plants indoors.

If you do put your houseplants outside, such as rubberplant, ferns, Chinese evergreen, *Dracaena*, Swedish ivy, purple-passion plant, *Aspidistra*, spider plant, ivy, prayer plant, *Sansevieria*, palms, *Philodendron*, etc., then do not put them where they will get any sun at all, as even outdoor shade is likely to give them more light than they've been accustomed to a few feet from a sunny window. Protect from storms, or bring indoors.

Good plants for outdoor containers in shade are: fibrous-rooted begonia, *Impatiens* (will flower in heavier shade than will the begonia), spider plant, ivy, *Browallia*, lobelia, coleus, *Nicotiana* (needs a large container — I use a bushel basket, only costs about \$1.99 and lasts about four years), *Tradescantia*. For shade with a little sun use: *Impatiens*, fibrous-rooted begonia, *Browallia*, lobelia, black-eyed-Susan-vine. Half a day of sun: I recommend petunias, especially the cascade type and the large-flowered begonias. Plant in containers more closely than you would in the ground, water often, and do fertilize.



Gardening On the Rocks

ROBERT STADNYK
Westlock, Alberta

Rock gardens provide year round interest — from the time the first crocus or species tulip pokes its way through April's warmed soil, to the spring and summer months when rockeries come alive with their interesting shades of bloom and grey or green foliage textures that last well into the fall when green foliage is rare.

The majority of rockery plants bloom in the spring or early summer, therefore it is best to plant them in August or during the the first half of September and no later, as late planting increases the incidence of heaving caused by sudden or hard frosts. The exception to the rule is the planting of early spring-flowering bulbs such as scillas, crocus, species tulips and grape hyacinths, just to name a few. These are best purchased as bulbs in the fall and planted after the middle of September so a good root system will establish itself by the time the ground freezes.

Perennials for rock gardens are all classified according to their habit of growth. There are those which literally hug the ground, known as dwarf

cushions. Plants such as the moss silene (*Silene acaulis*) and the stone-cress (*Aethionema oppositifolium*) are classed under this group.

Dwarf carpeting plants such as thymes, phlox, sedums and the creeping veronica make huge carpets of greenery in a single growing season filling up every available crevice.

Mound forming plants such as the arabis and dianthus find a place in a rockery, as they provide masses of bloom over a long period of time when the very early first flush of bloom is over. Some, such as *Artemisia* produce lovely silver-grey foliage that lasts the year round. Others such as the snow-in-summer (*Cerastium tomentosum*) are beautiful with or without blooms.

Finally there are the succulents and cacti which do well in the hot, dry sunny spot of the rock garden. *Sedum*, *Sempervivum* and the Prickly Pear cactus fit into this group.

I BULBS FOR THE ROCKERY

(a) *Bulbocodium vernum*

These are rare and expensive but the flower size and color is well worth

it. Flowers resemble a crocus, only larger, completely covering the scant foliage beneath. Flower color is an uncommon bright rosy-violet — a rarity among spring flowering bulbs.

(b) *Chionodoxa* (Glory of the Snow)

Graceful, starry flowers produced in the greatest profusion atop a three-inch stem. If left undisturbed for years, these multiply rapidly producing a cheerful floral display early in the spring. *Chionodoxa* come in white, pink, or the most common color being a sky blue with a faded white center — the latter being more reliable. Hardy varieties include *C. luciliae*, *C. sardensis* and *C. gigantea*.

(c) *Crocus*

Beware of catalog bargain sales on crocus as most are not hardy in our climate. I've found the species *crocus* (*C. chrysanthus*) as the only crocus that lasts for a number of years while others last a year or two at the most. In an unpredictable climate such as ours, it's best to plant the most reliable and hardiest of the species.

(d) *Eranthis* (Winter Aconite)

These are rarely seen in prairie rockeries and deserve much more attention. Pretty little yellow buttercup-like flowers surrounded by a frilly ruff-like green bract, being one of the first to flower, blooming with or just before the snowdrops. Plant these around mid-September for best results. Later planting usually results in the bulbs failing to root before winter sets in.

(e) *Galanthus* (Snowdrops)

These should be planted early in a well-sheltered spot of the rockery. An 8 to 10 inch mulch of straw applied from mid to late October (depending on the weather) is necessary to prevent early deep penetration of frost and to retard early spring growth.

Snowdrops are usually not very long lived.

(f) *Muscari* (Grape Hyacinth)

A very hardy class of small bulbs for mid-spring bloom. Miniature, blue hyacinth-like flowers are produced in abundance in May, long lasting if planted in a relatively sunny location.

(g) *Puschkinia*

White, striped and shaded blue blooms atop 6-inch stems. Relatively hardy but not too long lasting.

(h) *Scilla Sibirica* (Squill)

Scillas are first to bloom in spring in our area, sometimes flaunting their blue nodding bells as early as late March or early April. *Scilla sibirica* being the hardiest of the family, should be planted in a sunny spot of the rockery where they can be left undisturbed for several years.

(i) *Tulipa species* (Botanical Tulips)

There are many species tulips that are hardy and very useful in rock gardens. Plant these anytime after mid-September. Following is a list of the hardiest species which have wintered well and bloomed extensively as far north as the Peace River Country here in Alberta:

Tulipa praestans — 10 inches tall, orange-scarlet flowers 3 to 5 per stem.

Tulipa pulchella humilis — 4 to 6 inches tall, violet-pink flowers.

Tulipa turkestanica — dainty white flowers with orange yellow center; 10 inches tall.

Tulipa tarda — 6 inches tall, yellow starry flowers with white tips

Tulipa urumiensis — golden yellow flowers with a bronze reverse (6 inches tall)

Tulipa clusiana — known as "Lady Tulip" — narrow foliage, blooms white, interior crimson; 12 inches tall.

II EVERGREENS FOR THE ROCKERY

Following is a listing of some of the coniferous and broad-leaved evergreens suitable for rockeries:

Rose Daphne (*D. cneorum*)

Junipers — Bar Harbor

Dunvegan Blue

Prince of Wales

Andorra

Ulapitai

Blue Acres

J. tamarisifolia

(Tamarix-leaved

Juniper)

III ROCK GARDEN PERENNIALS

The following is a descriptive listing of some of the available rock garden perennials which I have found to be most reliable in our prairie climate. Some are readily available through prairie nurseries. Other more scarce varieties must be purchased through specialists or nurseries dealing exclusively with alpine or rock garden plants.

Aethionema

The stonecress species all make ideal specimen plants for that sunny spot in the rockery. Beautiful small heads of carmine flowers are produced freely in June and July over narrow grey-green foliage. Don't attempt transplanting these unless absolutely necessary as the long wiry roots make the task difficult. Since stonecress seed themselves readily, the best method of transplantation is moving any young volunteer plants in the spring.

Anemone

The native prairie anemone (*A. patens*) often called the "prairie crocus" does best in a sunny spot where soil is moist and not too rich. Bloom comes early in spring (late April-early May). Emerging flower stocks are covered with greyish silk-like hairs. Flower

color is either purplish or lavender-grey. The European Pasque Flower (*A. pulsatilla* or *A. vulgaris*) is also very similar to the above and is available from some nurseries.

Aquilegia

Columbines are too tall for use in rock gardens, however the foot high alpine columbine (*A. alpina*) makes a show for itself. Very intense deep blue blooms are produced atop attractive grey-green foliage. Grow in a half-shady or sunny spot for June blooms.

Arabis (Rockcress)

These very popular long blooming rock plants literally smother themselves with enticingly fragrant blooms. I have had these in bloom from early May past mid-June. Be sure to grow *Arabis* in a sunny spot of the rockery which receives ample snow cover, otherwise, foliage tends to desiccate in early spring in a windswept area. Clumps should be divided every second year. Cuttings taken after blooming is finished can be planted in a shaded coldframe to form good-sized plants by September. After blooming, remove spent blooms and any straggly shoots for a second flush of bloom in early September.

Armeria

The alpine thrift (*A. alpina*) is rather short lived but well worth a trial. Solid mounds of grass-like foliage become completely covered with stems of deep rose-pink globular heads of bloom in June and July, height 6 inches. Deep snow cover is required to winter the thrift successfully.

Alpine Aster

The alpine aster (*A. alpinus*) is native to the Rocky Mountains and ruggedly hardy. Large lavender-blue daisy-like blooms are produced in profusion in July, height 6 to 10 in-

ches. Grow in a well-drained soil shaded from hot midday sun.

Bergenia

Bergenias are low growing plants with large leathery leaves; grow in rich humus soil. *B. crassifolia* is the best bergenia to use in a rockery. It produces thick flower stems with clusters of pink blossoms carried well above the foliage, height 8 to 15 inches. Blooms are produced May to June in a shaded spot.

Cerastium

Belonging to the same family as chickweed, and almost as rampant, the snow-in-summit (*C. tomentosum*) becomes completely covered with white blooms creating the effect of a snowdrift in June. If one intends to use *Cerastium* for the rockery be prepared to keep it clipped back severely so to prevent it from encroaching on less rampant plants. Its attractive silvery-grey foliage and pure white daisy-like blooms are well worth the extra effort.

Dianthus

The maiden pink (*D. deltoides*) forms mossy dark green cushions covered with red or pink single blooms in July; very sensitive to browning due to early spring sun and drying winter winds. Ensure a deep snow cover and place a six-inch layer of spruce boughs over the plants to trap and hold the snow cover.

Erigeron (rockery type)

A very ruggedly hardy long-lived rockery perennial producing beautiful violet-mauve daisies on six-inch stems in July. Unfortunately it's not readily available in nurseries; likes sun or shade.

Gypsophila

G. repens is the only baby's breath suitable for rock gardens. It is a trailing plant with white or pale pink

flowers; very easy to grow. Height is six inches and the spread is 10 to 12 inches. Blooms in July.

Iberis

The perennial candytuft (*I. sempervirens*) is a dwarf evergreen shrubby perennial producing narrow, dark green shiny leaves and heads of white flowers in June; very susceptible to drying spring winds and sun. Winter protect as described for *Dianthus* otherwise tops brown and flower buds die. Easily propagated by cuttings or division.

Opuntia polyacantha

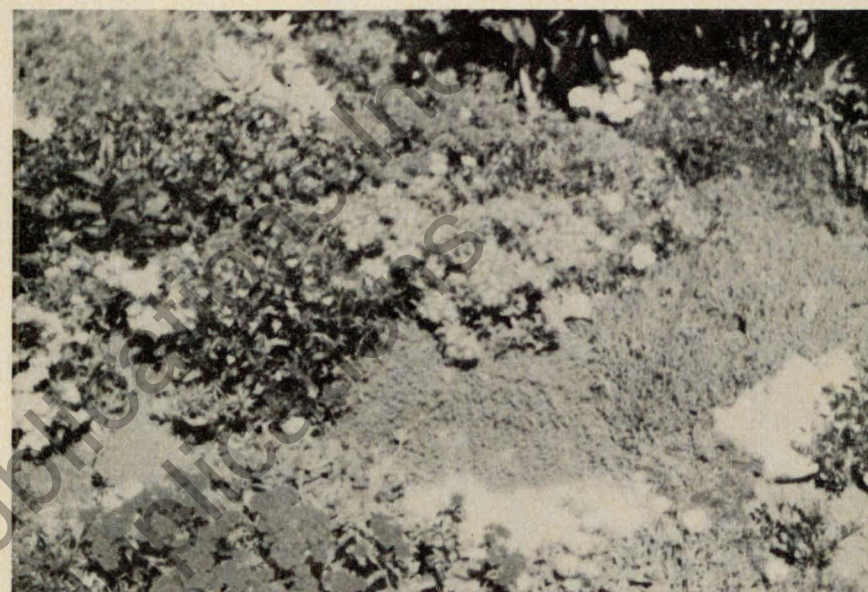
The prickly pear cactus is very useful for hot, dry positions in the rockery where nothing else will grow. A compact growing cactus with thick, fleshy leaves covered with spines. Large, attractive yellow flowers (mine has yet to flower) are produced in June. For something really different, why not try one?

Phlox

The moss phlox (*P. subulata*) is very useful for spreading amongst the rocks. Plants provide sheets of color in May and early June. Divide old plants right after flowering. Cuttings can be taken in the fall to root in a coldframe. The Arctic phlox (*P. borealis*) remains bright green all the year around. In June the plants are covered with carmine-rose blooms. Protect overwinter as described for *Dianthus*.

Primulas

Primroses require cool, moist soil and will not tolerate heat or dry weather. Grow in shade or semi-shade and keep well-watered during dry weather. For best results, grow primroses in a low level north facing spot of the rockery. The following varieties I have tried with good success:



Dwarf carpeting plants such as the woolly mother-of-thyme and *Sedum hybridum* provide year round greenery.

P. auricula — The auricula primroses are true treasures. Foliage is greyish-green without conspicuous veins so the plants are easily distinguished from other primulas. Individual flower clusters are large, velvety, and richly colored with a delicate fragrance. Most common color is a burgundy-red with yellow eye.

P. cortusoides — These tolerate more heat and dry weather than do other primulas. The cortusa primrose is very hardy; grow in sun or shade. Flowers are produced atop 6 to 8 inch stems, coming in mauve-pink clusters held well above the pale green finely cut foliage. After flowering, plants of this primula completely die down.

P. denticulata

Not proven to be fully hardy in the prairie region, however, I've wintered them successfully for over 3 years now. These are real gems for the

rockery. Fully rounded heads of bloom are produced in pink-mauve, mauve and white in early May lasting 2 to 3 weeks. If proven hardy, these will be the best primulas for the prairies.

P. polyantha

This is the most widely planted and most readily available variety on the prairies and plants produce in spring showy clusters of large blooms in brilliant colors. Plants do best in the shade. Divide plants every two years. Easily grown from seed; height 6 to 8 inches. Available in a wide color range.

Saponaria

The rock soapwort (*S. ocymoides*) is a six-inch creeping plant with small leaves and bright rose-pink flowers in July; needs sun for best show. Saponarias are able to stand drought. Deep snow cover is necessary for

bringing the plants through winter. For new plants, transplant volunteer seedlings or rooted branches.

Sedum

Sedums are very useful succulents for the hot, dry sunny spot. Blooms are produced in June to August, most in yellow, but pink and red is also common. Propagate by division. Some of the best varieties are:

S. kamschaticum — One of the easiest to grow, producing orange-yellow flowers and has bright green leaves. There is a very attractive variegated form of the above.

S. acre — Stems are three inches high and produce tiny yellow flowers. Spreads vegetatively or by volunteer seedlings. Can become a nuisance if not kept under control.

S. hybridum — low spreading plant with glossy dark green leaves and masses of bright yellow flowers in midsummer.

S. spurium — blooms in pink or red in July on spreading six inches high plants. Most common variety "Dragon's Blood", produces good red flowers.

Sempervivum

The houseleeks do well in hot, dry sites. Leaves are arranged in more or less close rosettes with a flower stalk in July that rises from the center. After blooming, the rosette carrying the stalk dies but young rosettes quickly form around the edge of the old one.

Silene acaulis

The moss silene is a small ground-hugging pink cushion when in flower. Since it forms a thick one-inch high cushion it is well suited to crevice planting. The moss silene does not form large cushions in a single growing season. It takes 4 to 5 years for a foot wide cushion to develop; very ruggedly hardy.

Thymus

Thymes are very useful creeping plants. Grow in full sun in well-drained sandy soil; easily propagated by division. Thymes make large mats of greenery that stay green the year round. Therefore supply ample snow cover to prevent winter and early spring desiccation.

T. serpyllum — The mother of thyme comes in several forms: there are those with golden, green, or greyish leaves. Some are scented like lemon, caraway and the usual scent of thyme. Thymes bloom in white or pink. The most commonly available one in nurseries is the wooly mother-of-thyme which has tiny, hairy leaves with a strong thyme scent.

Veronica (Speedwell)

A large group of plants easy to grow, ruggedly hardy that do best in any good soil in a sunny spot; propagate by seed or division.

V. incana — The wooly speedwell has silvery-grey foliage and spikes of small blue flowers in July; height six to ten inches.

V. teucrium — a very beautiful plant when in flower. Individual flowers on the spike are unusually large. Dense, deep blue spikes really stand out in June; height six to eight inches.

V. repens — The creeping veronica is a very dwarf species very useful for carpetting the rockery. It has tiny leaves with pale blue flowers in July; height 1 to 2 inches. This variety should have deep snow cover to ensure its survival over winter.

Violas

There are several violas suitable for rockeries. All should be seeded in the spring and allowed to seed themselves. *V. cornuta* is an exceptional variety for a sunny spot. Toyland

and Johnny-Jump-Up are two others which can easily be grown from seed. A native wild viola which produces beautiful true violet-colored flowers adapts well to domestic cultivation. I have had the latter in the rockery over 5 years. Each spring the clumps are completely smothered in bloom.

Anyone interested in constructing a rock garden can turn to past issues of the "Prairie Garden" for very useful information. The above is meant only as a guide for anyone interested in collecting these "dwarfs of the plant kingdom".

— Staking and Pruning Tomato Plants —

The staking tomato, allowed to grow naturally, makes a large, spreading plant with an abundance of leaves and fruit that ripen very late or may not ripen at all. Gerald Bitney, resource teacher for the Winnipeg School Division has advice for controlling the growth of these tomatoes.

When planting, place four-foot stakes in the ground close to the plants. Use soft string, strips of cloth or nylon stockings as ties to secure the plant to the stake.

Prune staking tomatoes to prevent them from becoming large bushy plants. The practice is to prune the plants to one main stem by removing the side shoots from the axil of the leaf.

These growths are pinched out while still small, so the plant's energy is directed into the main stem. During the latter part of June and most of July, pruning must be done every few



days and the stem tied to the stake as required.

Gardeners who are prepared to devote some time to growing their staking tomatoes generally are rewarded by high quality fruit.

Powdery Mildew of Fruit, Vegetables and Ornamentals

KNUD MORTENSEN

Plant Pathology Specialist, SDA, Regina

The fungi which cause powdery mildews grow on the surface of plants giving rise to the characteristic symptom of a gray to white, powdery layer on leaves and stems. The disease affects many plants such as: woody ornamentals including lilac, crabapple and rose; vegetables like cucumbers; legumes such as peas, lentils, beans and clover; fruit crops including apples, raspberries, currants and gooseberries; a wide range of annual and perennial flowers; and grasses such as lawn or turf grasses and cereals. A number of different fungi are responsible for the disease and some fungi only attack one or a few plant species, while others attack many different species. However, all powdery mildew diseases are generally similar in symptoms they cause, in their disease cycle, and in methods of control.

Symptoms

Mildew can occur on leaves, flowers, shoots and fruits. Most commonly it occurs on leaves as gray to white powdery spots. Depending upon the species of plant attacked, symptoms may be on the under surface or on the upper surface of the leaves. The whitish growth will

rapidly cover the leaves and infected leaves are generally pale, slender, and curled upwards. With age leaves become stiff and brittle. The fungus may develop on young twigs such as in raspberry, causing these to be stunted.

If buds are infected, as can occur in roses, there may be no bloom or only distorted flowers. Infection of fruit which occurs less frequently will often result in misshapen fruit and in apples, severely russeted fruit. Symptoms on most plants are usually apparent late in the season when cool nights are followed by warm days.

Disease Cycle

The casual fungi overwinter on the surface of infected parts. Spores produced on this diseased tissue are carried by the wind and these will establish new infections under favorable conditions. The mildew spores do not require a film of water but will germinate readily at high relative humidities. The fungus grows rapidly over the leaf surface in mild temperatures producing more spores which further increase and spread disease. Small, pin point size, dark brown fungal structures are sometimes

formed in the powdery surface in late summer.

Control

In some cases, such as on nursery stock or on young plants, severe damage can occur and control using fungicide sprays are necessary; in others, as on lilac, the disease occurs late in the season and will not cause sufficient damage to warrant a control program involving fungicide sprays.

Some control can be obtained by following cultural practices.

1. Grow mildew tolerant or resistant varieties whenever possible. This information is often on seed packages or in seed catalogues.
2. Reduce moist and humid conditions by:
 - a) Avoid planting in shady locations, where air movement is poor.
 - b) Keep proper thinning of crop to increase air circulation.
 - c) Keep cover crops or weed growth low between trees and proper drainage to reduce relative humidity.
 - d) Water in the morning to allow plants to dry before cooler night temperatures.
3. Do not fertilize excessively with nitrogen, as this stimulates succulent, mildew-susceptible growth.
4. Clean up and burn infected shoots and plant debris (mow lawns frequently and remove clippings). This will eliminate some of the source of fungal inoculum.
5. On some plants the only means of control to prevent severe damage is using a recommended fungicide. WHEN USING CHEMICAL CONTROL READ THE PRODUCT LABEL CAREFULLY SINCE IT SHOWS THE PURPOSE FOR WHICH THE CHEMICAL IS SOLD,

DIRECTIONS FOR USE, AND HANDLING PRECAUTIONS. Plants should be sprayed at the first sign of infection and spraying repeated every 7 to 14 days depending upon the value of the plants and conditions, such as cool nights followed by warm days which favor disease development. Be sure to contact all infected surfaces and, in the case of raspberries, this means the under-surface since this is where infection takes place.

Listed below are fungicides registered for mildew control on different host plants.

Benomyl (Benlate): Apple, cherry, small fruits, cucumber, melons, pumpkins, squash, roses, greenhouse ornamentals.

Rate: ¾ teaspoon (50% wettable powder) per gallon water.

Dinocap (Karathane): Apple, cherry, peach, grape, cucumber, melon, squash, most ornamentals and turf grasses.

Note: Roses have been injured at temperatures above 29 degrees C. Do not spray within 30 days of harvest.

Rate: ½ tablespoon (actual) per gallon water.

Sulfur: Apple, cherry, peach, currant, gooseberry, grape, strawberry, bean, peas, many ornamentals and turf grasses.

Note: Sulfur is injurious to roses (at temperatures above 29 degrees C), cucurbits, cranberries, and spinach.

Rate: 6 tablespoons (90-95% sulfur) per gallon water. Powdered sulfur can be applied in small areas as a dust by placing the chemical in a cotton bag and shaking it gently over the plants.

Thiophanate-methyl (Easout; NF-44; Cercobin-M; Topsin M): Apple, dogwood, many ornamentals, and turf grasses.

Rate: ¼-½ tablespoon (70% wettable powder) per gallon of water.

Chlorothalonil (Daconil 2787, Bravo, Termil, Prosol): Cucumber, melon, pumpkin, squash.

Note: Golden and yellow varieties of apples have shown fruit russet. Varieties of roses have been injured.

Rate: 1½-2 teaspoons (active) per gallon water.

Dodemorph-acetate (Meltatox): Roses (greenhouse nursery).

Note: Not available for domestic use.

Rate: 1.48 oz (active) in 10 gallons of water.

Force Branches for Winter Bloom

C. G. HARD,

Institute of Agriculture, University of Minnesota, St. Paul, Minnesota

Tired of winter? Forcing a few branches of a flowering tree or shrub is one way of bringing spring into the house early. On a bright day when the temperature is no lower than 20°F., take the opportunity to prune your flowering crabapple or plum and bring a few of the branches into the house.

Plunge the branches into a deep container of lukewarm water and then set the container of branches in a cool location such as the basement. If the branches are small enough lay them in the laundry tub and cover them with water, leaving them for

about 20 minutes to soften the buds. At intervals change the water and make fresh cuts at the ends of the branches so they will take up water. It is also a good idea to syringe the buds once or twice a day to keep them soft. Leave the branches in a cool place until flower buds begin to open; then they can be arranged into bouquets.

Flowering crabapple and plum can be forced into bloom in 18 to 21 days. Lilac, June berry, pincherry, chokecherry and forsythia are among other flowering trees and shrubs which can be forced. Forsythia will come into bloom in 9 or 10 days.

Wintering Miniature Roses

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Miniature roses generally have flowers one to two inches in diameter when fully open, on plants that grow from six inches to two feet, and occasionally taller. These roses are smaller than the Mother's Day roses sold by greenhouses in the spring, but are noted for a long blooming season. My miniatures bloom from late June till mid-October, with some variation according to variety. Miniature roses are valuable in that they take up less space than hybrid teas, floribundas, and grandifloras, and so you can plant a wider variety of colors. Another advantage is that they have small root systems when first purchased, and large, deep planting holes are not necessary. But the greatest advantage to me is their minimal requirements for winter protection.

Miniature roses might be classed as tender to semi-hardy in our climate. Some varieties have been known to over-winter on the prairies without any protection other than natural snowfall, although they do kill back considerably. Generally, it is wise to mulch them for winter, because severe winter temperatures may injure them before adequate snow is received, or in the spring after the snow has melted off them.

As for the larger tender roses, watering and fertilizing should be curtailed in the fall to slow down growth, but if the soil is very dry in late October, a good watering is desirable for them. This should be given a week or two before covering them, so that excessive moisture is not absorbed by

the mulch. The tallest roses may be pruned back to about a foot. They need not be defoliated, but dusting with a fungicide may be desirable. Early November is usually the time to cover them for winter.

Winter Protection

Here are three suggestions for winter protection, all of which I have found successful:

(1) Place cardboard boxes around the plants, and fill with vermiculite household insulation. Close the box tops and cover with plastic bags or sheets to keep the insulation dry.

(2) Mound a loose, dry soil mixture (soil, peat, vermiculite) over the plants, to a depth of four inches. Cover remaining stems with dry leaves, and top with a sheet of plastic.

(3) Mound small bark chips over the plants until covered and top with a plastic sheet to keep the chips dry. This method was used in 1978-79 and was one of the best, in that there was less freeze-back. Some varieties survived right to the top of the mulch. Of the 25 varieties I covered this way, only one performed poorly the following season.

Remove the mulch gradually in the spring, after severe freezes are past. Don't be alarmed if the roses have a lot of freeze-back. Some of them may grow faster and come into bloom sooner than those with less injury. Simply prune out the dead wood, shape the plant, if necessary, and then, anticipate their delightful blooms!

Unusual Perennials for Your Garden

HUGH SKINNER

Skinner's Nursery Ltd., Roblin, Man.

Add color, texture, interest to your garden with hardy perennial flowers. Many hardy and easily grown perennials can add beauty to your garden from early spring until freeze-up. Among my favorites are the less common ones which I will describe here.

Suitable perennials may provide a background for other plants, while others may be used to create a mass of color or provide interesting texture to flower gardens or rock gardens. Rough areas may be concealed with appropriate ground covers, and the cultivated areas around trees and other hard-to-mow areas, adorned.

Tall-Growing Perennials

Two of my favorite tall-growing perennials are the New England Aster, *Aster novae-angliae*, and the Japanese Meadowsweet, probably *Filipendula purpurea*, although it has been sold as a form of *Spiraea palmata* by nurseries. Many of you will be familiar with the New England Aster. It is available in purple or pink forms. The plant develops into a clump about two feet wide and about four feet high. It grows best in a moist soil and thrives in full sun or partial shade. The clusters of flowers develop in mid August and will provide color late into the

fall. The Japanese Meadowsweet should be noted for its exquisite plumes of feathery pink flowers in July. Its coarse stems and light green foliage will grow to a height of six feet in moist soil, either in full sun or partial shade. Because the meadowsweet spreads by rhizomes, it will form a large clump and the number of plants can easily be increased by division.

Medium Height

There are many different perennials of medium height which are suited to a variety of uses. I have chosen to describe five of these.

Dropmore Hybrid Nepeta or mint, *Nepeta X 'Dropmore Hybrid'*, is a hybrid between *Nepeta mussini*, a much used species in warmer climates, and *Nepeta ucrainica*, and grows to fifteen inches in height. The gray-green foliage and smokey blue flowers are attractive throughout the summer. It is very tolerant of hot, dry conditions. The compact spreading habit of the Dropmore Hybrid Nepeta makes it an excellent ground cover or subject for mass planting.

Siberian avens, *Geum sibiricum*, forms a rosette of dark green strawberry-like leaves. Throughout the summer it produces small rose-

like flowers which are an unusual brilliant scarlet color. It prefers a moist, partly shaded location and will provide eye catching spots of color for a shady flower border.

Lilac Geranium, *Geranium himalayense*, commonly sold as *Geranium grandiflorum plena*, bears little resemblance to the common geranium, *Pelargonium hortorum*. It produces a neat two foot mound of dark green foliage and a profusion of double, deep lilac colored flowers in late July and early August. It will grow well in full sun or partial shade and prefers a moist soil.

Spiderwort, *Tradescantia bracteata* is a close relative of the houseplant, Wandering Jew. It grows about one foot high. The foliage is grass-like in appearance and the flowers are a delicate pink or pale purple. Like the Lilac Geranium, Spiderwort prefers partial shade. It spreads by rhizomes and is easily increased by division.

Succulents

Succulents are interesting subjects for the perennial garden. Several of the sedums grow to eighteen inches in height. Of these Autumn Joy sedum, *Sedum spectabile*, is an outstanding plant. The fleshy pale green leaves are unusual and attractive. In late August it produces six inch heads of pink flowers. Like all succulents, this plant will grow in full sun and is tolerant of dry conditions. Autumn Joy sedum forms a clump that measures a foot and a half across and can be increased by division.

Low-Growing Varieties

Low-growing varieties of perennials may be suitable for rock garden plantings, an edging for flower gardens, as ground covers, and formal garden designs.

Hen and chickens, commonly listed as *Sempervivum tectorum*, is a low-growing succulent with rosettes of fleshy leaves. Its common name is derived from the fact that it produces numerous small off-sets which in this species become easily detached from the "mother" plant, and roll away to root nearby. The rosettes of foliage are bright green with reddish margins and backs. The creamy colored blooms are borne on a central spike. It should be noted that this plant will not bloom under crowded conditions. Hen-and-chickens is most commonly thought of as a rock garden plant, but I have seen it used as a ground cover on a sunny southern exposure, and it could replace the more tender *Echeveria* in formal flower bed designs.

Ukrainian Thyme, *Thymus Pal-lasianus*, commonly listed as *Thymus odoratissimus*, has value as a culinary herb which adds flavour to soup, stews, vegetables and other dishes in addition to its ornamental qualities. This species is an excellent herb which has a stronger, more distinctive flavour than *Thymus serpyllum*. The tiny pale rose flowers of Ukrainian thyme are set against grey-green leaves and shrubby stems which grow to a height of eight inches. The plant is hardy and drought tolerant, best suited for rock garden planting or for mass planting at the edge of a sunny flower border.

Evergreen Candytuft, *Iberis sempervirens*, is an evergreen sub-shrub with narrow dark green leaves. This plant is best left in one place once planted. A well-established plant can grow to six feet in diameter. The tufts of white flowers appear in June and turn pink with age. Its spreading habit and neat appearance make it a good



Thyme for Rock Garden or Paved Walk.

ground cover for sunny spots and an attractive subject for a rock garden or for edging a border.

These are but a few of the many perennials which can delight the gardener and provide color and form in our gardens alongside more common

perennials such as chrysanthemums, day lilies and delphiniums. Trees, shrubs, vines and perennials give a permanent beauty to the landscape.

Editor's Note: Refer to Colour Section p. 66a, 66b, 67a, 67b.

Growing Large Foliage Plants Indoors

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In a *Prairie Garden* issue focussing on trees and shrubs, the growing of those plant forms indoors should not be forgotten. Not only is the apartment dweller who has to do his gardening indoors, interested in large foliage plants, but also the outdoor gardener who wants to brighten up his house in wintertime, as well as the indoor decorator.

The use of plant material to enhance the appearance in office buildings, shopping malls, restaurants and other public places has become common practice. Large foliage plants can fulfil various purposes — as accents, focal points, to break up monotonous areas, as, for instance, long corridors in airports, as dividers, traffic controls, or simply to make a dull room appear more inviting. The use of plants in large office buildings has been found of positive psychological value, and expensive specimens have become status symbols of the executive.

The trees and shrubs which do well indoors come from a climate region quite different from that which is suitable for plants growing in our gardens and forests. Plants which grow outside here have developed a growth rhythm which adapts them to our climate, and the harsh winter with its enforced rest has become a neces-

sity. Even if, for instance, a maple tree was grown indoors under artificial light with long days and warm temperatures, it would eventually come to the end of its growing period, lose its leaves and finally die because it would not get the climatic change it needs to complete its rest period. Plants from the tropics and subtropics, however, which would quickly succumb to the northern winter, do just fine indoors.

To choose a foliage plant for a home or office, one has to select a plant which will grow well in the environment where it is to be placed. There are several environmental factors to be considered. When choosing a plant for indoor growing, perhaps the most important factor for the plant's wellbeing is light. A plant, as most of us know, needs light energy to manufacture food. It can adjust to more or less light only to a certain extent, far less than humans can. It is important, therefore, that we choose a plant which will survive and grow with the amount and intensity of light it can receive at the given location.

A simple guide at the end of this article will help with the choice of the right plant, as well as recommendations for its watering regime and preferred temperatures.

The light ratings for indoor plant growth are divided into low, medium, good, and direct, and will indicate the minimum amount of light needed for a plant to survive. Light can be measured with a light meter. However, a rough guess can be made by the location of the window and the distance from the window to where the plant is placed.

Low Light: (about 75 footcandles) would be found directly in front of a north window which is shaded by some obstruction, and about ten feet back from an east or west window.

Medium Light: (150 footcandles) would be found directly in front of an unobstructed north window, and a few feet back from an unobstructed east or west window.

Good Light: (300 footcandles) would be found directly in front of an unobstructed east or west window, and about five feet away from an unobstructed south window.

Direct Light: (1500 footcandles) means that the direct rays of the sun are falling onto most of the plant for at least four hours a day. Indoor temperatures can range from 18° to 30°C (65° to 86°F), low to high. Most foliage plants can adjust to our average house temperature, however, a drop of about 5°C (10°F) at night is advisable.

Humidity, or the lack thereof, can influence the health of all houseplants. Most common foliage plants do well in a relative humidity of 35% or more. Very low humidity can cause leaf drop, curling or drying of leaf margins and generally poor response in plant growth.

Watering seems to be a big problem for some people. A lot has been said about over-watering, to such an extent that many new owners of

plants are so confused about it that their plants die of thirst. The majority of houseplants (cacti and succulents are exceptions) prefer a slightly moist soil, not soggy wet or standing in water, but neither bone dry. When the upper inch of soil is dry to the touch it is usually time to water — but beware of water accumulating at the bottom of a container which has no drainage! The layer of gravel placed in the bottom of it is no safeguard against water standing there.

A great variety of planters are available today. For large plants, one should look for containers which are light, durable and, if possible, provide drainage. Molded plastic, fibreglass and aluminum containers are preferable to concrete, because of their light weight. The concrete, when filled with standard soil, can become so heavy that they are impossible to move. Soilless mixes, for their light weight, are preferable to soil for use in large planters, but need, perhaps, more careful watering and fertilizing.

Most large foliage plants sold these days come planted in soilless mix, usually with a slow-release fertilizer added which should last up to six months. If, however, the plant should show poor growth in spite of good environmental conditions, the reason might be that the nutrients in the mix have been exhausted and a regular feeding program has to be started. During the winter months the plants will show hardly any growth and should not be fertilized. Surplus nutrients at that time can become harmful if they are applied too often and allowed to accumulate in the soil. A resting or sick plant cannot take up plant food — it is not medicine. During the growing season, a 20-20-20 fertilizer, given according to direc-

tions, is a good choice for the large indoor plants.

Once a plant has been chosen and moved to its permanent place, it will require a certain amount of care to remain well. Its leaves should be dusted and, if possible, misted with a fine spray of room-temperature water. The soil surface, if it becomes

hard, should be loosened by scratching it, but not if this means breaking the roots. All weeds should be removed. Insect infestations should be controlled at all times.

The following list of trees and shrubs is only a short one, but gives some indication as to what can be grown in different locations.

Name of plant	Light requirements	Watering	Temperature
<i>Araucaria excelsa</i> (Norfolk Island Pine)	Good	Medium	Medium
<i>Chamaedorea elegans</i> (Bella Palm)	Low	Medium	Warm
<i>Chamaedorea erumpens</i> (Bamboo Palm)	Low	Medium	Warm
<i>Chrysalidocarpus lutescens</i> (Areca Palm)	Medium	Medium	Warm
<i>Cycas</i> (Sago Palm)	Medium	Medium	Medium
<i>Dieffenbachia</i>	Medium	Medium	Medium
<i>Dizygotheca</i>	Good	Moderate	Warm
<i>Dracaena marginata</i>	Low	Moderate	Warm
<i>Ficus elastica</i> (Rubber plant)	Medium	Moderate	Warm
<i>Ficus benjamina</i> (Benjamina)	Good	Medium	Warm
<i>Pittosporum</i>	Good	Medium	Cool
<i>Schefflera actinophylla</i> (Umbrella Plant)	Medium	Medium	Warm



Plant Evolution

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One of the most unforgettable experiences of the early settlers on the prairies was the prairie fire. Sweeping across the grasslands as an inferno of red rolling waves, this awesome and terrifying sea of flame destroyed everything in its path, travelling at express speed and running wild for miles. Though it left a scorched earth behind, it had little permanent effect on the grasslands, in fact resulted in producing a more lush cover the next spring. This phenomenon must have been noted by the Indians long before the arrival of settlers, as records indicate they deliberately set the grasslands on fire to encourage fresh growth and attract the buffalo herds. Between the natural and the man-caused fire vast areas of the plains were frequently burned over.

These fires were mainly responsible for creating and maintaining the grasslands which greeted the early settlers and for the assumption by many of them that trees would not grow on the prairies. In actual fact trees have always grown across the southern regions of what today is

Manitoba, Saskatchewan and Alberta. Their survival depended on their protection from the recurring fires and resulted in their being confined to riverbeds, low wet areas, ravines and coulees — any place where they could keep their feet wet. In such areas trees survived for many years. Along the south Saskatchewan River there were elms over 200 years old, old men with great girth of trunk but dwarfed in height due to their tops being burned off by passing fires. In fact, giant old trees became landmarks at river crossings in many parts of the early west.

Adding to the myth that trees were not part of the natural prairie was the settlers' satisfaction in taking a homestead on which they encountered nothing but grass, so unlike the experience of their parents or grandparents, particularly those from eastern Canada, who had to clear every acre from dense stands of forest. All you required was a plow and you were in business the first year. Frankly, many of our first settlers in the West were not the least interested

in trees. But some were — the Menonites of southern Manitoba planted belts of trees shortly after their arrival, many of them secured as seedlings pulled along the river banks and mostly quick-growing varieties. These premium agriculturists developed not only excellent farms, but gracious homes, protected by a living wall of trees, with flowers and shrubs lending their beauty and gardens providing diversification and stability. Other settlers, in all areas opening to farming, took advantage of native material to bring shade and beauty to their homesteads, but it was not a general trend.

Another influence that discouraged home building may have been in the early philosophy of many that they were not going to stay on the prairies, but rather enjoy enough financial success to move to some other place where nature more generously provided trees and flowers. Actually, the years passed and they remained on their prairie farms, with many of them creating, on what was once the bald prairie, homes as attractive, beautiful and comfortable as those enjoyed by farm families in any other part of Canada. It was just a case of making use of nature's materials, a lot of work and a realization of the possibilities.

Once the prairie fire was a thing of the past, the hardy prairie shrubs started pushing out from sheltered seed beds, aided by birds and the wind. They were followed by the hardy aspen and other native varieties until many areas of the west, which at settlement were open grasslands, are now parkland. This does not mean the trees are taking over farmland, but rather those areas not suitable for growing crops. Repeated prairie fires

crusted the top soil and made it almost impossible for shrubs or trees to gain a foothold. Their spread was due to settlement developments, breaking the land, opening road allowances and low spots in fields. The transition in many parts from prairie to parkland is being gently fused into a continuing landscape of trees and their spread is an ongoing process.

Nature's efforts to restore a well balanced environment have been greatly aided by the planting of trees as shelter belts and field shelters by over a hundred thousand farm families. The Tree Nursery Farm at Indian Head, which has been operating for over 60 years, continues to provide millions of trees each year for farm tree planting in the west, and Provincial Departments and private nurseries swell the annual number of trees and shrubs being planted. In an area as large as our southern farm regions a few million trees don't create a forest, but they provide protection and beauty to a steadily increasing number of farm homes. Added to the spread of the parkland across the southern parts of Manitoba and eastern Saskatchewan, they are changing the once prairie landscape with countless "islands of green".

Maybe the greatest lesson we can learn from this physical transformation lies in the knowledge that in working with nature we can improve our natural environment. At this time with so much controversy on man's relationship to the things of nature and his responsibility in maintaining a high quality environment, our experiences with trees on the prairies provides both a valuable lesson and an incentive for the future.

Featured Topics of Past Issues

Perennials

The special feature in the 1973 publication is Perennials. Again, beautiful, colored photos of various plants are shown with identification and cultural information on each.

Landscaping

The 1974 books are filled with articles on landscaping home grounds for beauty and practicability, and the colored section features the many happy results of good landscaping.

World of Bulbs

Many articles, and lovely colored photos of, daffodils, tulips, begonias, lilies, dahlia, et al fill the 1975 issue of The Prairie Garden. There is information on how and where to plant, how to store the bulbs, disease control, etc.

Fruits and Vegetables

As food prices rise many more people become interested in growing their own garden produce, and the 1976 issue of The Prairie Garden features articles and photos on fruits and vegetables which can be grown successfully on the prairies.

Indoor Gardening and Flower Arranging

In today's society where many people live in high rises, and more homeowners turn to a variety of plants for decorative purposes, the 1977 issue focusses on methods of balcony gardening, and care and culture of house-plants. It also features flower arranging, with a lovely colored section to gladden the heart of every creative person.

Gardening Hints for Everyone

The 1978 edition of The Prairie Garden features tips, suggestions, ideas for gardening as a whole. The book is full of the experiences, short-cuts, and knowledge gleaned by amateur and professional gardeners through the trial and error method over the years. For gardeners this book is an invaluable addition to their horticulture library.

Mostly Annuals

How best to grow annuals, from the grandeur of zinnias to the uncommon annuals, is featured in the 1979 edition. How to choose plants, planning and growing them, the common diseases of annuals, and new varieties of annual garden flowers and vegetables, as well as shade tolerant annuals, are some of the topics. And, as always, many other articles of interest to gardeners are included.

For any of these publications, as well as several others, see the Order Form on opposite page.

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International Flower Show

The Winnipeg Horticultural and Gladiolus Societies have announced that the Twenty-Fifth Winnipeg International Flower Show will be held on August 21st and 22nd, 1980 at the Polo Park Shopping Mall.

This beautiful annual event is a highlight of the summer for Manitobans and visitors alike, and there are usually an abundance of entries. Shipping charges to a maximum of \$5.00 per shipment are refunded to prize winners; and all exhibits are to be forwarded (prepaid) to arrive at the Polo Park Shopping Mall before midnight the night before the Show. Out-of-province exhibitors are advised to wire ahead and to mark all packages "cut flowers for exhibition — no commercial value."

Mrs. Frances Smith, 1054 Palmerston Avenue, Winnipeg (772-6488), Secretary of the event, informs us that the program and prize list booklets are expected to be available in early April for the coming Show.