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front cover

Joel Purpur, CGCS oversaw the installation of a reverse osmosis system. The members at Park Ridge Country Club invested in this technology so they can use their own deep well rather than city water sourced from Lake Michigan.

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FEATURE

Reverse Osmosis Water Treatment Systems – Not Just Coastal Anymore

Joel Purpur, CGCS

SERIALS

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Some of the members of the Midwest Equipment Technician Committee were at the sprayer seminar at Reinders in late January. Above (l to r): Wes Danielewicz, Justin Prescott, Jeff Cholewa, Chuck Totten, Glen Peters and Tim Johnson. The meeting is recapped on page 19.

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DATES

2019 UPCOMING MIDWEST EVENTS

- 02/06/19 Midwest Hospitality Reception, San Diego, CA
- 02/20/19 Assistant Winter Workshop, Midwest Golf House
- 03/06/19 Midwest March Meeting at TopGolf, Naperville

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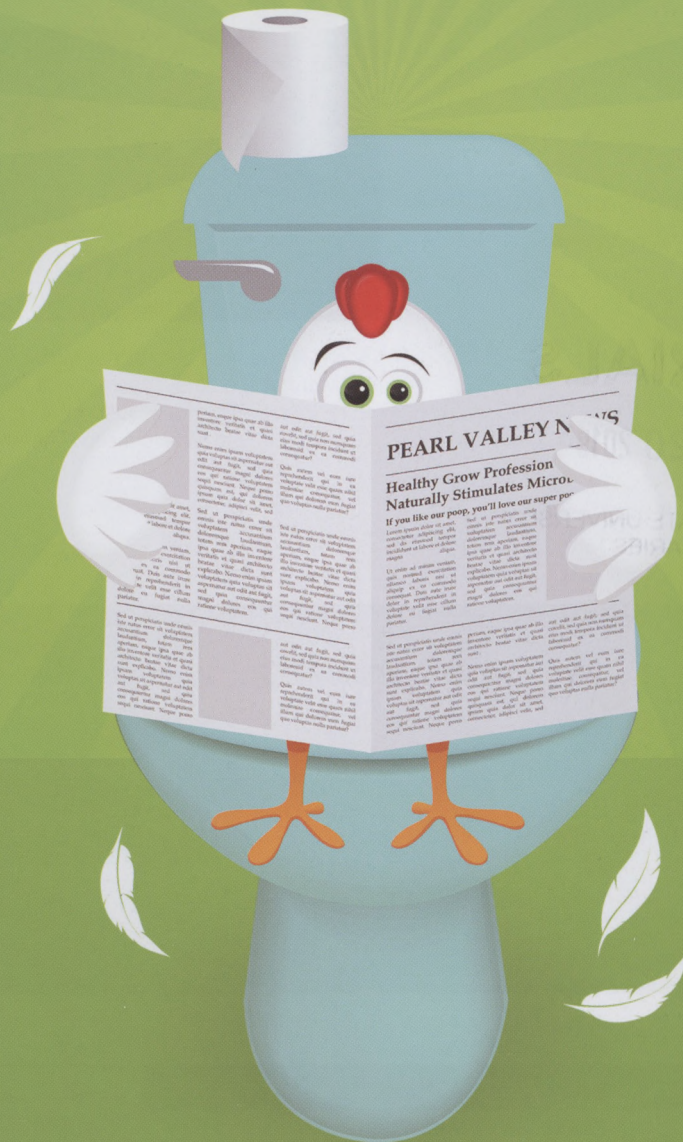
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Conrad Pannkuk
Wynstone Golf Club

Assistant Superintendent Update

Where has the time gone? I am sure that this is a common phrase that runs through the minds of the members of our association. It feels just like yesterday that I moved to the Chicagoland area to start my professional career. As I am writing this I look outside and see snow and know that in no time another golf course season will flash before my eyes.

When reflecting back on my first three years as an MAGCS member, the first thing that comes to mind is the people I have met and relationships that I have been able to build. I was pretty nervous to move away from home to an area where I did not know anyone. The MAGCS has been very welcoming. I hope we can all continue to build relationships and welcome new members throughout the year.

I am really looking forward to my first year serving as the Class C Representative for MAGCS and encourage all class C members to participate when possible. Our first event of the year will be the Assistant Winter Workshop on February 20th at the Midwest Golf House. The education will include presentations by Chris Zugel (Superintendent at Whistling Straits), Shelia Finney (GCSAA), and an equipment technician roundtable discussion. I am very excited about the speakers that will be joining us. Chris will be presenting on leadership and developing your maintenance team. He will also give a presentation about tournament preparation and the upcoming Ryder Cup at Whistling Straits. Shelia will discuss the new Assistant Superintendent Certificate Series that was developed by GCSAA along with what GCSAA can offer assistants to maximize your membership. Lastly, we will have a roundtable discussion with equipment technicians that will focus on the relationship between the assistant and equipment technicians and what part of the golf course maintenance operation assistants can learn from these experienced staff members.

I am very excited
about the speakers that
will be joining us.

We would like to keep some assistant events going throughout the golf season even though that is our busy time. We can plan to move events around the Chicagoland area so more members are able to attend. If there is anything specific that you are looking for or you would like to host something, please reach out to me. I would like to do some shop talks, small golf outings, or just meeting up at a local establishment to have a few beers.

I hope everyone has a great 2019 and are able to attend some of the events that MAGCS is putting on this year. @

MIDWEST Annual Assistant Winter Workshop

February 20, 2019

Midwest Golf House

Reserve your spot today.

Registration is now open online: magcs.org Guests are welcome to attend.

Reverse Osmosis Water Treatment Systems – Not Just Coastal Anymore

Joel Purpur, CGCS Park Ridge Country Club

PHOTO CREDITS: JOEL PURPUR



Do you irrigate with less than desirable water that is messing up your soils and the health of your turf? If so, a reverse osmosis water treatment plant could be a wise investment for you and your club.

Many golf courses are forced to use water that is considered poor in quality, whether it is effluent or from other sources which contain high levels of contaminants or high TDS (total dissolved solids) levels. This was our biggest hurdle. Salesmen are not shy to try and sell you their methods or products to improve less than optimal water quality. Depending on the type or the severity of the water problem, a chemical approach could work for some situations.

In many areas of the country deep wells are often a good water source. The property at the Park Ridge Country Club has a deep well (drilled to 1,300'), but the bed rock in the area is fractured from a large meteorite that crashed into our area "with the force of thousands of hydrogen bombs" millions of years ago (look up "The Des Plaines Disturbance" if you have insomnia). This fractured rock over a mile deep connects all the aquifers in the area in one way or another. Therefore, spending money in hopes that a different well will yield better water is not a recommended option.

Our plant health had been regularly affected from the well water (which has elevated TDS levels: 1550 ppm) so the club

has been purchasing Lake Michigan water from the city for over 2 decades. The Lake Michigan water is of excellent quality, but it certainly comes with a high price. In addition to the cost, limits and increasing talk of restrictions during drought periods are a growing concern. With water costs predicted to double in the near future, if a reverse osmosis system would work for us, the payback might only take a few years.

Reverse osmosis (R/O) systems have been around for quite some time and many people use them in their kitchens for drinking water. Commercial R/O systems that produce the volume of water that golf courses need have also been around for a while. These larger systems are predominately used in coastal areas to produce potable water sourced from the ocean. In simple terms, take ocean water and run it through some filters, keep the clean water and dump the salty water back into the ocean. That sounds simple enough. So how does a reverse osmosis system really work?

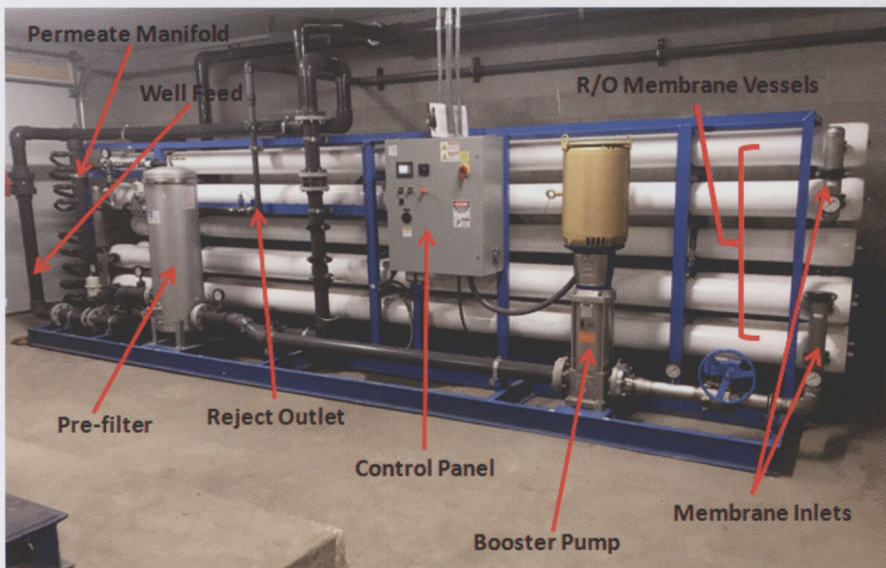
Quoting straight from Google – Osmosis is a natural process that balances two bodies of water separated by a semipermeable membrane. Water flows through the semipermeable membrane from the less concentrated solute (fewer contaminants) to the highly concentrated (more contaminants) to restore equilibrium between the two sides. A semipermeable membrane has small holes that trap contaminants but allow



Like other components of pump stations, the r/o system was built offsite and set into place with a crane at Park Ridge CC.



The long cylindrical tubes hold the filters (membranes) where the process happens.



The Reverse Osmosis R/O system at Park Ridge Country Club.

water to flow through. This flow of water may be reversed if pressure is applied to the solute with higher concentration. Reverse osmosis occurs when pressure is applied to solute with a high concentration of contaminants. For example, when pressure is applied to a volume of saltwater, the salt is left behind when the water passes to the other side of the membrane. Now, the saltwater is drinkable. The fresh water produced is called the permeate. The concentrate left over is the waste, or brine.

What to do with the brine has long been a question for those wanting to use these systems in non-coastal areas. As the treatment systems have gotten better through advancing technology, the process has gotten more efficient and the amount of reject brine has decreased (only 15% with our model). This equates to less reject water to dispose of and depending on the contents of the water that you are trying to clean up, the brine most likely will not generate enough concentration of heavy metals or toxic substances to be classified as industrial waste. This is important if you are seeking a permit to dispose of the reject water into the sewer system, which was our goal.

The company that we purchased the equipment from, MCI, employs a water expert named Tom Morgan who took our raw water report and produced a breakdown of the projected



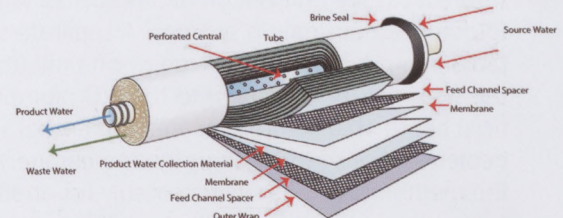
Pictured left is the 30 hp motor and booster pump that move water through the system. Notice that many of the fittings and components are corrosion resistant because once the water is cleaned, it is a bit caustic.

contents of both the permeate and the reject water which was useful for the permitting process. The permeate water that the system produces is very clean. It is so clean that it can be a bit corrosive. We needed to have certain parts of our pumps and pump station protected from corrosion by using stainless steel components or coatings on the contact parts ahead of installation. We were fortunate to be installing a completely new pump house and pump station together, so everything was coordinated and compatible.

Also straight from Google – The term TDS describes all solids (usually mineral salts) that are dissolved in water. The TDS and the electrical conductivity are in close connection. The more salts are dissolved in the water, the higher is the value of the electrical conductivity.

Conductivity monitors were installed in the wet well for constant monitoring and safety. As a precaution, the plumbing plan made provisions so that the well water could bypass the R/O system if there was ever a problem. Also, if the conductivity of the pond water was getting very low, we could run the untreated well water directly into the reservoir pond to “dirty up” the pond water a bit and raise the conductivity.

Reverse Osmosis systems operate best if they run continually: 24/7. Water must run through the membranes regularly to keep them from scaling or fouling. We found for us at the least this meant we had to run the system every other day for an hour or two. Sizing the system's production capacity was based on what we typically use for irrigation with an “average” watering cycle. In our case this is around 350,000 gallons per day. If we had a larger pond with more storage potential, we might have sized the system a bit larger, however we still have the option of supplementing the pond with the city water tap if the R/O may not meet the demand.



A cut away view of a r/o filter shows how many layers there are inside each filter.

Pond level sensors are set to start and stop the R/O system automatically. The system starts as the pond level drops and automatically shuts off when the pond becomes full again. If we plan on programming a heavy irrigation cycle at night, we often manually start the system earlier in the evening to build up a higher reserve before the irrigation cycles kicks on, leaving less of a pond level deficit in the morning. During a couple of dry periods last year, the system ran 24/7 for a couple of weeks straight, which is actually best for the system.

continued on next page...

Daily monitoring of several pressure gauges and readouts on the system are recorded. We are mainly looking for changes in pressures or levels that might signal the need for a pre-treatment filter change, indicate a problem with the membranes, or the need for minor adjustments for the permeate or reject amounts.

What does all this cost? We priced out several sizes of systems and ranges of gallons of water produced per day. I would estimate that most of the courses in the Midwest could figure on a range of \$200,000-\$300,000 for initial investment, depending on the size of the property. Our 350,000 gallon per day unit ran about \$235,000. A pre-treatment antiscalant chemical is constantly pumped into the system during operation to keep the membranes clean and unclogged. A 55-gallon drum of antiscalant costs about \$1,600 and lasts us about six months under normal operation. We used a total of about 70 gallons of antiscalant our first year. The membranes are expected to last at least 5 years and will cost around \$15,000 to replace all four in our system when the time comes. There are pre-treatment filters on the system that we used all of last year (our well water was pretty clean) and expect to use again this year; when they need to be replaced the cost \$600. The 350,000 GPD system is run with a 30 hp motor, so depending on what you are paying for power, you can figure on that electrical cost plus the well pump power to deliver the water.

Winterizing the unit is a bit different than what we are used to doing with irrigation systems. A separate somewhat portable pump system and a large nylon tank (that come with the system) is hooked up into the R/O plumbing like an artificial heart. That setup circulates a chemical solution (which depletes all of the oxygen in the membranes) throughout the membrane chambers repeatedly for about 20 minutes so that nothing can grow in the membranes during the idle time after the system is put to bed for winter.

Working with Leibold Irrigation, Inc. and MCI was gratifying. Both have a wealth of knowledge and worked well together to make sure that everything went like clockwork from installation to operation. The club is positive about the investment and already seeing the benefits of the R/O system. Most notably, they are happy to see a very inactive city water meter. @

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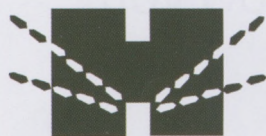
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DATES TO REMEMBER

February 2019

February 20 – Annual Assistant Winter Workshop at Midwest Golf House in Lemont. Chris Zugel, Whistling Straits to present.

February 22-24 – 36th Annual Chicago Golf Show at the Donald E. Stephens Convention Center in Rosemont, IL.

February 26-27 – Northern Great Lakes GCSA Annual Education Conference at The Waters of Minocqua in Minocqua, WI. Visit www.nglturf.org for details.

We welcome these new MAGCS members to our fold and wish them all the best:

- Mike Elinger, Class DT, Cantigny Golf
- David Greene, Class DT, Orchard Valley Golf Course
- John Hardee, Class C, Chicago Golf Club
- Chris Holt, Class C, Sportsman's Country Club
- Chad Kuzazwa, Class E, Earthworks Carbon Based Fertility
- Christopher McIntyre, Class C, Cantigny Golf
- David Pittman, Class C, Idlewild Country Club
- Tim Schwierjohn, Class E, Redexim Turf Products
- Justin Wehr, Class C, Tamarack Golf Club

Calling all would-be writers: Want to attend MAGCS meetings for free? Want to stay involved in your association, with the monthly opportunity to network with your peers and exchange ideas and issues in a relaxed, informal atmosphere? Want to have your fingers on the pulse of the most current education offerings, allowing you to learn and utilize what you learn for the betterment of your own facility? If you've answered YES to these questions, MAGCS has an opportunity for you. We are looking for an Associate Editor(s) for On Course whose responsibility will be to attend each month's Education session and write the "Education Wrap-Up" page for the magazine. If you are interested, contact **Luke Cella** for more details. **Chuck Anfield** left big shoes to fill, but, as is the case on the golf course, he's beatable!

Congratulations to EC Design Group, Ltd. on reaching its 25th Anniversary milestone this year. That equates to approximately 219,000 hours that **Larry Collins** has spent either on an airplane, in an airport, or on a golf course.

Don't Miss the Midwest's

**March Meeting
March 6, 2019**

**TopGolf
Naperville**

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and Superintendents"

March 13-14 – Reinders' 24th Green Industry Conference at the Waukesha Expo Center in Waukesha, WI.

March 21 – Chicagoland Forum at Naperville Country Club, Tim Anderson and Nate Bolhous hosts.



Ken Lapp was a golf course superintendent for 58 years and quietly hosted more PGA tour events in Chicagoland than any other Superintendent.

The world of golf, and our Midwest brethren lost a true legend and friend when Mr. **Ken Lapp** passed away on January 18th at the

Bull Sheet continued on page 11...



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age of 82. Ken was a superintendent for 58 years, serving as Director of Golf Course Maintenance at Cog Hill Golf & Country Club from 1973 until his retirement in 2012. He also held the distinction of being one of only ten superintendents to have hosted twenty or more PGA Tour events—quite an accomplishment! Our condolences go out to the Lapp family, as well as the Jemseks and all of the Cog Hill family.

It's been nearly a decade now that the BMW Championship has rotated out of the Chicago area every other year. That trend is about to change—Medinah Country Club and **Steve Cook, CGCS** are hosting the 2019 event this August, and it has been announced that Olympia Fields Country Club and **Sam MacKenzie, CGCS** will host a FedEx Cup playoff event (possibly called the BMW Championship depending on negotiations between the PGA Tour, Western Golf Association and BMW) in 2020 around the same time of year. Congrats to Medinah and Olympia Fields, and thanks for shining that spot light on the great golf venues in our area!

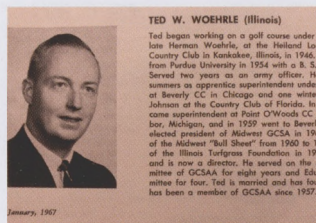


USGA's President Mark Newall, Brian Chasensky, Scott Bordner and USGA's Championship Director Shannon Rouillard.

Speaking of great area golf venues, Chicago Golf Club (**Scott Bordner** superintendent) received a 2018 "Grainy" award—Golf Course Industry columnist Tim Moraghan's annual salute to our industry's memorable and not-so-memorable moments—for Outstanding Achievement-Senior Division for hosting the inaugural Senior Women's Open last July. A job well done to Scott and everyone who helped to make it such a great event.

Blasts from the Past: 53 years ago this month, in the February 1966 issue of GCSAA's *The Golf Superintendent* magazine, Homewood, Illinois irrigation engineers Charles E. Stewart and Joseph P. McBride engaged in a "For/Against" debate about Automatic Irrigation. Yes, someone actually took the "Against" side, arguing "...I cannot agree that the services of a night watering man can be eliminated when an automatic sprinkling system is installed on a golf course." In that same issue we also learned that Beverly Country Club superintendent and former MAGCS and GCSAA President **Ted Woehrle** and his wife welcomed their fourth child into the world, and longtime Westmoreland Country Club superintendent Don Strand died at the age of just 58.

A year later, the February 1967 issue ran a cover story titled



Ted Woehrle

And before those newfangled snow machines were allowed on those courses, they were effectively and SAFELY treated with some nice mercuric chloride.



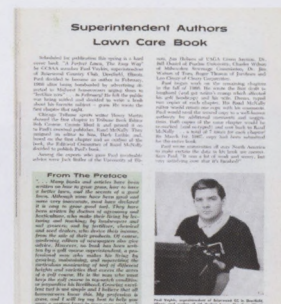
I'm sure *THIS* guy is still alive...

Donna typed two copies of each chapter. The editing process called for each chapter to be rewritten and retyped SEVEN times! Paul's book was published by Rand McNally, and you can still find it on Amazon.

"Snowmobiles Friend or Foe?" citing Pheasant Run Resort in St. Charles, IL (where **Dan Murray** was probably still superintendent) as one golf course who welcomed snowmobilers, and even rented them out as a winter revenue source.



And lastly, 51 years ago this month The Golf Superintendent announced "Superintendent Authors Lawn Care Book," about Briarwood Country Club's **Paul Voykin** and his foray into book writing. He wrote the first draft in longhand (and got writer's cramp which he insisted affected his golf handicap), and his wife



Q: Where do airplanes make emergency landings at **Dan Murray's** course?

A: Pheasant Runways.

Over the past several months, we've seen some changes in our ranks:

Alan Hoogstraat, former superintendent at Ravisloe Country Club is the superintendent at Kankakee Country Club.



Tim Kelly, Exmoor Country Club

Andrew Evans, former assistant at Ridgemoor Country Club is the superintendent at Prairie Bluff Golf Club.

Matt Harstad, former superintendent at Calumet Country Club is now the superintendent of Bloomington Country Club.

Tim Kelly, formerly of Aronimink Golf Club in Pennsylvania is the superintendent at Exmoor Country Club.

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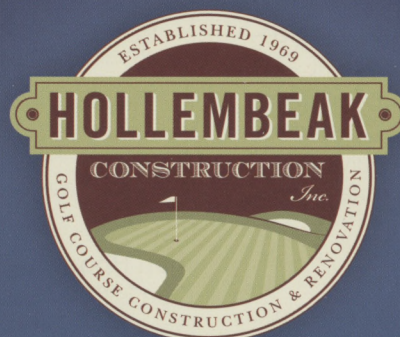
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February's "Clavin-ism:" Did you know—it's a little-known fact—that the first-ever nationally televised golf tournament was the 1953 World Championship of Golf at Tam O'Shanter Country Club in Niles, IL? It was, and it featured an incredible finish from Lew Worsham. Needing a birdie to tie Chandler Harper and send the match to a playoff, Worsham holed out an eagle from 104 yards on the 72nd hole to win by a shot.

MAGCS member **Andy Morris** from the Country Club of Peoria had an article published in December's Golf Course Industry magazine. The piece was a follow-up to an article written by Pat Jones

11 years ago titled "It Plays in Peoria," where Andy revisits the article's topic of the management team at CCP and how it has changed and evolved over the years. Most impressive is that Andy hasn't gained a single pound in those 11 years. I hate that.



Andy Morris, the current President of the ITF welcomed attendees this January to the Turf Conference in Springfield and Illinois.

GolfWitticism of the Month (from Roger Simon): I'm convinced the reason most people play golf is to wear clothes they would not be caught dead in otherwise.

It's that time of year again, where news around town slows to a crawl so I have to find filler for this column that will still interest at least some readers. So, without further ado, here is a list of all MAGCS members who have made GCSAA's Membership Milestones—a salute to its veteran members for their dedication to the superintendent profession and their many years of membership in the association:

25-Year Members

Tom Abbott, Bill Ahlstedt, Mike Bavier, Jr., Jeff Everson, Frank Heery, Brian Kimbrough, Scott Klingberg, Bob Lohmann, Brian Mores, John Nelson, Greg Rounds, and Tim White.

26- to 29-Year Members

Chuck Anfield, John Berarducci, Dave Braasch, Sean Creed, Doug Davis, Vince Dodge, Jay Druhan, Eric Ensign, Ed Esgar, Ben Exline, Rob Foster, John Fulling, Jeff Gerdes, Jim Hall, Brad Helms, Jeff Hoste, Jim Keith, Dave Kohley, Bob Kohlstedt, Bob Lively, Dan Marco, Mike Mumper, Tracy Murphy, Scott Nissley, Keith Peterson, Mark Petitgoue, Dave Radaj, Scott Resetich, Bob Rigney, Kurt Sams, Paul Schaefer, Dave Schlagetter, Mark Schmitz, Gary Schweber, Scot Spier, Mark Stephan, Gil Velazquez and Mike Vukmir.

30-Year Members

Pat Norton, Rick Reed, Dan Tully, and Mike Vercautren.

31- to 34-Year Members

Don Altman, Brad Anderson, Tim Anderson, Fred Behnke, Russ Chamberlin, Andy Dauksas, Kevin DeRoo, Don Ferreri, Larry Flament, Ron Fox, Me, Mike Handrich, Renie Jacobson, Jon Jennings, Greg Johnson, Tim Johnson, Tony Kalina, Randy Kane, Kevin Knudson, Henry Michna, George Ott, Chris Pekarek, Tom Prichard, Joe Reents, Tim Scott, Ken Shepherd, Luke Strojny, Brian Thomson, Dennis Troy, Paul Wagner, Lynn Wesson, and Scott Witte.

35-Year Members

Jerry Arden, Glenn Bereiter, Mark Bobb, Brian Bossert, Brian Comiskey, Dave Fisher, Al Pondel, Mike Sprouse, and Rick Wilson.

36- to 39-Year Members

Chad Ball, Paul Bastron, Sandra Bemis, Dave Blomquist, Ed Braunsky, Art Clesen, Steve Cook, Tim Davis, Dan Dinelli, Ron Doruff, Jim Evans, Kurt Galisdorfer, Phil Hall, Tom Jauch, Rod Johnson, Craig Joscelyn, Tim Kelly, Jim Knulty, Mark Kowaliczko, Tom Lively, Harry Lovero, Sam MacKenzie, Bob McCallum, Dan Murray, Joel Purpur, Tom Savage, Jeff Smith, Greg Thalmann, Steve VanAcker, Randy Wahler, Dennis Willms, and Tommy Witt.

40-Year Members

Peter Hahn and Mike Sauls.

41- to 44-Year Members

Dave Behrman, Brian Chalifoux, Don Cross, Al Fierst, Brian Green, Brad Johnsen, Jerry Kershasky, Pete Leuzinger, Jerry Mach, Bob Maibusch, Mike Nass, Dale Nissen, Jules Peuvion, Tommy Robinson, Les Rutan, Roger Stewart, Dave Ward, and Bruce Williams.

45-Year Members

Ron Dohman, Mike Matchen, and Ted Mochel.

46- to 49-Year Members

Tom Byrne, Ed Fischer, Keith Fuchs, Wally Fuchs, Leon Hartogh, Rich Kensinger, Bob Kronn, John Krutilla, and Dick Lamkey.

51-Year Plus Members

Mike Bavier (53), Art Benson (55), Tom DiGuido (60), Harold Fredrickson (58), John Lapp (51), Ken Lapp (55), Oscar Miles (57), Fred Opperman (53), Danny Quast (54), Ray Schei (53), Ray Schmitz (52), Dick Trevarthan (57), Tom Van De Walle (52), and the grand daddy of us all—Paul Voykin at 63 years of GCSAA membership.

OK, why not? I ordered a chicken and an egg from Amazon to see which comes first.

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Sometimes our lookalike is not a movie star or a sports celebrity. Sometimes our "twin" pops up in the oddest of places, like **Mike Bavier's** driving a cab in Spain or **Vence Zolman's** in a mural on a wall of a German restaurant. In **Don Ferreri's** case, it was a painted (oil on canvas) portrait in a law office in Pontiac, Illinois, where **Brian Bossert** happened to visit (not real sure why Brian was seeking legal advice.?).

MIDWEST Doppelgänger



Don Ferreri and his twin brother August Fellheimer.

The Education season is in full bloom, with the most recent offering being the Illinois Turfgrass Foundation's TURF Conference 2019. Unique to this year, the conference was held on consecutive days in two locations, allowing for easier access from throughout the state. Panther Creek Country Club in Springfield hosted on January 15th, and Toyota Park (hosted by Joel White) in Bridgeview was the host on the 16th. Among the presenters were Roch Gaussoin and Bill Kreuser from the University of Nebraska, Bob Vavrek from the USGA, Tom Voigt and Bill Sharp from the University of Illinois, Zach Simon from Northwestern University, and Nick White the Superintendent of Bellerive Country Club in St. Louis, host of the 2018 PGA Championship. The event is always a great opportunity to learn and network with fellow turfies, and this year's rendition did not disappoint. 

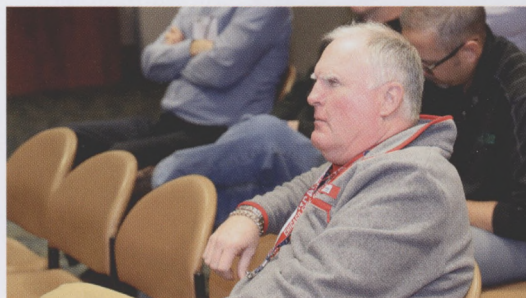


Chris McIntyre (l) is Steve Kuretsky's (r) new Assistant Golf Course Superintendent at Cantigny Golf. Welcome to MAGCS Chris.



Chuck Barber sat with the two Kyles at the Turf Conference: Kyle DeRoos (Conway Farms) and Kyle Schwieter (Sunset Ridge CC).

Peter Killian (l) of Sunset Ridge CC and Jeff Frenz (r) at Lakeshore CC talk about Rogaine during a break.



Joel White, hosted the event at Toyota Park - which is now actually named Seat-Geek Stadium.



Attendance at both Turf Conference locations was good and the education provided was worthy of everyone's time.



Nick White, the golf course superintendent at Bellerive Country Club was a last minute sub for Carlos Arraya who had to have a rotator cuff repaired. Nick did a great job for the ITF talking about the PGA Championship that they hosted in 2018.



Bubo virginianus

Kati Bernardy and Dave Ward

Common: Great Horned Owl, Tiger Owl, Hoot Owl

Family: *Strigidae*

The great horned owl is one of the most common owls found in the United States. Due to its highly adaptable nature, it is widely found throughout North and South America. It can be found in a diverse range of habitats including the cold

tundra in Alaska to the warm tropical rainforests of South America. In our region, the great horned owl is usually found in woodlands and along the edges of fields. The feathers of the great horned owl are camouflage and vary in color based in its surrounding environment. In our region they are shades of brown, black, and white to blend in with the trees they nest in.

December to February and lay an average of 3 eggs. The male and female both incubate the eggs for about 30-37 days before they hatch. They also both feed the baby owls until they can sustain themselves. Baby owls are ready to fly when they are only about 10 to 12 weeks old. Great horned owls don't migrate and are also monogamous. They spend most of their time in solitude until it is time to reproduce. The average lifespan of a great horned owl is 13 years in the wild and the oldest on record was more than 28 years old.



GREG HUME- WIKIMEDIA.

All species have a circle like shape on their face that is formed around their eyes and bill and is called a facial disc. This facial disc also contributes to their extremely sensitive hearing by focusing sound waves to their ears. This facial feature, along with the tufts of feathers that form horns on the top of their heads called plumicorns, can help identify this species of owls. Great horned owls have very large eyes with wide pupils that actually cannot move in their eye sockets. In order to see what is around them, these owls have the ability to turn their head more than 180 degrees. They can grow up to 25 inches in height, have short, wide wings that allow them to maneuver towards prey quietly and accurately, and can fly up to 40 miles per hour.

Research and studies have shown that the reproduction of the great horned owls are highly affected by their environment and their ecosystem and varies based upon prey availability. Great horned owls reproduce seasonally from around



They have some of the biggest eyss of all the terrestrial vertebrates.

Great horned owls are nocturnal and hunt their prey at night. They have exceptional eyesight called binocular vision which is where "an animal having two eyes is able to perceive a single three-dimensional image of its surroundings". Their carnivorous diet consists of rabbits, rodents, birds, insects, etc., depending on their environment. Sometimes they swallow their prey whole and then regurgitate the bones, feathers, or fur later. Their talons are extremely strong needing up to 28 pounds of force to open them when they are closed which is a key feature to being such a successful hunter. These owls contribute to the human population in a positive way by helping control the rodent and pest population. 🦉



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Midwest Equipment Technicians (MET) Meet at Reinders Illinois HQ

Luke Cella, MAGCS

Reinders hosted the Midwest Equipment Technicians (MET) in January for a seminar on sprayers. Over 100 Technicians, Assistant Superintendents and a few Superintendents made their way to the Reinders Mundelein facility.

Attendees were greeted with plenty of coffee and donuts on what turned out to be an icy/sleety day. All was warm in the shop where Greg Zumdaahl of Spraying Systems opened up the lecture on nozzles. He covered many topics that impact the delivery of product to the turf with the nozzle as the focus. The biggest and most often overlooked takeaway from his talk was that nozzles do wear out – they don't last forever (some erode faster based upon the material they are made from) and are not expensive at all to replace. So check your nozzles and consider replacing them when they wear out – an accurately functioning nozzle is the key component in making sure that the product is applied at the proper rate and disbursement.



Joe Etten is passionate about sprayers and a great resource for information.

Joe Etten and Grant Runblade tag teamed the next section where they covered many different topics. They taught the group to calibrate your sprayer using the 128th of an acre method. They discussed the different components of sprayers and talked about troubleshooting issues with different systems.

They had a pump broken down to show parts that tend to wear out, and explained about replacing seals and diaphragms. Like most preventative maintenance, the cost is in the labor to go through the unit and inspect each component, replacing small, often inexpensive parts that if they fail in use, can cause trouble. Joe and Grant did a nice job of overall troubleshooting sprayers from what they've encountered in the field. Joe related, that when a sprayer is working improperly – more than likely turf is going to get injured – from over or under applied products. A properly functioning sprayer is one of the key pieces of equipment in a turf maintenance program – perhaps this is why this session was so popular.

After lunch, the Reinders staff went through their sprayers in greater detail for those who wanted to hear about their particular models.

It was a great day of learning, and we're all thankful to the Reinders team, especially Joe Etten who put a lot of time into the day for us. He's also promised us a follow up article on his talk for On Course in the coming months.



Mixing and keeping your solution in suspension is important. There are many items like this flow valve that solids can accumulate on and clog the system.

MAGCS is excited to be working with our Equipment Technicians and have created a formal committee within our board structure. Wes Danielewicz is going to represent the group at the board level as our first "Class DT Advisor" and MAGCS Directors Todd Schmitz and Josh Cull are going to work as liaisons with the committee.

We hope you consider enrolling your equipment technician in MAGCS this coming year. We're planning to conduct four education events per year, create a technician column/corner in On Course and offer other opportunities for you technician to network and share ideas and information with others in our industry. @



Reinders took the time to label all the parts on a sprayer they had in the shop.

Knockin' on Heaven's Door

Craig Shepherd, Advanced Turf Solutions



This article has been on my mind a while. As most of you know I spent much of 2018 in a bed and I wanted to write something that would reach a wide audience. In the past year I've been battling an illness which led to autoimmunity.

Essentially my body has produced a high number of anti-nuclear antibodies that attack my own muscle tissue. The good news is it is not autoimmune disease yet but I have most of the symptoms that a person with one does. The most difficult part of this journey has been trying to find good, integrative rheumatologist with multiple treatment options. Now that I have a few great doctors I can rely on, I hope this healing continues and I can help a multitude of people that are dealing with this illness. Here are a few things I've learned during the course of my disease.

1. You cannot do it all on your own. I used to take a lot of pride in being able to finish a job with nobody else's help. What I've found is that I have learned more in the process and had more fun with others being involved. It often takes being at rock bottom to find this lesson out.

2. You really are what you eat. I eventually discovered I was very intolerant to gluten, dairy, and many other foods. These allergens had been making me sick going back to my early teenage years. It took months of an elimination diet to find out what was causing the autoimmunity to flare up. If you are ever curious Google® Dr. Steve Gundry and watch a few of his YouTube® diet videos. It's a simple starting point.

3. Prayer can move mountains. I've never prayed as much as this past year. A lot of my prayers have been answered but not like I would have guessed. God has his own timetable. Often times prayers don't get answered. I don't know why but what I do know is that prayer made me feel comfort even when I physically felt ill.

4. Shifting baseline syndrome. Scott Pavalko brought this


...my health started deteriorating very slowly in high-school with frequent low-grade muscle weakness and common colds that would last weeks to months. I thought that was normal.

up over a recent lunch. It's the assumption that your current problems are the new norm. Please pay attention to health symptoms and signals. Like I said earlier, my health started deteriorating very slowly in high-school with frequent low-grade muscle weakness and common colds that would last weeks to months. I thought that was normal. Please don't make the same mistake as I did and speak with your doctor. And if he/she doesn't have an answer find another doctor that will work to find one. There are more ill-advised doctors out there than good ones that care for your well-being.

5. Naltrexone is a life-saver. This is my auto-immune therapy drug. The reason I bring this up is this drug is not talked about a lot. There is not much money to be made off this drug since it is an older drug, hence the pharmaceutical reps do not bring it up to the doctors.

Many of the rheumatologists I've seen don't know much about it. It covers numerous autoimmune diseases with very little side effects. My biggest side effect is having very vivid dreams. Just another idea to help others with this disease.

I want to thank my Wife Laura, and both my Dad and Mom for getting me through this rough period in my life. And if there is anyone out there that has an immune related issue please reach out to ask me any questions you have. I want to help others in the same way I was helped. God Bless. @



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