construction and/or the hazard, the player must add a one-stroke penalty, and drop the ball outside the hazard. Because it is usual for a ball in a water hazard to be unplayable, areas under repair should not normally be defined as ground under repair. A water hazard does not loose its status as a water hazard just because of the construction.

In the second scenario, your greenkeeping staff is pushing the sand back up in a bunker after heavy rains have washed it out, and a ball lands in the bunker. The bunker does not lose its status as a hazard because of the rain washout, or because the grounds crew is working in the bunker. Once again rule 25-1b allows the player to drop in the bunker without penalty, in an area affording *maximum available relief,* or he may drop outside the bunker taking the one-stroke penalty.

Finally let's look at a scenario where the greenkeeping staff is completely rebuilding a bunker with new drains, new sod, the works, and the entire bunker is undergoing construction. decision 25/13 tells us that even this bunker does not lose its status as a hazard and there is still no free relief. However, it is recommended that the Committee should define the bunker as *ground under repair* and classify the bunker as *through the green.* Reclassifying the bunker as *through the green* is the one and only "loop hole" that will finally get the player free relief from a hazard.

Bottensek, Stevens Point Country Club to Host WTA Golf Benefit

The beautiful Stevens Point Country Club will host the Wisconsin Turfgrass Association Annual Golf Benefit on Monday, September 28th. Lunch will be served from 11:00 a.m. to noon, and golf will begin with a 12:30 p.m. simultee. Dinner and prizes are after golf.

This long standing event is a key fund raiser for the WTA. Proceeds from the registration and from the donor board go to the Wisconsin Turfgrass Association for turfgrass research in the state.

For details, call Jeff Bottensek, golf course superintendent at SPCC, at 715-345-8906; or call Audra Anderson, executive secretary of the WTA at 608-845-6536.

Inside The Ropes

By Monroe S. Miller

It was cool — I had the chance to watch the 1998 US Women's Open at Blackwolf Run as an official member of the media, from 'inside the ropes' as we ink stained reporters say.

The Open was actually my second experience as a media person. The first was as a staff writer for The Capital Times. Rob Schultz got me the media pass, the neat kind you actually tie to your belt, and I watched the Packers defeat the Cleveland Browns in a preseason game at Lambeau Field in Green Bay almost ten years ago. My daughter Christie was able to use my ticket to attend the game, too, so it was a big deal in a lot of ways.

It was quite an experience, and I learned how well the press is treated. There was preferred, free parking right next to the stadium (I still park for free, on the street but blocks away!). We got there right before the kickoff, avoided all traffic hassles — the fans had already arrived and parked — and rode an elevator to the press box.

Ah, the press box at Lambeau Field. There's a place to spend some time. The Packers provide the print and electronic media reporters a buffet right in the press box that would suit members of the most exclusive country clubs in Wisconsin. And it was, again, no charge!

The view of the game media people have isn't for sale anywhere else in Lambeau Field — clear glass unobstructed view, 50-yard line seat, comfortable chairs — unless you are in a skybox for $30K a year (or more).

Rob's only advice was "keep your mouth shut and take a few notes."That was easy enough and I escaped undetected, even though I sat right next to Bud Lea from the Milwaukee Sentinel. He's a veteran reporter with considerable fame and I couldn't resist visiting with him. I did not, however, ask for an autograph. Normally I would have.

Halfway through the fourth quarter we went down to the Packer sideline,

My headquarters for the day, as a member of the golf media!

Traffic was backed up on Rt. 23 on the first day of the Women's Open.

out of the way of players and coaches, but literally right next to them. I was stunned by their size, by the sound of the hitting on the field, and by the talking among players on both teams.

And then — WOW! — down to the locker room for interviews with players, into the interview room with coaches, and after it was all over, a conversation with Linde Infante in the concourse of Lambeau Field. Rob provided an experience I won't forget.

The USGA gave me the opportunity for a similar experience this past July 4th holiday.

Shortly after the announcement naming Blackwolf Run host of the 1998 US Women's Open, Mike Lee arranged to get me on the media list for the Open as editor and chief reporter for *The Grass Roots*. I received all press releases concerning the Open and an invitation to apply for press credentials for the tournament.

I read the application blank, considered if I could actually get away from work on the Thursday before the 4th of July holiday weekend, and decided to return it completed. And then I forgot about it.

The reason I forgot about it was that I did not expect to get credentials. The questions on the form included things like, "how many phone lines will you require?"and "how many desks are needed?" C'mon! This is *The Grass Roots* we talking about, not Sports Illustrated or *Golf Digest* or *The Capital Times*.

But the USGA deemed our journal worthy of a media pass, so I had it safely in my pocket when we headed up to Kohler for the Open on Thursday, July 2nd. I wasn't sure what privileges came with it, but I wasn't expecting much. My interest was the course, Mick Lee's job of preparation, and the players, not the credentials.

That was wrong. By early Thursday morning I am sure Open officials and Kohler Company execs figured out this was a bigger deal to golf fans in Wisconsin than they had hope for in their wildest dreams. Traffic was horrific, backed up past on/off ramps and onto Highway 23, both east and west. I groaned at the thought of the big wait in the car getting to the parking lot and the likely even longer wait for a shuttle ride to the golf course.

We inched toward the lots north and east of the foundry and office complex, but as we got closer could see that an occasional vehicle was moved straight through to the Village. I wondered if, maybe, the privilege to go straight through past the lots and closer to the course was for media types, which I was for that one day.

I flashed the credentials the USGA sent me and whizzed right into Kohler, past the American Club to the stop sign, left to a lot I knew was within walking distance of the golf course. We were directed into a grassy parking lot, exchanged credentials for a badge and armband and camera pass, and boarded a new, air-conditioned mini-van. The ride took all of two minutes and we were deposited at the front door of the media tent.

(Continued on page 34)

The entrance road took fans past the practice range, . . .

where Jan Stephenson was fine tuning her game for the Open.

Wisconsin players included Sherri Steinhauer of Madison, here headed for the 8th tee, and. . .

Martha Nause of Sheboygan, here hitting from the bunker on hole one.

(Continued from page 33)

It wasn't the kind of tent you conjure up in your mind when you hear the word 'tent'. First, it was huge and covered the area of a good-sized golf course maintenance building. There was flooring in the tent, bright lighting, air-conditioning, and it was well appointed. There were rows upon rows of desks (long tables, really) and phones at each chair. Offices, an interview room, printed material by the bushel, and television sets all around were also there to use. On the one hand I felt like a rube as I gaped in awe. On the other hand, the special treatment gave me the feeling of a big shot!

No doubt the guys who write — newspapers and magazines — for a living or those involved with radio or television don't feel like I did. What the USGA really did was give them a comfortable setting to do their jobs. Clear, honest writing and reporting is hard work, and for a few days in July the media tent was their office. It needed to be reasonably comfortable.

Media credentials extended to me the opportunity to carry a camera, something the regular fans couldn't do. I shot a lot of pictures, some which are included here. The point of the rule, I guess, was to minimize the distraction to players, and that makes sense. They have the same 'no camera' rule at the Masters in Augusta each year.

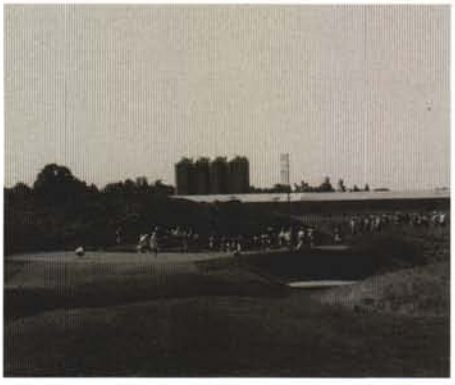
The 'inside the ropes' armband gets a person closer to the action, meaning the players. But I didn't take advantage of it because Cheryl was with me and she isn't a member of the media like I am!

But even from outside the ropes, we had a fantastic time. The golf was great, the golf course was just the best, and I don't know how much better the weather could have been. A clear and sunny and moderate day in July is a rare event. Rain had fallen and given the course a deep green color, but there wasn't a wet area to be found. The course was spotless and immaculate, which allowed focus to fall on the competition, just as it should for any golf tournament.

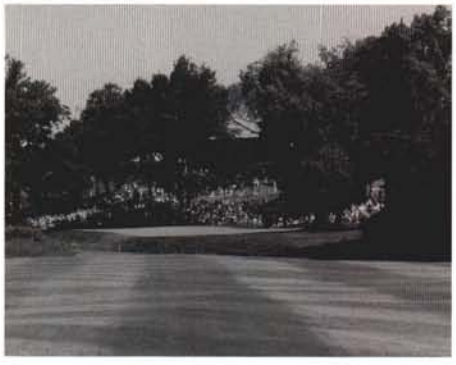
Mike Lee and all the crew at Blackwolf Run received unanimous

The view from the TV camera tower behind the 15th green. Down the hill behind the tower is the golf course maintenance facility.

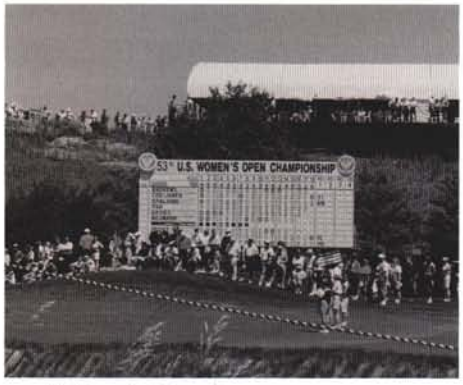
A great feature of Blackwolf Run is its embrace of the Wisconsin landscape, as shown by the barn used as a shelter on the front nine, and. . .



the silos across the road from third tee.



The ninth green into the hillside below the clubhouse drew a huge crowd, . . .



as did the eighteenth green.

praise. And they deserved it. For the WGCSA, we have a young superintendent among us who has reached a professional level of success that brings pride to the entire organization. The success of the tournament opened eyes all over the country — attendance records were broken, a playoff resulted, and tons of interest in the golf was shown.

The USGA Museum had a display for all to enjoy.

Junior Golf received a big boost from the Women's Open.

I am certain the USGA extends media privileges in the hope of extensive reporting on the tournament, but I am not doing that. The golf media took care of it and did so superbly. My point to these ramblings was to give you a bit of a look from the inside. It was fun and it was a neat experience. But the real experience was seeing a great golf course at its best with the world's best women's players.

That is what the 1998 US Women's Open was all about.

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ON THE COURSE

By Dr. Wayne R. Kussow
Department of Soil Science, University of Wisconsin-Madison

This article deals with some issues and problems that have surfaced on golf courses this season. While some of the problems are undoubtedly weather related and may not reappear next year or the year thereafter, they are red flags that warrant thoughts of remedial action.

About a month ago, after some torrential rains, the issue of bunker drainage was aired on the Noernet. Questions arose regarding how to effectively tile drain bunkers. A quick search in textbooks revealed extensive discussions of the importance of diversion of surface water away from bunkers, but almost nothing on subsurface drainage. None of the authors pointed out that you cannot effectively drain bunkers that contain the oft recommended 4 to 6 inches of sand. That information came from Dr. Oscar Miles at the Merit Club. He pointed out that you need about 11 inches of sand over the drain lines if good drainage is to occur. Why is this?

Movement of water out of sand into pea gravel and then into a drain pipe involves movement from relatively small pores into humongous pores. In order for this to occur rapidly, two conditions have to be met. First, the water at the interface between the small and large pores must be at near zero tension. This condition only occurs when there is saturation of the finer-pored material. The second requirement is that there has to be a pressure that "pushes" the water into the larger pores. That pressure arises from the water in the pores in the sand. To get sufficient pressure for rapid water movement into the drain tiles, you need considerably more than 4 to 6 inches of sand. This, by the way, is why putting greens are constructed with a 12-inch root zone. Dr. Miles recommended 11 inches of sand to get the pressure required for drainage, but to not dry out the surface as much as on a putting green. Good advice!

The bottom line here is if you are going to install subsurface drainage in bunkers and expect that it will function properly, the mode of construction needs to be essentially the same as that of a putting green. The subgrade has to be prepared and trenched for drain lines embedded in peagravel and some 10 or more inches of sand placed over the drain lines. The depth that will work best is dependent on sand particle size. I suggest going with about 12 inches to begin with. If the sand gets too dry, remove it down to where it seems to have the degree of wetness desired.

After reading this, you should now appreciate even more the need to make sure that the area around your bunkers is contoured so as to divert any surface water away from the bunkers. With a little luck and some tolerance on the part of your golfers, you may be able to avoid the expense of putting effective subsurface drainage in bunkers.

So much for bunkers. The rains also brought to the forefront problems with wet tee boxes. The proverbial sand or sand-peat in bathtubs filled up and needed subsurface drainage. Everything I have said above about bunker drainage applies to these sand-based tee boxes. Native soil tee boxes also suffered from excess moisture, but in this case, the problem was generally compaction of excessively moist soil. If you are considering reconstruction of these tee boxes, you might want to consider what I will call here the Penn State and Ohio State approaches. Dr. Peter Landschoot at Penn State University (PSU) has had great success in amending soils with composts. While developed primarily for lawns, the technique has great promise for fairway and native soil tee box renovation. Once the existing sod is stripped, approximately 2 inches of a good quality compost is spread on the soil surface and thoroughly incorporated to 6 inches or so with a rototiller. The tee box then needs to be graded to provide a slight slope from back to front to ensure surface drainage. The box is then ready for sodding or seeding. Seeding is preferred so as to not introduce a layer of unlike soil.

If the PSU approach has a limitation, it is finding a uniform, high-quality compost in the quantities needed. The compost must be dark brown to black in color, have a crumb structure, be free of large pieces of debris, and have an earthy aroma. You also need to have the compost tested to make sure it does not contain excessive amounts of soluble salts.

Dr. Ed McCoy at Ohio State University has recently completed an extensive study of blended topsoils. He found that the best mix from the perspective of soil physical properties that seem to most influence turf quality is a mix that contains about 65% sand and 8% organic matter by weight. The creation of such a mix is not something that can be done effectively on-site. It involves blending of existing soil with sand and a good source of organic matter. Dr. McCoy

(Continued on page 39)

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(Continued from page 37)
used foundry sand and sphagnum peat in his research.

Now I want to share with you some things I have learned this year in my putting green management systems project. One lesson learned relates to another discussion on the Noernet that took place in early spring. That discussion was one about algae on putting greens. I very effectively created the problem this year by mowing at 0.125 (1/8) inch or less and applying simulated traffic that compacted the green surface just enough to increase water retention and keep the surface continually moist. There is no algae where the mowing height is 0.156 (5/32) or more, even where the green is heavily trafficked. From these observations, I can conclude only one thing: algae on putting greens is a self-inflicted problem. Expose the soil surface to sunlight, encourage surface wetness, and the problem is yours to deal with.

The protocol for the putting green management systems project this year calls for dropping the mowing height to 0.109 inch on one set of plots and applying Primo. The object is to have putting green speeds consistently above 11 feet throughout the day. Due to excessive rainfall and soft greens, it is only recently that I have been able to mow at 0.109 inch without scalping. This gave me a window in which I could establish how putting green speeds vary through the day before Primo is applied. The same will be done after application.

What I have observed is that between mid-morning and early afternoon, speeds can change anywhere from 0 to +8 inches. This, I assume, is due to drying. From around noon to mid-afternoon, the speed change has ranged from -4 to +11 inches. After 3:00 pm, the speeds have consistently declined, the amounts ranging from 3 to 15 inches. In many instances, these late afternoon declines in green speed have done nothing more than bring them back to where they were in mid-morning.

As you can see, there is tremendous variability in what happens during the day to the speed of greens rolling in the range of 11 feet. The type and amount of change that has been recorded varies with the weather, which bentgrass cultivar we are looking at and whether or not the green has a sand-based or native soil root zone. Hot, sunny days are typically associated with substantial increases in green speed between mid-morning and early afternoon, but little change thereafter. On cool, overcast days, changes in speed during the day are minimized while late afternoon reductions tend to be accentuated. 'Penncross' creeping bentgrass tends to give the largest changes in speed and 'Crenshaw' the least, but exceptions to this have often been encountered. Similarly, the native soil green has often exhibited wider swings in speed than has the sand green, but exceptions have not been uncommon.

Given the variability I have seen in putting green speed and the multiple factors that seem to be involved, I cannot perceive that application of Primo to bentgrass-dominated putting greens is worth the expense and risk involved. The situation may be different for bent-Poa greens. I will be checking this out next year.

Grass Breeders' Conference Showcases O.J. Noer Facility

By Dr. Michael Casler
Department of Agronomy, University of Wisconsin-Madison

The 35th biennial Grass Breeders' Conference was held in Madison on August 8-11 this year. Fifty grass breeders from as far away as Florida, Arizona, and Manitoba attended the meeting. The group is made up of both turfgrass and forage (or pasture) grass breeders. Although we work on different commodities, many of the ideas and principles are the same. In fact, many of the grasses are the same - bermudagrass, perennial ryegrass, and tall fescue are just a few examples for which breeders have developed both turf and forage types of varieties.

The meeting was very successful and the delegates got a good feel for Madison and the University of Wisconsin grass research facilities. An advance group arrived in Madison on Saturday and were treated to an evening on the Memorial Union Terrace overlooking Lake Mendota, followed by dinner and a walk down State Street.

On Sunday, the advance group had a golf outing at the University Ridge Golf Course. Everyone had a great time —the course was in excellent shape and the weather cooperated perfectly! Jeff Parks, superintendent of the course, participated in the outing and was often found in deep conversation with Leah Brilman, turfgrass breeder for Seed Research of Oregon, and John Stier, UW turf management specialist, about the condition and management of the course. The teams led by Michael Casler, UW turfgrass breeder, and Milt Engelke, Texas A&M turfgrass breeder, tied for the lowest best-ball score. Team members voted to have Milt and Mike run a race to select a winner, but they declined.

We got down to the business at hand on Monday and Tuesday. Monday found the group discussing forage and pasture grass breeding research and touring plots at the Arlington Agricultural Experiment Station north of Madison.

On Tuesday, we focused on turfgrass research. Dave Huff, Penn State turfgrass breeder, gave an excellent overview of his *Poa annua* breeding and selection program. He is working to develop a perennial, greens-type *Poa annua*. We spent the afternoon at the O.J. Noer Turfgrass Research and Education Facility in Verona. The UW turf research and extension specialists gave an excellent tour and overview of activities at the facility, including the plans to expand the University Ridge Golf Course and the O.J. Noer Facility plot area. The group was able to see the center in its best condition, just one day prior to the annual WTA Turf Field Day. Many of the delegates were very impressed with the O.J. Noer Facility and the level of trial-plot activity.

There were many notable breeders who attended the conference. Milt Engelke of Texas A&M is the breeder of Cato, Crenshaw, and Imperial creeping bentgrasses. Leah

Mike Casler, standing in the immediate foreground, hosted the Grass Breeders Conference at the Noer Facility. Here, he and his colleagues listen to Dr. Wayne Kussow discuss his research.