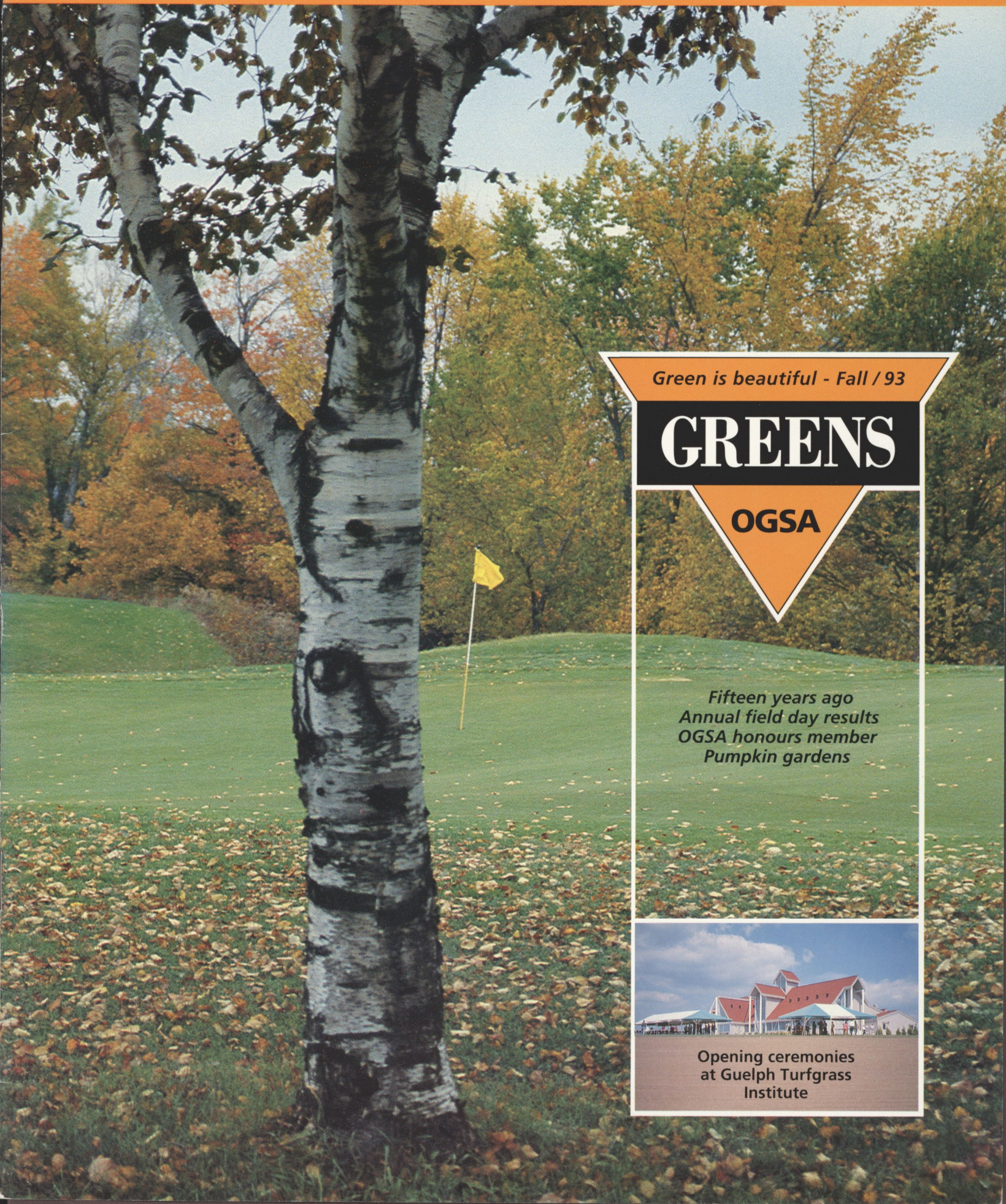
Association makes move
Exciting new headquarters

21st century architecture
Tomorrow's golf course

Preparing for winter
Preventing spring trouble



Green is beautiful - Fall / 93

GREENS

OGSA

Fifteen years ago
Annual field day results
OGSA honours member
Pumpkin gardens

Opening ceremonies at Guelph Turfgrass Institute

It's a Sure Bet The World's Top Courses Aren't Cutting with a National Mower Because It's Pretty!

National 84" Triplexes are "reel" pros in the golf course maintenance field. They cut a lot more grass for a lot less money than most machines on the market.

The phrases **HIGH PRODUCTION, LOW MAINTENANCE,** AND **LOW ORIGINAL COST** describe National 84" Triplexes to a "tee" and explain why they are dubbed the "reel" pros by the golf course industry.

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Fall issue, 1993

Greens is the official publication of the *Ontario Golf Superintendents Association* and is published by the Association four times annually - spring, summer, fall, winter.

It is distributed as an educational document (without charge) to its members, advertisers and other selected parties.

Although every effort is made to check material for publication, the Association is not responsible for material published on behalf of its contributors.

Advertising rates and schedules are available through the Association office.

Feature pairing

Greens sections

Cover

Fall golf in Ontario is often brisk but colourful, particularly in the Albion Hills at GlenEagle Golf Club
Photograph:William Newton / Golf Images

Ceremonial tents for opening of the Frost Research Centre frame the modern barn-like architecture of the Guelph Turfgrass Institute.
Photograph: Bruce Burger

Office Manager
Cindi Charters
Guelph Turfgrass Institute
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Design and production:
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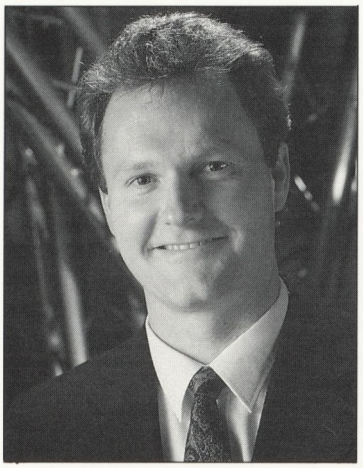
Green is beautiful

Presidential fairways *GTI, bylaws, members*

OGSA



A major goal realized

The OGSA has now realized one of its long-range goals of moving its office to a place of prominence. The Guelph Turfgrass Institute will provide the membership with an operating office at the University of Guelph in connection with Canada's finest turfgrass research personnel. This is truly an exciting time for members and the Association. We will now become a more visible force in the shaping of the golf industry in Ontario. Inquiries pertaining to the Association must now be forwarded to our new office. (The address and telephone number is listed on this page.)

Important bylaw proposals

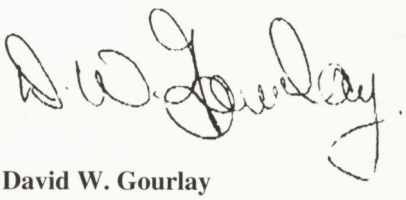
Board members have met several times throughout the province to discuss significant bylaw changes. This will help ensure that we remain in a healthy and prosperous state of development. The proposed changes are included in this issue for your review. Please take the time to read these proposals.

Most of the amendments are made to help clarify certain inconsistencies, or phrases, in the present bylaws However, other issues have been addressed. This is your Association and, as you know, bylaw changes must be ratified at the January Annual Meeting in Guelph. If you require any further information pertaining to these proposals, please contact the Director in your area.

Membership drive and great golf

The Association's financial position continues to remain quite solid. The membership base remains at approximately 400. A membership drive will again be implemented at our new booth at the Ontario Turfgrass Symposium in Guelph.

With the shortened season here in Montreal, I have been fortunate to be on the golfing tour this fall. Superb golfing events have been held by the CGSA, WOGSA, OGSA, OTVA and the QGSA. On behalf of the Board of Directors, we would like to thank you for your continued support and wish you all the best for the remainder of the season.



David W. Gourlay
President

Important moment at GUELPH TURFGRASS INSTITUTE

Bruce Burger

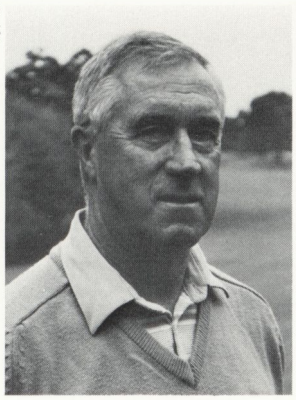
Mac and Beth Frost look on as commemorative plaque is unveiled which honours their contribution to the new centre.

Thursday, August 26, 1993 will be remembered for the official opening of the G.M. Frost Research and Information Centre. Dr. Clay Switzer, a main force behind the fundraising campaign, was master of ceremonies. Many interesting people attended from all aspects of the turf industry.

During the ceremonies, Thom Charters, President of the Ontario Turf Research Foundation, gave a brief personal background outline of Mac and Beth Frost. The Frost's initial donation to the Foundation and the Guelph Turfgrass Institute made this opening a reality.

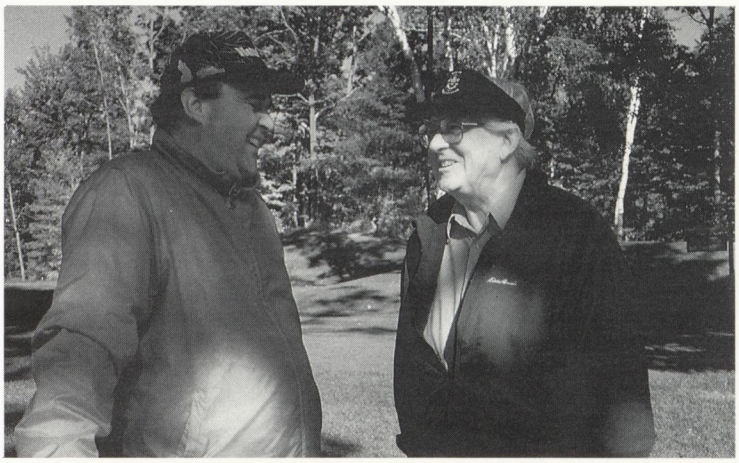
Along with the University of Guelph, there were representatives of many government groups, including: Government of Ontario, Ontario Ministry of Agriculture and Food, the Mayor of Guelph. They combined with the Foundation and the Institute in providing considerable effort to complete the Frost Centre.

The building, with meeting rooms, offices and research facilities combined with 53 acres devoted to turf research, is a first-class Canadian facility on an international scale. A commemorative, pictorial plaque of Mac and Beth Frost will be located in the foyer.



Golf Images

During his inspection rounds last summer at Summit Golf Club, Scott Dodson shared a moment with his former professor, Dr. Clay Switzer.



Golf Images

Green is beautiful

Editor's clippings — *New look emerges*

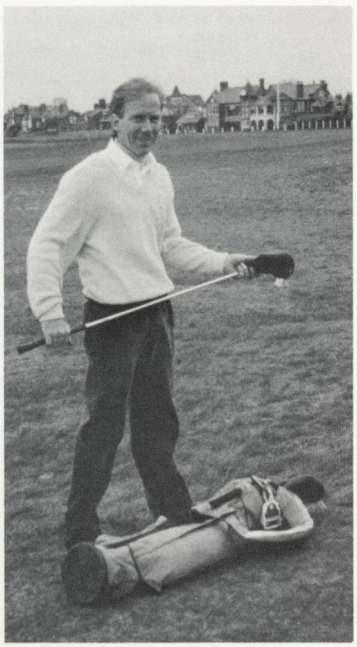
OGSA

This fall issue has a wide variety of articles. And for the first time, they are original. Hugh Kirkpatrick has provided an update on winter covers and Rod Hermitage reviews the use of chemicals in preparation for winter. Doug Carrick provides an insight to tomorrow's architecture, and we plan this to be the first in a series of articles from golf course architects.

The fall and winter seasons are upon us and I would like to remind everyone that now is a good time to plan for educational upgrading. There are many opportunities over the coming months, such as the GSAA seminar at the Guelph Turfgrass Institute. As well, there is an excellent three-day symposium in January, then the GSAA conference in Dallas. Finally, the CGSA conference in Calgary which has returned to its original March date.

We are changing the look of the magazine with more emphasis on editorial material. Overall, our intention is to provide a more professional appearance. We welcome your input, articles and, in particular, photographs.

Doug Suter
Editor



Doug Carrick has developed a reputation as one of the country's best architects. In particular, he has become highly regarded for his restoration work for Stanley Thompson courses.

Looking at architecture

•Golf•course•
•architecture•
•in•the•
•next•century•

by Douglas Carrick
Robinson & Carrick, Architects

Tomorrow's issues are here now

As the beginning of the twenty-first century approaches with lightning-like speed, it will be interesting to look at the recent trends in golf course design and predict how the profession of golf course architecture will continue to evolve into the next century.

Environmental issues, playability, affordability and accessibility, and the design process are four major factors that will influence the shape of golf course design in the years to come.

The golf boom of the mid to late 80s collided with the ever-increasing environmental movement and has changed the approach to golf course design quite dramatically.

Long gone are the days of incorporating unique natural features into the strategic design of the golf course as rivers and streams become protected with vegetated buffer zones and woodlots become designated as preservation zones, or as wildlife habitats are increasingly protected.

A different relationship with nature

Golf courses traditionally shared a very intimate relationship with their natural settings. Architects in the early part of this century utilized the best natural features of the land to create character, strategic value and visual interest in their layouts. This involved siting greens close to natural watercourses, routing holes through natural valleys and mature woodlots, or incorporating dramatic elevated tees immediately adjacent to steep valley slopes.

The environmental awareness and concerns shared by the public has forced the regulatory agencies to scrutinize new development - including new golf courses - much more rigorously.

The protection of groundwater resources, surface water, rivers and streams, natural woodlots and wildlife habitats have become extremely sensitive issues in the development of new golf courses. The public perception is that they contaminate groundwater resources with pesticides and fertilizers; that they deplete groundwater or aquifer resources through irrigation; that they destroy wildlife habitats when being carved through a woodlot; and that they increase stormwater flow downstream.

The golf industry, on the other hand, has always held the belief that golf courses gen-

erally enhance the environment. For example, golf courses support a variety of wildlife including numerous species of birds along with deer, fox, wolves, moose, and many other animals. As well, the industry contends that soil erosion is controlled - amongst other benefits - and while various chemicals are applied to turf, they are regulated by the Ministry of the Environment and Energy; and are applied only by licensed applicators.

Engineering the new golf

This confrontation between the golf industry and the environmental agencies has forced golf course developers to take a more rigorous environmental and engineered approach to new golf course development. Natural vegetated buffer zones, ranging from 15 to

Typical of 'environmental golf', will be this type of wording on signage suggesting not only a user-friendly approach, but a long carry is required.

30 metres in width between natural watercourses and fairways, have become a standard design feature.

Engineered stormwater management and extensive sub-surface drainage has become much more prevalent. Balancing cut and fill in floodplain areas is now a prerequisite, as well as the preservation of large contiguous blocks of natural vegetation which is paramount to preserving wildlife corridors.

All of these factors have had a tremendous influence on the way in which golf course architects design and detail their layouts. In many cases, earth moving and sculpting become the most important aspects to creating character and interest in the layout of a golf course, rather than relying on the unique natural features of a site. The control of stormwater drainage with small catchment basins, sub-surface drainage and detention areas are also affecting the playability and visual character of a course as numerous grassy hollows find their way into new layouts.

Industry confirms its beliefs

While the regulatory approval process has become more complicated, lengthy, expensive and frustrating, the golf industry is benefitting by the tremendous amount of scientific information that is being generated through the myriad of environmental studies that are produced to satisfy the regulatory agencies.

Through ongoing monitoring of the groundwater quality, aquifer reserves and wildlife on new and existing golf courses, the industry is confirming what they have always believed to be true, namely - that golf courses do enhance the environment and that they can be developed with environmental sensitivity.

The next generation of criteria

As the popularity of golf continues to grow, the aspects of affordability, accessibility and playability will become increasingly important. The recession that we are slowly climbing out of has influenced golf course developers to finally respond to the real demand for new golf facilities - the pay-as-you-play course. Over 80 per cent of the golfing population are represented by public players.

Yet, developers have continuously ignored this market in favour of the high profile private country club. What many developers failed to realize is that they were all competing for a very small segment of the market which is not immune to the ravages of a recession. The result is that many of these new high profile private clubs have been forced to adapt to the market demands by allowing public and/or tournament play.

The golfer of the 90s, and into the next century, will most likely be looking for pay-as-you-play opportunities as well as good value. They will seek courses that have all the character, challenge and quality of a private club, but at a reasonable cost. This also permits the avid golfer more control over personal golf expenditures.

Old-style is fashionable

With more and more new golfers every year, and with the increased involvement from women and seniors, playability for all skill levels will become an extremely important criteria. Long, forced carries from tees to fairways, and the so-called target golf of the 70s and 80s, will gradually disappear to provide the average golfer with a more manageable and enjoyable golfing experience.

Greens bunkered to the sides and rear will likely make a comeback to allow the easier bump-and-run approach shot. Grass hollows mown at fairway heights - similar to the ones found on the old links in Scotland, or Ireland, or at Pinehurst Number 2 - are starting to find their way back into the newer designs. These hollows provide an area where the average player can make an easy recovery while providing the expert golfer with a delicate challenge.

High-tech architecture

The design process that golf architects follow will continue to change as we approach the end of the century. The environmental movement has already dramatically changed the way in which an architect approaches a new project. No longer does the architect work alone. A team comprised of engineers, biologists, hydrogeologists, environmental experts, land and municipal planners is now required to guide a project through the complexities of environmental and engineering issues.

"Golf course design in the next century will no doubt become even more complex than it is today but, perhaps, it will bring back some of golf's traditional values found on the earlier courses of Scotland." - Doug Carrick

As this process becomes more complex, the use of the computer-assisted design will become essential for overlaying layers of information on a site, all of which might influence the design. The aspect of 3D terrain modeling, computer imaging and animation capabilities will also prove to be beneficial in communicating the proposed design characteristics of future projects.

Golf course design in the next century will no doubt become even more complex, than it is today.

CPGA Championship requires theatrical effort to get the job done

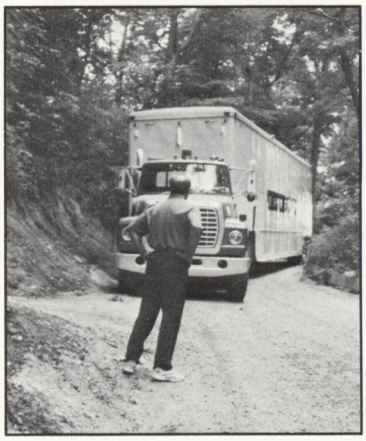
TSN production truck carefully makes its way down to the valley at Credit Valley to anchor August television coverage of the 1993 CPGA Championship.

To accommodate the high-tech mobile facility, the club had to widen its long valley roadway.

The vehicle eventually found its place in 'tent city', between the ninth and eighteenth greens, which was the command centre for technical, entertainment and food preparation during the week-long event.

Within twenty-four hours of the presentation ceremonies, everything had just as mysteriously disappeared.

By then, the valley had been restored and returned to members, and the fox.



by Barry Endicott
Nobleton Lakes Golf Club

The Ontario Golf Superintendent's Association executive for 1978 was: **Paul Scenna** (President), **Stew Mills** (vice-president), **Paul White** (Secretary), **Ken Nelson** (Treasurer), **Bill Bowen, Blake McMaster, John Smith, Rusty Warkman, Bill Hynd** and **Paul Dermott.**

The eighth Annual Turf Management Symposium was held at Hamilton Golf Club hosted by **Stew Mills. Paul Scenna** opened the Symposium which was chaired by **Norm McCallum** and **Al Beeney.** The speakers were **Terry Dwyer** (Meteorological Officer, Mount Hope Airport), **George Cumming** (Royal Botanical Gardens), **Dr. Jack Eggens** (University of Guelph), **Ken Nelson, Steve Miller, Jim Wyllie, Rusty Warkman, Doug Suter** and **John Smith. Paul White** was the Chairman, and over 70 superintendents, assistants and associates attended.

Monthly meetings were held during the off season at Glendale Golf Club.

The Canadian Golf Superintendent's Association Conference was held March 5 - 8 at the Hotel Toronto. The President/Greens/Chairman/ Superintendent Tournament was held at the Hamilton Golf club on July 28. The team of **Harry Ritson** (President), **Frank Pope** (Greens Chairman), and **Bob Heron** (Superintendent) won first prize. **Bill Hynd** hosted the ladies' Peter Jackson Classic. **Dennis Pellrene** hosted the Canadian Open and **Bob Brewster** hosted the Ontario Amateur.

Paul Scenna hosted another great Field Day on June 8. Low superintendents were **Bill Bowen** (76), **Bill Glasham** (77), **Jack Fairhurst** (78) and **Graham Sholdice** (78). After golf, everyone went over to the Cambridge Turf Plots. **Gord Witteveen** hosted a meeting on August 16 at the Board of Trade Country Club. It was a rain-delayed round and the low gross winners were **Bill Bowen** (76), **Bill Glasham** (77) and **Barry Endicott** (78). The theme was 'America Day' and the American guests included **Dr. Jim Watson, Ted Smith, Ned Brinkman, Bob Moore, Jim Latham, Andy Bertoni, Norman Leising** and **Mel Lucas. Mel Lucas,** Director of the GCSAA, gave a demonstration of the new speed stick which was developed by the USGA to measure putting speed on the greens.

The McClumpha tournament was held at Glendale Golf Club. Genstar Chemicals hosted superintendents at Glen Abbey and the CGSA held their Fall Field Day at Lachute Golf Club which was won by **George Garner** with a 78.

The Pro-Superintendent Tournament was held at Dalewood and **George Garner** (79) and professional **Dave Clayton** (71) won top prize. **Thom Charters** won low superintendent prize with a 78. **Kimmo Solonen** won the Taylor Barnes trophy at Cherry Hill Country Club.

James H. Roberts passed away on January 1. **Mr. Roberts** retired in 1972 following 20 years as superintendent at Sunningdale Golf Club. **Henry Guertin** accepted the job at Beachgrove in Windsor and **Barry Endicott** moved to Chinguacousy Country Club from Glen Shields Golf Club. **Stew Picken** moved on as superintendent at Glen Shields. **Al Draper** accepted the job at Greenhills Golf Club. **Doug Heron** of Scotts became Regional Manager for Ontario, Quebec, Ohio, Michigan and parts of New York with **Dave Dick**, formerly of Sleepy Hollow, taking over the Toronto territory. **Ron Craig** became Manager of the Rexdale branch for Spraymotor. **Hugh Kirkpatrick** moved from Dalewood Golf Club to Westmount Country Club in Kitchener. **Clay Switzer**, Dean of OAC, was made an Honourary Member of the OGSA.

Upcoming events

GSAA Seminar
October 18-19, 1993
Guelph Turfgrass Institute

Ontario Turfgrass Symposium
January 5-7, 1994
University of Guelph

64th Annual Michigan Turfgrass Conference
January 18-20, 1994
Holiday Inn
South Convention Center
Lansing, Michigan

CGSA Annual Turfgrass Conference and Trade Show
March 5-8, 1994
Calgary, Alberta

Summer competitions

OGSA President/Green/ Chairman/Superintendent/ Director Event

The 1993 competition was held Tuesday, July 13 at the Burlington Golf & Country Club.

Thirty-six foursomes participated on a beautiful day and the host superintendent, Pelino Scenna, had the golf course in excellent condition.

The winning Burlington team consisted of Bill James, Chris Elgar, Dave Turnbull and Pelino Scenna. The Glendale Golf Club team placed second. After a superb meal, Jim Skuroski of the USGA Green Section gave an informative speech.

Our thanks to Bernd Klahre (General Manager) and Trevor Fackrell (Professional) of the Burlington club for their fine efforts. And a thank you to Club Car Canada for their generous donation of golf cars for the day.

OGSA Pro-Superintendent Event
The 1993 competition was held Tuesday, September 7 at the Blue Springs Golf Club in Acton. Ted Ellis, host superintendent, had the course in great shape and Shelly Wolner, host professional, welcomed all participants.

Thank you to Blue Springs for being an outstanding host club, and to the 40 competing teams. The results were:

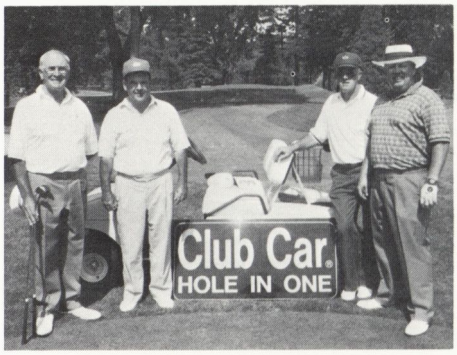
Low gross team
1. Weston Golf Club
Thom Charters
Herb Holzscheiter
2. Cedarbrae Golf Club
Warren Vout
Al Patterson
3. Hidden Lake Golf Club
Robbie Robinson
George Tidd

Low net team
1. Foxwood Golf Club
Bruce Vollet
Danny Maue
2. Scarboro Golf Club
Keith Rasmus
Arthur Ewire
3. Oakdale Golf Club
Paul Dermott
Gary Maue

Low gross pro
1. Danny Maue
Foxwood Golf Club
2. Glen Patterson
Roseland Golf Club

Low gross superintendent
Thom Charters
Weston Golf Club

Low net superintendent
Robbie Robinson
Hidden Lake Golf Club



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2

3

1.
At Burlington, Credit Valley team pauses at tee before attempting an unlikely feat.
Left to right: Tony Allin (Greens Chair), Larry Langill (Director), Doug Suter (Superintendent), Henry Koe (Director).

2.
Burlington celebrates team victory at home course.
Left to right: Pelino Scenna (Superintendent), Chris Elgar (Greens Chair), Dave Turnbull (Past Greens Chair), Bill James (President).

3.
American team from The Park Country Club in Buffalo pose before dinner at the Burlington club.
Front: Howard Hutton, Dan Brown; Back: Martin Scherrer, Scott Dodson (Superintendent).

Sand saves: a technical tip

Bradley C. Turner, Director of Marketing and Sales, provides these maintenance tips for one of the world's most popular rakes - the Accuform Sand Trap Rake:

Handles
Every three to four years, or as needed, sandpaper the handle lightly and apply a thin coat of polyurethane lacquer with UV stabilizer. This will ensure that the fibreglass handle remains smooth and free of any cracking or peeling.

At the Anaheim Trade Show, one superintendent found the best method of doing this was filling an irrigation tube with the polyurethane, dipping the rake in upside down and hanging the rake to dry.

Any handles that have a damaged spot, or are broken, should be replaced.

Heads
The head is made of durable automotive plastic and should last, relatively maintenance-free, for many years. Replacement heads are available if needed.

Golfer's oasis: a dispensing tip

For further information contact, USA Entertainment at: 1 (800) 633-0340

This is the first state-of-the-art coinless, dispensing unit with multi-pricing capability. Employing the latest advances in electronic, computer and communications technology, these 'smart' machines offer up to 16 different selections of ice-cold, canned beverages for sale using credit cards.

Netlon distributors

UK-based Netlon Limited has recently appointed seven distributors in North America to supply *Netlon Advanced Turf*, the unique rootzone system which provides natural grass with unrivalled stability, durability and resistance to soil compaction.

For more information, contact:
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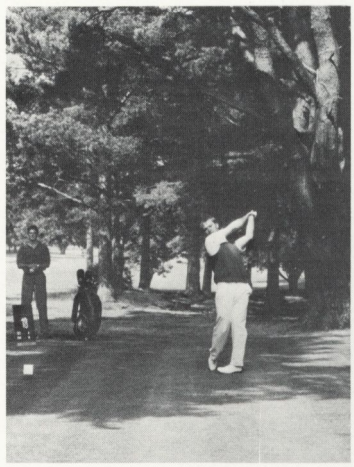
Huntsville, Ontario P0A 1K0
Tel: (705) 789-4457
Fax: (705) 789-1049



Proof of its durability is the small eighteenth tee surface at the famous Woburn Golf & Country Club in England.

Flour power: a marking tip

Dale Wysocki of Faribault Golf & Country Club in Faribault, Maine has this interesting tip:

Instead of using paint to mark circles on putting greens, I use flour. In hot weather, the paint will kill the greens, but flour washes off with the next irrigation cycle.

Information about products or general industry news, for possible inclusion in upcoming issues, may be sent to the Editor care of the Association office.

Association honours 25-year member

"It has been an honour and a privilege."

Monday, May 31, 1993, I was presented with my twenty-fifth anniversary OGSA plaque during the Annual Spring Field Day at the Cutten Club in Guelph. The date was not important (the event has been an annual for 25 years), however, the venue just happened to be the place I got my start in the golf business.

I was asked to say a few words, and rather than omit much of the following, I decided to write this letter as a method of expressing my feelings.

My family were members at the Cutten Club. We caddied, played junior golf and I was fortunate to begin working for Jim Wyllie - his first position as superintendent - in 1959.

In the room where dinner was served, was a trophy on which my late mother's name had appeared, as Club Champion, no less than eight times. It was 1961 when my mother met Mrs. Bert Musser, who told her of the turf program at Penn State University. This was my second break in the turf business. This presented the opportunity to meet Dr. Joe Duich who has had the greatest impact on my career. He developed an enthusiasm within me that has never (nor will ever) diminished in regard to the the science, art and business of growing grass.

I have had the opportunity to work, as a superintendent at four vastly different private clubs since 1968. The challenges have been varied, but the satisfaction has been rewarding. There have been many great members, talented assistants, helpful associates, close friends and an understanding family during the past 25 years.

The OGSA has meant a lot to me over the years, and I feel fortunate to be located in such a wonderful area for golf. In fact, I personally feel course conditions are, generally speaking, as good here as any other place in the world outside of the Chicago area. Our members, and the public golfers are the benefactors.

I am looking forward to the future with continued enthusiasm. Although for a while, in regard to course maintenance, we will have to do more for less given the current economic climate.

To quote an old Blue Jay, Rico Carty, who said, "Baseball has been 'berri, berri' good to me", I feel sincerely that golf has been very, very good to me. It has been an honour and privilege to be involved in the OGSA for 25 years.

Robert 'Tee' Heron

SPRING GREENS

by Hugh Kirkpatrick
Westmount Country Club

Solving the problem of minimizing winter damage to greens has forever been a greenkeeper's objective.

Bill Fach and Hugh Kirkpatrick, **because of innovative experiments, have become known as the 'fathers of the solid cover'.**

Experimental beginnings

We began experimenting in the early 80s with a material called *excelsior* which is used in the manufacture of furniture. We then tried a product called *Remay*, which was an extremely hard material to anchor to the greens. If it happened to stay on the surface, it did a good job with often spectacular results in controlling desiccation.

In 1984, we were contacted by a man who produced the 'evergreen covers'. He wanted us to experiment with a new cover they had developed. Within a couple of years we had purchased several of these and covered all the greens and practice tees. The 'evergreen' covers were more durable and easier to handle than the 'Remay' covers.

The problem was that we still had several greens that would be wiped out from ice damage. These porous covers did not deter this damage. Although their installation was helpful in getting problem greens to recover, labour was intensive since covers need to be removed in order to mow, then reinstalled. This frequently meant the use of temporary greens.

A more solid approach

Some superintendents have had success by simply removing the ice. I have seriously been thinking about doing the same. But,

after conversation with a fellow superintendent, I contacted Bill Fach of Essex Golf Club in Windsor. Apparently, he had been trying solid plastic covers with very good results. In the fall of 1989, I decided to try his experiment at Westmount even though we were hosting the LPGA du Maurier tournament in June.

Bill's theory was to install the plastic so that all water would be kept from contacting the surface of the green. He strongly recommended extending the plastic right up any slopes around the green so that water would be intercepted before it could get under the plastic. His material was 6 mil construction grade plastic sheeting. The size we used was 30 x 100 feet. It is relatively inexpensive and readily available at most building supply centres.

We secured the plastic to the turf with 1 x 3 inch strapping with 6 inch spikes every few feet. We installed plastic on portions of six greens - some were small (10 x 10 feet), others were an entire sheet; and for one green we joined two sheets together.

The iceman still cometh

The ice damage throughout the course in the spring of 1990 was devastating. However, the experiments were very encouraging. In fact, on some greens, the only turfgrass that was alive was in the experimental areas.

Evidently, some of the plastic was poorly installed resulting in water underneath. The two joined sheets had separated in a windstorm, and turf at the separation was wiped out while the remainder was perfect. The bad area, unfortunately, was the centre of the green.

The results we achieved helped me to convince the Directors that we were on the right track. A more extensive program was planned for the next winter.

Although the 6 mil plastic worked well, its use was time-consuming and difficult to work with. We looked into bonding sheets together and we asked our suppliers if a more durable material was available.

Problem solved

The 'evergreen' people came up with a woven plastic fabric used for swimming pool covers. This has proven to be fairly durable with costs about the same as breathable covers.

Our method of installing is to custom fit them for the entire green including any slopes where water might travel from. We pin them down with staples every 18 to 20 inches around the cover's perimeter.

In windy locations, it might be advisable to lay branches or boards over the cover to help in anchoring, thus avoiding any staples or holes away from the perimeter.

We purchased six of the solid covers in the fall of 1990 and the results continue to be excellent. Last year, we covered all greens and they were perfect come spring. Although the course wintered well this year, we do have ice damage on some fairways. The 6 mil plastic used in our original experiments is now being used on problem tees. We are contemplating using the same for stubborn fairways.

Covering all the bases

Personally, I feel that the covers should be removed as soon as the threat of ice damage is over. If they are to be used to initiate growth, they must be closely monitored - especially after the soil temperatures warm up a little (50F).

If you have a problem with cold temperature kill, try to accumulate more snow on the greens using snow fence (or brush). Don't remove it until the risk of ice damage is over. Some superintendents have experimented with geo-textile blankets and straw in conjunction with the solid covers.

Prior to installing the covers, we aerate and remove the cores, apply fungicide and dormant fertilizers. We have removed snow in order that the covers can be installed directly to the turf. But, we have also found that installing over a little snow had no adverse affect. We then install farm fence around the greens to keep the cross-country skiers off the plastic.

In the spring, once the covers have been removed, there is the added bonus that the greens are dry, firm and free of debris. They also seem to have less disease than those covered with breathable covers, or even those uncovered.

Helping to ensure proper spring results

With Westmount's history of ice damage, I wouldn't think of going into the winter without properly winterizing the golf course. This is no different than contemplating driving my car without insurance.

Items I include in winterizing are: irrigation system drainage, fungicide and dormant fertilizer applications, solid turfgrass covers for critical areas, and fences for the greens.

Kirkpatrick winterizing program

1. ***Irrigation system drainage***
2. ***Fungicide and dormant fertilizer applications***
3. ***Solid turfgrass covers for critical areas***
4. ***Fences for the greens***

"These items cost quite a bit, but so does getting the course back into good condition."
Hugh Kirkpatrick

Acknowledgements
Dr. D. Brown and Fred Spencer/Ontario Hydro; Bill Chapel/Ontario Ministry of the Environment

Living with the threat

Mad about MUSSELS

by Robert Burrows
Cornwall Golf & Country Club

Zebra mussels were probably introduced in the Great Lakes (1986) as a result of discharge of ballast water from ships which had visited Europe. Adults are 2.5 to 5 cm. molluscs marked with light and dark bands.

When water temperatures reach 12 C, between June and October, adult females spawn (up to 40,000 eggs each) allowing dispersal over large distances by floating, free-swimming microscopic larvae stages called veligers. Within three weeks, these mature and attach to any solid surface, filter-feeding on phytoplankton. Densities of 700,000/M.2 have been reported with lifespans 3.5 to 5 years.

Not a simple plumbing job
Imagine the possibility of living organisms clogging pumphouse intakes, irrigation supply lines, swing joints and sprinkler nozzles.

This has become a real threat to water-taking facilities in the Great Lakes and St. Lawrence River.

The invasion of Zebra mussels into the lower Great Lakes is an urgent problem. Colonization at intake, water cooling and distribution points has reduced intake capacity leading to power plant shutdowns; shortage of public and industrial water supply; and safety hazards should nuclear plant cooling, or fire protection systems fail.

Zebras can disrupt food chains, ecosystems, sport and commercial fishing, and all forms of boating.

Establishing proper controls
Control can be broken into four methods - biological, chemical, physical and mechanical. The best strategy is prevention of entry. Experts agree that it is best to do this at the free-floating veliger stage - before the larvae have an opportunity to settle and colonize within the distribution system.

They have few natural predators, although some suppression has resulted from the presence of carp, crayfish and waterfowl.

Solutions

Chlorine
The use of chlorine products (chlorine gas, sodium hypochlorite) is approved as a water treatment chemical. Chlorine is added at the mouth of the intake pipe through a diffuser system with injects during the breeding season, and only when the pumps are in operation. A chlorine residue of .5 to mg./l. in the water is required to kill the larvae. Any residual discharge must not exceed .01 mg./l.

The costs of installing this system and monitoring - including the permit process - is the least preferred method. And the use of chlorinated water on fine turf is questionable.

Studies by Dr. D. Brown of Ontario Hydro report: "Chlorine additions at a level of 2 PPM did not have any observable effects on growth, or flower production, in any of the species tested." Studies were conducted on various ornamentals and Kentucky bluegrass only, with no analysis of chlorine's effect on soil medium.

Other efforts
Physical and mechanical efforts have included: micro-screens, strainers, filters to prevent veliger entry (50 micron or 600 mesh); increased current flow (at velocities more than 1.5 to 2 m./sec., the veliger larvae don't settle); scraping of intake pipes to remove colonies; ultra-sonic vibrations; extending intake pipes into deeper water unpopulated by mussels (+30 ft.); infiltration unpopulated bed/gallery systems (sand filters); thermal shock (+50 C).

A proactive plan
The Canadian Coast Guard, who service buoys along the river, note a heavy six-inch mussel crust only 500 feet from our pumphouse. In case the Zebras attempt to muscle in, I have a plan:

1. Backwashing the main intake screen with hot (150 F) water to kill adults (we have an above-ground centrifugal pumping station with a capacity of 1000 GPM at 110 PSI with one main floating intake pipe, as opposed to a wet-well with vertical turbines).
2. Installing an electro-filter on the intake screen to supply 220 volts/CM of screen.

These two safeguards will only kill adults near the intake which would prevent clogging of the one-quarter inch screen.

It is not the end
More is needed to ensure that the microscopic installation of two (50 micron or 600 mesh) self-flushing filters between the main intake and the above ground 'header' manifold pipes. These two filters should not restrict the 1000 GPM flow rate.

With this rate, sufficient water velocity (5 ft./sec.) discourages mussels from adhering to PVC, or cast iron pipes. The filter system is still necessary, since the standing water which exists when the jockey pump is not working provides time for colonization.

During the off-season when systems are blown-out and winterized, the established food source of phytoplankton is taken away and they die in about four hours. Spring start-up can mean that every swing joint and sprinkler nozzle becomes clogged with dead mollusc shells.

An inevitable conclusion
We need a new irrigation system. But, at this time, I can't see myself explaining a clogged system to the members. We will safeguard what we have - and hope for the best.

by John Wilson
Credit Valley Golf & Country Club

From annuals to pumpkins

As the last days of summer approach quickly, outside gardening activities start to wind down. We take the time to enjoy the results of spring labour viewing the flower beds and planters in full bloom and realize the struggles with weather, fertilizer and pesticide applications are behind us.

Now is a good time to make notes about the things that were right and some of the planting plans that did not work out as well. We can plan how changes can be made next spring to keep the gardens continuously interesting.

It is my objective to keep members excited about their surroundings by creating colour and texture that changes from one season to another.

We begin with spring bulbs, then massive plantings of annuals started in our own greenhouse. The season is ended with Indian corn and pumpkins all grown in various settings around the golf course. In addition, I am attempting to introduce some new and specialized perennials, as well as herbs and decorative grasses to add variety in the gardens.

Seasonal gardening effects

After the flowers have faded, the beds cleaned and prepared for winter, there is Halloween, Thanksgiving and Christmas. For these occasions, I have a little fun creating an atmosphere to celebrate these special events.

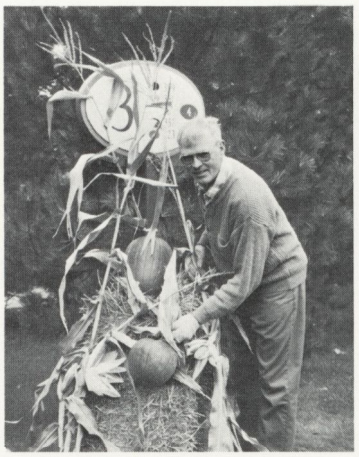
At Halloween, we call on a few pumpkins, bales of straw and hand-me-downs to create a number of pumpkin-head creatures which are placed strategically around the grounds. For Thanksgiving, we tie corn stalks to the light standards with bright orange bows.

And, at Christmas, we use natural greens and cones (collected from the course) arranged with red ribbon to create wreaths and sprays to add to the atmosphere. Boxes and baskets used for flowers are now filled with Christmas greens, bows, cones, cattails sprayed with silver, amongst other natural cuttings. Outdoor lights are used extensively on the pine and spruce trees around the clubhouse to create a holiday spirit.

Making ready for the new season

Before we know it, the cycle starts again - ordering, planting and nurturing those little seedlings for next year's displays.

1993 was a great gardening year. I know members and visitors appreciate the efforts we all enthusiastically put into our work, and they look forward to the new season.



Golf Images

Wilson uses home-grown creativity as the seasons change to provide regular visual surprises.

Preventing winter diseases

by Rod Hermitage
AG-Turf Chemicals Inc.

Timing is important

During my travels in the spring of 1993, I noticed a number of golf courses struggling to recover from severe winter disease. Most often, the last fungicide application is either credited with the excellent disease protection, or blamed for the lack of effectiveness, when, in reality, the damage visible in the spring actually occurred the previous fall, late October and November. In my opinion, winter disease protection starts in October and November, not just with an application in December. Hopefully, this article will help to support these views.

First of all, let's review all of the products available in Canada for winter disease control. The following chart shows the trade name, active ingredient, mode of action and the winter diseases controlled.

A mercurial problem

Here, now, is an update on the mercury situation in Canada. As of July 1, 1993, *Calo-clor* will no longer be manufactured for sale in North America. Sierra Grace Ltd. has voluntarily withdrawn from the USA market and this includes Canada. Dealers will continue to purchase product until all available stocks have been sold. *PMAS*, on the other hand, will continue to be sold in Canada until re-registration occurs in December, 1995. Then, the same phasing-out period will follow for Canadian dealers. (The phasing-out period is usually one to two years.)

With this in mind, turf managers will have to select a different product, or products, for their winter disease program. Since we only have four products for spring, summer and early fall disease protection, the term 'resistance' will again rear its ugly head. Golf superintendents cannot afford to lose these products since the prospect of new compounds for our market are still some years away. Specific products for snow moulds should now be thoroughly investigated.

Watch for the signs

The question I am most often asked is, "Why, when I applied 'brand-X' fungicide, can I still see the disease spreading?" This can best be answered by understanding how your fungicide works. A *2,4-D* mixture herbicide works almost immediately on a broadleaf weed. If the plant is actively growing we can detect a leaf curl within a few hours. A fungicide, on the other hand, assuming proper rates and application procedures are exercised, also starts to work immediately.

There are, however, still some infected plants which have not yet shown any disease symptoms. Consequently, to the applicator, the disease still appears to be active. As a rule, fungicides work immediately yet the visual signs will take a few days to be seen.

Typical program guides

In selection of your winter protection program, here are four ideas I've picked up while travelling across our country:

1. Spraying to control *Fusarium Nivale* (pink snow mould) during the months of October and November is a must if you wish turf to come through the winter months free of disease.
2. When selecting a winter fungicide, keep in mind that using a product which has not previously been used during spring, summer and fall seasons will greatly reduce the possibility of resistance.
3. In Western Canada, where snow mould protection is critical, the idea of using a broad spectrum systemic followed by a granular contact two weeks later seems to give the best results. The reasoning is simply: the systemic protects the plant from within and can only be removed by grow-out and mowing. The contact, on the other hand, gives the surface protection needed.
4. The use of spray pattern indicators like *Blazon** helps tremendously in proper application. Fungicides are expensive and the use of indicators help reduce the missed areas and eliminates the chance of spraying an entire area with a plugged nozzle.

**Blazon* - registered trade mark of Milliken Chemical*

Product	Active	Manufacturer	Mode	Pink snow mold	Grey snow mold	Low temp basidio mycetes
Arrest	Thiram/Plantvax/Vitavax	Uniroyal	Contact/Systemic	x	x	x
2-1-5 Arrest	Thiram/Plantvax/Vitavax	Nutrite	Contact/Systemic	x	x	x
Calo-clor	Mercury	Sierra	Contact	x	x	x
Daconil 2787	Chlorothanonil	ISK Biotech	Contact	x	x	
Easout	Thiophanate-Methyl	Fisons	Systemic	x		
PMAS	Mercury	WA Cleary	Contact	x	x	x
PMA-10	Mercury	Laters	Contact	x	x	x
Tersan 1991	Benomyl	Dupont	Systemic	x		
Terraneb SP	Chloroneb	Kincaid	Contact		x	
Fungicide II	Chloroneb	Scotts	Contact		x	
Terraclor	Pentachloronitro Benzene	Uniroyal	Contact	x	x	
FF-II	Pentachloronitro Benzene	Scotts	Contact	x	x	
0-0-6+15% Quintozene	Pentachloronitro Benzene	Plant Products	Contact	x	x	
0-0-6+15% Quintozene	Pentachloronitro Benzene	Nutrite	Contact	x	x	
Rovral Green	Iprodione	Rhone-Poulenc	Contact	x	x	
Spotrete-F+PMAS*	Thiram/Mercury	WA Cleary	Contact	x	x	x

**** Tank mixed as per labels***

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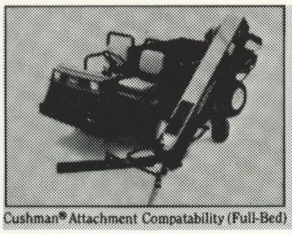
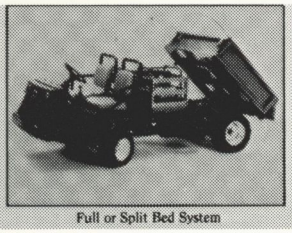
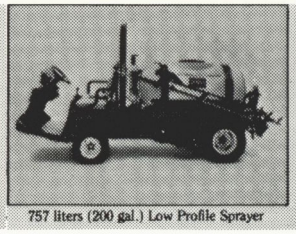
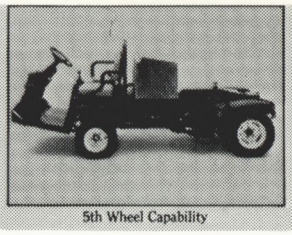
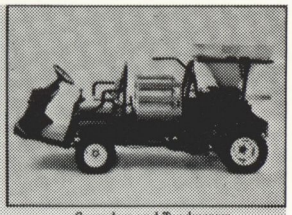

Cushman® Attachment Compatability (Full-Bed)


Full or Split Bed System


757 liters (200 gal.) Low Profile Sprayer


5th Wheel Capability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