



TRUCKS

By Monroe S. Miller

Men in our profession seem to often be envied by those in other endeavors. Neighbors have said to me how fortunate I am to be able to work so closely with golf and all of the excitement the game generates. Others wish they worked outdoors with nature and beauty, as I do. And haven't you also been viewed with "friendly jealousy" because of the wide variety of your work? The list of things other people like about our jobs is quite long, but one that I hear about a lot is that we all seem to have a truck! How true that is — we all have a legitimate need, in fact require, a truck. No wonder we are envied. I think most American men harbor a deep, albeit sometimes subconscious, desire to drive a truck for legitimate business purposes. It gets a little difficult for a dentist or an attorney or a clubhouse manager to justify having a truck. For us, it is part of our way of life.

Trucks have been a part of my life for as long as I can remember. Some people call the vehicles I'm speaking about "pickups." They are that, I guess, but I personally do not like the name and always call them trucks. My dad always had trucks, but the first one I can remember a great deal about, the first wheel I sat behind, was my grandfather's. He had a Model A Ford that was perfect for his 140 acre dairy farm in Grant County. The Model A Ford truck was much like the 8N Ford tractor — low technology at its best. There was beauty in their simplicity and functionality. Options were unheard of. Black in color and built to last, these trucks served this country in more ways than you could count. They could be repaired, literally with pliers and baling wire. They were inexpensive to maintain and seemed to last forever, hauling milk and livestock to market and performing endless errands on farms. No doubt the same was true for golf course work and the Model A. I was truly saddened when my grandfather traded his Model A for

a 1951 Ford.

The truck I like best of all that I have driven over the years is the one that I was first able (legally) to drive — a 1954 Ford. It had all the features that a good truck should have — a V-8 power, heavy gauge body metal, running boards, oversized tires, a spare tire bolted to the side of the box where you could get at it, and a standard transmission. It was built like a tank and lasted longer than similar vehicles today could be expected.

You couldn't possibly run a farm — yesterday or today — without a truck. Nor can you run a golf course without one. A number of years ago (more than I'd like to admit!) when he was my Assistant, Jeff Parks and I were going to a WGCSA monthly meeting after work. It was hosted by a golf course we'd never visited before and we had some difficulty in finding it. We finally stumbled upon the course itself and proceeded to search out the clubhouse. I was beginning to wonder if we'd ever find it when Jeff suddenly said, "That must be it, over there." I looked and couldn't see a building and asked him why he thought it was there. "Parking lot full of pickups!," he replied. He was right. There were anyway twenty-five trucks in the lot. Since then, I've taken particular note whenever and wherever we meet. From the Pfister Hotel to the SENTRY-WORLD golf course, when we gather, so do the trucks. Even Bob Hope has noticed this. In his new book, "Confessions of A Hooker — My Lifelong Love Affair with Golf — Bob jokingly tells about his acceptance of the GCSAA's **Old Tom Morris Award** a couple of years ago. "Arnie, who had been the recipient the year previous, was the presenter. I got to the hotel in Las Vegas for the ceremony and I knew Arnie was already there, because I saw his tractor in the parking lot!" I wonder if Bob saw all of the trucks in the parking lot at Caesar's Hotel that week?

I get a real charge from all of the pickups I see as I drive around town, day by day. I used the word "pickup" because no self-respecting truck would wear all of the baubles these urbane vehicles have — it is almost embarrassing. Wouldn't you love to see one of these "Yuppiemobiles" with a load of topdressing or compost or fertilizer? Trucks were meant for work, not looks. They should be a dark color, preferably green, brown, black or navy blue. Red is permissible here in Wisconsin because that is the UW's color. Glitter and metallic paint don't make it, nor do whitewall tires. Chrome on trucks should be verboten. Wheel covers and side mirrors are permissible because they serve good purposes, if they are kept simple. But this is not true for cab carpeting or fabric seats. Remember, trucks are not pleasure machines, they have serious purpose.

And what an insult it is to hear Rod Johnson talk about his "truck." Call it a toy or call it a wimpmobile, but don't ever refer to one of those Japanese wonders as a truck. Load more than three bags of Milorganite in the box of one of those silly little rice burners and you can't steer it down the road. I'm convinced the reason Rod always has someone with him is to help pedal!

I've got to admit, however, that I am sometimes caught between ritual or tradition and high technology. I may miss the running boards on trucks, but I love automatic transmissions. It used to require a heavy load for a truck to ride smoothly, but who cannot appreciate the smooth ride of today's truck, even if the box is empty. Tinted windshields are most definitely an improvement over straight glass. Nostalgia is nice, but so is the improved gas mileage of today's truck, even at the expense of more plastic and fiberglass than 30 years ago.

I think my love of trucks is probably pretty similar to that of most of the guys on Wisconsin golf courses. Here in Madison we all drive under-stated, full-sized, heavy duty trucks. Everyone understands what they are all really about.

Has anybody seen what Bob Musbach is driving these days?!

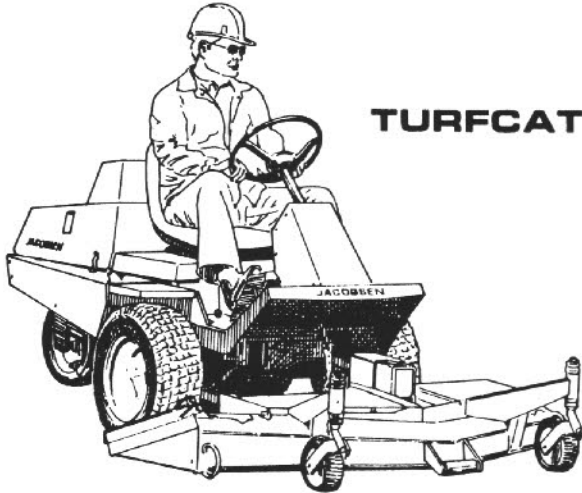
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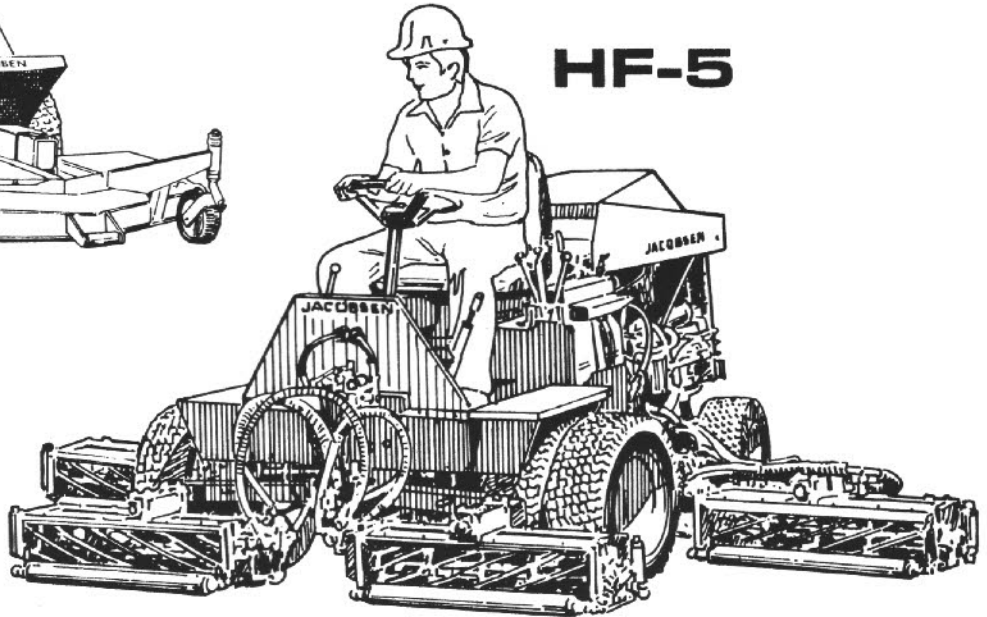
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WISCONSIN TURF HOLDS 30TH ANNIVERSARY “SALE-A-BRATION”

By Pat Norton

Wisconsin Turf celebrated their 30 years in the turf business on March 24 and 25 by hosting a two-day Sale-A-Bratton. The show was held at the Americana Lake Geneva Resort and attracted well over 700 of Wisconsin Turf's customers from their Wisconsin and Illinois territories. On the first day of the show 325 interested people from parks, cemeteries, schools, and municipalities attended while on day two 407 golf course related customers gave up a day with 80° temperatures to see what's new with Wisconsin Turf.

Dennis Christopherson, complete with tuxedo and top hat, acted as master of ceremonies each day. His MC role was most visible when he introduced each company and their representative as a truckster hauled Dennis and his entourage around the show floor. Dennis, along with Lyle Christopherson and Fred Holdorf, acted as chairmen for the show and were the principal organizers and planners.

Many attendees turned out to be buyers as the show proved to be an excellent opportunity to check out product prices, take advantage of the “show specials” from the manufacturers, and perhaps cut a deal right there on the show floor. Twenty-one different manufacturers were represented ranging from Jacobsen to Northrup King to Milorganite to DuPont—in short, all of the companies that Wisconsin Turf represents.

A very nice luncheon was served both days with Mr. Roger Thomas retired Executive VP from Jacobsen speaking very perceptively and wittily on the importance of managing time and people to their utmost.

The last such show was held here back in 1980. Many changes have undoubtedly occurred in the industry since then. It must be quite a challenge keeping pace with new equipment, new chemicals and fertilizers, and the

new and ever changing demands of their customers. As Curt Larson, Wisconsin Turf's general manager told this reporter, “This show represents the latest in innova-

tions that we're bringing to the turf industry.”

Hats off and congratulations to Wisconsin Turf for 30 successful years in the turf business!



Part of the crowd at the Convention Center.



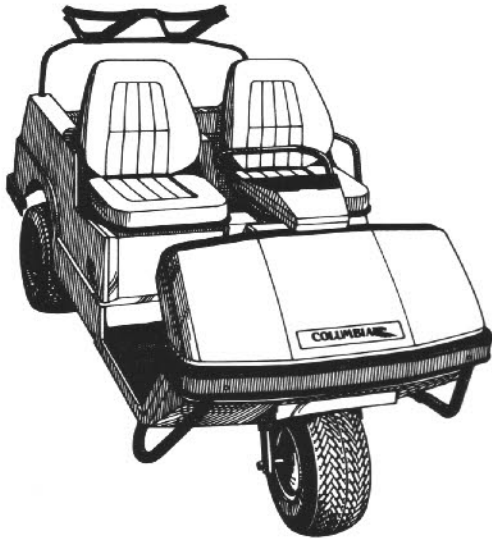
Sale-A-Bratton M.C. Dennis Christopherson.



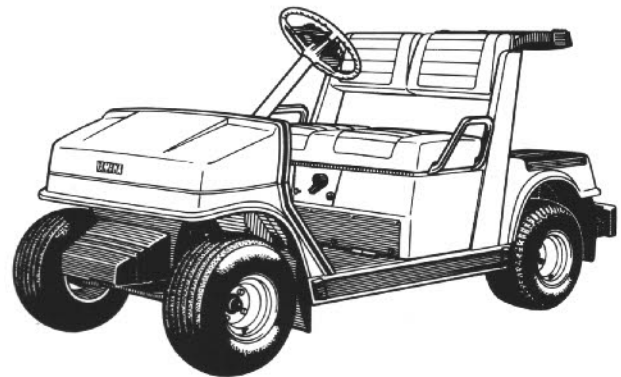
Listening for show specials.

Thank you,

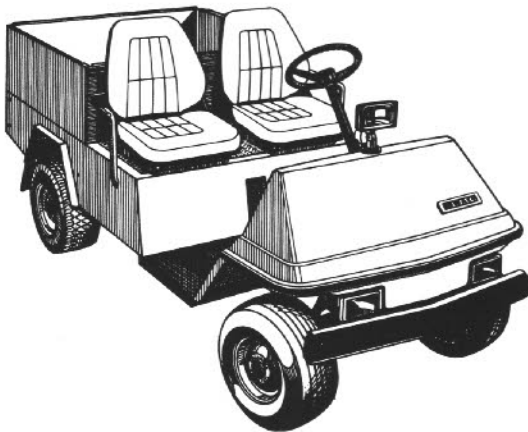
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(Continued from page 1)

There was quite a range in cost of bunker sand. The cost, in most cases, reflects the hauling cost. If the proper sand cannot be found in the near area, hauling greatly increases the cost. The key point is, I feel, that transportation costs are well worth the investment in getting proper size particles.

For the clubs surveyed, the number of mechanical rakes varied from none to three. Tuckaway started using three mechanical rakes three years ago. With this number of machines we can keep ahead of the golfer and not interfere very much with play on weekends or on busy days.

Only two companies manufactured raking machines of the clubs covered in the survey. Toro commanded a 3 to 1 market share compared to Smithco. An amazing thing about the Toro Sand Trap Rake is that many of them have been in service for 10 — 15 years. The hydraulic components for the machine can be rebuilt or replaced and the machine can be kept in service.

The clubs in the survey were fairly well divided between hard sand conditions and soft sand conditions. There are many factors that cause the condition of the sand in the bunkers. For soft sand we would be talking about new sand or dry sand; likewise, for hard sand we would be describing wet or old sand that was not properly loosened.

As Fred Opperman pointed out many times in his talk, you can have both conditions on the same course the same year. The example he used was that before much irrigation water had been applied in the spring the complaints were of soft sand. Later in the season, with irrigation water and rain, the condition switched to hard sand.

Getting away from the survey, let's cover some of the general things concerning sand bunkers. Jim Latham, Director of the USGA Great Lakes Region of the Green Section, pointed out that "sand was the biggest complaint I heard in 1985. Whether it was in Indianapolis or Fargo, the complaints were the same. For fairway traps the complaint was commonly that the ball does not sit up. For greenside bunkers, the ball sat down and could be best described

as a fried egg lie."

Who's doing the complaining? From our discussion, both medium and high handicap golfers are complaining. Probably the high handicap golfer does the most complaining about bunker conditions. This, of course, would be natural for someone looking for the ultimate.

It also seems fairly common for Board member(s) to think that his club has the poorest bunker conditions in the area. Best and poorest in your area can certainly exist for your course for the same year. One of the problems we have with bunkers is inconsistency. Some traps are too hard or firm and some are too soft. Bob Musbach of North Hills Country Club made the statement, "consistency is not going to happen and cannot be obtained." He pointed out that it is impossible to get all the traps to drain in the same way, and this causes some of the inconsistencies. Furthermore, non-uniform irrigation of

bunkers will cause some of the problems. It was pointed out that it is much easier to maintain consistently hard or firm than soft conditions.

Many of the problems with traps are the results of architect design. Reconstruction can lessen the problem but it is very expensive. In defense of the architects, it is difficult to design traps when there is a lot of topographic change without having a problem.

Some of the complaints we have control over, by virtue of our management decisions, are listed here:

1. Grooves left in the trap by raking machine.
2. Sand dragged out of trap causing an unclear line of where trap starts.
3. Wheel tracks still visible in traps.
4. Trap rakes not arranged properly.
5. A two-inch lip is not maintained on greenside bunkers.

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6. Leaves not cleaned out of traps before raking.
7. Rocks, sticks and other impediments removed on a daily basis.

There are many arguments about where trap rakes should be placed. The USGA rule permits rakes to be placed either in or out of the trap. For PGA or USGA events, "rakes should be placed outside the bunkers away from play," according to PGA Tour Agronomist Billy Buchanon in a recent telephone conversation I had with him. For most Milwaukee area clubs, the rakes are placed in the trap. A helpful hint that Wayne Otto, Golf Course Superintendent at Ozaukee Country Club, mentioned was the attachment of a decal to the handle of each rake with the following message: **Please leave in trap perpendicular to edge.**

At Tuckaway we have been cutting the spike off of the rakes so the golfer cannot stand the rakes up. Billy Buchanon suggested doing this for a reason that I hadn't thought of before. He said that by removing the spike, you may help prevent the membership from an accidental penalty. He pointed out that it is a two stroke penalty if a player tests the condition of the sand before striking the ball.

The survey showed that for the clubs with large number of traps it takes more than 300 labor hours to knife-edge the bunkers. For a crew of 3 to 4, it can take weeks to get the job done. The job quickly turns into drudgery. Jerry Kershasky of Westmoor Country Club developed a procedure to help take some of the drudgery out of this important work. He divides his crew into 4 teams of 4 people. Each team edges for 2 days at a time. A contest is set up among the teams to see who can do a fast and efficient job. Jerry is the sole judge. The winning team members each get a \$25 bonus. Second and third place teams get \$10 and \$5 respectively. The last place team gets to do the next undesirable job that comes along during the season.

I'm not supposed to cover the anything on construction, but a statement made by Carl Grassl is worth covering twice. For his crew it takes about twice as many hours for a unit of construction as it does a private contractor. However, the cost totals are approximately one-

half. I am assuming his crew is probably doing a somewhat better job.

One problem with sand bunkers is the attitude of the golfer toward them. They want them perfect so they don't suffer any unfair handicap. What they sometimes forget is that **they are supposed to be a hazard.** There is no way that we can change this attitude, however. So we will have to do as good a job as possible with the labor available to keep them perfect.

Bob Vanscoy, PGA Professional at Tuckaway, things we can, to a certain extent, change the attitude of the golfer. His idea is that basically some of the complaints the golfer has towards the trap are because of his inability to play the sand shot. Through proper lessons and practice, his ability to handle the shot will increase. As his confidence increases, his complaining will decrease.

In conclusion, the bunker survey can be used by one in many ways

to help support a given point. Most clubs think they have problem bunkers. Some bunker problems are ones under our control and some of them are not.

I have included the "Sand Bunker Survey" and the results I received. Also, I am including an instruction sheet given to our mechanical sand trap rake operators.

SAND BUNKERS SURVEY

- 1) *How many sand bunkers do you have on your course?*
Average 49, Range 20-77
- 2) *What is the total square footage of sand bunkers?*
Average 114,000, Range 50,000-187,000 (50% response)
- 3) *How often per week are your bunkers raked?*

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40	11.0
50	25.0
70	51.8
100	10.0
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- a) green bunkers average 4.9, range 3-7
- b) fairway bunkers average 4.75, range 3-7
- 4) For normal raking how many hours per day are spent on bunkers?
Average 5.8, Range 3-14
- 5) What is the average \$/hr. cost of personal raking traps?
Average \$4.06, Range \$3.35-\$5.25
- 6) How many times per season are the traps edged?
Average 3.7, Range 1-8
- 7) What method is used in edging and how many times for the particular method?
 - a) knife type mechanical edger, Average 1.8, Range 1-3
 - b) nylon string edger, Average 2.2, Range 0-6.5
 - c) others
- 8) Last season approximately how many times was sand shoved or pushed on traps?
Average 8.5, Range 3-15
- 9) How many hours does it take to edge the traps?
Average 125.3 hrs., Range 6-350 hrs., Average per trap 2.5 hr.
- 10) How many hours does it take to move sand up on the edge of the bunker?
Average 22.6, Range 3.5-41 hrs.
- 11) How frequent is sand added to bunkers?
Range as needed — once per year
- 12) What was the per ton cost of bunker sand F.O.B. at your club in 1985?
Average \$7.87, Range \$5.10-\$12.00/ton
- 13) What was the total cost of sand added to bunkers for 1985 season?
Average \$973.75, Range \$0 — \$3,000
- 14) How many mechanized machines are used on a regular basis for raking traps?
Average 1.5, Range 0-3
- 15) What manufacturer produces the machine?
Toro (16), Smithco (5)
- 16) How many years on the average is the mechanical rake kept before being traded?
Average 9.75 yrs., Range 3-15
- 17) How many hand trap rakes do you have on the course used

by golfers?

Average per trap 2.9

- 18) What term best describes the sand in your bunkers?
 - a) hard 6
 - b) soft 7
 - c) both 1

structed?
2,140 sq. ft.

- 4) What was the approximate construction cost per trap?
*average of 5 responding \$1.23/sq. ft. (range \$1.00 — \$1.48/sq. ft.)
*results of a sixth club was omitted because it varied widely from others responding

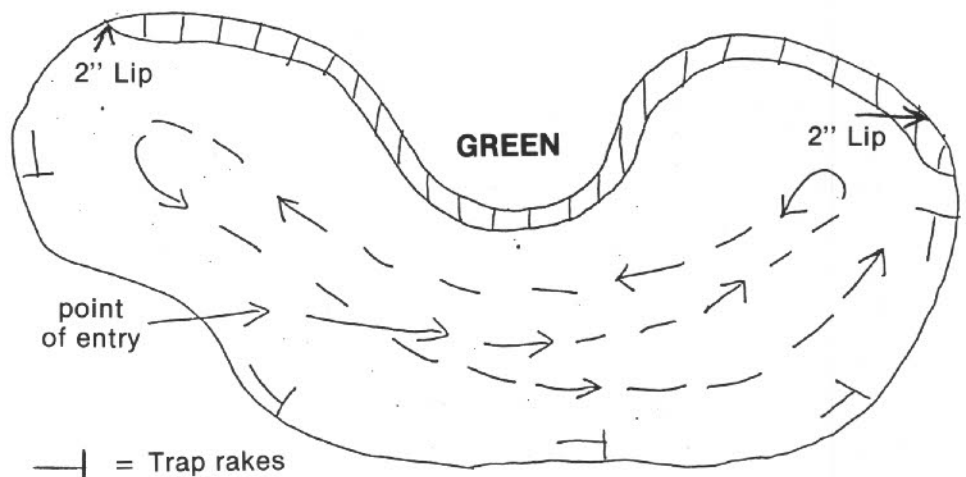
BUNKER CONSTRUCTION

- 1) In the past 5 yrs. have you added or filled in any traps on your course?
Added: 66 filled in: 21 (14 clubs)
- 2) In the next 5 yrs. do you project any bunker renovation?
Yes 13, No 1
- 3) How many square feet was the average trap that was con-

Construction expense variables:

- 1) Labor
- 2) On sight soil moving per yd.
- 3) Off sight soil moving per yd.
- 4) Drainage per ft.
- 5) Fiber blanket per yd.
- 6) Grading
- 7) Sand per cubic yard
- 8) Sod per sq. yd.
- 9) Rentals

SAND TRAP RAKING PROCEDURES



- 1. Fill gas and check oil daily; do not overfill
 - a. maintain full level on dipstick
 - b. blow out clutch daily on SMITHCO
- 2. Begin by handraking around the perimeter of the trap (green traps only). Clean up all sand that is out of the trap. Where sand is sparse in the trap, pull sand from an area with too much sand.
- 3. Begin machine raking in the center of the trap. Proceed in an outward circular direction.
- 4. The objective of raking is to provide a smooth and even surface for the membership. Do not leave a trap until that goal has been reached. NO GROOVES, ROCKS, GRASS,

- etc.
- 5. Leave no sand outside of the trap; i.e., clean up sand which the machine drags out.
- 6. All rakes should be placed **inside** the trap in a manner illustrated below.
- 7. Do not go in reverse with the rakes down because this gives Peter G. great heart-ache.
- 8. On Thursdays check to make certain a two-inch lip is maintained on green side traps. This does not mean the lip is to be erased on the other days, however.
- 9. Shut off motor if people (golfers) are on greens.
- 10. No one is finished until everyone is finished.



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WGCSA "March Business Meeting"

Nearly 60 members of the Wisconsin Golf Course Superintendents Association assembled at the Traveler's Inn in Fond du Lac on March 17th for the traditional "March Business Meeting." This annual meeting has continued to gain in attendance and interest as the magnitude of business conducted has grown. Items of particular importance acted on by and communicated to the association's membership reaffirmed WGCSA's role as a progressive leader in the Wisconsin golf industry.

Primary was WGCSA's continuing contribution to golf turf research. The \$2,500.00 WGCSA donation to the O.J. Noer Research Foundation, gratefully acknowledged by Foundation Secretary-Treasurer Robert J. Welch, was enhanced by two equally significant contributions. On approval by

the membership, the Wisconsin Golf Course Superintendents Association will assist the Golf Course Superintendents Association with a \$500.00 donation. Further, WGCSA support to the Wisconsin Turfgrass Association will equal \$5,000.00, allowing the association to maintain its example as the WTA's largest single contributor. Graciously acknowledging WGCSA's role in Wisconsin's rapidly expanding turfgrass research program was WTA President Tom Harrison.

Two significant By-Law changes, endorsed by the WGCSA members in attendance, will allow for increased participation by interested individuals in association affairs. A new, expanded "Class D, Associate Member" rule will incorporate those, who in an active capacity, contribute to our game, such as club officials and golf course owners. The "Class F, Student Member" By-Law will continue to provide that initial step to

the industry through professional association to students at the University of Wisconsin—Madison. However, this investment in the future has now been expanded to include those striving for academic excellence at other institutions as long as they are employed by a WGCSA member.

WGCSA programs and procedures were also addressed at the "March Business Meeting." Included in Officer and Director reports were communications regarding items such as:

- a.) a renewed WGCSA membership recruitment effort in 1986,
- b.) a financially sound association dealing with over \$14,000.00 annually,
- c.) a simplified, straight-forward procedure for handling monthly meeting arrangements including a pre-payment procedure and an "established handicap" policy,
- d.) a report detailing future plans for the already eminently successful association publication, "THE GRASSROOTS,"
- e.) an impressive listing of educational opportunities for professional growth in 1986,
- f.) tentative plans for another successful WGCSA "Social Weekend" in October at the Mead Inn in Wisconsin Rapids.

Finally, and appropriately, the March meeting was an opportunity to recognize those WGCSA members who have served the association. Les Verhalen was cited as a "50 Year" member of WGCSA. Irv Graf and Mike Lees were applauded for 25 year tenures in the association. Past President Monroe S. Miller, upon accepting his plaque commemorating his years of leadership, spoke of the privilege of serving in such a position. Rod Johnson, recipient of a WGCSA "Special Service Award" was eloquent in his thanks for such recognition.

Participation, communication and a heightened sense of interest — hallmarks of a growing association — could describe the Wisconsin Golf Course Superintendents Association "March Business Meeting." If the meeting was any sort of indicator of what to expect in 1986, Wisconsin golf is in for yet another extremely successful year.

"THE GRASSROOTS" RECOGNIZED NATIONALLY BY NGF

For the second time in only two months, the Wisconsin Golf Course Superintendents Association's official publication has been recognized on the national level. "THE GRASSROOTS," in competition with more than "130 entries from the United States and Australia," has been named recipient of the National Golf Foundation's prestigious Harry C. Eckhoff Award. The award, named for long-time NGF Director of Golf Development, Harry C. Eckhoff, recognizes "excellence in golf journalism."

According to National Golf Foundation Director of Communications Bill Jasso, "local and regional golfing publications" are "demonstrating a significant growth in their professionalism and spirit for the game." In announcing the award for the Professional Association Magazine category, "THE GRASSROOTS"

has, once again, been validated as a leading source of information in the golf industry.

WGCSA President William R. Roberts, in response to the NGF announcement, elaborated that "I believe the award to be another reflection of the professional attitude of Golf Course Superintendents in Wisconsin. "THE GRASSROOTS" Editor Monroe S. Miller, assisted by Rodney C. Johnson and Mike Semler, deserve our thanks for an effort that has resulted in a publication that is timely, informative and imaginative. Superintendents across the state have come to expect such an approach and it is gratifying for those efforts to be singled out as truly noteworthy in our profession. The Harry C. Eckhoff Award is substantial recognition for our Editor, our publication and our Association."

SAND BUNKER CONSTRUCTION

By Carl Grassl

Golf Course Superintendent
Blue Mound Golf and Country Club

Bunker construction, as most superintendents know it, involves building one or more bunkers on an individual golf hole. Ideally, the interests of course architect, Superintendent, and club membership will all be satisfied upon project completion. This is a difficult goal to achieve.

An important consideration, whether establishing new bunkers, or enlarging or reshaping old ones, is the original design of the golf course. New bunkers will hopefully maintain the character of the course created by the architect. In addition, the new bunker should not upset any aspect of course maintenance. In most instances, however, course character and maintenance concerns become secondary and design is based on membership desires and committee approval. For example, if a committee objective is to challenge the low handicap golfer, the out-of-character 7,000 sq. ft. bunker will appear, extending from 210 yds. to 280 yds. off the tee. Further complications might arise if another bunker of similar size is proposed for positioning directly across the fairway, with only enough room to squeeze a 7-gang fairway mower between the two bunkers. The conflict between playability, character, and maintenance can best be resolved through consultation with an architect. His experience and expertise will lead everyone in the right direction.

Now let's talk construction, the true joy of being a Superintendent. Seriously, I feel all Golf Course Superintendents have true talents for construction, and exercise this ability whenever they have the opportunity. Sometimes it is not economically feasible, where equipment or manpower is lacking, but that is the committee's and/or Superintendent's decision. Once the site, approval, and acceptable construction timetable are established, the challenge begins. Creating a large masterful bunker from a flat surface where soil must

be brought on site, carving one out of a hill, or enlarging an existing bunker all require much advance planning and calculation. This is true whether self constructing or hiring a contractor. Shaping, drainage, and sand texture are the principal concerns. Often, a Superintendent will encounter ideas at a club which conflict with present day construction principles. At Blue Mound, for instance, it was previously believed that only the depth of sand in a bunker determined how deep the ball would penetrate. In other words, to prevent burying, only 2" of sand should lie above the final grade. It takes a patient presentation of new concepts to change such long held notions.

Construction techniques today place more emphasis on drainage, greater depths of sand, and steep squared-off wall construction all creating improved water movement. Drainage seems to be the key word when talking about consistency in bunkers, meaning when bunkers are wet they are all wet, and when they are dry they are all dry. Physical drainage (drain tile) is of utmost importance in construction. Many methods of tile installation have been attempted and are draining water very well. I have installed a herring-bone pattern using 2" unsleeved tile under 6" of sand. The bunker drained well, but the tile wanted to work its way to the surface somewhat. To date, my best luck has been with 4" corrugated plastic tile covered by a nylon sleeve, with plastic wire ties used to hold the sleeve in place at all joints along the line. The tile is laid 6"-8" below the surface of the sand. For greater speed in water exit, the spun-bound blanket can be used, lined with pea gravel with 2" or 4" tile inside, then wrapped around and sealed. My experience has indicated that drain tile installation or repair works much better after sand installation. We have found that tile should be placed in settled, compacted sand at the base of the bunker. This insures no tile movement or damage while grading or compacting sand. A trench must be hand dug through the sand; however, I feel the time is well spent considering the assurance of a stable installation which will drain water. Another key to fast,

consistent drainage is fresh, washed sand; not simply placed over old sand, but through the entire depth of the bunker. This indicates another problem— sand might have to be replaced every so many years. All of these processes fall into place in our business, and this old sand from the bunkers will be used to topdress fairway areas!!!

Self construction of a bunker has resulted in half the cost that a contractor would charge. However, it requires twice the time. For moving large amounts of soil, contractors become more practical, unless necessary equipment is readily available. Below are the actual construction costs of a fairway bunker on Blue Mound's #9. The site was flat and no additional soil was required.

SIZE: 35 yds. in length	105 ft.	
9 yds. wide	27 ft.	
(kidney shaped)	2,835 sq. ft.	
CONSTRUCTION HOURS:		
96 hrs. @ \$7/hr. end loader, back hoe, box scraper		\$672.00
DRAIN TILE:		178.00
TILE INSTALLATION:		
8 hrs. @ \$7/hr.		56.00
SOD: Bluegrass blend —		
680 yd. @ \$.70/yd.		476.00
SAND: 80.8 tons @ \$4.50/ton		363.00
		<u>\$1745.00</u>
\$1745/2,835 sq. ft. = \$.62 per sq. ft. (a little under Ray's average)		

Hiring a contractor to rough-grade and/or final grade a bunker drastically affects construction costs. Given the above bunker, assume a contractor is brought in to grade the project.

CONSTRUCTION HOURS:		
20 hrs. @ \$72/hr. dozer with front blade		\$1,400.00
DRAIN TILE:		178.00
TILE INSTALLATION:		56.00
SOD:		476.00
SAND:		363.00
		<u>\$2,513.00</u>

This would be a cost of \$.89 per sq. ft. which is 30% higher than self construction. Labor hours and costs should be noted. Hiring a contractor to complete the entire project would more than double the total cost of construction.

This newly constructed fairway bunker soon became the topic of conversation and debate among the members. No consensus could be reached concerning "correct"