



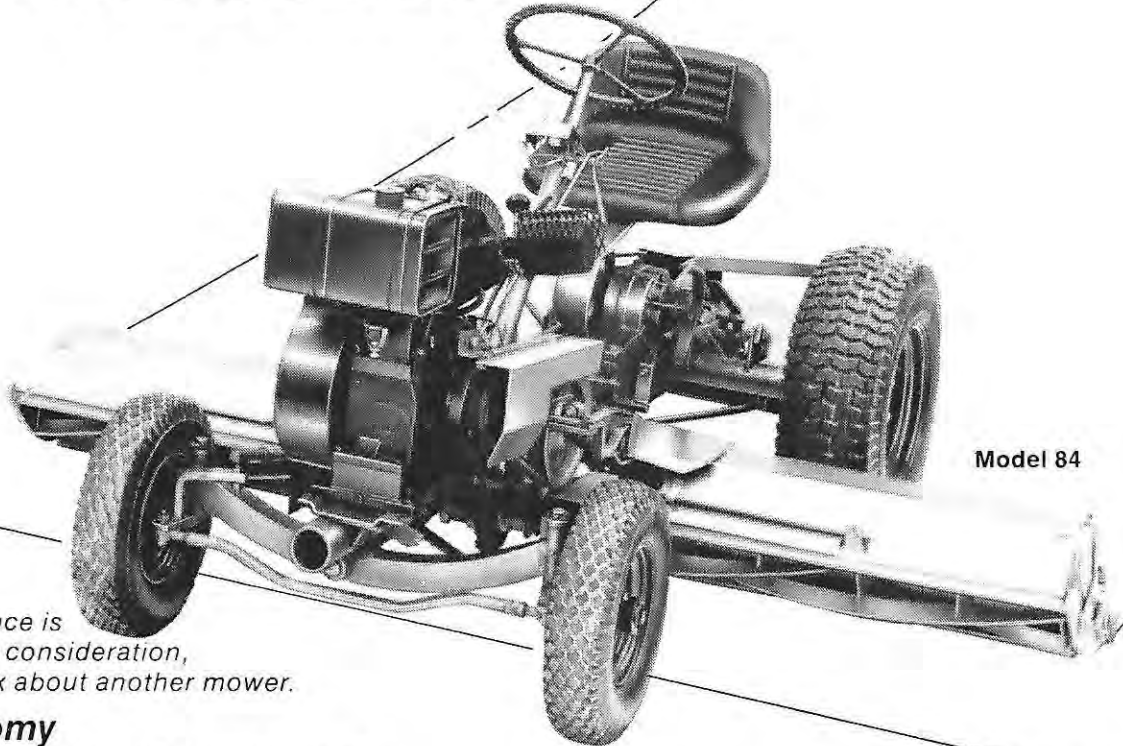
FEATURE ARTICLES

Boulder and large stone landscaping - 26

Turf injury from de-icing salt - 17

CONGRESS ISSUE

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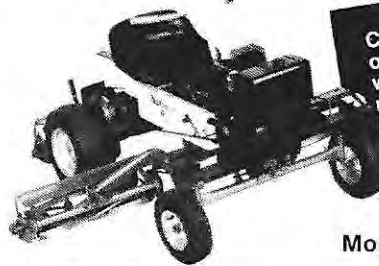
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January 1980

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our cover photo . . .

Skating rink at Nathan Phillips Square, City Hall, Toronto with the Sheraton Centre (site of 1980 Congress) in background.
 Photo by Joseph Chilco.



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PRESIDENT'S MESSAGE



Karl Stensson

*General Sales Manager
Sheridan Nurseries Ltd.*

This is the last message that I will be writing to you as President of your Association. I hope everyone had a very Merry Christmas and that you are entering a prosperous New Year.

At this time I would like to thank all of the many people in our Association who worked on Committees and Chapter boards in 1979. And a special thanks goes to our Office Staff and the members of the Provincial Board for their help and encouragement.

1979 was a year of many changes for Landscape Ontario. New staff members were added, the office settled into its new location in Mississauga, and new bookkeeping techniques were used. Many more changes took place which I will go into in more detail in my address at Congress. I believe that most of these changes have been extremely beneficial to Landscape Ontario and some in fact were essential to the operation of our Association.

As in any business, some changes brought confusion and others caused delays. However, as 1979 drew to a close it was my pleasure to see things all starting to come together. Landscape Ontario is now in the position to jump into the 1980's and actively represent its members at all government levels and at the same time provide its members with the information and benefits they deserve.

If there was one area that disappointed me as President in 1979, it would have to be **communications**. This topic has been coming up in various areas of the Association. Everyone is at fault; the office, chapter boards, members, the Provincial Board and myself. Instead of keeping our thoughts and feelings to ourselves, we must offer constructive remarks and suggestions to keep our Association productive.

Communications

In discussions with members of the Provincial Board who are remaining for 1980, I think the general feeling is that communications will be our no. 1 priority. I urge each and every one of you to work towards this goal, knowing full well that we are all capable of achieving this goal.

A good time to improve communications is at Congress and Mark Cullen and Bob Cheesman have been working to make the 1980 Congress the best ever. For the first time exhibit space is sold out and there is a waiting list to get in. For those of you who have never been to Congress give it a chance this year. The educational programmes and exhibits make it one of the best horticultural programmes in North America.

Due to its highly successful format last year, the Annual General Meeting will again be held in conjunction with a beef and bun luncheon. We hope to see as many of you there as possible on Tuesday, January 22nd.

Next year, in the position of Past-President I will continue to act in the best interests of your Association and to support the incoming President and his board.

Thank you again for your support and I hope to **communicate** with you all at Congress. □

WHAT SHOULD I WRITE ABOUT?

Are you a contributor to either of our magazines? Do you find yourself wondering "What should I write about?" even when you know your subject extensively? Do you wonder where to start when you've attended a meeting or convention and want to send in a report to a magazine or newsletter?

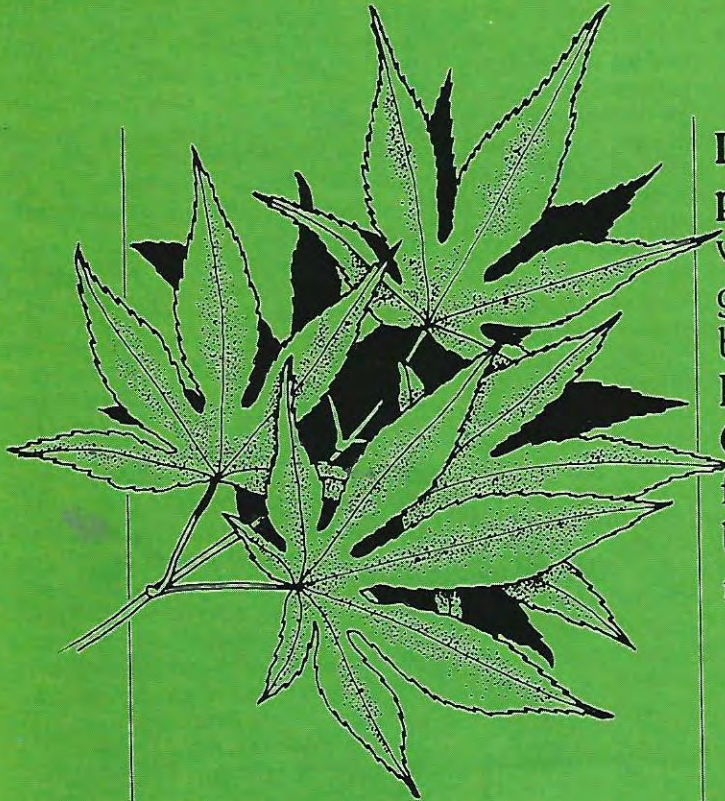
A writers' workshop is tentatively being organized for Monday, January 21, 1980 at 2:00 to 5:00 p.m. at the Sheraton Centre (that's the day before Congress starts) to help with these problems.

A professional writer/teacher will lead a practical workshop session on how to get that article written with a minimum of worry and fuss.

Please bring your articles or reports with you, if you have a current one you're working on. If you're interested in attending, call Susan Lawrence at 276-6177 by January 14, 1980. There's no charge. □

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Dennis Souder
Executive Director

As we approached the end of the calendar year business activity in the nursery and landscape trade diminished and there was a very dramatic increase in the activities of the association committees and office. Not the least of these is the preparations for the Annual Congress about which you have read a great deal in the association's publications and which will continue to be commented on by other contributors to this magazine. My comments will be limited to say that of the many large shows and conventions for the industry that I have attended in the last two years, I think there is no doubt that

Progress & Action:

Landscape Ontario offers the best educational programme. This in turn is combined with a trade show which features an excellent and broad range of exhibitors and products. Even before the sell-out achieved this year for exhibit space, Landscape Ontario's trade show was one of the dozen largest on the continent for the nursery trades and horticultural industry.

In the next few weeks you will be hearing more and more about the activities and progress being made with the Canadian Nursery Trades Association (Landscape Canada). At the meeting of the board of directors of CNTA held in November in Winnipeg, there was broad and enthusiastic agreement on some of the future operational aspects of the national association and it is anticipated that a new draft constitution will be completed by the time that the Landscape Ontario Congress is held. Of the four CNTA board meetings which I have attended, it was without a doubt the one which featured the most positive attitude and ended with the best prospects for future action. It was a meeting in which all member associations participated fully and in which they de-

veloped a great harmony of purpose and determination. This can only prove to be beneficial for the national association and the regional associations which are its members.

Members of Landscape Ontario have already received their special report issue the F.M.O. which includes the summaries of committee, chapter and other activities for 1979. Each member is encouraged to read these reports so that they can see what is happening on their behalf and how volunteers and staff are working for the betterment of the industry, the individual firm and the association as a whole. As we enter the 10th year of the decade, I hope that each member will be challenged to see what he/she can do to contribute to the improvement of his industry and association.

It is tradition as we enter a new year that resolutions are made (and almost as quickly broken) and plans are laid for activity in the next 12 months. The new board of directors of your association, Landscape Ontario, will be meeting during the Congress to select 1980 executive and as well will meet shortly following Congress to lay out goals for the new year. A goal towards which I think all members and participants in Landscape Ontario should strive is improvement of mutual understanding and communications so that together, good results can be achieved.

As a final comment, I would like to make special mention of our past-president, Gord Shuttleworth, the most recent recipient of the Landscape Ontario Jr. Award and the only two-time president of the association. After many years of active service at the board level Gord will be devoting less time on a formal basis to the association and returning to his business with, as he has many times noted, greater breadth of understanding and knowledge because of his involvement. I fully expect that Gord will continue his involvement in the association at the provincial and chapter level and that he will continue as part of the delegation to the Canadian Nursery Trades Association for LO. No one who has seen Gord work would ever question his dedication, sincerity, and incredible amount of effort on behalf of LO.

To all members and readers of Landscape Ontario, I extend my best wishes for a prosperous 1980. □

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COMING EVENTS

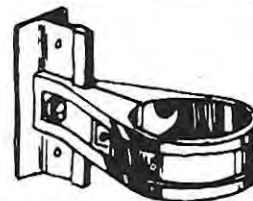
Hamilton Chapter	Feb. 7/80	8:00 p.m.	No meeting in January.
	Mar. 6/80	8:00 p.m.	Bohemian Restaurant & Tavern. 7:00 p.m. Social Hour.
London Chapter	Jan. 7/80	8:00 p.m.	Bohemian Restaurant & Tavern. 7:00 p.m. Social Hour.
	Feb. 4/80	8:00 p.m.	Howard Johnson Motor Lodge. Mall show preparations
	Mar. 3-8/80		Howard Johnson Motor Lodge. Don Salivan, of Don Salivan Landscaping, Toronto will talk.
Ottawa Chapter	Jan. 8/80	8:00 p.m.	Interior Landscaping Mall Show at Westmount Mall, London.
	Feb. 5/80	8:00 p.m.	Talisman Motor Hotel, Carling Ave., Ottawa. Mr. Bill Wilburn, of Deloitte Haskins & Sells, chartered accountants will talk on accounting procedures and tax shelters. Sheila Gabus of Alberts/Sinclair Cockburn, and Bob Lohnes and Dave Thomas of Lohnes Insurance will be speaking about insurance. Bob Cheesman of LO will visit.
	Mar. 4/80	8:00 p.m.	Talisman Motor Hotel, Carling Ave., Ottawa.
Toronto Chapter			Talisman Motor Hotel, Carling Ave., Ottawa.
	Feb. 12/80	8:00 p.m. General Meeting	No meeting in January.
	Mar. 11/80	8:00 p.m. General Meeting	Yorkdale Holiday Inn
Flower Show	Feb. 27-Mar. 2/80		Yorkdale Holiday Inn.
Canadian Garden, Pool & Patio Show	Mar. 6-9/80		C.N.E., Toronto.
Waterloo Chapter	Jan. 9/80	8:00 p.m. General Meeting	C.N.E., Toronto.
	Feb. 6/80	8:00 p.m.	Bingeman Park, Kitchener. Dr. Peter Rice of the Royal Botanical Gardens will speak on Pest Problems in Landscape Maintenance. Bob McDonnell will do a slide presentation on the Canadian Garden Pool & Patio Show.
Windsor Chapter	Mar. /80	8:00 p.m.	Bingeman Park, Kitchener.
	Jan. 8/80	8:00 p.m. General Meeting	Bingeman Park, Kitchener.
	Feb. 12/80	General Meeting	Continental Inn. Joerg Leiss of Sheridan Nurseries will speak on propagation.
	Mar. 2-8/80	Mall Show,	Devonhire Mall.
Growers Group			No meeting in January. Date of the February General Meeting and elections for 1980 will be announced.
Landscape Ontario Congress	Jan. 22-24/80	Convention and Trade Show	Sheraton Centre, 123 Queen St. West, Toronto. For further details contact Bob Cheesman, Show Manager (416) 276-6177.
Canadian Golf Superintendent's Association	March 9-12/80	31st Annual Canadian Turfgrass Show	Skyline Hotel, Toronto, Ont. For more information contact C.G.S.A., 698 Weston Road, Suite 32, Toronto, Ont. M6N 3R3, (416) 767-2550.

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Casey van Maris
President of
Parklane Nurseries

On Monday, November 28, and 29, 1979 the CNTA Board of Directors met in Winnipeg, Manitoba. Every region was represented by one or more delegates. Basic principles were discussed and agreed upon, objectives formulated, and committees formed in those areas where the CNTA can be most effective. The new constitution was discussed and board members assigned to certain tasks, but above all a timetable was established to accomplish the objectives set for 1980 and beyond.

Here are some particulars.

A) CNTA will operate as a federation of member associations.

CNTA Alive and Well

- B) It will encourage commodity groups within its framework.
- C) Each region will have 1 vote for 100 members or less.
- D) Each commodity group will have 1 vote and have a delegate on the Board of Directors.
- E) The CNTA foresees their efforts to go to:

- 1) Trade and Tariffs, Farm Classifications, Federal Legislation
- 2) Canadian Horticultural Council, co-ordination of research
- 3) Public relations
- 4) Communication
- 5) Promotion

Committees were formed in each of the above areas. A director is heading each and every one of these committees which will be operating by the time this magazine is received.

What does all this mean to you and I, out there as individuals? Well, the way I see it is like this. If you have a federal problem, you can either contact your Regional Director, who will funnel it to the committee responsible, or to the CNTA Board of Directors, or you

can contact your Commodity Chairman who can do the same thing as the Regional Director.

As a director who has been going to these meetings for almost 8 years, and who at times felt that time and money could be spent more productively, I am glad to say that the meetings of November 28 and 29 were the most productive held in the last 8 years. Too often, regional problems seem to be out of proportion. Too often, internal operations were occupying our time. Too often, conflicts arose because of mistrust. Over the years, this has disappeared. Everyone has realized that nothing can be accomplished by doing it on our own. Everyone has realized that we are all working towards a common goal, the betterment of our industry. For the first time, I can convincingly say "It is going well now".

On a personal note, I would like to say it is time for new blood. I've made many friends all across the country. They are all hard-working, honest people willing to share their successes and their mistakes. It was a privilege to be a Landscape Ontario delegate for which I thank the Landscape Ontario Board and the members very much. □

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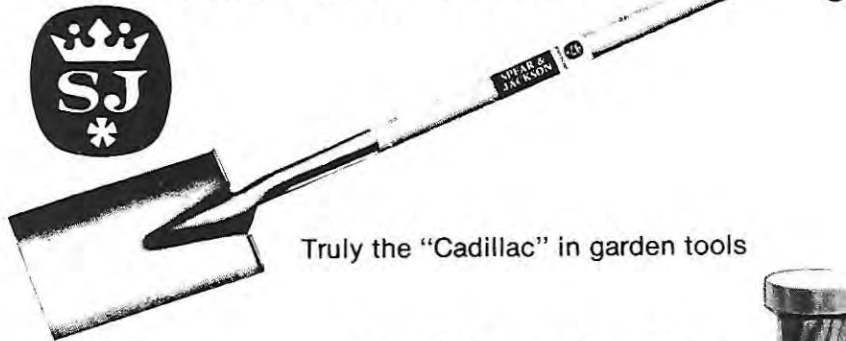


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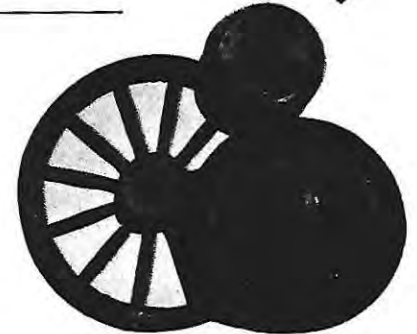
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15 to 18 ins., SX, 2-1-2	230.00	1700.00
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15 to 18 ins., SX, 2-1-2	230.00	1700.00
18 to 24 ins., SX, 2-1-2	280.00	2300.00
10 to 15 ins., JT, 2-1-1	300.00	2200.00
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18 to 24 ins., JT, 2-1-2	520.00	4450.00

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Watch, look, listen

... Part 2



By:
John Van Ast
Instructor, Ryerson
Polytechnical
Institute,
Toronto.

Some years ago I attended a summer course at the University of Toronto. On one occasion, my professor was kind enough to give me an assignment — a 30-minute oral presentation on “The art of questioning”.

Whatever I had expected was not this subject. What did he expect from me? Where do I start? And what books should I read? I **didn't** have a clue. **But** slowly, bit by bit, I got a “blueprint” together. I could tell you what I did find out, but that is not the purpose of this article. However, I will tell you one thing and that is, if you do your homework, you become very skilled in asking questions. A good lawyer is only one example of it. Whatever the question is, you must wait for an answer. And to be able to do that, you have to listen.

“Daddy are you listening?” is a question from a child in a radio commercial where a father on his business trip phones home. The

child takes the phone, and she hears her daddy's voice. And at that moment the child opens her heart to tell daddy all that has happened during the time daddy was away. But daddy interrupts the child every time. She has to tell something and to ask when daddy is finally coming home. Instead of listening, he says, “fine, fine, but is your mommy there?”

Are we listening?

I have attended many meetings: business, educational, political, religious, or Landscape Associations. There questions were asked, but many times the answer was not to the point because the listener did not listen well, or he did not want people to know that he didn't know the answer. But before I continue, let me point out one thing: Listening is the most difficult thing in our life. There are people who are excellent speakers. Some are well-known orators or TV personalities. But if you ask them a question, they become uneasy. They are so used to being in the spotlight all the time, that they cannot listen to others. Yes listening is very, very difficult, and I am convinced that if we would listen more to our children, our parents and our friends, we would have a different society.

We are entering a new year, 1980, and I am concerned about what will happen in the coming 10 or 20 years. I have heard

forecasts that scared me. I don't want to be a ‘doom prophet,’ but I am concerned for our youth; I am concerned for our environment. I have listened this summer to political, religious and business leaders. I have listened to young married people and to teenagers and children. I have heard things I don't dare to write in this article. But let me give you an example from listening to a teenager, in discussing the values of life and our task in society today and closer to home in our community. The boy himself had listened to a tremendous speaker about the value of life, and here is the boy's answer, and I quote: “I see life as an orange, and all I want is to suck of it, and get every bit of juice out of it.”

Warning signs

I was listening to a speaker on Ecology when he said, “If we continue to take out more resources than we produce the end of the world is not too far off.” Another speaker mentioned that “the good green earth may be considerably less, if a trend in the developing world continues unchecked.” And the warning of a world bank president: “There could be no forest left in less than a century if deforestation continues at the present rate in countries seeking to make the great leap forward into industrialization.”

What about our environment mentioned before? I am thinking of a cartoon in the Toronto Star not long ago, with the title: “Atomic bombs coming down.” The “atomic bomb” in question was a big drop of acid rain. In my last year's article on ecology you can read more details about our environment today. But let me give you two more examples. The present forestation area in developing countries is some billion acres, half of what it was at the turn of the century. China, which is noted for its scarcity of trees, was once heavily forested.

“Human overuse without heed to replacement has been a major force in the de-greening of the planet.” Are we listening? What about our youth of today, and the leaders of tomorrow? In a recent TV program with Mike McManus as host, one of his guests stated, and I quote: “If communication in a family breaks down either inside or outside the family, the result will be seen in the following generation.” Are we listening to our students, employees, or to our Landscape Ontario Directors? This month we have our yearly congress. There will

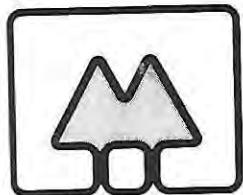
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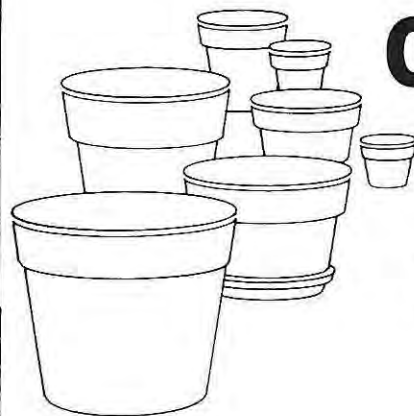
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be speakers, seminars, and of course, proposals from our directors. Those proposals need not only your voice and support, but also your time and your talents. Shall we listen in a positive way? And are we willing to go a little farther this time, and to go out of our way to create a more healthy organization?

The potter's example

This summer I heard a very moving story which I'd like to share with you. Someone was watching a potter working on a beautiful vase on his potter's wheel. The onlooker was amazed at the patience the potter had doing this piece of art. When the onlooker thought the potter was ready to take the vase off the wheel, the potter started all over again, pressing his hands and fingers smoothly over the precious vase. But then, all of a sudden, the potter stopped, took a knife and cut off a part of his right finger. The blood was streaming down, and the onlooker shouted, "Why did you do that!" "Because," the potter answered, "My finger was in the way, and I couldn't finish the vase as I wanted it," "But," said the onlooker, "did it not hurt you and don't you have

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pain?" "Of course," the potter answered, having taken his finished vase from the wheel. "But it was worth it all".

My dear fellow-members of Landscape Ontario and to all who read this article, are you, or am I willing to follow the potter's example? And are we willing to cut off something that is in our way to create that product or that task or that issue? What is asked of us? Are we willing to go that far, to the point that it starts to hurt?

The recent Nobel Prize winner, Mother Theresa, is a living example in today's society.

There is another moving story in the Old Testament. The young Samuel heard a voice, and thinking it was the priest, (in whose house he was serving,) he went to his room and said, "I heard your voice, what can I do for you?" But Eli said, "I didn't call you, go to sleep." This happened three times in a row, and the priest said to Samuel, "If you hear the voice again, just say speak Lord, for thy servant listens." It was not Eli, but the Lord himself who called Samuel.

Will we listen to the right voices, to the right questions in the New Year, 1980?

May God bless you all. □

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Q/ I am insured under the Landscape Ontario Group Health plan, and my wife has just had an operation. She requires a nurse to visit our home daily to change her dressing. We had planned to visit Florida shortly, and wonder if the plan will pay for a nurse to attend to my wife's dressings while in Florida?

A/ Yes, the plan will pay for this

expense. In order for your claim to be paid, the insurance company would require a note from your doctor stating the necessity of the nurse's visit and she would have to be treated by a Registered Nurse, licensed practical nurse, or registered nursing assistant.

Q/ When a member of the Landscape Ontario Group Health plan is admitted to hospital, and the doctor requires you to be in a

private room, does the Group insurance cover this extra cost?

A/ The L.O. Group Insurance plan will pay the difference between ward and semi-private accommodation in a hospital. However, if a doctor prescribes a private room as being medically necessary, the Group plan will pay the difference between ward and private accommodation.

Q/ What does accidental death and dismemberment coverage include?

A/ The AD&D coverage is an amount equal to twice the Life Insurance benefit. If a covered person dies as a result of, and within, 365 days of an accident, his beneficiary will receive the benefit (called the principal sum) in addition to the Life Insurance benefit. The plan will also pay a portion of the principal sum for loss or limbs etc. as follows:

— pays full amount of benefit if you lose two hands, two feet or sight of both eyes; or lose one hand and one foot, or one hand or foot and sight of one eye; or movement of both upper and lower limbs (quadraplegia); use of speech and hearing

— pays 3/4 of benefit if you lose either arm or leg or movement of both lower legs (paraplegia)

— pays 1/2 of benefit if you lose either hand or foot, sight of one eye, use of speech or hearing; or use of upper and lower limbs of one side of body (hemiplegia)

— pays 1/4 of principal sum if you lose thumb and index finger of either hand.

Q/ My firm has five employees, and we have a group health plan including Life Insurance, Accidental Death & Dismemberment, Health Insurance, Dental Care and Long Term Disability. Our benefits do not seem to be the same as the Landscape Ontario plan (i.e. no 3% Cost of Living Allowance with LTD) and I am wondering why. How can I compare the two plans?

A/ All group health plans are not the same. If you like, we can do a costs/benefits comparison for you. This will give you all the information you require to compare the relative benefits of each plan, costs nothing, and places you under no obligation. I might point out that in the past we have been able to save employers money, and improve their benefits by enrolling them in the L.O. Group Life Health plan. Just give us a call or mention it to our representative at your next chapter meeting. □

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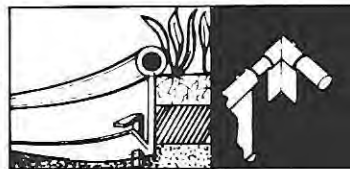
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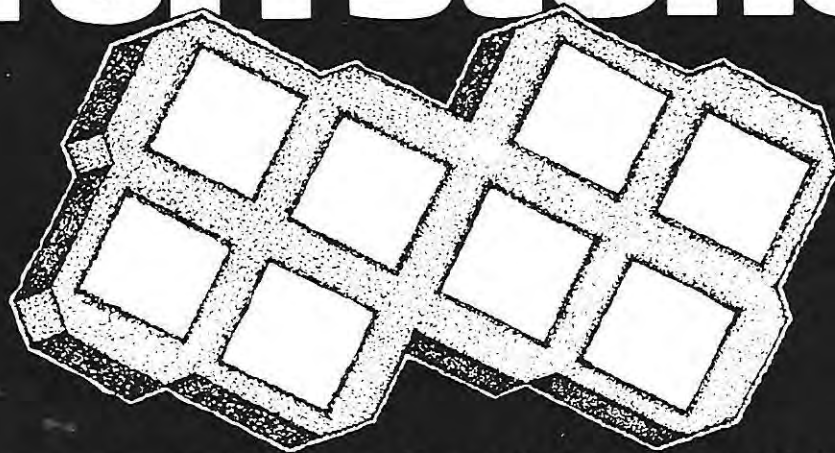
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American Arborvitae (<i>Thuja occidentalis</i>)			Mugho Pine Tyrolean (<i>Pinus mugho mughus</i>)			Scotch Pine Scots Highland		
(2-0) 1 to 3 ins.	\$16.00	\$80.00	(2-0) 1 to 3 ins.	16.00	80.00	(2-0) 3 to 6 ins.	14.00	70.00
(2-0) 3 to 6 ins.	20.00	100.00	(2-2) 1 to 3 ins.	45.00	225.00	(2-1) 3 to 6 ins.	39.00	195.00
			(2-2) 6 to 9 ins.	77.00	385.00			
Fir						Scotch Pine Turkey		
Douglas Fir <i>Glauca</i> (<i>Pseudotsuga taxifolia</i>)			Ponderosa Pine (<i>Pinus ponderosa</i>)			(2-0) 1 to 3 ins.	12.00	60.00
(2-0) 1 to 3 ins.	16.00	80.00	(2-0) 3 to 6 ins.	14.00	70.00	(2-0) 3 to 6 ins.	14.00	70.00
(2-0) 3 to 6 ins.	22.00	110.00	(2-0) 6 to 9 ins.	20.00	100.00			
(2-0) 6 to 9 ins.	28.00	140.00				White Pine		
(2-1) 3 to 6 ins.	50.00	250.00	Red (Norway) Pine (<i>Pinus resinosa</i>)			(2-1) 1 to 3 ins.	38.00	190.00
(2-2) 6 to 9 ins.	60.00	300.00	(2-0) 1 to 3 ins.	18.00	90.00	(2-1) 3 to 6 ins.	45.00	225.00
			(2-0) 3 to 6 ins.	21.00	105.00			
Pine			(2-2) 9 to 12 ins.	60.00	300.00	Spruce		
Austrian Pine (<i>Pinus nigra</i>)			(2-2) 12 to 18 ins.	77.00	385.00	Alberta White Spruce (<i>Picea glauca albertina</i>)		
(2-0) 1 to 3 ins.	11.00	55.00	Scotch Pine Austrian Hills			(2-0) 1 to 3 ins.	11.00	55.00
(2-0) 3 to 6 ins.	13.00	65.00	(2-0) 1 to 3 ins.	12.00	60.00	(2-1) 1 to 3 ins.	28.00	140.00
(2-1) 3 to 6 ins.	39.00	195.00	(2-0) 3 to 6 ins.	14.00	70.00	(2-1) 3 to 6 ins.	33.00	165.00
(2-2) 12 to 18 ins.	77.00	385.00	Scotch Pine Belgium			(2-2) 3 to 6 ins.	43.00	215.00
(2-2) 18 to 24 ins.	90.00	450.00	(2-0) 1 to 3 ins.	12.00	60.00	(2-2) 6 to 9 ins.	55.00	275.00
			(2-0) 3 to 6 ins.	14.00	70.00	(2-2) 9 to 12 ins.	70.00	350.00
Bristlecone Pine (<i>Pinus aristata</i>)			Scotch Pine East Anglia			Norway Spruce (<i>Picea abies</i>)		
(2-0) 1 to 3 ins.	16.00	80.00	(2-0) 1 to 3 ins.	12.00	60.00	(2-0) 1 to 3 ins.	10.00	50.00
(2-1) 1 to 3 ins.	28.00	140.00	(2-0) 3 to 6 ins.	12.00	60.00	(2-0) 3 to 6 ins.	12.00	60.00
(2-1) 3 to 6 ins.	32.00	160.00	(2-0) 3 to 6 ins.	14.00	70.00	(2-0) 6 to 9 ins.	18.00	90.00
(2-2) 1 to 3 ins.	32.00	160.00	(2-1) 6 to 9 ins.	45.00	225.00			
(2-2) 3 to 6 ins.	39.00	195.00	Scotch Pine French Green			Serbian Spruce (<i>Picea omorika</i>)		
Mugho Pine Pumilio (<i>Pinus mugho pumilio</i>)			(2-0) 1 to 3 ins.	12.00	60.00	(2-1) 3 to 6 ins.	45.00	225.00
(2-0) 1 to 3 ins.	16.00	80.00	(2-0) 3 to 6 ins.	14.00	70.00	(2-1) 6 to 9 ins.	55.00	275.00
(2-1) 1 to 3 ins.	38.00	190.00	(2-1) 3 to 6 ins.	39.00	195.00	White Spruce (<i>Picea glauca</i>)		
(2-2) 3 to 6 ins.	55.00	275.00			(2-0) 1 to 3 ins.	10.00	50.00	

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				80.00	750.00			
Taxus Cuspidata Rooted Cutting 3-yr. TP.	23.00	200.00	Taxus Hicksi Rooted Cutting 3-yr. TP.	23.00	200.00	Vines		
4-yr. TP.	100.00	950.00		80.00	750.00	Boston Ivy 1-yr. TP.	35.00	320.00
Taxus Dark Green Spreader Rooted Cutting	23.00	200.00	Taxus Hunnewelliana Rooted Cutting	23.00	200.00	Virginia Creeper 1-yr. TP.	36.00	320.00
			Taxus Intermedia Rooted Cutting	23.00	200.00			

Deciduous Shrubs

	Per 100	Per 1000		Per 100	Per 1000		Per 100	Per 1000
Dogwood Red Osier (<i>Cornus stolonifera</i>)			Dogwood Red Twig (<i>Cornus alba</i>)			Olive Autumn (<i>Elaeagnus umbellatus</i>)		
(1-0) 1 to 3 ins.	8.00	55.00	(2-0) 6 to 9 ins.	15.00	100.00	(1-1) 9 to 12 ins.	33.00	250.00
(1-0) 3 to 6 ins.	11.00	75.00	(2-0) 9 to 12 ins.	19.00	125.00	Rosa multiflora (Shrub Rose)		
Dogwood Red Twig (<i>Cornus alba</i>)			(2-0) 12 to 18 ins.	22.50	150.00	1-0) 1 to 3 ins.	14.50	100.00
(1-0) 1 to 3 ins.	8.00	55.00	Lilac Late Purple (<i>Syringa villosa</i>)			(1-0) 3 to 6 ins.	18.00	125.00
(1-0) 3 to 6 ins.	11.00	75.00	(1-0) 3 to 6 ins.	12.00	80.00			
			1-yr. TP.	35.00	300.00			

Deciduous Trees

	Per 100	Per 1000		Per 100	Per 1000		Per 100	Per 1000
Ash Green (<i>Fraxinus lanceolata</i>)			Birch European White (<i>Betula pendula alba</i>)			Maple Amur (<i>Acer ginnala</i>)		
(1-0) 3 to 6 ins.	13.00	85.00	(2-0) 9 to 12 ins.	27.00	185.00	1-yr. TP.	37.50	250.00
(1-0) 6 to 9 ins.	16.00	110.00	(2-0) 12 to 18 ins.	30.00	200.00	Tulip Tree (<i>Liriodendron tulipifera</i>)		
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De-icing Salt Injury to Turfgrasses

By J.L. Eggens,
Associate Professor
Department of Horticultural Science
University of Guelph

The benefits of using de-icing materials on roads and sidewalks are obvious but the injury to plant material is often not so obvious and sometimes not evident until the following growing season. Considerable research has been done on the salt injury to trees and shrubs (Lumis et al) but research on the effects of de-icing materials on turfgrass is limited.

Materials used for de-icing

Calcium chloride ($CaCl_2$) and sodium chloride (NaCl) are the two most widely used de-icing salts. They melt ice by lowering the freezing point of water, thereby causing the ice to melt and remain unfrozen at low temperatures. Calcium chloride reacts more quickly, can more readily absorb moisture out of the air and is more effective at temperatures below 20°F than is sodium chloride. However, sodium chloride lasts longer and costs considerably less. Ammonium nitrate and urea have also been used to a limited extent for areas where the water can readily drain away when the

ice melts. The higher cost of these two nitrogen fertilizers, and the polluting effect when the nitrogen drains into streams, rivers and lakes, are strong arguments against their use.

How does injury occur?

Injury from de-icing salts to turfgrasses is primarily from crown and root injury rather than leaf and bud injury in trees and shrubs. The salt increases the concentration of the soil solution and causes dehydration injury to occur when the water in the roots and crown tissue is drawn out into the soil solution. The grass plant responds as though it were growing under severe drought conditions even though sufficient water is present in the soil. Drainage and aeration of the soil is reduced through the dispersion of clay particles and the altering of the soil structure by large amounts of exchangeable sodium. Cordukes and Maclean (1973), working at the Central Experimental Farm in Ottawa, found that when several turfgrass species were subjected to different con-

centrations of salt in the soil, the deterioration in turf quality was accompanied by a decline in root production and injury was less when the turfgrasses were grown in sand than when grown in clay loam or sandy loam.

The most common application of salt to turfgrass areas is through contaminated snow being plowed off streets and parking lots on to the turf area.

As the snow melts, the salt reaches the grass leaves and the soil around the root system when the grass is not actively growing during the winter. In the spring, the grass plant, which has been injured beyond the point of survival may just die or may produce some leaves with tip burn and gradually die as the temperature increases in the spring. Some plants may not die in the spring but live until mid-summer and die during the period of maximum moisture stress. In areas where the amount of salt applied has been insufficient to kill the turfgrass outright, the turfgrass area becomes thin and open and is successfully invaded by weeds such as crabgrass, knotweed and narrow-leaved plantain which have good salt tolerance (Buzio et al 1977).

Reducing injury

Unfortunately, there are few practical means of reducing salt injury to turfgrasses:

1. Reduce the amount of de-icing material applied.
2. Substitute sand for de-icing material or combine small amounts of de-icing material with sand. While a literature search has not revealed any data on turfgrass injury from the use of ammonium nitrate and urea as compared to calcium chloride and sodium chloride for de-icing purposes, severe turfgrass injury has been observed when they were used on parking lots and the water from the melted snow and ice was allowed to drain and to remain on adjacent turf areas.
3. Incorporate a uniform particle size sand of 0.25 to 1.0 mm diameter into the soil to improve the soil drainage for those turf areas adjacent to surfaces which annually receive large amounts of de-icing



Figure 1. Turf injury from de-icing salt.

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salt. This would be impractical for large turf areas and would have to be combined with a good irrigation system to supply water to the well-drained, droughty soil for good turfgrass growth during the growing season.

4. Leaching the salt through the soil during March and early April is practical only for small areas located close to a water source.

5. Use resistant turfgrass species. Mr. Cordukes, Agriculture Canada, has found *Norlea* perennial ryegrass to be the most tolerant in his tests and that Kentucky bluegrass and Kentucky 31 tall fescue were much more tolerant to salt treatment than were annual bluegrass and creeping red fescue. Gibeault et al (1978), provided data which showed pelo and Manhattan to be the most tolerant perennial ryegrass. They also found considerable variation in Kentucky bluegrass cultivars with Merion very intolerant to salt while Fylking exhibited a very acceptable turf cover during the test period with a salt tolerant rating as good as Manhattan perennial ryegrass. Other Kentucky bluegrass cultivars which exhibited good salt tolerance during the test were Park, Sennstar and Victa. Jonsson and Nilsson (1977)

screening red fescue cultivars for Swedish road verges found that the cultivar Polar was superior to the other red fescue cultivars evaluated for survival in areas of high salt concentration. Butler et al (1974), reported that weeping lovegrass (*Puccinella distans* (L.) Parl.) has been observed growing along an Illinois highway and since 1969 has become widespread along northern Illinois highways where de-icing salt had destroyed the other vegetation.

In our cultivar evaluation plots at Guelph, it received ratings equal to most red fescue and some perennial ryegrass cultivars. However, it has not been evaluated under high-salt roadside conditions. The despised quackgrass has been found to be quite tolerant to de-icing salt along highways. Shannon (1978) has found considerable variation in salt tolerance among species and genotypes of the Genus *Agropyron* to which quackgrass belongs. However, none of these species have been shown to have good turfgrass qualities.

Acknowledgements

The turfgrass cultivar research was financially supported by the Ontario Ministry of Agriculture and Food.



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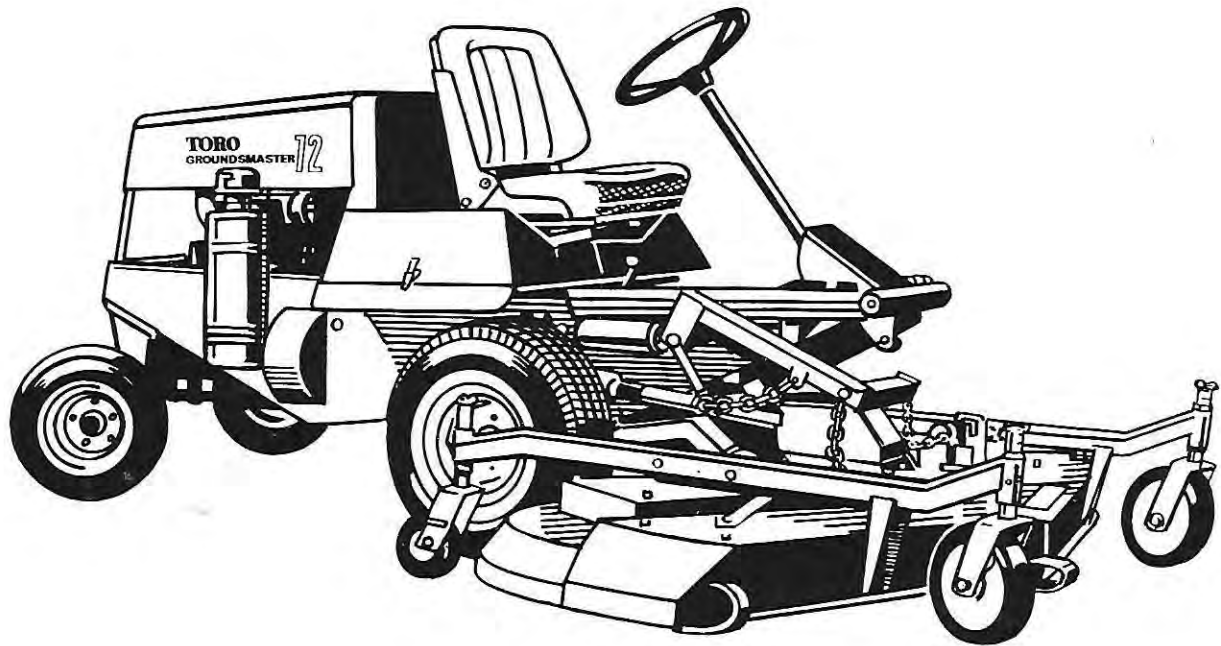
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Congress Speakers

J. David Jackson

Prof. Jackson, a registered psychologist received his M.S.W. from the University of Toronto and a Ph.D. in Psychology from the Committee on Human Development, University of Chicago. He has had extensive experience with organization development, learning and counselling systems, training and developing management skills and potential, and time management. For the past 5 years, he has been working with the Halton Regional Police Force developing a team policing concept, beginning with human relations training and working into technological changes, structural changes, and changes in the attitudes and skills of the personnel.

With the accounting firm of G.H. Ward and partners, Mr. Jackson has done organization development work dealing with low performance, team building, recruiting new personnel and developing new systems. One of the prime goals in his work has been to help groups at work understand the emotional conflicts which tend to block progress.

He has also taught courses in computer analysis of survey research, and was the principal investigator of a study on communication and decision-making. Among his many papers and publications are:

- **Communication—Reducing Uncertainty**, a paper given to the National Convention of the Canadian Institute of Chartered Accountants,
- **A New Approach to Planning Training Programs and Organizational Changes - A Marketing Example**, in Canadian Personnel and Industrial Relations Journal, 1974 and
- **Suffer from Management Stress? Try the O.D.** in The Financial Post, June 1976. □

Franklyn Theakston

Professor Franklyn Theakston who has been with the School of Engineering, University of Guelph for almost 30 years now, was educated at Acadia University in Math & Physics, and gained his Bachelor in Civil Engineering and Master of Mechanical Engineering from Nova Scotia Technical College. In his early career, he worked as a provincial land surveyor, an assistant engineer with the Nova Scotia Department of Highways and the Department of Transport,



Franklyn Theakston

a regional Engineer with the Department of Fisheries and an assistant Town Engineer with Truro, Nova Scotia.

More recently, he has done research on snow, wind and ice control, on coal dust particle movement and on steel buildings.

Among the awards he has received for his research and work are the Metal Building Manufacturers' Award and the Canadian Sheet Steel Building Institute Award. In addition to his duties with the University, Prof. Theakston is vice-president of Morrison, Hershfield, Theakston and Rowan, Ltd. Consulting Engineers in Guelph, Ontario. □

Wilfrid T. Bradnock

Mr. Bradnock was born and educated in England, and graduated from Oxford University with an MA in Botany in 1958.

He was employed in research and in routine seed testing at the Official Seed Testing Station in Cambridge, England from 1958 until 1967. In January, 1968 he joined the Seed Biology Laboratory Plant Products Division, Agriculture Canada to undertake research on seed germination and physiology. He has published several scientific papers and was the first editor of the review journal **Advances in Research and Technology of Seeds**.

In July 1973 he was appointed Chief, Seed Section, Plant Products Division, the position he still holds. He is responsible for the administration and enforcement of the Seeds Act.

For the past three years, he has been responsible for developing recommendations for a Plant Breeders' Rights law for Canada, the topic on which he'll be speaking at Congress. □

Horst Dickert

Horst Dickert, after completing his training in Agriculture and Nursery Apprenticeship, came to Canada in 1953. In Canada he worked in landscaping for various companies to gain experience and progressed from landscape gardener to foreman to supervisor and finally to landscape manager. From 1964 to 1968 he supervised landscape projects in Halifax, Nova Scotia, St. John, New Brunswick, St. John's, Nfld. and at Expo in Montreal. In 1968 he joined Lakeshore Landscape Associates Limited as foreman and is presently working as landscape supervisor, responsible for all landscape construction.

He instructed part time at Humber College and Ryerson Polytechnical Institute.

Horst is married and has two grown up children and lives in Milton, Ontario. □



Clayton M. Switzer

Mr. Switzer was raised on a farm in Middlesex County, attended high school in Strathroy and graduated from the Ontario Agricultural College, specializing in botany, in 1951. After completing the M.S.A. degree in weed science at OAC, he was granted a Ph.D. degree in 1955.

He joined the Department of Botany, Ontario Agricultural College immediately after graduation and taught courses in plant physiology, plant nutrition, and weed control. He became chairman of the department of botany in 1967, Associate Dean of the Ontario Agricultural College in 1971, and Dean on July 1, 1972.

His research and extension work at the present time is on weed control in turf and growth regulation

of turfgrasses. In addition to his work within the University of Guelph he is involved with many off-campus committees. He has been Chairman of the Ontario Weed Committee since 1962, is President of the International Turfgrass Society, President-elect of the Ontario Institute of Agrologists, and a member of the Science Council of Canada.

Wayne H. Dickson

Wayne Dickson first became associated with the nursery industry in 1963 as a managing editor of Sutherland Publications where he developed **Nursery Business** magazine.

In 1965 he was appointed Director of Public Relations for the American Association of Nurserymen in Washington, D.C. In that position he developed a modern communications program for the nursery industry. He was responsible for initiating the National Landscape Awards program, the Green Survival program and the Green Survival City and Retail Advertising award programs. He was also instrumental in the development of Garden Centers of America, the first national association for retail nurserymen.

In 1974 he started Dickson Public Relations which represents national



Wayne Dickson

trade associations as well as national and international businesses. The primary emphasis of his business has remained in the horticultural industries.

In 1979, in cooperation with Paul Dawson whose advertising agency also represents AAN and who serves as the Marketing Director of the Nursery Marketing Council, he started the Nursery Industry Marketing Seminars. These two-day seminars are for retail nurserymen. They teach marketing and advertising techniques to increase the profitability of garden centers.



Palmer W. (Bill) Bigelow Jr.

Bill was born and brought up in the nursery business, Bigelow Nurseries, founded by his father 65 years ago in Northboro, Massachusetts.

He is the past president of the New England Nursery Association, the Eastern Regional Nursery Association, the American Nursery Association, and served 2 terms as president of the Worcester County Horticultural Society.

He is an active member of the Boston Horticultural Society.

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Recent Research Results

- 1) It was found that trunk injections to control insects should only be used where other methods are not satisfactory because of the wounds caused to the trunk by this method.
- 2) It is also reported that private tree companies are not using tree paint on tree wounds since it has been found to be ineffective in preventing decay.
- 3) In another research project on the pruning of trees during transplanting, it was found that the less foliage removed the better, so the tree has the maximum foliage to produce the food needed to establish new root growth.

The following tree and shrub maintenance can be completed during the winter months of November, December, January and February:

Pruning, shaping, thinning, balancing, dead, dying and unwanted materials removed, tree removal and stump removal, cavity treatment, aerating and feeding, cabling, bracing, large tree supplying or transplanting, planting of trees and shrubs and fruit tree pruning. Wholesale delivery of tree and shrubs.

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Potentilla Moonlight	1 gal	40 cm	3.10	2.90
Potentilla Tangerine	1 gal	40 cm	3.10	2.90
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Congress Program

TUES., JAN. 22, 1980

Garden Centres Program

7:30 A.M.
Registration Opens
9:00 A.M.
Exhibits Open
Official opening-surprise guest
9:15 A.M.
Marketing and Sales Development
— Mel Brady, California
11:45 A.M.
Assemble for Lunch
12:00 Noon
Annual Meeting Luncheon
12:30 — 3:00 P.M.
Annual Meeting
3:30 P.M.
Marketing and Sales Development
— Mel Brady, California
VISIT EXHIBIT AREAS
5:30 P.M.
Exhibits Close
Open Dinner
8:00 P.M.
Open Session — Mel Brady

WED., JAN. 23, 1980

Growers' Program

7:30 A.M.
Registration opens
8:30 A.M.
Keynote Breakfast — Dave Jackson, Jackson, Smith & Associates Toronto
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10:00 A.M.
Exhibits Open
10:15 A.M.
Nursery Marketing Council — Wayne Dickson, Maryland
VISIT EXHIBIT AREAS
Open Lunch
2:00 P.M.
Plant Breeders' Rights — Wilf Bradnock, Agriculture Canada and Frank Kearney, Downham Nursery
3:00 P.M.
Future in Nursery Stock Production
Bill Bigelow
Bigelow Nurseries, Mass., U.S.A.
4:00 P.M.
An address by the Minister of Agriculture and Food, the Hon. Lorne Henderson.
4:30 P.M.
American Association of Nurserymen meeting.

THUR., JAN. 24, 1980

Landscape Contractors' and Maintenance Program

7:30 A.M.
Registration Opens
9:00 A.M.
Exhibits Open
9:15 A.M.
Snow Control by Tree Planting — Professor Theakston, University of Guelph
10:30 A.M.
Park Planning & Maintenance — Frank Kershaw, City of Toronto
Parks

12:00 Noon
Combined Lunch Youth-Ladies-men — Dr. Clay Switzer, Dean, University of Guelph
2:00 P.M.
Maple Theme Park — Steve Moorhead, Moorhead Fleming Corban Inc. Toronto
3:30 P.M.
Where are your new employees coming from? — Horst Dickert, Lakeshore Landscape Associates
VISIT EXHIBIT AREAS
4:00 P.M.
Exhibits Close
6:30 P.M.
Cocktails — Hotel Toronto
7:30 P.M.
Banquet — Hotel Toronto
9:00 P.M.
Dance

Ladies Program WED., JAN. 23, 1980

8:30 A.M.
Keynote Breakfast — Speaker to be announced
10:00 A.M.
Hospitality Suite — Room No. to be announced
11:30 A.M.
Board buses
12:00 Noon
Lunch — Anesty's
1:30 P.M.
Board buses
2:00 P.M.
"The Vaudevillians" at Old Angelo's
4:30 P.M.
Return to Hotel

THUR., JAN. 24, 1980

11:00 A.M.
Hospitality Suite — Room No. to be announced
12:00 Noon
Combined Lunch Youth-Ladies-Men
6:30 P.M.
Cocktails — Hotel Toronto
7:30 P.M.
Banquet — Hotel Toronto
9:00 P.M.
Dance

Schedule of Rates for Delegates

Registration at Congress

Members \$75.00 —
Non-Members \$90.00.

After December 14th, you will have to register at Congress. Price includes all meal functions (Annual Meeting Luncheon, Keynote Breakfast, Youth Day Luncheon, Banquet and Dance). Does not include draw ticket for the trip for two to Banff, Alberta.

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Non-Members \$65.00

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Keynote Breakfast \$7.00
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NOTICE

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One of the most stupendous examples of large rock landscaping is the Ryerson Community Park in Toronto. The pond and skating rink was designed by Moorhead, Fleming, Corban, Inc.

Boulders and large stones in the home landscape

It is unfortunate that Canadian garden designs have not as a rule given significant attention to the role and importance that large boulders and stones can play in the home landscape. Anyone who has been fortunate enough to visit Japan, where rock and stone are the cornerstone of many designs, can appreciate that we here in Canada have a lot to learn about this fascinating subject.

Weight and Stability

Large stone and boulders as a design element give weight and stability to the landscape, and a sense of permanence far exceeding that of any other garden feature. Observing a wide variety of residential landscapes in Southern Ontario reveals that larger accent stones are most often used on their own or in combination with one or two other stones as a focal point for the landscape composition. Large stones of irregular outline or deeply weathered character may be used on their own as a sculpture or garden ornament. Low profile, sprawling, ranch-type houses commonly rely on such character stones to provide focus and attention. However, with most residential lots 5,000 to 8,000 square feet in size, and front lawns seldom exceeding 1,600 square feet, groupings of two to three smaller boulders or stones are commonly employed.



Frank Kershaw is Parks Co-ordinator for Metro Toronto Parks Department.

Setting for Lamp Posts

Large accent stones can be used to provide a setting for lamp posts, signs and plants. When placed at the corner of the driveway/roadway they help to confine cars to the driveway thereby avoiding unsightly tire marks and compacted soil on front lawns. Because of their weight and volume, large boulders and rocks can be used to assist in giving weight to fragile architecture or to divide the garden up into separate spatial areas. Variable rock shapes, sizes, colours and textures, when combined with plant material can imply

different moods - low profile, smooth rocks suggesting tranquility and repose while more jagged, erect rocks suggest power and unrest.

Include Rocks in Landscape Plans

The suitability of any large rock or boulder composition depends to a great extent on its relationship to the site and other landscape elements. If you are extremely lucky you may have purchased a lot with rock outcroppings already present and all that's required is some judicious clearing. Unfortunately, such a condition is rare with smaller, builder-developed urban lots, and even when present on estate lots they may not be where you want them. If you have decided to incorporate several large rocks in your home landscape, remember to include them on your conceptual and detailed landscape plans. Far too often people lay out their landscaping and then decide to try to fit in boulders; this after the fact tactic seldom works as space is just not available. Of primary importance in the location of accent stones is to attempt to develop what looks like a naturally occurring group of boulders which is in place with the remainder of the home landscape. Rock placement will have to be studied from all angles for best results. A position on the flanks of the resi-

dential lot is often recommended that will not compete unduly with the house for attention. As most houses are man-made brick or block construction, the separation of natural stone from this man-made feature is a 'must'.

Separate Stones from House:

Even where houses have a natural stone facade accent stones will benefit by being separated from the house if the effect is not to be too overpowering. With most stone facades being of granite rock, associated accented boulders should also be of granite type. Plantings associated directly with the stones can serve as a backdrop or be utilized to soften the appearance of an overly robust rock composition. Because of their large size, boulders and quarried blocks more than any other element of garden design, set the scale of the design. It goes without saying that large lots can accommodate larger rocks than smaller-sized lots. Mass more than height determines these scale relationships because of the volume relationships.

1500 lb. Rock not really big

Without doubt one of the most frequent questions raised by homeowners contemplating the use of large stones is how big a rock should be used. As noted earlier, this will depend to a great extent on the size of the



During the process of moving this 85-ton granite boulder from its native Muskoka soil, it split. Moving was done by Bruce Evans Ltd.

lot, its topography and attendant plantings. While a 1500-lb. rock may sound formidable, it really is not because of the weight per unit volume. Rocks in the 18 cu. ft. to 27 cu. ft. range, weighing in at 1500 to 3000 lbs. have been used extensively with many average or slightly above average sized

residential lots. Industrial, commercial and apartment properties may use large boulders weighing in at seven tons or more. A sloping terrain is better able to take a large rock than a smaller one, as there will likely be several ideal sites for blending the rock into the contours and the sloping landscape will better foil the vertical height of the rock. Where only flat land exists, placing the rocks on an artificially-created berm or framing them with a crescent-shaped berm will serve to increase its importance.

Respect Gravity

Any rock or boulder placement should always respect gravity by placing the rock on its largest surface. Boulders should appear as though they are growing naturally out of the land, as though surface erosion had recently exposed them. To achieve this result with manmade placement, the boulder or rocks are generally buried from one-quarter to one-third of their height into the ground. This is one reason why most accent rocks are at least 3' x 3' x 3' so they are large enough to stand out. Rock stability is also ensured by following such a procedure. Where it is not possible to bury the rock in situ, soil can be built up around the rock sides to achieve the same result. Soil mounding is also used to deflect drainage away from the stones where eddies and undercutting could result.



Photos by Sandy MacKay/Landscaping using large stones has been very pleasingly done in this private backyard in a Toronto home. Landscaping by Baker Salmona Hess Ltd.

Bulbs can be planted around accent rocks

Soil mounding further provides an ideal location for growing plants such as the various varieties of horizontal junipers (i.e. Compact Pfitzer, Tamarix, Andorra, etc.) and various prostrate forms of Coton-easters. Bulbs can also be planted around and between accent rocks for a pleasing spring effect; however, keep to subtle colours. Make sure that surrounding plant growth just covers the edges of the rocks and does not cover or mask the rock itself. Remember - you are only trying to soften the effect of the rock and tie it into the landscape. Unfortunately, too many examples exist where upright spreading junipers and yews have gone unpruned and now cover the rocks to be displayed. Trees can also be planted in association with accent rocks or boulders to create a scene reminiscent of the Canadian Shield or of a desert landscape. For these effects pines spruce and white birch are used for the Northern Ontario look, with yuccas used where a drier desert like scene is desired. Large trees are also used to give weight and balance to a rock composition where it is lacking.

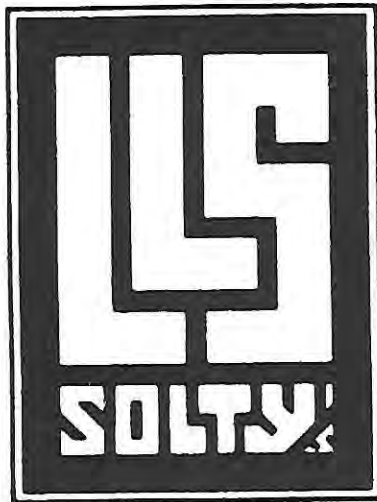
Rugged, Weathered Fieldstone Preferred

Now - getting onto the specifics of individual stones or groupings of stones to use. Rugged, weathered fieldstone, either granite or limestone, is preferred as the local indigenous rock of this area. Stones with open-jointed ends which are subject to exfoliation with winter frosts will pose problems. Moss or lichen covered rocks or boulders will impart a real sense of permanency when transplanted to a residential lot. Unfortunately it is difficult to avoid dislodging same in transshipment. Protective burlap or tarps could be tried if you are intent on preserving mosses. Moss covered rocks will also require a cool shady location in your garden setting. Avoid overly round shapes as these are seldom experienced in nature, or highly coloured rocks that would detract from other elements of garden design. Rocks with mineral veins can be used effectively, provided they are positioned so the veins run horizontal as originally laid down. Irregular-shaped rocks having strong character and a number of good faces that could be put forward are the easiest to work with. In

making a rock composition of three to five rocks, place the rocks at unequal distances and depths of burial to create a pleasing, asymmetrical design. The common practice is to use three substantive rocks, one of which has a strong, vertical axis accompanied by two slightly smaller rocks of horizontal disposition. This will create a sense of dominance with contrast and tension established through the point-counterpoint emphasis of variable stone sizes and masses. Each rock or boulder has its own character but to be in harmony with other rocks it must be studied in the context of the complete rock composition.

Avoid most common shortcomings

One of the most commonly observed shortcomings with do-it-yourself rock groupings is the use of rocks of unlike type, texture and colour in the same group. For example - porous sandstone used with solid granite boulders, or quarried, angular limestone blocks combined with round granite fieldstones. As far as colour goes, earthy browns, greys and terra cotta look most natural, and will blend well with other garden



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colours. A dull-looking, dry field-stone in a farmer's field may reveal exciting colours when moist and placed in the intimate scale of a front yard.

How to avoid grass trimming

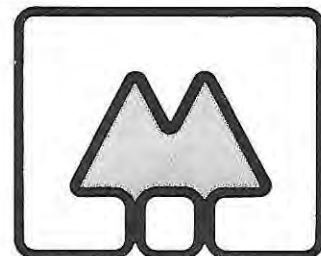
Because most people dislike grass-trimming, the placement of smaller stones around boulder groupings is commonly employed. Alternatively, a soil sterilant like simazine could be used but this may create unsightly effects, particularly with leaching through the soil. Where smaller stones are used, they can be placed on top of a 4 to 6 mil. thick plastic sheet to inhibit weeds and grasses emerging through the stones. In order that visual harmony exists between accent rocks and edging stones, use round gravels of like colour and material if rounded boulders are used, and crushed, angular gravel with blocky limestone rocks. A common fault is to place dark granite boulders in a bed of white dolomitic chips where the contrast is harsh and unsettling. For those individuals who prefer to have the large rocks set out on their own, purchase a monofilament cord-type trimmer for grass-clipping next to the rocks.

Where and How to get Rocks

Before leaving this fascinating subject, a few words are warranted about purchasing rocks and their placement. A rock about one foot in diameter will be about the largest you will want to handle on your own with crowbar, board and

muscle power. With most accent rocks being in the 1500 to 3000-lb. range, it is easiest by far to make a deal with the supplier or a landscape contractor possessing a crane or front end loader to move the rocks into place. Some people have had success with renting a tree cart to move stones up to a ton but this will require skill and a number of able-bodied helpers. Many rock suppliers simply deliver to the job site but refrain from crossing the property and moving the rocks into place. Granite field-stone varies in price from \$37.00 to \$45.00 a ton delivered, with quarried limestone (from the Georgetown area) slightly more expensive at \$43.00 - \$53.00 a ton. You can probably figure on at least \$35.00 - \$45.00 a ton to have a landscape contractor move it into place. If you are lucky and have a land developer friend, you may be able to pick up a large boulder or two for free. However, most of these individuals are integrating boulders into their landscape plans. Some farmers will be glad to let you take a large boulder from a field on the condition that you lift and transport it. It goes without saying that most homeowners would be far better to buy direct from a local rock supplier where you can select from a number of different stones and make arrangements for delivery and stone placement. In any case, the degree of variability of arrangement is infinite and the enjoyment derived from experimenting with a rock composition well worth the effort. □

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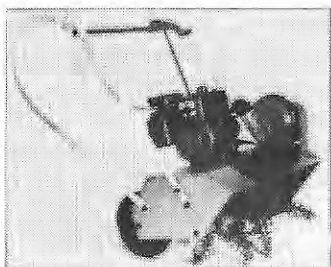
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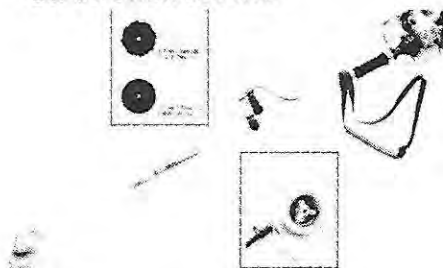


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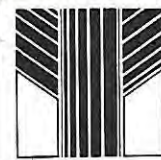
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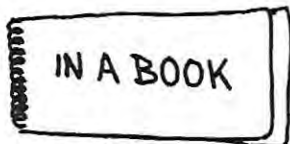


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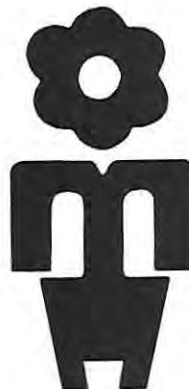
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Cambial Necrosis of Sugar Maple associated with Tree Marking Paint

By Douglas M. Stone and
Douglas J. Frederick

ABSTRACT— Cambial tissue died following application of aerosol tree and log marking paint to the bark of pole-and sawlog-size sugar maples (*Acer saccharum* Marsh.) in nine northern hardwood stands in Michigan. Cankers and stem swelling from callus formation developed on 76 of 220 sugar maples observed in these stands. The swelling will bias diameter measurements for research and inventory purposes. Cankers reduce log quality and may be infection courts for wood decay fungi.

Toxicity of liquid tree marking paint to cambial tissue has been noted previously; aerosol formulations are more toxic than the liquid form. Foresters working with northern hardwoods should avoid using either form to label study trees or crop trees that are to be left standing for any length of time. These can be labeled with quick-drying enamel, which has shown no abnormal effects.

Silvicultural studies frequently require periodic diameter measurements over long periods. In several studies we have noted abnormal radial growth, cambial necrosis, and canker formation when aerosol tree and log marking paint (TLMP) was applied to the bark of pole-and sawlog-size sugar maples.

Reprinted from the Journal of Forestry, September, 1979, with thanks to the North Central Forest Experimental Station, Minnesota.

Toxicity of liquid tree marking paint to cambial tissue of both conifer and hardwood species has been noted by a number of workers, although reports have not been published. This article presents data from three sets of observations on sugar maple in Michigan, and summarizes information from unpublished sources.

First Trial

In early May 1972, two 50-year-old sugar maples 6.3 inches in d.b.h. were numbered and breast-height measurement points marked with a half-inch-wide band of red aerosol TLMP; 70 corresponding trees had been labeled previously with quick-drying enamel. Each tree was measured to the nearest 0.01 inch each fall for four years.

During the first growing season, stem swelling and development of abnormally wide and long bark fissures were obvious. By the end of the second season, d.b.h. at the TLMP marks was 0.12, and 0.14 inch greater than that an inch above the paint bands (fig. 1). After four growing seasons, d.b.h. "growth" at the TLMP bands averaged 0.21 inch more than on the trees labelled with quick-drying enamel. No swelling was perceptible on any of the 70 study trees labeled with enamel.

Second Trial

During the fall and winter of 1974, orange aerosol TLMP was used to mark one-inch-wide measurement bands around 80 sugar

maple crop trees; the boles were numbered with the same paint. Trees ranged from 5 to 13 inches in d.b.h. and were part of a study of commercial thinning. In October 1977, after three growing seasons, d.b.h. of each tree was measured to the nearest 0.01 inch at the paint band and at 4 inches above the band, and formation of cankers were recorded.

Swelling of 0.1 inch or greater beneath the TLMP bands occurred on 25 (31 percent) of the released trees and averaged 0.22 inch per tree over the three growing seasons since application. Swelling and cankering occurred beneath both TLMP numbers and bands, but were much more frequent under the latter. In all, 53 cankers were present on 17 (21 percent) of the 80 crop trees. Cankering was slight on one tree, moderate on seven, and severe on nine (fig. 2).

Third Trial

In May 1975, 138 maples in seven stands were selected for a fertilization trial; the trees were 6 to 16 inches in d.b.h. Half of those in each stand were fertilized and half served as controls. Orange aerosol TLMP was applied on fertilized trees, and red TLMP on nonfertilized trees, both in a 2.0-inch-wide band around the boles at breast height. Each tree was numbered with white aerosol TLMP; numerals were about 1 inch wide.

By the end of the second growing season, stem swelling beneath the TLMP was visible on 49



Figure 1. Swelling of maple stem beneath a band of red aerosol tree and log marking paint applied 2 years previously. (Paint band just below ruler).

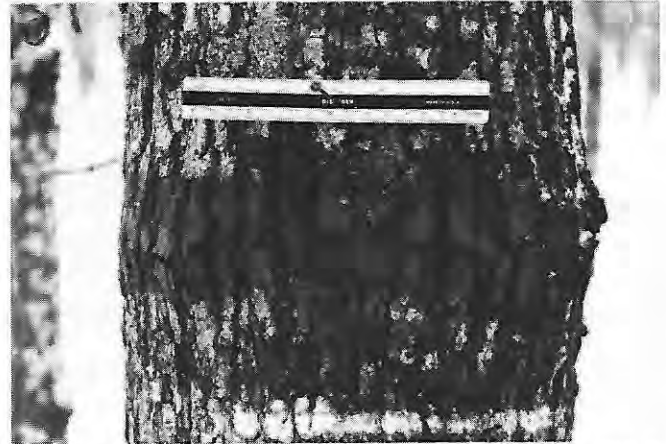


Figure 2. Severe cankering of sugar maple beneath a band of orange aerosol paint applied 3 years previously.

(35 percent) of the 138 trees (table 1). Twenty of the red painted (nonfertilized) trees, and 29 of the orange painted (fertilized) trees were affected; 7 of the 49 affected trees were cankered beneath both the white numbers and the red or orange d.b.h. bands. Swelling and cankering were classified as follows:

slight: indistinct cankers, bark lesions, swelling < 0.12 inch

moderate: obvious cankers, bark splitting, swelling \geq 0.12 inch

severe: large cankers, deep splits exposing dead, dry xylem, swelling > 0.12 inch.

Swelling and cankering generally were slight on non-fertilized trees. On fertilized trees, slight and severe damage occurred with equal frequency; moderate swelling was less prevalent.

Four trees showing a range of swelling and cankering were sampled; 22 cankers were bisected longitudinally with a band saw and small chips of discolored wood were cultured on 1 percent malt agar at 25°C for 14 days; microorganisms isolated from the chips were recorded.

Stem sections through cankers revealed that the cambium had died the season the TLMP was applied, and that the swelling was due to subsequent formation of callus tissue (fig. 3). The 22 dissected cankers averaged 1.5 inches in length; all wounds examined were discolored. The growth ring formed the first year after TLMP application was discolored 1 to 2 inches above and below the cankers; the discoloration penetrated several annual rings into older xylem (fig. 4).

Principal microorganisms isolated from the discolored wood were characteristic of those associated with mechanical wounds on sugar maple (Shigo 1966); *Chrysosporium*, *Aureobasidium*, *Fusarium*, *Aspergillus*, and bacteria were identified in 50, 64, 73, 77, and 86 percent of

the cankers. While none of these cause decay, they are typical successional organisms that commonly precede decay fungi. Decay-causing Hymenomycetes were found in four (18 percent) of the 22 cankers.

Average oven-dry specific gravity was 0.79 ± 0.07 in callus tissue, and 0.72 ± 0.05 for normal wood; the difference was significant at the 0.01 probability level (t-test). Microscopic examination of cankered wood revealed visibly denser tissue than in normal wood, and somewhat smaller vessels. Affected wood contained bark pockets where xylary tissue had formed scars during healing (fig. 4). The afflicted tissue contained larger and more numerous rays than normal wood (J.P. Armstrong 1978, personal communication).

Discussion

Toxicity of tree marking paint to cambial tissue has been observed previously, but reports have not been published. The toxicity is not restricted to sugar maple, nor to the formulations currently marketed in aerosol cans.

Death of cambial cells and formation of callus tissue (swelling) beneath paint bands was first recorded by James C. Ward (unpublished correspondence on file, Northern Hardwoods Laboratory, Marquette, Michigan). Yellow (liquid) tree marking paint had been applied directly from the cans, without thinner, in August 1960 (Darroll D. Skilling 1962, personal communication to Ward). Stem sections in 1962 revealed that growth rings were much wider (swollen) beneath paint bands than corresponding rings at other heights along the stem. Callus growth had occurred around the entire circumference of the paint bands (Philip R. Larson 1962, personal communication to Ward). The dead cambial tissue corresponded closely

to the width of the paint bands. There was no evidence of any other external source of injury.

Stem swelling and bark splitting have been noted beneath white (liquid) tree marking paint on oak (*Quercus* spp.) in Wisconsin (H.F. Scholz 1962, personal communication to Ward), yellow (liquid) tree marking paint on white spruce (*Picea glauca* (Moench) Voss) and balsam fir (*Abies balsamea* (L.) Mill.) in New Brunswick (G.L. Baskerville 1979, personal communication), orange aerosol TLMP on young sugar maple in Ontario (W.M. Stiehl 1979, personal communication), and on yellow-poplar (*Liriodendron tulipifera* L.) in Alabama (F. Freese 1977, personal communication, paint color unknown). We suspect similar reactions by jack pine (*Pinus banksiana* Lamb.) in Michigan (G.L. Willis 1977, personal communication).

Our initial observations in 1972 indicated that aerosol TLMP was more toxic than the liquid form; subsequent examination of additional stands confirmed this. Application of aerosol formulations of red, orange, yellow, blue and white TLMP all resulted in swelling and cankering of pole-sized maple. Susceptibility probably varies with physiological condition of the cambium, but cannot be confirmed from these observations. Cambial necrosis and subsequent formation of callus tissue and cankers resulted from application of aerosol TLMP in the spring (1972 trial and table 1), in August when first noted by Ward and Skilling, and in the fall and winter in the thinning study (W.B. Botti 1978, personal communication). Season of application on the oaks, spruce, balsam, yellow-poplar, and jack pine is unknown.

It is not clear whether the cambial tissue of sugar maple is particularly susceptible, or whether the problem appears to be more severe on maple because it is



Figure 3. Cambial necrosis and callus formation resulting in stem swelling on sugar maple 3 years after a band of aerosol TLMP was applied.

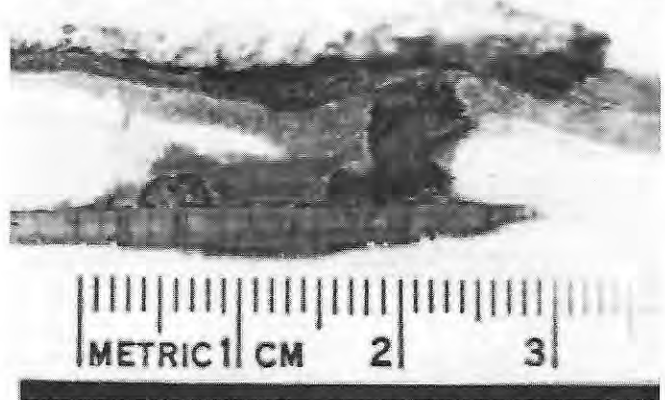


Figure 4. Discoloration, bark pockets, and callus tissue beneath the bark of sugar maple painted with white aerosol TLMP.

the most common species in our studies. Field observations suggest that the incidence is higher on maple, and indicate that degree of injury is inversely related to bark thickness. The most vigorous trees show the greatest injury; apparently, the bark fissures on rapidly growing trees provide little resistance to penetration of toxic substances to the cambial region.

Production of high-quality veneer and sawlogs is a primary objective of northern hardwood management. Stem swelling due to callus formation can lead to serious overestimates of tree growth and stocking levels. Defects, and stain and discoloration caused by cankers, can seriously reduce log quality and value (Shigo and Larson 1969, Stayton et al. 1970). Tree vigor will be impaired if the cankers become infected by decay-causing organisms. Microorganism succession is evident in the discolored wood beneath TLMP-induced cankers. Thus, the early wound colonizers predominant at this stage are being succeeded by wood-decaying fungi since extensive necrosis or toxic substances from the TLMP have retarded normal healing of the wounds.

Recommendations

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It seems best to avoid using aerosol TLMP to designate young crop trees in thinnings or other timber stand improvement practices, and for marking trees to leave on seed tree, shelterwood, or selection cuts where high-value stems are retained. Aerosol TLMP should not be used to indicate measurement points on trees in continuous forest inventory (CFI) or other long-term sample plots. We suggest labeling these with quick-drying enamel, which thus far has shown no abnormal effects.

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THE AUTHORS — Douglas M. Stone is now at the Savannah River Forest Station, Aiken, South Carolina. Douglas J. Frederick is assistant professor, Department of Forestry, North Carolina State University, Raleigh. □

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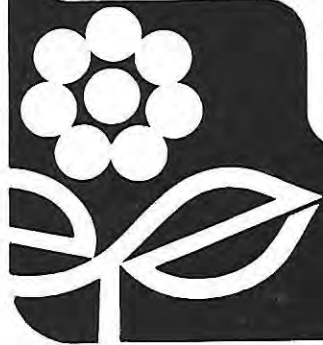
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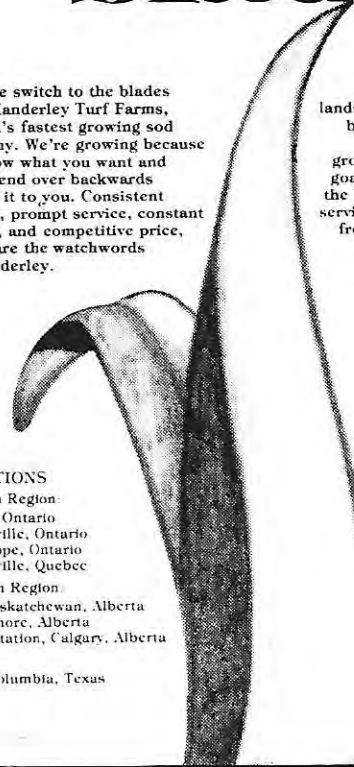
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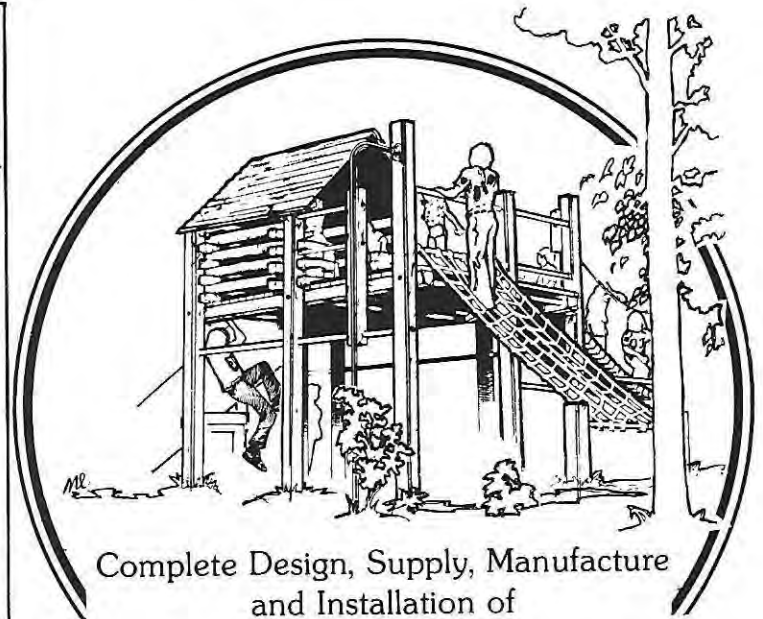
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John Hope first Canadian president of ASPA



Heading up the American Sod Producers Association in its International Year is John Hope of Manderley Turf Farms Ltd. of North Gower, Ontario, the first Canadian ASPA president. He was elected to this office at the ASPA conference held in Columbus, Ohio last July.

ASPA is the largest organization of sod producers in the world with 500 members. In addition to Canada, ASPA has members in Australia, England, South Africa and Sweden.

The Association holds two conferences a year. Its 1980 mid-winter conference will be held in Disney World, February 25 and 26

at Orlando, Fla. More than 400 delegates are expected to attend.

The 1980 summer conference is slated for July 21 and 22 at the Four Seasons Hotel in Edmonton, Alta.

On taking office at Columbus, Ohio, Mr. Hope said: "I feel deeply honoured to have been elected as the first International President of ASPA by your board of directors. I am looking forward to the challenges and accomplishments the Association will achieve in the coming year through its members and its board of directors."

International aspect

Speaking on ASPA's International Year, Mr. Hope said: "We plan to provide the International aspect of ASPA and the sod industry, through Turf News, our foreign membership and our International Convention in Alberta next July.

"In the coming year more emphasis will be placed on warm season grasses through conference speakers and articles in the Turf News. With the growing importance and population shifts to the Sun Belt our Association needs more representation through increased membership in these states.

Back home, Mr. Hope told Landscape Ontario that one of the major thrusts is the efficient use of energy in sod production.

"We hope to accomplish our objective through articles in our magazine and topics at our winter conference. The conference theme is 'The 80's - Sod Production in a Changing World.' Some of the topics will include The Use of Brewery Effluent for Irrigation, a panel discussion on fuel saving operation methods as well as update information on new turfgrass varieties that require less mowing, less fertilizer and less irrigation."

Growth to continue

Writing in Turf News, Bob Garey, ASPA executive director, said in part:

"Under the new leadership of John Hope and the new officers and trustees plus those who continue to serve on the board, ASPA can continue to grow and follow the outstanding efforts of those who have faithfully served in the past."

The American Sod Producers Association is headquartered at Association Building, 9th & Minnesota, Hastings, Nebraska 68901. Tel: (402) 463-5691. □

Management weaknesses unions look for

What union organizers look for when they begin selecting an organizing target is reported in "the grower", published by the Wholesale Growers of America, Inc., Washington, D.C.

A recently published study suggests that unfair and harsh treatment by supervisors is a primary condition of this selection process.

The study - The Dartnell Management Report - also suggests that employees believe they can get even with management for real or imaginary wrongs by joining a union.

Here are some of the items, according to the report, that union organizers look for:

- Little, if any, personal recognition. Employees believe they could at least get forced recognition from the company.
- Lack of firm and fair discipline.
- Fear of job security. Employees feel they would have greater safety and job security in numbers.
- Failure of management to exercise confident leadership.
- "Open-door" complaint procedures that do not open doors.
- Failure of management to help employees identify themselves with their employees. Employees

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INDUSTRY ACTIVITIES

believe they would have the opportunity to achieve a personal need satisfaction through a union.

- Favouritism.
- Lack of standard or inadequate employee benefits.
- Substandard wages.
- Failure to put company personnel policies and employee benefits in writing. □



Chipman Inc. appointment Cindy Harper

Mr. A.F. Butt, National Sales and Marketing Manager, Chipman Inc., is pleased to announce the appointment of Cindy Harper as Product Co-ordinator for Chipman Home and Garden and Speciality Products.

Cindy brings to Chipman several years experience in market development, a Bachelor of Mathematics degree from the University

of Waterloo and an MBA from McMaster University in Hamilton.

Cindy will assist in the evaluation, development and implementation of Chipman Home and Garden and Speciality Products' marketing plan.

This appointment reflects the continued growth of Chipman Inc., one of Canada's leading manufacturers of fungicides, herbicides and insecticides for the home and garden and agricultural markets. □



Market planner joins Bolens International staff

The Outdoor Power Equipment Division, FMC Corp., manufacturers of Bolens lawn, garden and snow removal equipment, has announced the appointment of Philip Martin as International Product and Market Planner. In this position he will

be responsible for the coordination of Bolens expanding international product requirements and assist in the development of international market strategy.

Martin joins the OPED from the W.H. Brady Co., Milwaukee, where he served as market specialist and product manager. He holds a B.A. from Colorado University in German and a Master of International Management degree from the American Graduate School of International Management, Glendale, Arizona. He has studied German language and culture abroad at the Goethe Institute and the Universitaet Regensburg, Germany.

In making the appointment, Charles Bartlett, Director of International Marketing, said, "This newly created position will enhance our ability to meet the growing product and marketing needs of the international business arena. International sales of Bolens products have doubled in each of the past two years, necessitating the need to increase our support of Bolens customers and branches overseas. The addition of Phil Martin will enable us to maintain our momentum as Bolens products continue to penetrate more international markets."

FMC Corporation, headquartered in Chicago, is a major international producer of machinery and chemicals for industry and agriculture, with 1978 sales of \$2.91 billion. Worldwide, the company has more than 45,000 employees located at 136 manufacturing facilities in 33 states in the United States and 14 other nations. □

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INDUSTRY ACTIVITIES

Swinger expands articulated loader line

The 1980 Swinger loader line now features five models ranging from the Swinger 110, with an SAE operating capacity of 1175 lbs. to the Swinger 320, with an SAE operating capacity of 3,012 lbs. The models offered for 1980 include the 110, 120, 210, 220, and 320.

The Model 210 features a 56.8 horsepower, water cooled Continental gas engine. It has increased fuel capacity, oil pressure and ammeter gauges, load sensing steering and an optional fourth valve spool for secondary auxiliary hydraulic operation.

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Growers Day conference

Bob Ziraldo was the chairman of the well-organized and interesting Growers' Day held November 29 at the Arboretum Centre at University of Guelph. The theme of the pro-

Continued on page 46.



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Continued from page 44.

gramme was "Soil Management", and some 50 people in the growing, nursery and landscaping trades gathered to hear Mr. Jim Myslik, Agricultural Engineer with OMAF, talk on Soil Drainage, a problem which plaques many growers, and which can be expensive to rectify. He showed some humorous slides to illustrate his point that many growers have drainage problems whether they realize it or not!

Dr. Tom Bates of the Univ. of Guelph was unable to come because he was subpoenaed to testify in a court case, but Earl Gagnon filled in very capably with an informative talk on Soil Testing and Soil Reports. Many growers find that the hardest part of soil testing is filling out the forms which must accompany any samples sent in to OMAF and Earl helped by explaining why certain information is needed and how the tests are done, and why it's a good idea to sample problem areas separately from the main sample of your soil. After a box lunch, Prof. H.D. Ayers of the School of Agricultural Engineering, Univ. of Guelph talked on Irrigation Principles and Practices. One of the more interesting things which he pointed out was the need to be wary of purchasing too small diameter pipe when installing an irrigation system. The cost saved in doing so will probably be more than offset by increased fuel costs because more fuel is needed to pump the water through a smaller diameter. He also pointed out that if you use over 6,000 gallons of water a day, a permit is needed.

The final talk of the very full day was given by Dr. Robert Cline of the Horticultural Research Institute of Ontario, Vineland Station who had already given a talk earlier that day in Vineland, but who energetically outlined how trickle irrigation is working in Vineland with fruit growers who introduced it in 1972. Bob illustrated the advantages of trickle irrigation: (i) the system is always out there, (ii) there is no need to stop other operations while you irrigate, (iii) you don't wash off insecticides or fungicides when you irrigate. However, it is important to use clean water, as dirty water can quickly clog the trickle irrigation system. More will follow on this topic in later issues, as many members of the audience showed interest on this topic. □

New warehouse opens

McRitchie Distributing of Strathroy, Ontario, officially announce the opening of its new warehouse at 5 Industrial Road, Strathroy, Ontario.

These new facilities are designed to serve Southwestern Ontario, Strathroy being the centre of this area, with access to Highway 402 this fall.

With the modern warehouse, all current lines of C.I.L., Genstar, Chipman, Hillview, Pickseed, Plant Products and Wilson's have been expanded. New lines have been taken on of pottery, wicker, plastic wares, stakes, bird feeders and many other products that garden centres, florists, golf courses, greenhouses and landscapers need and want. □


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Interested applicants may also arrange for a personal interview on January 22nd, 23rd, and 24th, 1980 in Toronto at the Sheraton Centre Hotel by contacting the above before January 18th, 1980. □

Project Manager

General Landscape Contracting Challenge:

Reporting to the manager, the successful candidate will be responsible for: Supervision and coordination of superintendents and subcontractors. Coordination and

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Qualifications:

We are looking for an individual with considerable independence and drive with the ability to look ahead. We wish to talk to individuals with considerable knowledge in all aspects of landscape construction and design. Experience in the field is essential.

Interested applicants may apply in confidence to:

Walter Mlinaritsch
Manager
Clareview Landscaping Ltd.
R.R. 6, Site 3, Box 25
Edmonton, Alberta
T5B 4K3
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Hopa, Profusion, Royalty, 4/5'.
1,000 PYRACANTHA, Lalandi, 15/18",
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Nana, 15/18", 18/24". 1,000 PRUNUS,
Tomentosa, 2/3'. 1,000 ROSA, Rub-
rifolia, 18/24", 2/3'. 500 ROSA,
Rugosa, 18/24", 2/3'. 3,500 SALIX,
Nana, 12/15", 15/18". 250 SYRINGA,
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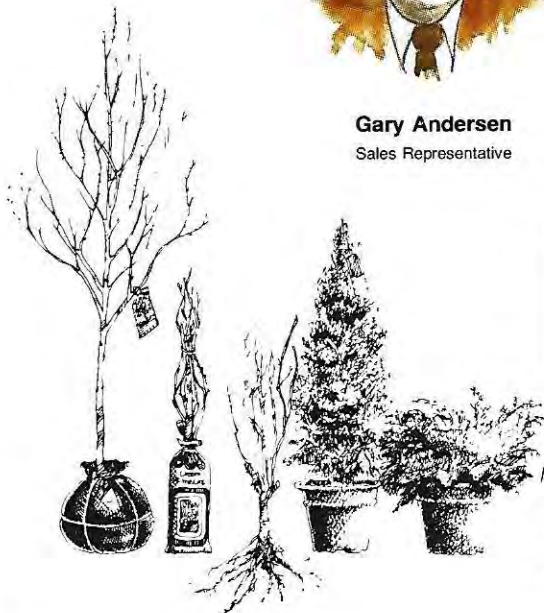
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Pin Oak	from 6' to 2" caliper
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Burr Oak	3" caliper
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