THANKSGIVING PROCLAMATION

State of Connecticut
By His Excellency Wilbur L. Cross, Governor: a

PROCLAMATION

Time out of mind at this turn of the seasons when the hardy oak leaves rustle in the wind and the frost gives a tang to the air and the dusk falls early and the friendly evenings lengthen under the heel of Orion, it has seemed good to our people to join together in praising the Creator and Preserver, who has brought us by a way that we did not know to the end of another year. In observance of this custom, I appoint Thursday, the twenty-sixth of November, as a day of

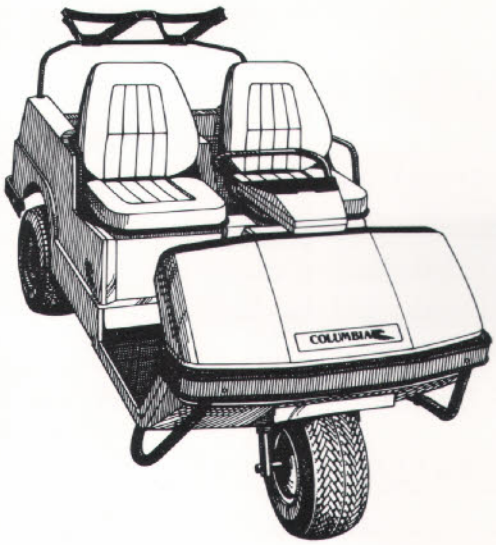
PUBLIC THANKSGIVING

for the blessings that have been our common lot and have placed our beloved State with the favored regions of earth —for all the creature comforts: the yield of the soil that has fed us and the richer yield from labor of every kind that has sustained our lives—and for all those things, as dear as breath to the body, that quicken man's faith in his manhood, that nourish and strengthen his spirit to do the great work still before him: for the brotherly word and act; for honor held above price; for steadfast courage and zeal in the long, long search after truth; for liberty and for justice freely granted by each to his fellow and so as freely enjoyed; and for the crowning glory and mercy of peace upon our land—that we may humbly take heart of these blessings as we gather once again with solemn and festive rites to keep our Harvest Home.

12 November 1936 WILBUR L. CROSS

Thank you,

Wisconsin Golf Course Superintendents, for helping make Wisconsin a great place to play Golf!



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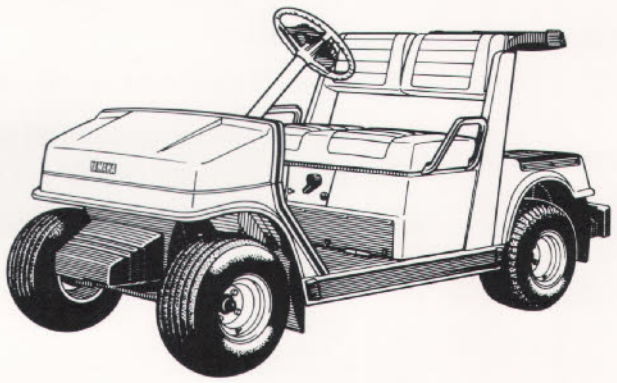

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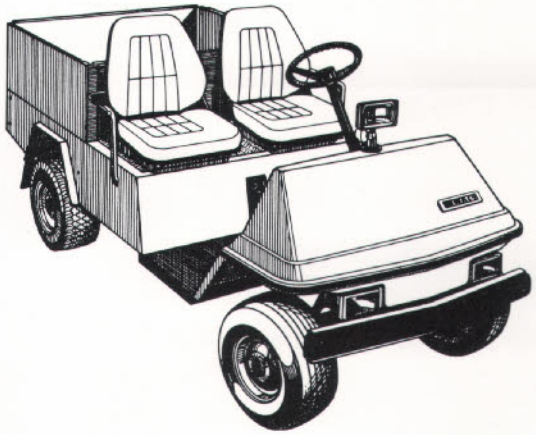

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mation valuable to their audience. This year's keynote speaker was WGCSA Honorary Member Dr. Joe Vargas. Vargas, a 17 year staff member at Michigan State University, titled his remarks, "Fairway Clipping Removal — The New Messiah." He pointed out that although clipping removal is a good practice, it will not solve all fairway management problems. It is a simplistic approach and, like many other practices, will not work by itself as a solution to turf problems. Dr. Vargas also expressed the opinion that it will take three years to see how clipping removal will affect the turf microenvironment and what problems may result, since that is generally the period of time taken to reach equilibrium.

Vargas presented basic management recommendations for both creeping bentgrass and annual bluegrass fairways. Briefly, they are:

Cultural Management of **Poa annua** Fairways

1. Deep vertical mowing after green up
2. Aerifying (coring)
   — after spring green-up
   — after seedhead production
   — fall
3. 3# — 4# of nitrogen per season
4. Collect clippings
5. PGR use — Embark
6. Nitrogen fertility: ½# June 1, ½# July 1, ½# August 1, 1# September 1 and 1# November 1.

—OR—

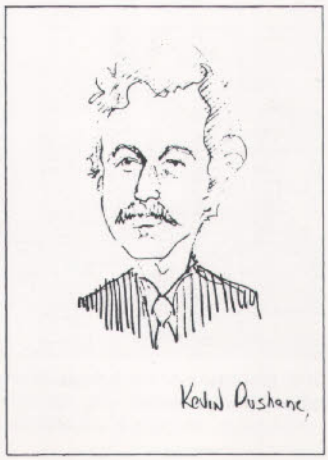
1½# June (e.g., 6-2-0), 1# September 1 and 1# November 1.

Cultural Management of Creeping Bentgrass Fairways

1. Aerifying during annual bluegrass seedhead production
2. Vertical mowing, lightly in summer to prevent scalping
3. Approximately 2# nitrogen per season
4. PGR use — Cutless
5. Nitrogen fertility: 1# May/June, ½# August, 1# November/December.

Dr. Vargas was followed on the program by one of his former students, Kevin Dushane. Kevin gave a wide ranging talk on lightweight fairway mowing at his club, Bloomfield Hills, near Detroit. He has been using smaller units on his fairway turf for four years and has observed the benefits of less water usage, less fertilizer and fewer fungicide applications. Along with lightweight mowing, Kevin has been collecting clippings. Part of that program was the sculpturing of his fairways to reduce acreage and therefore program costs. The resulting long **Poa annua** rough adjacent to the fairway created a major problem and Kevin did an outstanding job of covering the story of changing this unfair playing area to a more acceptable Kentucky bluegrass/ryegrass rough. His presentation was complemented with a great set of slides.

Bob Randquist, Golf Course Superintendent at Southern Hills Golf and Country Club in Tulsa, Oklahoma, travelled to Milwaukee to share his experiences with the hand mowing of putting greens. Bob, who has a B.S. degree in Metallurgical Engineering from the University of Oklahoma, analytical-



Speaker caricatures by GRASSROOTS illustrator Gene Haas.

ly reviewed his reasons for instituting walking mowers into his putting green management program in 1981. He considered labor requirements, equipment costs and effects on cultural practices. He concluded, based on the eight machines needed to do the job at Southern Hills, that walkers cost $2,000 per year less in equipment costs than triplex machines over a ten year period. In a golf season of ten months where greens are cut six days a week, he calculated that the use of walking mowers increased his labor expense by $9,500 per year. The subjective observations on putting green quality weigh heavily in favor of the smaller units. He has seen a decrease in vertical mowing requirements and less soil compaction. They have eliminated the "triplex ring." He has measured their effect on green speed and recorded an average of 9" to 10" in speed increase over triplex mowers when both are set at the same height of cut. Although inexplicable, you can conclude you will be able to achieve the same speed with a walker at a somewhat higher height of cut, thereby reducing some plant stress. Bob did point out that this program may not be for everyone and many factors must be considered:

1. Contouring and size of greens, steep slopes adjacent to greens and difficulty in maneuvering the triplex mower.
2. Bunkering, principally as it relates to closeness to putting surfaces.
3. Labor market translated into availability, cost, unions, etc.
4. Mowing frequency.
5. Length of season.
6. Convenience.

In conclusion, he has seen great member acceptance at his club because of the elimination of hydraulic leaks, no triplex ring, better rough grasses around the greens, a decrease in syringing requirements of collars and an overall pleasing appearance.

The afternoon session, chaired by WGCSA Director Dale Marach, welcomed Mr. Bruce Boegel, a member of Wayne Otto's club, Ozaukee Country Club. Mr. Boegel addressed a number of topics pertaining to golf course maintenance from the golf players perspective. He emphasized that enjoyment of the players and the pace of play should be the primary concerns in the work that we do. He also made the point that our golf courses should be clearly marked so that the rules of golf can be easily applied.

Dr. John Street, an Associate Professor of Turf from Ohio State University, followed Mr. Boegel on the program. Dr. Street addressed the strategy and potential long range problems of low nitrogen fertilization programs. He stressed proper timing of nitrogen applications to maximize root growth and CHO reserves going into the summer stress period. He warned that low nitrogen programs combined with clipping harvest on fairway turfs could deplete nitrogen reserves and that higher N rates may be necessary in the future.

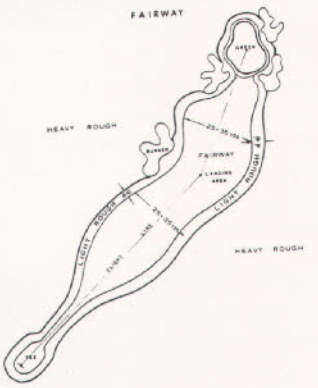
Wrapping up Wednesday's program was Mr. William R. Ward, Golf Course Superintendent at Morris Park Country Club in South Bend, Indiana. He led a discussion on his use of Roundup to convert his mixed **Poa annua**/bentgrass/Kentucky bluegrass fairways to bentgrass. His experience showed that proper timing and removal of existing thatch greatly helps in the success of this endeavor. Key to his presentation was the importance of long range planning when attempting a project of this magnitude.

The PGA's Tour Agronomist, Mr. Billy Buchanan, came to Wisconsin from Ponte Vedra, Florida to participate in the Symposium. In a talk filled with many words of advice, Buchanan drew together problems and conflicts between the game and the care of the golf course. He remarked that golf course management is a compromise between what is agronomically correct and what is good for the game of golf. What is important, bottom line, is what the players have to play on, and we must recognize that **how** we

Dr. Clint Hodges.

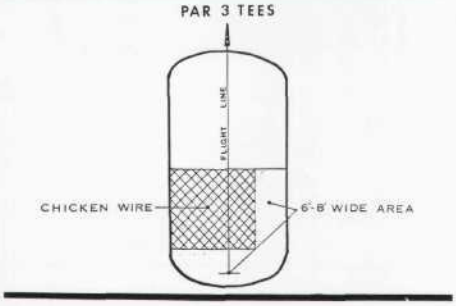
Jim Latham wraps up the 1985 Symposium.

Billy Buchanan makes a point about golf course maintenance.

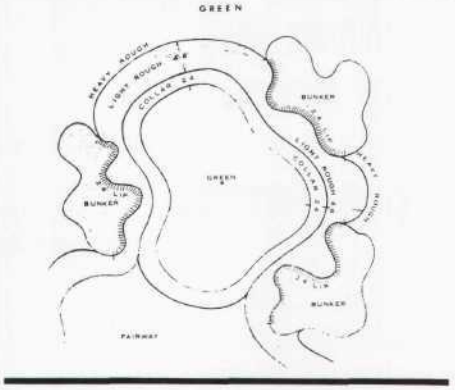


Tony Grasso, President of the O.J. Noer Research Foundation, presents Jim Latham with the Foundation's Distinguished Service Award.

prepare the field matters little to the players. Billy recognized our problems with the weather, but said, "Sound agronomics will diminish the impact of the weather." He expressed the need to control the growth of grass,



especially on putting greens, and reminded everyone that they are **putting surfaces and not landing areas.** (Editor's note: better to remind players than us). Golf is supposed to be played on firm surfaces, not dead and not wet. Commenting on remarks made by Lee Trevino and Hubert Green during the 1985 PGA at Denver's Cherry Hills Country Club, Buchanan suggested, "Do what you have to do to get the job done and don't worry about impossible remarks of players."



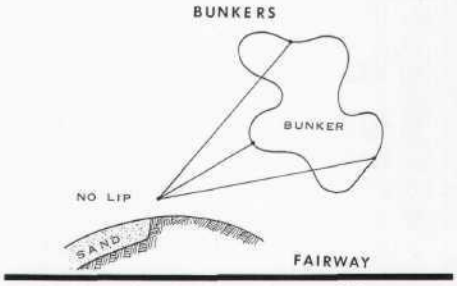
Mr. Buchanan commented on some specific golf course practices involved in the management of fine golf turf. Among them were:

1. Mowing. Cares little what machines are used; look at what is left for putting. Is it smooth, firm and true? You cannot overmow a good surface. More is better and there are clubs where greens are cut nine times per week. The second cutting of a double mowing will increase the stimpmeter reading 6"-8". If you mow the same path, you can get 8"-10" increase with the second cut.

2. Rolling. A good maintenance tool. Some moisture is needed. Mow once and roll once and expect 8"-10" increase on stimpmeter reading.

3. Irrigation. We need absolute control of what is applied. Hand watering is important — all good courses do. Use nozzles when hand watering. Cycle irrigation system frequently rather running the time off in a single setting. Irrigate for the lowest spot on a putting green and hand water the highest.

4. Fertility. Lowered levels of nitrogen are good. Don't ignore other nutrients that give strength to grass blades. Consider a 1:1 or 1:2 ratio of N:K.

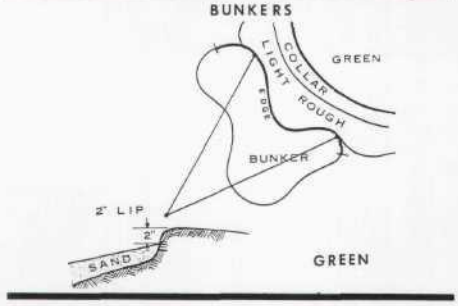


5. Vertical Mowing. Clip only the tops. When you can see evidence of vertical mowing straight on but not when you turn 90 degrees, you've done a good job.

6. Topdressing. Use light amounts of dry material. Even if you are on a straight sand program, **you still need to aerify.** We must get oxygen down into the root zone.

7. Spiking. Not seen much anymore on putting greens, but it is a good practice and should be done once a week.

8. Sand. Sand is a hazard on the golf course, just like water. Players should not complain about the depth of sand anymore than they complain about the depth of the water!



Tournament preparation guides, made available to attendees, are reproduced in this article with Mr. Buchanan's permission.

Dr. Clint Hodges, Professor of Horticulture and Plant Pathology at Iowa State University, made his second appearance at the Symposium as a speaker. He was a participant in the 1982 program. Dr. Hodges gave an extremely interesting presentation on the interactions between **Helminthosporium** leaf spot and herbicides. He shared research information on how rates of different herbicidal materials affect the germination of leaf spot spores and their subsequent growth. He demonstrated stimulation and inhibition of spores at varying degrees of concentration of herbicide. Since the herbicides involved in his study are plant hormones, their impact is not totally surprising. At this stage of his research, Dr. Hodges is unable to say whether or not we need to do anything to counter the influence of herbicide applications on the leaf spot organism.

Jim Latham had a new role in this year's Symposium. He wrapped up the program with an excellent summary of what each speaker said. Although he wore a different hat this year, we are fortunate he continues to be an important part of the Symposium.

Gratitude was felt by all to Don Gurda, Jim Spindler and all the staff people at Milorganite. Without their hard work and dedication these excellent annual programs wouldn't be posible. Members of the Symposium Committee — Jim Belfield, Jim Latham, Monroe Miller, Wayne Otto, Danny Quast, Jim Spindler and Woody Voigt deserve thanks for yet another job well done. But most deserving of applause is Bob Welch. He provided the guidance and the glue that made this year's meeting one of the best ever.

Members of the WGCSA that attended the 1985 Symposium.

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Merrimac, Wisconsin 53561

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George Kalka at 1-608-493-2251

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Koshkonong Mounds is an old established club which expanded to eighteen holes six years ago. Its location on Lake Koshkonong, with rolling hills and mature oak and hickory stands, makes it one of the most picturesque golf courses in southern Wisconsin. This position represents an interesting challenge in golf course management.

The salary and benefits are negotiable and will be comparable to those paid in similar positions within the area. The Fort Atkinson area provides a high quality of living in an excellent location between Madison and Milwaukee.

Interested parties should contact:

Mr. Thomas Schoen, President
Koshkonong Mounds Country Club
427 Rogers Street
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From the Director's Desk

FACTORS AFFECTING SOIL TEMPERATURES

By James M. Latham
Director, Great Lakes Region,
USGA GREEN SECTION

The temperatures of the soil and air above the soil are vital factors in plant and animal growth. We are well acquainted with above-ground temperature since it affects our own comfort. Quite often we relate this to soil temperature but the two are not always parallel. Wind movement has some control over our **interpretation** of temperature but has little to do with actual soil temperature. So for a while, let's forget about the Weather Bureau and concentrate on the soil surface and below.

All soil reactions have an optimum temperature for activity. Most microbial activity has an optimum temperature of 75° — 90°F. As the temperature goes down the activity decreases, but does not stop until the soil freezes. At 75°F organic matter decomposition is ⅔ as fast as at 90°F. It is only ⅓ as fast at 60°F.

Fall seeding is preferred over spring seeding, because the soils are warmer and germination is faster. White pine seed germination is 10 times better at 76° than at 57°F. There is an upper limit to this effect, coming at 120° — 125°F when most seed are killed. Dry soil temperatures can exceed 150°F.

Sources of soil heat are chemical and biological processes, conductions from within the earth, atomic radiation, and solar radiation. Solar radiation is by far the most pronounced, the others being negligible.

Solar radiation crosses the 93 million miles of space as a broad spectrum of wavelengths. The earth intercepts one part in two billion of the sun's output. As it reaches the earth's atmosphere containing ozone, dust, moisture, etc., some of the wavelengths are absorbed, others scattered and others arrive at the earth's surface. The retained heat depends on the amount of radiation received, the soil color, moisture, compaction and cover.

The amount of radiation received depends on cloudiness, dust in the air or other impeding factors. Clouds reflect an average of 78% of the sun's rays. Other particles in the atmosphere scatter the radiation. When Krakatoa blew up in 1816, the great dust cloud cooled weather in many areas and was a cause for mass migration from New England to the Prairies. The dust had weakened the warming effect of the sun.

Ozone, found 13 to 20 miles up absorbs a great deal of ultraviolet waves and acts as a filter. Water vapor, on the other hand is transparent to ultraviolet but heavily absorbs long wavelengths in the infrared area. In short the earth is well protected.

When sunlight penetrates our natural filter, what happens to it? Part heats the soil surface, part is conducted to lower levels, part heats the air above the soil and part is re-radiated into the atmosphere as long wavelength radiation.

The amount of heat absorption depends in great part to surface color. Listed below is the percentage of incoming radiation reflected by various surfaces:

Fresh snow	80%
Old snow	40%
Sand (avg)	60%
Forests	15%
Fields	10-12%
Black Soil	5%

The angle at which sunlight strikes the surface is also a major factor. Worldwide, the equator receives more perpendicular sunlight than the poles and is hence warmer. In the Northern Hemisphere, the angle of exposure or slope is important. A 45° slope facing the south is warmest on a **yearly** average. In midsummer a south facing angle of 15° is warmest.

Other factors have an influence, however. In the morning soil moisture is highest as is relative humidity, so a high percentage of energy is required for evaporation. By the afternoon, these factors are lower, so more energy is available to heat the soil. With no clouds, then, the Southwest slope is warmer.

Summer (convection) clouds usually form during the daytime, leaving the morning relatively clear. This means more sunlight during the morning hours. When clouds are present, then, the Southeast slope is warmer.

Diurnal, or day and night, temperature variations are also governed by direction of exposure. South slopes have wider variations than north slopes. The temperatures here are higher during the day and lower during the night. Bare soil will be even greater than soil covered with vegetation. Dark soil will vary more than light, and arid regions more than moist.

Grass-cover is a great insulation. It keeps the soil cooler in the spring and summer by blocking incoming radiation. It keeps the soil warmer in the fall and winter by blocking outgoing radiation. Experiments in England show that on a 10 year average, soil under turf is 2° warmer in October and November than bare soil, but only 1° warmer during winter and spring, whilst from May to August they are within 0.5°.

Snow, although reflecting a great amount of sunshine, is valuable in insulating the soil against colder air temperatures during periods of short days. Reflectivity of snow can, of course, be altered by dusting with dark colored materials that will absorb solar energy and convert it to heat.

Dry soils warm easier than wet soils because water has a higher specific heat, about five times that of soil. This means that because a greater amount of heat is required to warm water, wet soils remain cold longer in the spring. Water also conducts heat away from the surface better than air. Wet soils, then, are more difficult to heat and as they warm they transmit heat downward faster than dry soils. The cumulative effect is a cold surface.

Compaction, because it excludes air but not water, is another roadblock to soil warming in the spring.

As we look deeper into the soil profile, we see less and less daily or seasonal temperature variation. The depth where no changes occur is called the neutral layer. On the average in natural soils, the neutral layer for daily temperature

fluctuation is 5" deep. The neutral layer for annual variation is 40 feet. At about 30 feet the seasons are reversed; that is, the soil is warmest in January and February and coldest in July and August.

To maintain an energy balance, heat received must be given off. The energy received during the day must eventually be given off — whether it be at night or during the cooler seasons. In arid areas the soil becomes quite warm during the day, but gives off much of the heat at night because there is little atmospheric moisture to intercept the infared radiation away from the surface. With a humid microclimate over vegetation this rapid radiation cooling produces dew.

When there is high atmospheric humidity and cloud cover, this outgoing radiation is reflected back toward the earth, preventing the rapid cooling and greatly reducing or preventing dew formation. In this situation, the soil temperature will be the least variable.

In summary, the soil temperature variation is best described by table:

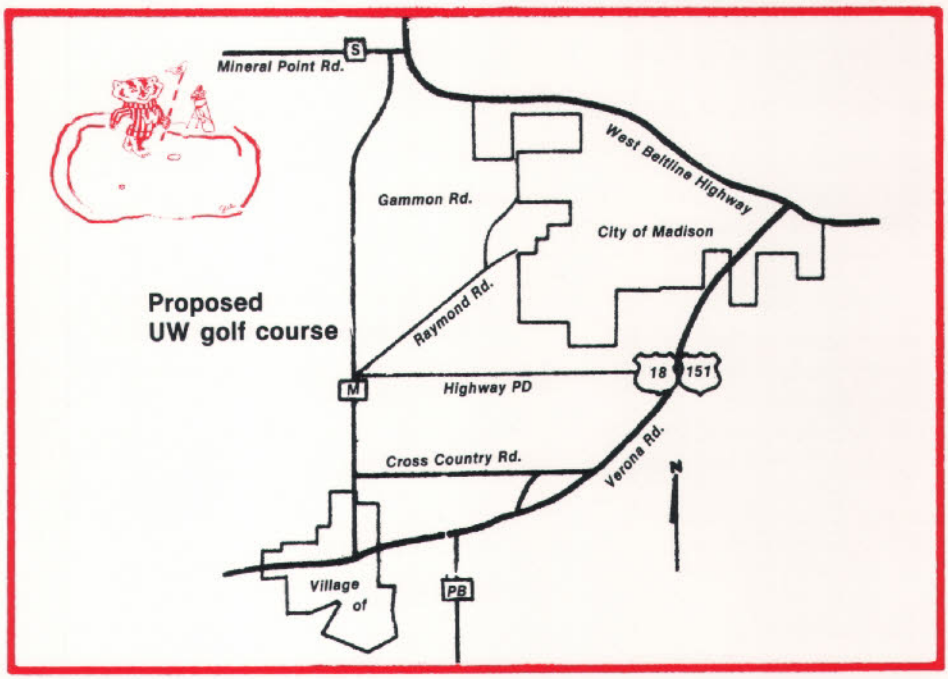
Warmer Soil	**Cooler Soil**
Dark Color (dry)	Light Color
South Slope	North Slope
Well Drained	Poorly Drained
Uncompacted	Compacted
Bare	Forested or Cropped
Equatorial latitude	Polar latitude

UW DECIDES TO PROCEED WITH CONSTRUCTION OF GOLF COURSE

Chancellor Irving Shain has given approval for construction of a UW—Madison golf course west of Madison. He will include the project in the University's 1987-1989 budget that goes to the governor in January of 1987 and goes into effect on July 1, 1987. He qualified his approval with the requirement that sufficient funds be raised so that a first-class course with the appropriate amenities can be built. The golf course project will have to be approved by the Board of Regents, the State Building Commission and the Legislature, as well as the governor.

The university owns nearly 600 acres of land in the township of Verona and the golf course will be built on a part of that property. The golf course fund started with a donation from the late Carl Dietze of Milwaukee. He was a graduate of the UW—Madison and left money for the project at his death in 1960. The land was donated by Dr. Harry Culver of Chicago.

The golf course has been the subject of controversy for years. Early disputes about the environmental impact of such a project put it on hold. More recently the subject has been money, and whether or not the foundation held enough funds for construction. Several studies have been made, including one by a committee of WGCSA members including Tom Harrison, Bill Roberts, Roger Bell, Jerry Kershasky, Rod Johnson, Pat Norton and Bob Musbach. All but one of the studies indicated a shortage of funds and that was also the conclusion of the WGCSA committee. Currently, the UW Foundation has $2.8 in contributions and pledges, about $1 million short of what is needed to meet university requirements. The UW Foundation is prepared to embark on a fund drive early next year and it is assumed that the golf course project will be part of that overall fund drive.



OUT IN LEFT FIELD? APPARENTLY NOT!

The suggestion presented last summer to change the name of the Wisconsin Golf Course Superintendents Association to the "Wisconsin Golf Course Managers Association" may not be as far out in left field as some think. The Golf Course Superintendents Association of America did an extensive survey of its members last year. The survey generated many interesting statistics, but none more telling to this editor than the one that showed a very high percentage of national members didn't like their title. Forty-five percent of the Superintendents responded, in fact, that they preferred the title "Golf Course Manager." It is a subject that is bound to come up again, soon, at our state level as well as at the national level. It may be something to give careful and deliberate thought to over the upcoming winter months.