



## President's Message **THE WEATHER**

Boy, do we need a rain; what I wouldn't give for an all day shower. I need it as badly as the golf course does. Although it isn't 8:00 A.M. yet, it is beastly hot already, and it promises to be another near 100 degree July day. No doubt that by the time the sun reaches its zenith, blazing down with incredible intensity and purpose, it will make Madison feel as uncomfortable as Equatorial Africa. I know it will rain again sometime, but the cloudless sky doesn't seem to promise much for awhile. How could any Golf Course Superintendent be in a good mood today?

Golf Course Superintendents are slaves to the weather. Whether we declare any season successful, merely average or not so good usually depends on the kind of weather given to that year. Try as we might, we can only do so much to moderate its influences. I always share this thought with the member who is praising the condition of the golf course: "Thanks, but I must give some credit to the good weather we've been having, and please let the weather help shoulder the burden of blame when conditions aren't what either of us would like them to be."

Sometimes the wrong kind of weather cancels out our greatest and most heroic efforts. And there are the times I harbor bitterness and resentment over how much the weather affects my mood and my state of mind. Last Wednesday dawned hot and jungle-like, and when I got to work the skies were gray and overcast, with ragged edges of black clouds. Winds were out of the southwest and Mike Nelson felt there was about a 30 percent chance for some significant rain. I was thrilled and had

already, albeit prematurely, started feeling better about everything. As the morning went on, the storm clouds became darker and filled the western skies. A few warm, immense errant drops of rain sprinkled the golf course. The wind picked up and started to gust. It looked more and more like it really was going to rain — seemingly there was no way we could miss this time. But by noon the clouds had pushed around to the north and the sky had started to lighten and brighten. What a sinking feeling — disappointed again. And my spirits that were so high at mid-morning had fallen to where they'd been for too many days already. By now, I should know better than to count on the weather. Ever.

"Everybody talks about the weather, but nobody can do anything about it" is a proverb that has as much truth to it as any. We celebrate it and condemn it; we curse it, slander and implore it; we rage against it, pray for it and even thank it. But there is no denying that unwaivering, constant fact: we can't do a thing about it, let alone improve it to suit ourselves.

For ten years I was more psychologically insulated from the impact of the weather than I have been the last three years. Youthfulness may have been a part of it, but hindsight tells me that more likely it was because I was lucky enough to have a pretty good weatherman working for me. Vincent had a keen sense of observation about nearly everything, but the weather in particular seldom fooled him. There were times I felt he qualified as a weather clairvoyant — he was correct in his forecasts more often than he was wrong. Years of farming in the rolling hills north and west of Madison sharpened and refined his perception about the weather, and he used this sixth sense and the clues nature gave him to gauge what to expect. I lost this "inside" information when he retired from full time duty three years ago. I've missed him and his forecasts.

**This spring was a turning point. I had to have more information about the weather. It was insane to be so affected by it and yet have so little knowledge of what to expect.** And if you live in Madison and need that kind of help, there's only one person and one place to go to — Mike Nelson and Weather Cen-

tral. Mike hardly fits the image of many television weathermen — he is a meteorologist rather than an actor (although I envy his comfortable presence on TV when he reports on the weather on WKOW-TV). Mike grew up playing golf at Blackhawk Country Club and his father is on our Board of Directors. His dad has told me that Mike's interest in meteorology and weather forecasting goes back to his grade school days, so Mike is no Johnny-come-lately on the weather scene. Many of you will remember the excellent talk he gave at our meeting in Wisconsin Rapids last summer.

Mike and his company have the latest equipment used in weather forecasting and are out front in the techniques they use in developing their forecasts — computers, satellite information, National Weather Service data, lightning detectors, you name it. If it's the state of the art, they either developed it or have it in use. I can't help but think everyone at Weather Central draws some input from the UW—Madison Meteorology Department, too, which is generally regarded as the finest in the country. The forecasts I get from Mike are even better than the ones Vince used to give me. There is no higher compliment than that!

If you've ever given a thought to subscribing to a weather service, please think about it some more. It is the best money I've spent in a long time. I think it is similar to using the USGA Green Section Turf Advisory Service. The service is nearly insignificant in cost, especially in the context of the money we spend on labor, machinery and pesticides. The information has been valuable to me in making any number of decisions — whether to aerify or not, helping to decide if we should continue topdressing or if we should stop, making sure the waterman is off the golf course because of strong lightning storms west of Madison, and warning players of imminent violent weather. It makes risk-taking decisions easier to make and that one right decision pays for the service for the entire year.

The forecasters aren't always right, but it easily beats sticking your finger in your mouth and holding it up to the wind.

Unless you have a Vincent Noltner!

Monroe S. Miller



## A Player's Perspective

# Who Should The Golf Course Be Maintained For?

By Dr. David Cookson



The argument is raised by some that a golf course should be maintained in a different manner for golfers of varying abilities, and since a golf club has members whose talents cover a wide spectrum, confusion ensues as to which golfer is to be the recipient of the green superintendent's special concern. I would suggest the contrary view that a golf course should be maintained in only one way— to try to achieve the finest conditions for golf play that are possible with the limitations of budget and equipment— and that this result will generally best satisfy the entire golfing membership at any club.

The most important part of the course for proper maintenance are the greens; if the greens are bad, no matter how great the rest of the course is, a golfer will leave the club dissatisfied with the condition and in a hypercritical state of mind. If the greens are exemplary, the same golfer will tend to overlook other parts of the course which may have less than desirable conditions, and feel quite positive about the course. Every golfer wants the green to be smooth, weed free, and without damaged, diseased, or dead turf. The argument then is how fast the green surface should be; some feeling that the average golfer needs a slower green than the expert player. This is fallacious; a golfer of any ability will learn to putt the speed of his home course greens, and all appreciate a ball rolling on a smooth and true surface where a good effort is properly rewarded. No golfer wants to putt on a thick carpet of lush grass where it takes a hit rather than a stroke to putt the ball, and where grain and surface irregularity will confound a properly struck putt. The green does not have to be as fast as the standard at a national championship, but faster greens over the long haul generate far fewer member complaints than do slow greens. A player used to fast greens can adjust to slower greens if he plays at another course much more easily than a player used to slower roll trying to adjust the other way. All golfers want their course to be in top shape, and if the standard of excellence, as measured by conditions existing for the national championships, is not approached, the membership will in time become disenchanted with the efforts of the green superintendent.

Similarly, fairways should be cut short enough that the ball will sit up and not bury in grass too long and weak to hold it up. This is the standard for all golfers of any ability. The worst player cannot hit the ball cleanly if it is not sitting up, as it may well not be with too long fairways. The argument I hear is that if fairways are cut too short, the grass will die under summer heat stress. Whether or not this is true, (and I am highly skeptical that it is, but that is subject for another time), all golfers will tolerate better shorter fairway grass with a few dead spots, than long green fairway grass that they cannot hit the ball out of with any consistency. Tees must be short too; it was never meant that on the tee one should place his ball barely over the tip of the grass blades due to a long cut. No class of golfer wants that, yet I see long grass on tees in my travels; completely unnecessary, and leading to heavy criticism of that particular course's maintenance. Bunkers should of course be carefully tended, weed free, properly cropped edges, with special attention to greenside edges so that players may not putt out. Golfers play the game at least in part for the challenge, and all know that it is not proper to be able to routinely putt out of bunkers. Roughs should be rough; not as too often noted, near extensions of the fairway. The difference in height of cut of a proper rough will add to the aesthetics of the golf round by outlining the hole more effectively, and add to that spice of challenge that players expect. The rough need not be impossible, nor the depth expected in a major championship; but it should be deep enough so that a player of any ability cannot expect to hit on the green as easily as if he were in the fairway. Even a thirty handicapper appreciates that a ball hit on a fairway should be more easily struck than one errant enough to be in the rough, and if he is in a match and in the fairway, he expects to have an easier shot than his opponent who may be in the rough. Golfers expect the rough to be a bigger challenge, and are inwardly miffed if they play a course where it is not.

I believe in any human endeavor one can generate more appreciation for one's efforts by striving to create the best, rather than settling for less than the best. In golf course maintenance the "best" is properly considered the course condition required for a major championship, and criticism of the green superintendent will be a lot less the closer he gets to that standard than it will be if he allows lesser course conditions to prevail in the belief he is satisfying more of the golfing membership. Not only that, the green superintendent can be much happier with himself, knowing that he is striving for excellence and doing the best of which he is capable.

# Wisconsin is the district of Columbia.



**Columbia is going strong—right at home on Wisconsin golf courses.**

In Deerfield, Wisconsin, we make a golf car that just might be the perfect car for Wisconsin golf courses — Columbia.

At Columbia, quality and perfection have always been our goals. We bought the Harley-Davidson golf car division because we knew we could build on its traditional strengths — and we're doing it. Now Columbia has a complete line of cars ready to meet the needs of Wisconsin golfers — whatever course or terrain you play on.

You can depend on Columbia to deliver the performance you need, too. Whether you prefer three-wheel or four-wheel models — gasoline or electric power — Columbia cars have the quality, dependability, and comfort you want. After all, they're built by your neighbors, right here in Wisconsin.

Find out for yourself why Wisconsin is the district of Columbia. See your nearest Columbia dealer today, or contact the Columbia Car Corporation, One Golf Car Road, P.O. Box #1, Deerfield, WI 53531, 1 608 764-5474.

**COLUMBIA**  **RIDE. THEN DECIDE.**

APPLETON HARLEY-DAVIDSON INC.  
2148 W. Wisconsin Ave.  
Appleton, WI 54911  
1 414 733-7282

JORDAN GOLF CARS, INC.  
3680 N. 126th St.  
Brookfield, WI 53005  
1 800 242-2072 1 414 781-2277

TIZIANI GOLF CAR CORPORATION  
4230 Argosy Court  
Madison, WI 53714  
1 608 221-4911

## POLARIS E-Z-GO

**TEXTRON**

**GARY MONFRE**  
PARTS, SALES, SERVICE

### E-Z-GO GOLF CARS

Waukesha, WI 53186  
414/542-7586  
414/344-0404

### E-Z-GO CHICAGOLAND

24404 N. Hwy 12  
Lake Zurich, IL 60047  
(312) 438-5511

## WGCSA AUGUST MEETING Stevens Point Country Club Stevens Point August 13

Continued from page 1

tion, our TV forecasts are seen over thousands of square miles. It might be raining in the northern part of our coverage area and clear in the south. Because of our large area of responsibility, a forecast of "scattered showers and thunderstorms" may be the best we can do.

Likewise, our cohorts in the National Weather Service are chartered to provide "general weather outlooks" — not specific forecasts for special interests. They also have too many other tasks at hand to spend the day talking to hundreds of private businesses, farmers or country clubs. In order to get more information for your individual needs, you may want to consider contracting with a Private Weather Consultant.

Private Weather Consultants are independent businesses who contract with other companies that

need specific weather information. For example, Weather Central, the company I am with, is contracted to provide hour by hour temperature, wind and humidity forecasts for several Wisconsin power utilities. This daily information is used to help predict the electric load that will be on the utility later in the day. This can be critical in hot weather when everyone turns up the air conditioning. By knowing in advance that the electric load will be high, utilities can be ready with backup generation or purchase power from other utilities to avoid a cutback in service or blackouts.

In the case of Weather Central, we employ a dozen degreed meteorologists. Each is fully trained in forecasting and weather analysis, and is a member of the American Meteorological Society. Our forecasters look at much the same type of information as the forecasters in the National Weather Service, and make their own predictions of further weather conditions. As an independent source of weather forecasts, the private consultant often will invest heavily in new equipment to help them do a better job. At Weather Central, we have 24 hour a day satellite movies, our own radar, and the state's only cloud-to-ground lightning strike detection system. Such high tech equipment, along with other computer data sources, enable us to keep tabs on developing bad weather anywhere in Wisconsin and over most of North America.

Whether the weather comes from Weather Central or any other private consultant, it will, of course, cost money. Many consultants offer a wide range of services that may be as simple as an occasional call when the weather gets bad, or as elaborate as 2 or more scheduled calls each day with printed forecast forms or direct forecast input into your personal computer. Because your service is custom tailored, the rates will vary depending upon your needs. A good ball park figure is about \$150 per month for a call in service with no forms, up to \$350 per month for 2 to 3 scheduled calls each day using specially prepared forms or direct computer input.

The main difference between "getting the forecast free from TV"

and "paying a consultant," is really fundamental. The "free forecasts" do not take into account your needs — they are a homogenous product put together to try and serve the majority of the public. The "fee forecasts" are developed with you in mind. Your course becomes a point-source for the forecast, so instead of predicting scattered showers, we can say, "the rain is just past you and it should stay dry through tonight." The TV weatherman and the National Weather Service won't go out of business if they miss your forecast. If you employ a consultant, you are his bread and butter — he had better do a job that is worth your money. In addition, the private consultant is there when you need him. Most consultants operate 24 hours a day, so if you have a question, the phone will be answered by a trained individual.

Over the course of a summer, you might spend \$500 to \$1,000 for a weather consultant. Our goal is to save you much more than that. Consider the cost of applying a herbicide over your course. If the chemical needs 12 hours of dry weather or rain with 6 hours or whatever, you can waste thousands of dollars in material and labor costs if the weather doesn't cooperate. Private Weather Consultants want to help you and your course save time, dollars and frustration often spent on incorrect "guesses" about the weather. Since we forecast with you in mind, we can better answer such questions as start and stop times for rain, precipitation amounts and intensities, temperature trends and the extended weather outlook. Think about how many times you have wished for more weather information or someone to really talk to about an approaching storm. If that happens frequently, you may want to consider a private consultant for your weather forecasts.

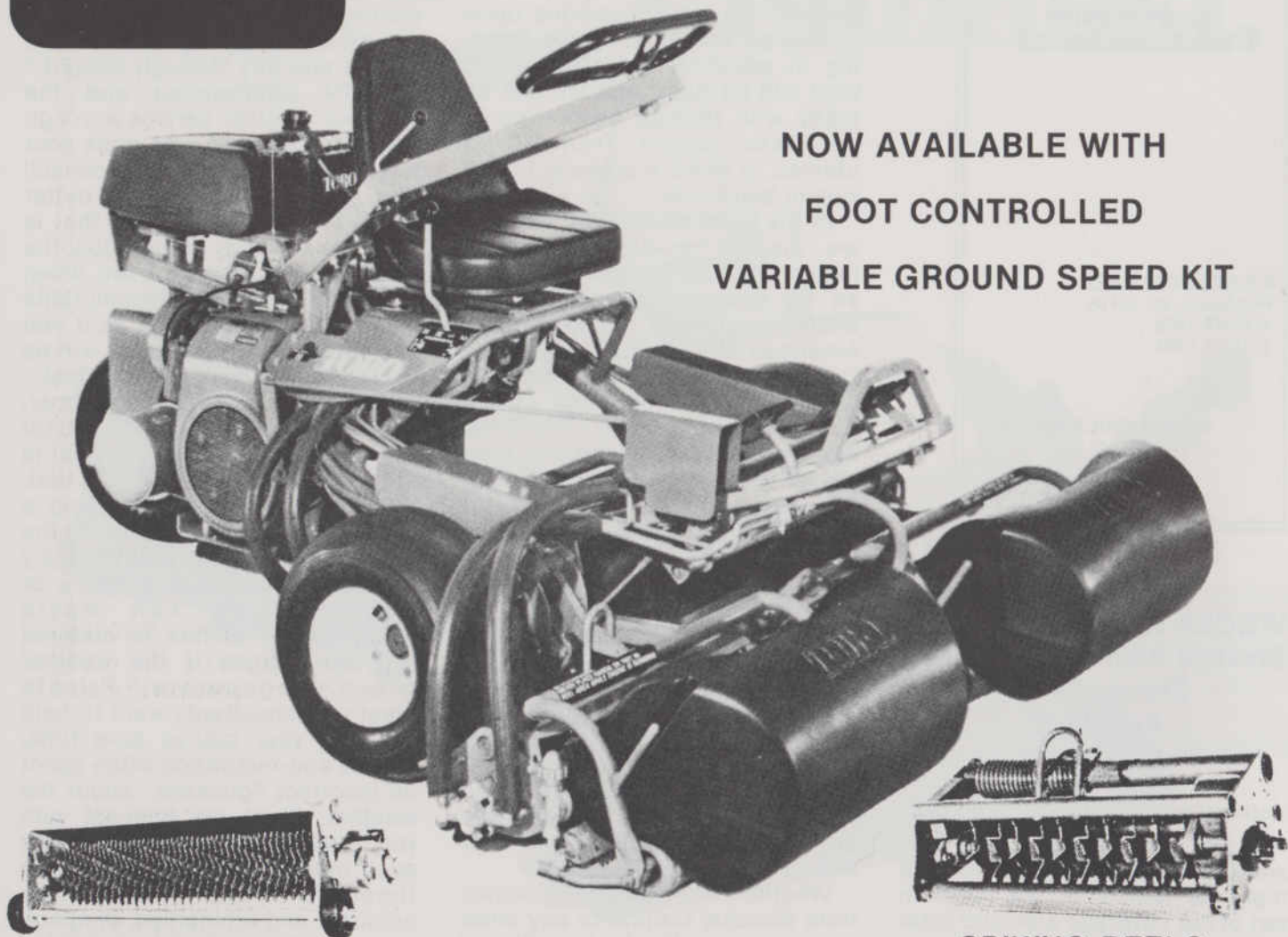
*Editor's Note: Mike Nelson is a native and lifelong resident of Madison, and grew up playing golf at Blackhawk Country Club. Mike is currently Executive Vice President for the Weather Central Division of ColorGraphics Systems, and received a B.S. degree in Meteorology from the UW-Madison. He has been with Weather Central since 1976 and is the Meteorologist for the Wisconsin TV Network. He is a member of the American Meteorological Society. Mike and his wife Cindy welcomed their first child — a baby girl — on July 1st. Congratulations!*

"ENGINEERED by PROFESSIONALS for PROFESSIONALS"

**TORO**

## GREENMASTER 3

NOW AVAILABLE WITH  
FOOT CONTROLLED  
VARIABLE GROUND SPEED KIT



THATCHING REELS

SPIKING REELS

Top ranked in quality of cut because no other greensmower in the world has cutting heads isolated from the traction unit and grass baskets. Engineered for turf care professionals by the professionals in turf care products.

*Reinders*

## TURF EQUIPMENT

13400 W. WATERTOWN PLANK RD., • ELM GROVE, WIS. 53122  
PHONES: SALES (414) 786-3163 — 1-800-782-3300

## DON'T MISS WTA SUMMER FIELD DAY

Final plans are set for the second annual Wisconsin Turfgrass Association Field Day. The "hands on" event will begin at 9:00 A.M. and run until 4:00 P.M. on August 27 at Oconomowoc Country Club.

Last year, the first of what is now and will be an annual event, was so well received that this year's field day has expanded in terms of distributor and manufacturer displays, as well as more demonstration plots set up by Dr. Gayle Worf and Dr. Bob Newman. Lots of planning and work by Ed Devinger have laid the groundwork for a successful and educational day. WGCSA member Harvey Miller has been very gracious to offer his golf course as a site for the field day and he has been helpful to everyone — researchers, exhibitors and WTA organizers - involved in making the day instructive and productive for those in attendance.

Try to keep this day open on your calendar. Lunch and refreshments will be included in the registration fee and there will be plenty of activity to make it a full day. Details and registration forms will be forthcoming from the WTA.



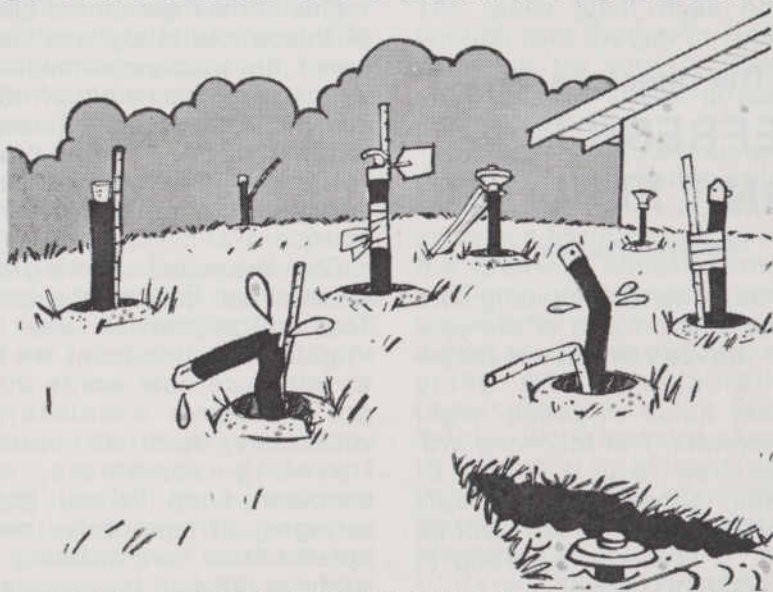
**Fast-acting  
nutrition for trees**

That's what  
**STEMIX**<sup>®</sup>  
can do for  
your tree care  
program.

**DHD**  
TREE  
PRODUCTS, INC.

2467 SOUTH 170TH STREET  
NEW BERLIN, WI 53151  
(414) 784-3556

## SPRINKLER SYSTEM PROBLEM?



CALL REINDERS IRRIGATION SUPPLY  
FOR

**TORO**

**Irrigation**

- PLASTIC PIPE
- DESIGN & SPECIFICATIONS
- PUMPS & CONTROLS
- REPAIR & SERVICE CONSULTATION

**REINDERS**

13400 WATERTOWN PLANK ROAD 800 782-3300  
ELM GROVE, WIS. 53122 MILW (414) 786-3163

## An Objective Study RESEARCHER CAN'T FIND ILLNESS/ PESTICIDE LINK

With all the legal actions and publicity by people who say they have been harmed by chemicals, surely university researchers could prove the relationship between health problems and pesticides. Not so, according to Dr. Vern Dobson, a professor of Preventative Medicine at the University of Wisconsin — Madison!

In eight years of research, Dobson was unable to link health problems with pesticides. Dobson conducted two studies, one which

lasted three years with 500 orchard growers in Michigan. The second study, which lasted five years, was with the Mayo Clinic for employees of Libby Foods in Minnesota. Other than cases of unusual circumstances, — for example, undiluted pesticides being spilled on an individual, Dobson reported, "We didn't come up with anything."

The UW—Madison medical researcher did not discount that some health risks are real. For example, asbestos has now been found to cause cancer. But he does point out that poisons are all around us, many occurring naturally.

"The way to solve a problem is not to hook the two things together with a preconceived idea," he said. That situation, unfortunately, is all too often the case when local bans are proposed.



## From The Director's Desk

# REFRESH IT — DON'T FLUSH IT

By Stan Zontek

*Now that we are heading into the most difficult part of the year for golf course turfgrass management, it seems that some reminders about irrigation might be appropriate. The following article, written by William C. Buchanan, appeared in the July 1976 issue of the "Green Section Record". It is worth repeating in the GRASSROOTS. SJZ*

Irrigation on golf courses was unheard of in this country until the turn of the century. At the time, if it was referred to at all, it was called watering. The grasses survived as best they could through the stress periods. Needless to say, turf conditions on many greens were on the sparse side by the time summer had passed.

Fred V. Taylor made some studies of golf green construction around that time. He was trying to determine the best way of building a putting green and the best way to maintain it. He noted that watering to keep the seed moist during the first phases of green establishment was very important. At this stage, he was watering the greens frequently, several times a day. After the grass seed germinated and had begun growing, the watering was done only once a day for two hours. This lasted for two to three weeks, then the watering was reduced to two hours every other day for several weeks.

The process of reducing the amount of water continued. After five weeks, the grass was only watered one hour a week. This lasted for several weeks until he felt the grasses were strong enough to do without. After the grasses had matured, they were observed to have root systems of up to 18 inches. Try to remember the last time you observed roots on putting greens that were 18 inches deep. Taylor was very proud of the fact that after several years by summer's end, the greens had a 75

per cent cover. This was considered quite an accomplishment at the time.

One of the most incredible parts of this whole study was that the green he was experimenting on was mowed at a height of 1/8 of an inch. That's extremely close, even today. Can you imagine how fast the greens must have putted with no water and mowed at 1/8 of an inch?

Over the years, watering was increased far beyond the point of Taylor's program. It was called irrigation. At this point we began to introduce new words into the golf course maintenance vocabulary, such as: sprinklers, traveling sprinklers, quick couplers, snap valves, pop-ups, syringing, syringe cycles, and last but not least, overwatering. Once we have reached the overwatering point the matter is academic; the only question is how we are applying the water. Are hoses and sprinkler still being used, or is the approach more scientific with the use of semi-automatic or automatic systems? It seems that no matter which system is used, the end product is a wet golf course. This condition seems to be practically universal and not peculiar to any type of course whether it has cool season grasses or warm season grasses.

Webster defines irrigate (vb) -gat·ed; -gat·ing 1: wet, moisten: as a: to supply (as land) with water by artificial means b: to flush (a body part) with a stream of liquid (as in removing a foreign body or medicating) 2: to refresh as if by watering vi: to practice irrigation—ir·ri·ga·tion (n)—ir·ri·ga·tor (n).

Irrigation to Mr. Webster apparently means one thing, while to the golf course industry and club members it means quite another. To the golf course industry it means money—irrigation systems and operations are the major expenditure once the course is constructed. To the club member it means green playing surfaces—what makes up the green playing surface is another story. The majority of club members have no idea what grass they are playing on; it could be bluegrass, bermudagrass, bentgrass, *Poa annua*, or any combination. I have seen clubs where they are happy with well manicured

weeds. They do not care or mind as long as the color is green and the greens hold.

The superintendent is caught in a different situation. Irrigation systems to him are indeed a friend, because they are labor savers and tools with which he can manage the watering of the golf course. Using this vital management tool, water can be applied at the time it is needed in the amounts required and with a minimum of labor. When used in this manner, irrigation systems are a very worthwhile and necessary investment. The only problem with this type of program is in determining how much water is needed.

Too many times, Mr. Webster's definitions get confused. Remember, he made a distinction between irrigation of the land and the body. For land, the definition was watering by artificial means and to refresh as if by watering. For a body part, it was to flush with a stream of liquid (as in removing a foreign body or medicating). Gentlemen, contrary to popular belief (although I realize many superintendents become married to the golf course during the summer stress periods and pour their hearts and souls into keeping the turf alive on the course), the golf course is not a body part. The grass and soil are not foreign objects that need to be flushed by a stream of liquid to be removed.

Irrigation can become a foe when not properly managed. Membership pressure as well as nonfamiliarity with the system can lead the superintendent into poor management practices. Many times, although it is difficult to get anyone to admit it, they do not know how much water is being applied. Sure they know what the system is *designed* to supply, and they know how long the system is programmed to run, but how many know the *actual* amount of water that is being distributed? How many times have cans been randomly placed around the course, on tees, greens and fairways and the actual amount of water applied been measured? I would say relatively few. I would not be at all surprised that if this were done, many people would be amazed that the amount they are applying is greater than what they anticipate.

Probably the best indicator of

overwatering, although it is generally noticed too late, is a gradual but significant increase in *Poa annua* population on the course. There have been more areas converted from a high percentage permanent turfgrass surface to a high percentage *Poa annua* playing surface within a few years following the installation of an updated irrigation system that I care to mention. One of the main contributors to this is that the improvements in the irrigation system cost a lot of money. Therefore, pressure is exerted, whether real or imaginary, to run the system frequently to get your money's worth. Another contributing factor is that the new irrigation system is being used, but the old watering practices are also still being used. As soon as either of these situations exist, *Poa annua* percentages begin to increase because the maintenance program has changed in favor of *Poa annua*'s growth.

Overwatering is very seldom by design; it just seems to evolve! The gradual evolution starts when a certain area begins to wilt. This area probably would have not even been noticed ten years ago, because there was not the pressure on the superintendent for wall-to-wall green; and besides, there were probably more important jobs to be done. But now at the slightest sign of wilt, not only is that spot watered, but more than likely, the entire surrounding area is watered. This sort of TLC (Tender Love and Care) starts a process of conditioning the area to demand more water. Because the grasses that were not to the wilting point have been gradually conditioned to expect the watering, the entire area becomes weaker. It is being maintained so that the weakest portion will survive. This type of practice can only lead to an overall weaker turf.

It seems that golfers and turf management personnel have lost sight of the phenomenon of natural selection in nature. Some plants are going to be weaker than others, and they will die; then the stronger plant will take over. According to the imposed laws of the golf world, it seems: "All Will Be Green and Live—Forever." There is no allowance for any turf to die, no matter what. Now, I am not advocating that we do not try

to keep the golf course a nice healthy green, but I believe there is a limit.

During the spring and fall when the weather is relatively cool and the grasses show some wilt, I suggest we not be too hasty in applying water. Let the turf come under some stress; force the roots to go down into the soil profile and search for water. The only way they are going to go down is if they are forced to do so. If abundant water is available in the top two or three inches of the soil profile, then that is where the roots will remain. Only when the moisture supply is deeper than the roots, will the roots extend to it. Sure some of the grass will not make it, but I bet surprisingly little will not survive this treatment. And once the grasses become conditioned to the treatment, they will be a healthier green with a good root system.

Along with the grass being extraordinarily green, the putting green probably will be soft. The golf course industry has been pushed into believing a soft putting green is a good green. Of course, the easiest way to get the green soft so that it will hold a half-skulled 9-iron or even a 4-wood is to water it until the ball sticks. Invariably, when the water is used to soften an area where traffic is going to be concentrated, such as tees, fairways or greens; there is a problem with the turf. The more water applied, the easier it is to compact the soil and when the soil is compacted, soil structure is destroyed. When soil structure is destroyed, the plant cannot grow as well because of reduced soil air space. Tight soils make root growth more difficult. A short root system requires more frequent watering. It is no longer capable of supplying enough nutrients and water to the plant to withstand the stress periods. More water is needed, which causes more compaction and shorter roots, which brings about a need for more water, which subjects the soils to more compaction and shorter roots, etc., etc., etc.

This is truly a vicious cycle and the longer it goes on, the worse conditions get. Not only do the conditions get worse for the grass but weed infestations are encouraged. Crabgrass, *Poa annua*, and all the other variations of turfgrass headaches arrive when

the permanent turf is weakened. During July and August it is truly difficult to keep the grass alive. The grass plant does not have enough root system to support its demands for survival from heat, moisture, and traffic stresses being placed on it.

A program of judicious watering during the cool months of the year will firm up the soil, which will allow for more natural growth of the grasses. Almost without exception, golf course personnel know how much moisture is required each week at any given time in their area. The information has been compiled by the Bureau of Plant Industry by using an evaporation pan and by personal observation. These bits of information can be of immeasurable assistance in planning an irrigation system. However, unless the superintendent is sure how much water he is actually applying, the evaporation information is of little use. Some suggestions therefore to help control the use of water on the golf course are:

1. Determine how much water is actually being applied.
2. Make sure the areas being irrigated are receiving the right amount of water.
3. Keep spring and fall irrigation to a minimum.
4. When irrigating, apply enough water to wet the soil through the root zone.
5. Increase the interval between irrigations.
6. Try to avoid daily irrigation.
7. Try to determine if the grasses are serious about turning blue and dying or just thinking they are going to die. They are in a way like athletes. You have heard athletes say they thought they were going to die when placed under great stress. But they were well-conditioned and survived. Grasses may also survive.
8. Remember Mr. Webster's words in making a distinction between body and land. We refresh for land flush for body. And to this date, there is no lovelier stretch of land on earth than a well conditioned golf course.

**SUPPORT OUR  
ADVERTISERS**



**It's a jungle out there.**



And the Ransomes Bob Cat Diesel is King. With a cunning for cutting fuel consumption. And a quiet engine that purrs through the toughest, tallest terrain.

See your Ransomes Bob Cat distributor for a personal demonstration of this great grass machine or call Ransomes, Inc., One Bob Cat Lane, Johnson Creek, WI 53038, (414) 699-2000.

**RANSOMES**

**BOB-CAT®**

**The grass machine.**