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**Cover Photo:**

James B. Moncrief accepts
the USGA Green Section Award.
Frank D. Tatum, Jr., former
President of the USGA,
makes the presentation.

James B. Moncrief

USGA Green Section

1986 Award Recipient

FOR NEARLY 30 years, James B. Moncrief has served the interests of better turf for golf, and in doing so has traveled a million-and-a-half miles across the sunbelt of the United States and made 5,000 visits to golf courses. On February 3, 1986, he became the 26th recipient of the USGA Green Section Award, in recognition of distinguished service to golf through work with turfgrass.

The Award was presented by Frank D. Tatum, Jr., of San Francisco, former President of the USGA, at the Golf Course Superintendents Association of America's Annual Conference and Banquet, at the San Francisco Hilton Hotel. Twenty-five hundred dinner guests attended. Earlier in the day, the Annual Green Section Education Conference attracted over 1,000 superintendents and club officials from around the world.

Jim Moncrief, of Athens, Georgia, came to the Green Section Staff in February, 1957, from the Dallas, Texas, Parks Department. He served as a USGA agronomist in the Southeastern Region for three years and thus began his long career of golf course visits, conference speaking, writing, and collecting of everything unusual in turfgrass management. In 1960 he was named Director of the Green Section's Southeastern Region.

A GRADUATE of Texas A&M University, Monty was at home with turfgrasses on golf courses across the nation's southern tier, from the Carolinas to the Arizona deserts. He also consulted with clubs in South America and the Caribbean. During one of his trips, he noticed an especially fine-leafed bermudagrass mutant on the 12th green of the Florence Country Club, in Florence,



James B. Moncrief

South Carolina, collected samples of the grass, and transferred them on to Dr. Glenn W. Burton, plant geneticist of the University of Georgia Coastal Plains Experiment Station. This grass was later to be called Tifdwarf bermudagrass, the finest-leafed bermudagrass available in the world today.

Collector he was. He brought samples of grasses, diseases, insects, soils, ideas — everything imaginable for university researchers to probe and investigate. If he missed anything, no one noticed. As an extension teacher, no one was better informed or more willing to search out the answers.

He retired from the Green Section Staff in 1982, but he has continued to serve as a member of the USGA Green Section Turf Research Advisory Committee.

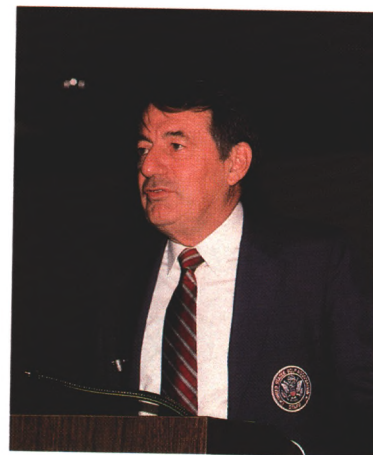
"As a Texas sharecropper's son," he said, "I've been privileged to work with turfgrasses all my life, and I've made a lot of friends along the way."

Indeed he has. He is a member of the Oklahoma Turfgrass Hall of Fame and a recipient of the Texas Turfgrass Association's A. W. Crain Diamond Award. He is a member of the American Society of Agronomy and a Certified Professional Agronomist. He served on the Editorial Board for the USGA publication *Turf Management for Golf Courses*, a book by James B. Beard.

"Receiving the Green Section Award is simply the most wonderful thing ever to happen to me professionally," he said when he was notified of his selection.

Golf Course Management — It's Not All Agronomics

February 3, 1986, Moscone Convention Center,
San Francisco, California



William H. Bengeyfield

THE 1986 GREEN SECTION EDUCATION CONFERENCE was again held in conjunction with the annual Golf Course Superintendents Association of America International Turfgrass Conference and Show. This is the fifth consecutive year for this arrangement, and we are pleased to be a part of the GCSAA international event. The San Francisco meeting was a huge success, with over 1,100 attending the Green Section's program. This issue of the GREEN SECTION RECORD carries the proceedings of that program.

BEST TURF TIPS OF 1985 — PART I

Nine Green Section Agronomists have consulted with 1,100 USGA golf courses and their superintendents in 1985. They have been hunting for the best turf tips throughout the year. Here is Part I. Parts II and III will be found later in this issue.

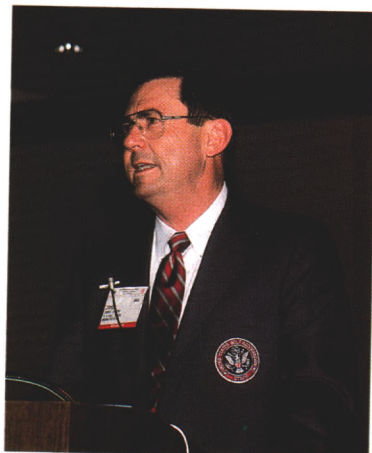
How to Move Half a Fairway — Quickly and Easily

by **JAMES M. LATHAM**
Director, Great Lakes Region, USGA Green Section

THE LOGISTICS involved in golf course renovation become quite important when the work is to be done principally by the maintenance staff. The project faced by Wayne Otto, CGCS, at Ozaukee Country Club, in Mequon, Wisconsin, involved realigning a fairway, among other improvements planned for the third hole. Naturally, speed was important, and the work had to be done during the period of maximum turf growth and heavy golf play, in April and May. Bentgrass sod was to be moved from the right side of the existing fairway to the former left rough to achieve the new fairway alignment.

First, new mounds were created, bunker hollows cut, and sand put in

James M. Latham



place. Irrigation lines had been relocated so a water supply for the new turf area was ready. When the rough was cleared and the soil prepared, the special equipment was brought in. Rolls of sod 6' x 1½' grown on mineral soil are heavy. To alleviate worker stress, Otto contracted a local sod producer to move the turf to the new location, just half a fairway away.

A commercial sod harvester was used to cut, roll, and place the sod on pallets. The pallets were then moved to the work area with a lightweight forklift. The pallets were placed so that there was a minimum carrying distance for the workers laying the sod, contributing to individual productivity as well as to the capability of the staff to perform their



(Above) In May a sod harvester, operating in right background, cuts and palletizes square yard rolls of bentgrass sod to be moved to new location half a fairway away. Stripped area will be new rough.

(Right) Pallets of sod are placed to minimize carrying distance. Note new irrigation head location, soon to be center of fairway.

(Lower right) CGCS Wayne Otto marks the limit of bentgrass fairway. Note sand already placed in new bunkers.



normal course maintenance operations. The efficiency and speed of the sodding operations virtually eliminated transplant shock and wilt so that new roots developed almost immediately. Nursery-grown improved bluegrass sod was used in the new roughs to frame the fairway beautifully.

A footnote to this well-planned operation is Otto's use of plant growth regulators on other fairways. The reduced mowing requirements of that acreage gave more man-hours to the major project.

With some restrictions on golf car operations, play of the newly aligned hole began in June.



Core Transplanting

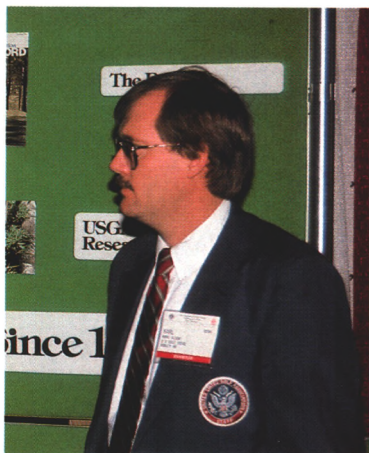
by **KARL ED OLSON**

Agronomist for Championships, USGA Green Section

CORE TRANSPLANTING, by itself or in combination with other programs, is a technique that can be used to restore turf to bare areas on greens. It is perhaps most useful in cases where turf loss is patchy rather than complete. The turf loss shown in the photographs was the result of an aggressive pearlwort control program. Core transplanting was planned in this instance when the fall overseeding failed and cool spring weather prevented an early overseeding effort.

The first step is thorough aerification. Using a large $\frac{3}{8}$ -inch tine will make it easier to place the good plugs back into the holes. Some of the newer aerifiers will permit even larger tine coring. Do not overlap when coring, and follow a straight line method of aerification.

Cores from the healthy portions of a green are placed by hand into the holes on the bare areas. You must proceed quickly with this part of the process



Karl Ed Olson

to prevent the cores from drying out. Natural settling will cause them to drop somewhat in the first few days. However, this will prevent them from being pulled up or out by the mowers.

Next, apply a seed/soil topdressing mixture by hand. Gently work it into the bare, transplanted areas to establish good seed/soil contact. Finally, apply topdressing to the entire green in the usual manner.

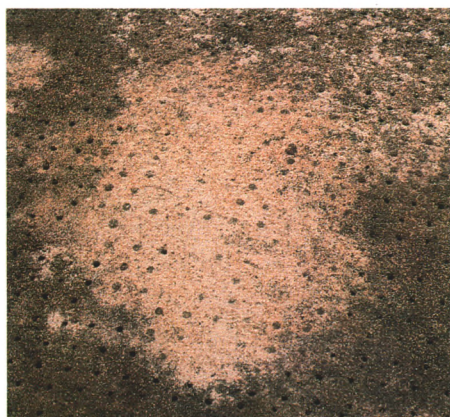
Without a doubt, core transplanting is time consuming. However, when it is executed properly, it will yield excellent results. Putting conditions were good three weeks after transplanting was completed. Conditions had greatly improved in as little as a week's time. Certainly this method is not meant to replace sodding or overseeding in all cases, but it has its place in course management, and it can be used to the superintendent's advantage. It prevents the patchy appearance that so often results from sodding.

A damaged green.

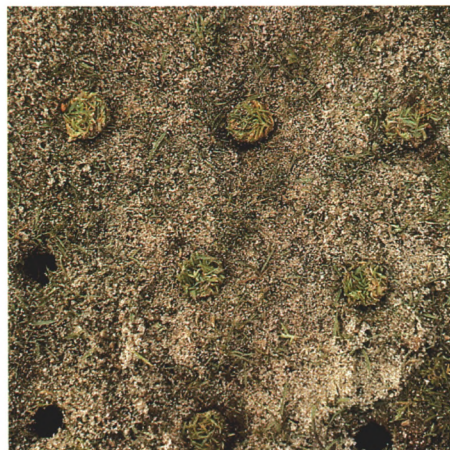


Removing the cores.





The damaged area.



Introducing new mature plants.



Replacing the cores.

Rough Times

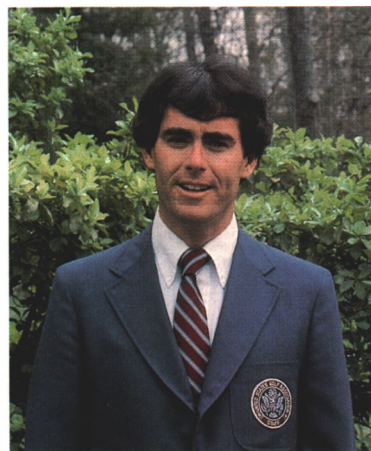
by **PATRICK M. O'BRIEN**

Agronomist, Mid-Atlantic Region, USGA Green Section

IN OCTOBER, 1985, I attended the Scotland International Golf Greenkeepers Association Conference and later played golf at more than 15 of Scotland's finest courses. Some of these are very old, with golfing history going back to the early 1400s. Consequently, this was an excellent opportunity to see how it all began.

Almost immediately, Americans will notice how the maintenance of grasses around the sand bunkers and the rough grasses next to the fairways differ from home. These grasses are not neatly groomed and cut short. They are taller, with little evidence of any maintenance. In the United States, the same areas are cut relatively short, especially around the bunkers. In Scotland, they have

Patrick M. O'Brien



historically allowed the roughs to grow naturally. One exception is a secondary type of rough, usually eight feet wide, at the fairway perimeters. These grasses are maintained two to three inches tall next to the one-half-inch cut on fairway grasses.

Usually, Scottish roughs are a mixture of fine fescues and bentgrasses that are ideal for the purpose. Because of the low soil fertility and cold temperatures in Scotland, all grasses grow slowly. Surprisingly, some fairways are cut only five to ten times annually because of the climate. These unusual features make it possible for the golfer to find his ball in the rough and attempt to recover. It may still take an outstanding shot, however.

Because of longer growing seasons and more favorable weather conditions in the United States, many of our golf courses would become unplayable if these grasses were allowed to grow naturally. Some degree of maintenance around our bunkers and in our roughs is necessary, and it is expected by American golfers. Nevertheless, many American courses could significantly reduce the intensity of their management in these areas and thereby reduce maintenance costs and at the same time add greater definition to the golf course itself.

The USGA/GCSAA Turfgrass Research Program is supporting the work of plant breeders in developing minimal maintenance turfgrasses for golf. This program will have tremendous influence on golf course maintenance, not only in this country, but worldwide. Even now, zoysiagrass is becoming more popular around bunkers because of its slow growth rate, traffic tolerance, and lower maintenance requirements. What will tomorrow bring? Better grasses without sacrificing turfgrass quality and lower maintenance budgets is the answer. That's a priority for all golf course superintendents.



Low maintenance.

An innocent Scottish rough.



Everything You've Always Wanted to Know About Putting Green Soil Mixes But Didn't Know Whom to Ask

by **JUDITH FERGUSON GOCKEL**, General Manager,
Agri-Systems of Texas, Inc., Tomball, Texas

WITH 25 YEARS of experience with USGA Green Section Specifications for Putting Green Construction successfully behind us, many wonder why certain basic questions still persist. But persist they do, and I've been asked to clarify these issues:

Why is a physical soil analysis really necessary for putting green construction?

What quantities of the basic materials are needed by a laboratory for testing?

Why does it take so long to achieve and receive laboratory results?

Why do the final numbers vary from one lab to another?

Why is straight mechanical analysis not sufficient?

Why is a soil mix better than straight sand construction for greens?

Why is it essential to off-site mix?

Why laboratory work does not always produce magical results.

Most of you are aware of the Specifications for Putting Green Construction and the techniques for physical soil testing for greens. The original research was done to correlate the findings of research studies, the soil sciences, and the practical solutions arrived at by superintendents trying to solve real-world problems. To this was added exhaustive laboratory analysis of hundreds of cores from all sorts of golf course greens all over the country. The research was conceived and conducted by Dr. Marvin H. Ferguson, then National Director of the USGA Green Section.

The conclusion of this work led to the understanding that by constructing greens in a specific fashion and using a pre-tested blend of construction materials, consistently desirable conditions could be provided for optimum turf growth, economical maintenance, and maximum playability of putting green surfaces.

Simply stated, the method recommends that the green be constructed with the subgrade finished to the final contours of the green; that the subgrade be adequately trenched for drainage tile; that the tile be covered with gravel; and that a gravel blanket about four inches deep be placed over the entire subgrade. The gravel is to be topped by at least two inches of coarse sand with roughly a 14-inch layer of prepared seedbed mix placed over the surface.

THIS METHOD is designed to take advantage of a peculiar interaction of soil and water, a condition called the perched water table effect.

The other part of this system is the mixture used for the seedbed; although this has evolved over the years, its function has not changed. The actual seedbed or top mixture is put together after a physical analysis of the materials (sand, soil and/or organic matter) available and an assessment of their suitability when combined with each other.

If you could get a worm's eye view of a good soil mixture, you would see a

variety of particle sizes bridging each other, combined with an organic material chosen to fit the characteristics of the sand. There would be a small quantity of silt and clay present to increase nutrient retention, and the mixture would be stable. It would not shift under traffic, and the fine particles would remain in place.

To go about achieving this mixture, we begin by analyzing the sands that have been submitted to us.

We report the particle breakdowns in millimeters; we also provide U.S. sieve sizes for comparison with suppliers' specifications. We prefer very little material above the 2mm range.

Sands with a predictable curve of particle size distribution have proven over the years to be the most desirable for seedbed construction. The details can change, but the overall curve is a good guideline for selection.

We also run a hydrometer analysis on virtually every material that comes into the lab.

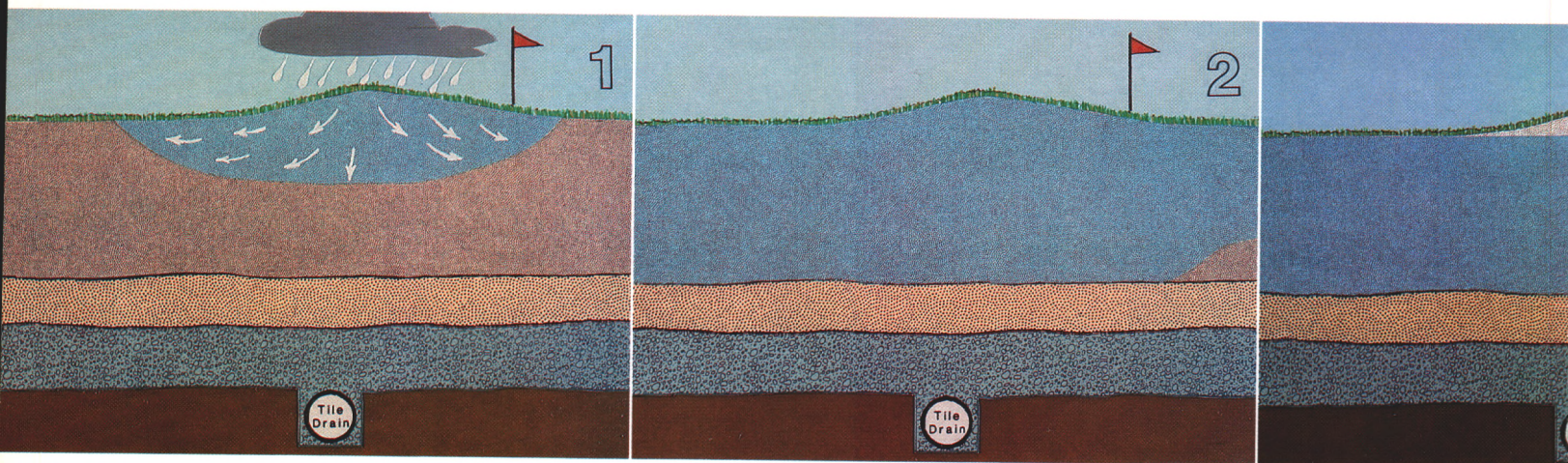
At this point, we go into the realm of "feel" — which is a brief way of saying that we apply the experience gathered in testing thousands of materials over the years to the specific materials we are looking at.

This is the point at which a selection of organic materials is made. We know that a fine sand with a fair amount of silt and clay may develop dangerously low infiltration rates if we combine it with a reed-sedge, or bog or muck peat. We know that a clean, relatively coarse sand combined with a long-fibered sphagnum peat will be droughty. There is almost no way to record the variables, which are literally endless. We call this accumulation of experience "feel," and we don't have any shame in doing so.

We are asked far too often why we use organic matter at all. The answer is we use peat to improve water retention, to

Judith Ferguson Gockel





cushion the roots of the turfgrasses during their early development stages, and to increase porosity. Peat is not an optional ingredient; its absence cuts your margin for error to almost nothing. One mistake, one problem, and you can lose the green.

WHEN WE HAVE chosen the best materials from what we have been sent, we make up mixtures and test them for these factors. Capillary porosity is the water present in the soil which is not available to the plant. Non-capillary porosity measures the water that is available to the plant. Bulk density measures the weight of solids present in a given volume of soil. Water retention measures the capability of the mix to retain adequate moisture. Permeability measures the quantity of water that will penetrate a known volume of soil in a given period of time; this is also referred to as the infiltration rate. There is a good deal of controversy and confusion concerning the infiltration rate. It is necessary to figure in the finished depth of the green mix in the field in order to make accurate predictions of field infiltration.

While there are guidelines for acceptable figures in these categories, no one set of numbers within these guidelines is necessarily better than any others. Selecting the best mix must take into consideration what is available in the way of material, the climate, the altitude, the budget of the course, the distinctive nature of soils in any given area, and a host of other variables.

In spite of our testing background, in spite of our experience, we can only help you if you give us adequate information.

And I say "us" referring to any laboratory you work with. There are at least three physical soil testing laboratories in the country today, and we all do good work. But none of us can do our best work without your input.

We need adequate, separate samples of the materials you propose using. We prefer to receive one gallon of each material to be tested (i.e., sand, soil and/or organic matter). We need to have the materials labeled on the outside of the package. We need to know what course we are working for. We like to know which materials are most convenient or least expensive, since we are willing to help you build economically. Give us a complete return address and a telephone number. It helps to receive a letter detailing as much information as possible about what you are doing and what you would like us to do. If you have a rush job, advance notification is vital.

ONE of the major problems between field conditions and laboratory results is in sampling error. We usually get no more than one cubic foot of material in a single sample. If you are building one green with a 7,000-square-foot surface area, you are going to be working with 7,000 times as much material as we do. In order for there to be a reasonable degree of correlation between laboratory and field results, you will need to take great care in your sampling procedures.

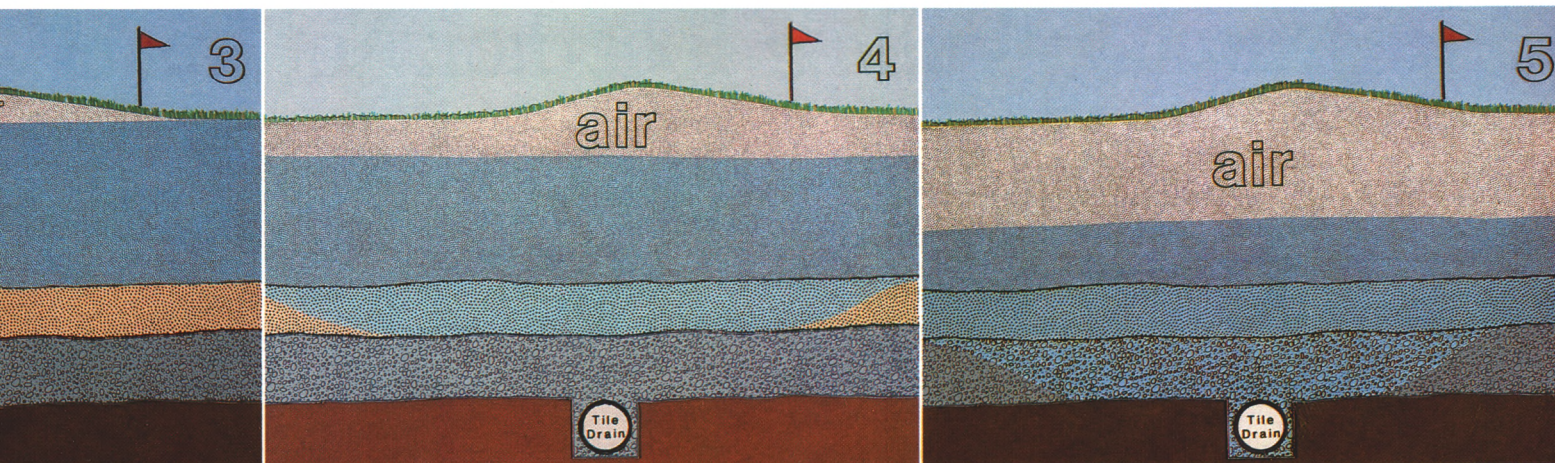
Take your own samples. You will find it useful to see the materials and the production facilities of your supplier. You will get an idea of how carefully the

supplier handles the materials, and you will know what the product looks like in volume. This can keep you from accepting a load from the wrong stockpile. In taking the samples, take several from different areas of the stockpile. Take your samples from the interior of the pile, and go in at chest height or higher.

When you have accumulated several samples, mix them together thoroughly, and send us half of what you have. Keep the rest, well labeled, for your own reference when delivery starts. Ask the supplier for several screening records. Most commercial suppliers make regular tests of the particle sizes in their products and will be happy to give you an example.

When selecting an organic material, have the supplier provide you with a bag, bale, or a representative quantity of bulk material. Here again, retain part of the sample for your own reference, and cross check it against the delivered materials. By acquainting yourself and whoever will receive incoming materials with the look, feel, and general characteristics of the materials, you will save a great deal of trouble in case of a delivery error.

Perhaps you should be aware that, after being something of a stepchild in many areas of the country for years, golf courses have become a hot new market for many suppliers of construction materials. You will find they are willing to meet your needs and live up to your standards. They are willing to work with you. Give them the right information and you can have superior materials delivered for the same cost of the merely adequate.



THIS SEEMS to be the proper place to mention a thorny problem. **TIME.** We all have a tendency to see our own work as the only important thing going on at any given time. Having just mentioned the new interest of sand and gravel suppliers to golf courses, it is appropriate to mention that more golf courses are being built today than at any time in history. Our laboratory has been swamped with an almost double work load during the past year. In the best of times, a physical soil analysis takes one working week to complete. Shipping your materials can take up to three weeks, and there is a finite amount of lab equipment available to do the work. Since we have no prior notice of the arrival of most of our samples (and they refuse to arrive tidily, at regular intervals, but often come in huge batches), we must sometimes arbitrarily assign a processing order to what we receive and work through the accumulation as efficiently as possible. We do our very best to turn out the work as rapidly as possible.

New construction is rarely a last-minute decision. There is seldom a need to start choosing the materials for construction six days before you begin getting the loads. If you will plan in advance and notify us that your work is coming in, we can better schedule our time and produce your results much faster.

One of my remaining topics is the importance of off-site mixing. To boil this one down to the essence, if you mix on-site, you will probably have undesirable greens for several reasons. On-site mixing rarely produces an even distribution of the materials. The usual

effect is the creation of an additional perched water table with a tremendous water retention factor right at the root zone. It is almost impossible to achieve the recommended uniform ratios of materials by on-site mixing. The overall behavior of the green will be totally unpredictable. In short, on-site mixing is a potential disaster.

THE FINAL point I must mention is why laboratories do not always produce magical results. That isn't too difficult. We aren't magic. Nor are we psychic. All of us, individually and collectively, do the best possible job, and I speak for my competitors as well as myself. Sometimes clients will send materials to two or more labs and then compare results. The reported lab numbers will often vary substantially from one to another. This does not necessarily mean Lab A disagrees with Lab B. Lab techniques and equipment can vary considerably. The material samples sent may not have been exactly alike. Interpretation and analysis of results will also vary from one individual to another. There are many explanations and many possibilities. There are ranges of interpretations in a science that is not and cannot be exact.

Science is a wonderful thing, yet without meaningful information from you and practical field application of all of the USGA specifications, a good greens mixture won't solve your problems. Remember that you are dealing with a method, and a quarter-of-a-century of experience indicates that it is a good method. We, along with all the other professionals in this field, keep working to make it even better.

Figure 1. In this instance, water is being added. Notice that although this is a sand-peat mixture, the water moves horizontally as well as vertically.

Figure 2. Here, the seedbed is almost saturated, but no water has yet penetrated into the sand layer, although it is the coarser of the two.

Figure 3. This illustrates why droughty spots occur on some greens: the subgrade does not have the same contour as the finished green. It also shows the seedbed layer saturated, but with no breakthrough to the sand below.

Figure 4. The water has penetrated to the sand layer, but not to the gravel.

Figure 5. This is the completed cycle, with the green draining normally into the tile lines, re-admitting air to the roots, having completed the cycle necessary for plant growth.

Research — Pulling Together, Not Apart

by **DR. JAMES R. WATSON**, Vice President,
The Toro Company, Minneapolis, Minnesota

SUBSTANTIAL and continual progress has been made in setting up the projects needed to support the objectives that form the basis for the USGA-GCSAA cooperative research program. Pools of diverse germplasm for most of our important turfgrasses have been and are being collected, studied, evaluated, and maintained. Basic information pertaining to stress mechanisms in both cool- and warm-season grasses and how these affect water use will point the way towards selection of truly water-conserving stress-tolerant plants. We have increased knowledge of the effects of major and secondary cultural practices, and, equally important, we are beginning to understand the interacting effects of these factors. In short, progress — good, sound, on-time progress — has been made toward accomplishing the objectives established by the USGA-GCSAA Research Committee. These have been accepted and funded by the USGA Executive Committee. To review, the objectives are:

(1) To reduce water use on golf courses by 50 percent, and (2) to reduce maintenance costs by 50 percent. These goals are based on 1982 figures, and the anticipated length of the program is to be for a minimum of 10 years.

Last fall an exchange of information and update of the status of each of their projects by the researchers occurred. This event was sponsored by GCSAA in conjunction with their Mid-Year Conference and Show. This is an excellent example of pulling together. Certainly the meeting induced a spirit of accomplishment and cooperation between the GCSAA and USGA Green Section as well as the researchers themselves. None of this would have been possible just a very few years ago.

I do not wish to review details of each of the active research projects. Should you have an interest in the specifics of any particular project or area of research, please contact William H. Bengueyfield, USGA Research Committee Chairman, Golf House, Far Hills, New Jersey 07931.

What I would like to do, however, is to point out other significant examples

of accomplishment and cooperation that stem from the first three years of committee activity.

FIRST, the Michigan State University Turfgrass Information File. This grant was initiated in April, 1984. The project manager was charged to "acquire, maintain, and preserve all appropriate printed and processed materials reporting on research related to turfgrass growth, development and maintenance." The library has purchased an Alpha Microsystems computer and STAR information retrieval software. The system was installed on August 8, 1984. Files and bibliographies of the National Agricultural Library, the Commonwealth Bureau, foreign agriculture organization, biological abstracts, as well as all current periodicals are reviewed and computer-searched each month. In addition, the O. J. Noer Library collection has been indexed, abstracted, and added to the computer file.

Today it's possible to contact Dr. Richard Chapin or the project manager, Peter Cookingham, and obtain information from over 10,000 research references.

This is a remarkable accomplishment for the two years this project has been funded, and it shows promise of an even greater role. In a short period of time, it may become the world source of turfgrass information, if it is not that already. The USGA-GCSAA can be proud of their roles in this endeavor. Pulling together is paying dividends.

Dr. James R. Watson



A SECOND example of cooperation by these two major segments of the game is the improved working relationship between USGA and GCSAA. Financial support of the research effort is only one small although significant area that exemplifies an increasing harmony between the two organizations. The exchange of ideas and participation of GCSAA's Director of Education Jim Prusa and Executive Committeeman Gerry Faubel helps to keep focus on the benefits of what otherwise might appear to be unrelated scientific information.

Benefits beyond the strictly agronomic and financial emanate from this unique partnership. Pulling together helps to solidify and strengthen the mutual goals and objectives of each organization without detracting from their independent roles. This jointly sponsored research effort opens the door for the superintendent to become the central club spokesman for all aspects of golf turfgrass — its culture, its maintenance, and its future needs. Most importantly, he will be able to speak with authority, with conviction, and as a participant in the USGA-GCSAA research activity.

The superintendent can add substantially to his standing and to his professional image by urging his club, his colleagues, his state golf associations, and everyone he can reach who is involved with golf or with turfgrass, to solicit their support of this worldwide effort. The superintendent has a major professional stake in this partnership effort.

YET, the most important role that will solidify and exemplify pulling together of these two great and dedicated organizations is still to come. On the horizon is the need for field evaluation of the improved cultivars that will be coming out of the various grass breeding programs. Because of the cooperative spirit and the recognition of the need to pull together to accomplish mutual goals, evaluation under playing conditions — in the middle of a fairway, the playing area of a tee, in the heart of a green, and scattered through the roughs — becomes

a reality and has the potential for expanding participative research. Widespread testing under widely variable environmental conditions will speed the release of superior grasses that will be stress-, drought-, heat-, and cold-tolerant, that will use less water and require minimal maintenance, and that when released in a shorter than normal or average length of time will have been evaluated under varied conditions. Playing characteristics will be already known. They will have been tried and tested and ready to be planted on golf courses.

SUCCESS is a result of pulling together and not apart! Success is being achieved because this research partnership recognizes the importance and the necessity of a single-minded, nationwide effort coordinated by representatives of national organizations. This broad outlook, as opposed to a more narrow provincially oriented viewpoint has a much greater chance of success both from a financial and from a research standpoint. Just as with amateur golf, the USGA, the GCSAA, and NGF — all national organizations — are far more successful than ever would be possible for 50 or more individual local organizations. One readily recognizes the need to avoid provincialism, and yet there seems to be a reluctance to step beyond the regional boundary, to recognize the absolute need to think in terms of nationwide support for turfgrass research. True, there is greater overall understanding of this basic point than was the case only a few years ago, but barriers still remain. The Minnesota golf course superintendents serve as an excellent example of a broad outlook on turfgrass research. They support research at three levels — the state (University of Minnesota), the region (Oklahoma State University, Penn State University, and Michigan State University), and at the national level (GCSAA and USGA).

Golf cannot afford to step away from the commitment needed to accomplish the objectives. All segments of the game must pull together. Each segment must do its part, each must contribute financially and in kind, each must retain its identity, but all must join hands for the betterment of golf. Let each of us help to expand the contribution base, and through an all-out effort help other segments of golf join us in our desire to improve golf turfgrass. Let us use turfgrass research as the vehicle to solidify this great game and work to provide superior golf turfgrass.

The Honor Roll

THE HONOR ROLL of donors to the USGA Capital Campaign, as of January 1, 1986, is shown below. Because of these contributors, it has been possible to continue turfgrass research, for the past two years, which is leading to development of minimal maintenance turfgrasses for golf within this decade. Clubs marked with an asterisk followed by their golf course superintendent's name, have requested their gift to be specifically restricted to the joint USGA/GCSAA turfgrass research effort.

If your name or club is on this list, we sincerely thank you. You are contributing directly to improved turfgrasses for the future — not just for golf, but for all who labor and are concerned with conservation and the environment. Your gift is important to all who enjoy the beauty and recreation of the outdoors and what it has to offer our modern world.

If your name or club is not on this list, we surely hope you will put it there next year. We need you. Research efforts of this magnitude are expensive. We must constantly be reminded that new, improved turfgrass varieties take a long time to develop — usually from eight to 20 years — and we must not grow impatient. We need annual, continuing support. The USGA and GCSAA cannot do it alone.

What we need is for your club to send the USGA Capital Fund Campaign (USGA, Golf House, Far Hills, N.J. 07931) a check for the amount of \$2 per golfing member at your club. The check should be clearly marked for the USGA/GCSAA turfgrass research project. It will not be spent for any other purpose. It should be generated on a continuing basis so that the GCSAA and USGA, working together, can finance the basic, essential, coordinated, longer-term research projects so desperately needed and so important to golf's future.

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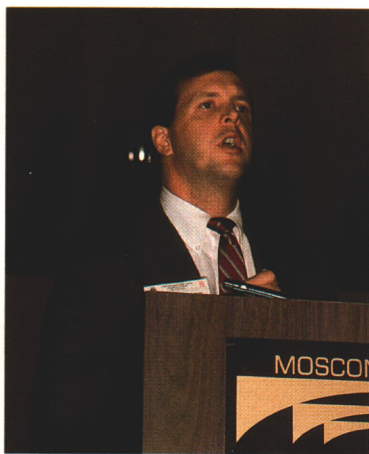
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THE BEST TURF TIPS OF 1985 — PART II

Flushing Drains and Brushing Greens

by CHARLES B. WHITE

Director, Southeastern Region, USGA Green Section



Charles B. White

FOUR-INCH flexible perforated pipe is the norm for drainage systems in most golf course situations. Unfortunately, if these drain lines become plugged after they have been installed, it is nearly impossible to clean them out short of digging up large areas and trying to flush them with a high-pressure hose. This is both expensive and unnecessary. The installation of flush-outs at the high point of all drainage systems can eliminate this problem indefinitely.

When installing drains in bunkers or greens, the end should not be capped off. Instead, attach a 45-degree elbow and bring the cap up to the surface. The cap can be installed just below ground level for easy access with a plug cutter. There is a cap available for 4-inch drain-pipe that has a stainless-steel insert. The flush-out points can be shown on the irrigation as-built and can also be easily found with a metal detector. Once it is located, simply expose the subsurface cap with a plug cutter, remove the cap, and flush with a high-pressure hose



Green and bunker flushes.

approximately once a year. If you do not have the stainless-steel disk caps, a couple of large flat washers will suffice.

If the flush-outs are located in a bunker, they should be extended through the bunker and located at its edge rather than placing them in the sand itself. This allows for greater stability of the drainage system, because a cap placed in the sand may be damaged by the bunker-raking machine.

The cost of installing flush-out points in drain systems is insignificant, usually requiring only three to six extra feet of pipe. They will quickly prove to be the most important single feature of your entire drain system.

ANOTHER TURF TIP is making brushes for putting green mowers at a significant saving. As illustrated, a brush attachment for a walking putting green mower was made with a threaded rod and a high-quality, industrial-grade pushbroom head. The broom length and weight can be varied according to the user's desires by the type of broom head purchased. It is easily mounted by a series of brackets to threaded rods onto the green mower as is the manufactured brush.

This design was developed by Stan Carr, Golf Course Superintendent at Gulf Stream Country Club, in Boynton Beach, Florida. He estimates the cost



Brush made with threaded rod and floor broom.

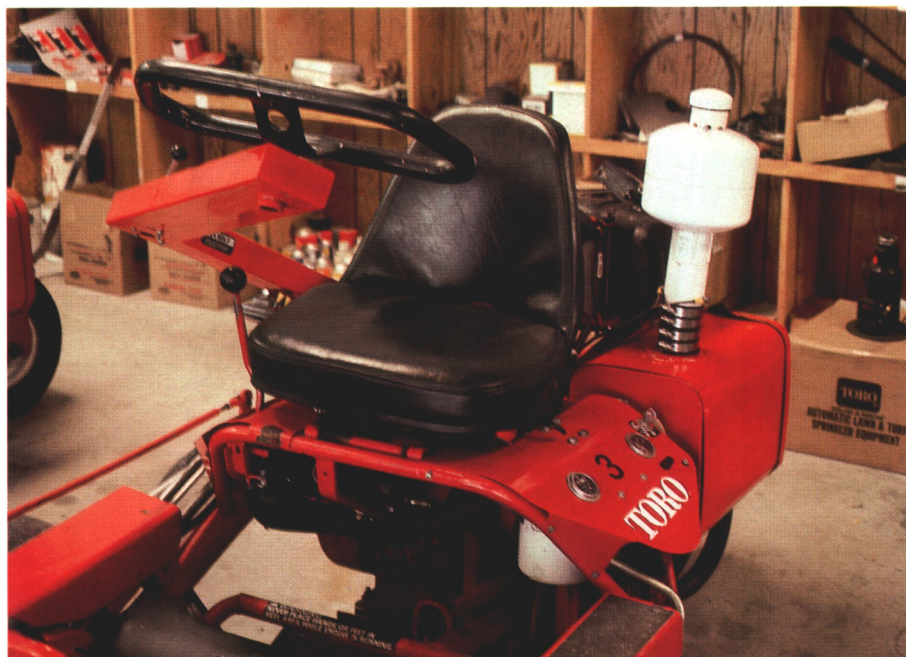
of his brushes at about \$11 each. He feels the industrial-type broom head gives better quality grooming than the conventional metal bristle brush. He is able to increase or decrease the vigor of the brushing by varying the weight of the brush on the surface or by changing the brush head itself. Carr has also adapted the idea for brushes on triplex putting green units and brushes for matting-in topdressing.

This is but one example of the tremendous resourcefulness that can be found in the field of golf course management.

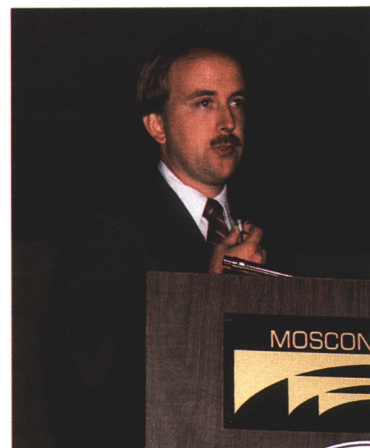
Hydraulic Leak Warning

by **LARRY W. GILHULY**

Director, Western Region, USGA Green Section



*A surefire way
to increase
Stimpmeter readings.*



Larry W. Gilhuly

ONE OF THE MOST frightening problems that plague superintendents who use triplex putting green mowers is the hydraulic leak. We have all seen damage that ranges from small dead areas every 10 to 15 feet to massive lines of dead turf covering several greens or tees. In the past, a careful maintenance program and operator attention would be the best answer to the problem. However, the golf course mechanic at Silverado Country Club, in Napa, California, has devised a method by which the operator is warned about hydraulic leaks.

The Green Sentinel operates at a detection level of five ounces of hydraulic

fluid loss and is not affected by the angle of the mower. Thus far, several superintendents in Northern California have been quite pleased, and I feel it was easily the best turf tip I came across in 1985. I feel it is one of the most innovative ideas made by a golf course employee.

Another innovative and imaginative turf tip also came to my attention in 1985. It is illustrated here, although its use may be dangerous to your security.



This device to be used — for observing summer turfgrass problems.

A Useful Technique in Sand Bunker Renovation

by JAMES T. SNOW

Director, Northeastern Region, USGA Green Section

SOONER OR LATER, every golf course superintendent is faced with rebuilding sand bunker edges and banks that have deteriorated through excessive sand buildup. One of the most critical steps in this process is establishing a well-defined border that gives the bunker its final shape and aesthetic appeal. When the sand bunker is on a relatively flat plane, strips of plywood or metal sheeting work reasonably well in establishing these edges. This method doesn't provide enough support, though, where large, elevated capes and mounds are involved.

At the Winged Foot Golf Club, in Mamaroneck, New York, Bob Alonzi has developed a technique for rebuilding the banks around the large, capped sand bunkers that eliminates the problems associated with plywood or metal strips. Thinking back to his days spent filling sandbags in the Army, Bob came up with the idea of filling medium-sized burlap bags with soil and using them to form the perimeter of the new capes and mounds.

Using the burlap bags in this way has many advantages. The bags form a solid, stable edge, yet they can be moved and molded to provide the precisely desired effect. Once the bags are in place and the soil has been used to backfill behind and between them, sod can be laid on the soil and directly over the bags to establish the capes and mounds. Because the bur-

lap is porous and biodegradable, turfgrass roots grow through the burlap and become established in the soil below, and ultimately the burlap will decompose. Thus, there is no need to use artificial support such as plywood strips or metal sheeting for establishing the bunker edges, and there is no need to remove them later. Once the sod is in place and the roots have become established, the job is essentially finished.

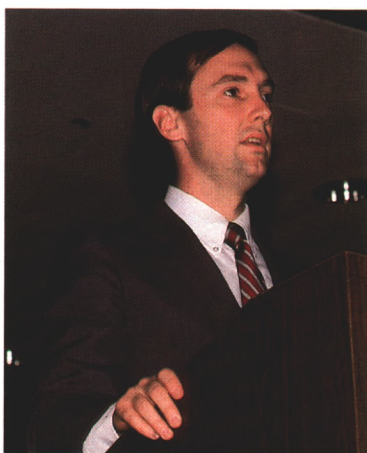
In using this procedure, Bob suggests that the sod be brought down directly over the rounded edge of the bag. Final edging can be done when the sod becomes rooted and well established. He also suggests that this technique can be practical for a variety of other uses on the golf course, including landscaping hard-to-work slopes, building retaining slopes for ponds, for outlining walkways, etc.

Plywood or metal edging works reasonably well.





But soil-filled burlap bags . . .



James T. Snow

work better.



A PANEL DISCUSSION: A Critical Look at Contemporary Golf Course Architecture

EDITOR'S NOTE: One of the key segments of the February, 1986, Green Section Educational Conference in San Francisco was a panel discussion of Contemporary Golf Course Architecture. The tone and stage for the discussion were to be set by Ben Crenshaw, PGA Tour player and a member of the USGA Museum Committee. Unfortunately for us, Crenshaw was unable to attend the Conference because of a rain-delayed tournament at Pebble Beach. However, the other panel members were:

Gene D. Baston, President GCSAA and CGCS, Waco, Texas

Rees L. Jones, golf course architect, Montclair, New Jersey

Jerry Tarde, executive editor, Golf Digest, Trumbull, Connecticut

Frank Hannigan, Senior Executive Director, USGA, Moderator

This is a transcript of their views on the subject.



Frank Hannigan

FRANK HANNIGAN: The panel today is comprised of a golf course superintendent, a golf course architect, and the editor of that publication which, more than any other medium, defines contemporary architecture. We were to have a fourth expert this morning, but he is not with us for the best of all possible reasons. Ben Crenshaw shot 68 yesterday at Pebble Beach, and he is playing in the fourth round of the rain-delayed tournament. Ben Crenshaw was really looking forward to doing this. He is a golf course freak and has been since he was a kid. It is no secret that he is very much a traditionalist and that he is chagrined by much of what he thinks of the dominant trends and influences in today's golf course architecture.

Before we begin, we had better define the subject. What is meant by "modern or contemporary golf course architecture" are those courses built mostly in the last decade and a few as early as 1970 **that have attracted the most attention.** That attention derives from word of mouth, from advertising and promotion, from television, and from golf magazines. To name names, we are talking about a few designers and their work. They are Pete Dye, Jack Nicklaus, and the Fazios, Tom and George. Of course, there may be as many as 75 or more other practicing architects in the country today, many of them both successful and excellent. We are going to hear from one this morning. For the purposes of this discussion, however, we are going to operate on the premise that a disproportionate amount of attention is being paid to the work of just a few men, and because of this attention and their success, they have a great deal of influence. Many of the elements they put into their work inevitably drift over and down through the rest of the field.

Some of us tend to think of a particular period in American golf as the golden age of golf course architecture. This period began at the end of the First World War and ended with a thud at

the onset of the Great Depression of the 1930s. The high priests of that period were Donald Ross, Alister MacKenzie, A. W. Tillinghast, Seth Raynor, Bill Flynn, and a couple of others. They were fortunate that they operated in a special time with special privileges and advantages. For the most part they were designing courses for the members who had equity. The courses were to be playgrounds, places of pleasure. They had nothing to do with commerce.

TODAY, we live in an age of notoriety. Refrigerator Perry is nowhere nearly as good as Howie Long, but Howie Long doesn't get invited on the David Letterman Show. This same syndrome applies in golf today, where the name of the game is to be noticed, to draw attention to the product. Notice and attention convert to money. That is not necessarily the fault of the golf course architect. He didn't create this society. I have read a good deal of golf's literature of the 1920s. Donald Ross was largely an anonymous figure; somebody way behind the footlights even though he was going around sprinkling these little jewels of golf courses throughout New England like some architectural E.T. dropping off candies. Remember, Ross had the luxury of building for members.

Today, the architect builds for a company which, by definition, has to think of a bottom line. Green fees, the sale of real estate and housing adjacent to the property, and making the course into an arena or stadium may conspire against art. It is not at all certain that Donald Ross could have survived in this climate.

We now move on to the Panel.

Our first panelist is no less than the President of the Golf Course Superintendents Association of America. Gene Baston grew up in Augusta, Georgia, where, as you know, there is an annual tournament of some repute. Gene's father was in the construction business and supervised all the renovations that

were done on the Augusta National Golf Club for a period of more than 20 years. Young Gene observed his work and he was part of it. He went to Georgia Southern University and after that, took a job as an assistant at Augusta National Golf Club, where he worked from 1950 to 1965. His first head superintendent's job was at the Savannah Inn and Country Club, in Georgia, a Donald Ross course, I believe. After five years in Savannah, Gene moved on to Bay Hill, in Orlando, Florida, the flagship course of the Arnold Palmer empire and site of an annual PGA Tour event. From 1972 to 1985 Gene was at the Birmingham Country Club, in Alabama, where they had 36 holes of Donald Ross. Gene is now at the Ridgewood Club, in Waco, Texas, and has served on the Board of the GCSAA for five years. Gene will tell us how it feels to be a superintendent at a modern course.

GENE BASTON: Contrary to popular belief and some rumors that go around, I do not shoot all golf course architects. It is a pleasure for me to be here and I hope that any of my expressed comments will be received as pertaining to maintenance and not criticisms of design features that may or may not enhance the game of golf.

The golf course superintendents of today can and do maintain excellent turf under some extremely difficult situations. We accept this challenge. But another challenge we often face, and one that is becoming more and more difficult for us to sell, is large budgets to our clubs to maintain turf under some very difficult situations. I have just a few quotes that may prompt further discussion:

"The Lord made golf courses. Golf course architects simply discovered them." — *Donald Ross*

"Golf should be a pleasure, not a pennance." — *Donald Ross*

"I am not trying to create maintenance problems. I'm trying to reduce them!" — *Contemporary Golf Course Architect*

"Hand mowers are a lot less expensive to operate than gang mowers." — *Contemporary Golf Course Architect*

"Grasses planted on a one-to-one slope, or even a zero slope, i.e., straight up and down, do not retain water, do not retain fertilizer. Get a grass that grows very slowly on that bank. Then you'll only have to mow it four or five times a year.



Figure 1 (top). Figure 2 (above).

"It is my belief that, if you remove water and fertilizer from a grass area, you won't have to maintain it at all. It will die.

"Each course requires a design plan that takes into consideration what is right for that course, its maintenance budget, climate, and the golfers who are going to play it regularly. An architect should not force his style on a course." —
Gene Baston

The most successful use of waste areas or minimal-maintenance areas that I have observed are areas that would not be in play under any circumstances. They are non-play areas, and I feel this is a term that should be applied to them.

When reading a newspaper story not long ago about a city considering construction of a swimming pool, one of the councilmen opposing the pool gave these reasons for his opposition: it was too costly to construct, it was not conducive for the enjoyment of the people who would use it, yearly maintenance costs would be excessive, and the proponent was only building a monument to himself. For a minute, I thought a golf course architect had gone into the swimming pool business!

IHAVE SOME illustrations of architecture that created maintenance problems. (1) We recognize that it is beautiful, but can we afford it? (2) Contours are beautiful but when wear occurs, we have a maintenance problem. (3) Is this purpose or is this signature? (4) A golf hole should have a lasting

impression upon the player. I think this one will. (5) Sometimes you need to seek divine guidance. The golfer is asking for help to get over this and the superintendent is asking for help to maintain it. (6) Design like this has to make us ask, "Is it good, is it fair, is it fun?"

I heard it said at a meeting not long ago that it seemed golf architecture today was taking the route of A Design of Six. You take six men, with six weed eaters, six hours a day, six days a week. Is this your design? If it is, plan to increase your budget. Be aware of the costs to maintain difficult, lavish designs. They dictate maintenance problems and increase your budget. (7) Minimal maintenance. This, to me, is what golf is all about — a game that we enjoy playing, a game we enjoy watching. To me it is not much trouble looking out over closely mowed, manicured turf. That, to me, is the epitome of good golf design.

I quote the Green Section's Bill Bengeyfield at a recent National Golf Foundation dinner: "Golf is to be played on grass." If we are to play golf on grass, recognize that golf course architecture directly affects turfgrass maintenance costs. And if we are to develop minimal maintenance turfgrasses for golf, I would leave you with just one additional thought. Support USGA/GCSAA research to find grasses that will provide us with at least the same or even better playing surfaces in the future but will require less water, less fertilizer, and less mowing. Then we will have truly achieved minimal maintenance.



Gene Baston

Figure 3.



Figure 4.





Figure 5 (top). Figure 6 (above).

FRANK HANNIGAN: In the American theater the Barrymores were known as the Royal Family. In golf course architecture, the Royal Family is that of the Joneses. Robert Trent Jones, the patriarch, is still going strong in his 70s. He completely changed the face of golf course architecture in the period beginning after the Second World War. He had extraordinary energy, a different vision, and determination. Trent Jones knew how to market both himself and his products. Every architect who is making a decent living today owes something to Robert Trent Jones. His oldest son is Bobby Jones, whose base is in Palo Alto, California. Bobby Jones's work is imaginative and includes such courses as SentryWorld, in Wisconsin, the one with all the flowers, and Princeville, a lovely course in Hawaii. Bobby is now at work on two projects in the Pebble Beach area. One is Poppy Hills, to be owned and operated by the Northern California Golf Association, beginning this summer. The other is Spanish

Bay. It will open next year. His partners in the latter design are Tom Watson and Sandy Tatum.

The younger of the Jones sons, and the latest of this Royal Family, is Rees. Rees Jones grew up in New Jersey. After high school he was shipped off to a golf factory in Connecticut — Yale University — and after that he worked for his dad. Rees has been in business for himself for many years. His most esteemed early work was Arcadian Shores, at Myrtle Beach, South Carolina. I think of Rees Jones as something of a traditionalist. Incidentally, Rees seems on the verge of a new and deserved repute. He is doing a new course in Augusta, and any new course in Augusta, because of where it is and the crowd that comes there, gets a great deal of attention. He has also just opened a new course at Pinehurst called Pinehurst No. 7 and that inevitably puts him in the same league with Donald Ross, whose No. 2 course at Pinehurst is certainly one of the game's masterpieces. Finally, Rees

Jones is now overhauling one of the game's beloved antiques — The Country Club, in Brookline, Massachusetts, where so much golf history has been made and where the 1988 U.S. Open Championship will be played. Nothing does more for a golf course architect's reputation than an association with a U.S. Open Championship. He's a good golfer who breaks 80. He does it at his home course, the Montclair Golf Club, in New Jersey, and will do it occasionally at his second course, Pine Valley.

REES JONES: The question we are asked to answer today is, "Will the modern golf course stand the test of time?" This is the type of question I always hoped for when I was being tested in college, because it has so many answers.

We are supposed to be comparing some of the courses of today to the courses of the 1920s and earlier. What we must first understand, however, is that many of the sites we have today

are so much less suitable than the sites available back in the early part of the century. The early architects had the opportunity to build golf courses on ideal sites.

Our design styles today are a throw-back, to some degree, to design styles of the early 1900s. I think we are improving designs, but in some cases a few architects are trying too many tricks. Also, today we are building courses for a different type of client. We are building primarily for real estate developers, whose main interest is selling the adjacent real estate. He often then transfers ownership of the golf course to the members after the real estate has been sold. We are also building golf courses for major resorts for daily fee play and for tournament viewing. Fewer and fewer truly private golf courses are being built today.

The expectations of today's players (because they see so many golf courses on TV) are far greater than they were back in the '20s. The demand for quality maintenance is much higher in the U.S. than in Britain. Score is of great importance to every golfer in America, whereas in Britain, it is whether or not you beat your buddy. Here, whether or not you score the number you always intend to is much more important.

We are building dramatic resort golf courses to draw people to new, sometimes mammoth hotels, and the golf courses are sometimes of secondary interest to the client. The client wants you to build something dramatic to bring guests to the resort to fill up the rooms. Pinehurst No. 7 is dramatic and will help that resort. The Spanish Bay Golf Course that my brother is doing on the Pacific Ocean, in Monterey, California, will help fill the hotel they are building there.

DEVELOPMENT golf courses that will become private someday and daily fee golf courses definitely should be designed to be enjoyed. Form should follow function. This is not often the case. Several architects today are designing courses where function follows form. Money is being spent on dramatic visual features that hurt the higher-handicap players and really have no effect on the pro or the low-handicapper. High mounds, deep cavities, tee-to-green waste areas, hard-to-maintain bumps, inordinately deep bunkers, steep slopes, deep cuts in the middle of fairways. These features create the drama and many are effective and well thought out. The major mistake, in my opinion, is that

these features serve no purpose. When they are repeated hole after hole needlessly, they lose their effectiveness. I believe every hole should have its own theme, using different combinations of features. Each hole should be a new experience. The mark of an interesting golf course is that every hole can be remembered after a first round.

The routing of the holes, in my opinion, is the most important aspect of design. If this is done properly, the golf course will unfold and be enjoyable to play. We must not forget to have alternate routes of attack, essential for so many golfers to finish a round. I believe that it is wrong to design a golf course where so many of the higher-handicap players are really defeated before they strike the first ball. For example, we are building a golf course at Haig Point, on Daufuskie Island, one mile from Hilton Head. We had two opportunities to build spectacular golf holes from the bluff, across the marsh to a spit of land on Calibogue Sound. You can almost see the ocean. We did not want to miss this chance for two truly dramatic holes on this site. We came to the conclusion that these two holes might be too hard for the majority of players, because the carries were so long. So we are building a 20-hole golf course at Haig Point. We have two back-up holes for the eighth and 17th, so you can play the inland holes or the Sound holes, depending on ability or weather conditions. This is how we have created what we think is a great golf course while at the same time a viable recreational facility for all golfers.

While several golf course architects are adding all the dramatic aspects to their designs, they have often neglected green design. This is probably the second most essential aspect of golf course design, i.e., properly designed greens for the shot required. We are finding on contemporary golf courses, those that receive so much publicity today, that greens must often be rebuilt soon after the course opens. Some of these greens were originally built with too many plateaus and too much contour for the size of the surface. Some architects are designing fall-away greens or greens that reject shots on holes that require forced carries to reach them. Greens are being built that are too small for the amount of actual play and often too small for the shot required.

TEN YEARS AGO, golf course architects were being told by people responsible for maintaining golf courses

that we had to build lifeless, low-maintenance, long-slope golf courses in order for golf to be viable. We were in the middle of a terrible recession. In fact, we were not even designing many golf courses at the time. We had an energy crisis and it looked as if we really should concentrate more on lower-maintenance courses. However, it would have been wrong to design courses for low-maintenance only. I think architects made an attempt then to design for lower maintenance, but today there has been a great departure from this line of thinking because the economy is so good.

I don't believe we should take the character out of the golf course. I think we should have the same character in design with slopes, etc., as we did in the '20s. We should use our major features and the steep slopes judiciously in the areas where they affect play and shot values. That's the proper way to do it. We can build pot bunkers so long as they can be maintained. Bold mounds should be incorporated into the design of golf holes if they can be mowed. Large bunkers or waste areas should be used in areas that are in play and not necessarily from tee to green. Grass bunkers are an effective hazard for good and average golfers. In fact, they are really a better hazard for the average golfer. Courses should be built with diversity of style that can be maintained at a reasonable cost after the developer leaves the course to the members.

I feel we are in a renaissance period of golf course design. A golf course, however, should not be designed as an ego trip for the architect, but rather as a recreational facility to be enjoyed repeatedly. If a golf course is designed to make the top 100 list or to make a breathtaking photograph, it might not be viable when repeat play is required for success. I think one really must design a golf course with definition to be viewed from the tee and the fairway itself. Too many golf courses today have features that are not as visible from the ground as they are from helicopters.

The greatness of the game of golf, unlike many other sports, stems from the fact that every playing field is different. Every architect has his own concepts, and each course is a unique creation. But we must design interesting, fair, enjoyable, dramatic, beautiful courses that will attract new golfers. They must maintain the golfer's interest and allow him to play the game at affordable cost. We can use old concepts or devise new ones, but the features we use should be fair.



Photograph by MARK BROWN

Rees Jones



(Top, left) The 18th hole, Country Club of Hilton Head. This is a par-five punch-bowl green utilizing diverse features such as a pot bunker, sculptured bunkers and mounds on the approach. (Above) The 8th hole, Haig Point Golf Club. This hole would be too difficult for the higher-handicap player. Therefore, an alternate, shorter hole was built on the bluff. (Above, right) The 7th hole, Loxahatchee Golf Club, Jupiter, Florida. This is a good example of low-maintenance designed mounds which ultimately have to be maintained so that players can find their balls. Mowing is being done with four people using a fly mow and raking the mowed grass. (Right) The 4th hole, Jones Creek Golf Course. This course utilizes bermudagrass fairways, bentgrass greens and centipede roughs. The centipede grass is a lower-maintenance variety and provides a contrast between fairway and rough.



Photograph by CHARLES HOLLEY

FRANK HANNIGAN: Our final panelist is also, shockingly, the youngest. He is Jerry Tarde, who is perhaps the most influential golf journalist in the world. As Executive Editor, he decides what goes into *Golf Digest* magazine, the biggest publication in its field.

Actually, it was the *Golf Digest* project of naming the so-called 100 Greatest Golf Courses that launched the current and general interest in golf course architecture. That list is revised every two years and its influence simply cannot be overstated. Architects will kill to get on the *Golf Digest* list, and so will the owners of profit-oriented golf courses.

Jerry Tarde, this power broker, grew up playing public golf courses around Philadelphia. He escaped to Northwestern University, and immediately after graduation joined the *Golf Digest* staff, where his rise to eminence has been meteoric. Jerry is a member at Winged Foot, the U.S. Open site near New York City, where he is what I think of as a strong six-handicap player. He is also a member of Royal Dornoch, in Scotland, but that is simply to show off.

JERRY TARDE: Now that you have heard from the Forces of Good, as Frank Hannigan explained it to me, I am supposed to represent the Princes of Darkness — Pete Dye and Jack Nicklaus. If you believe Crenshaw and Hannigan, they would say that anything new isn't good. They are the kind of people who think, as some music critics do, that anything written after the Baroque Period of Handel and Bach isn't worth listening to. I was reminded of that kind of people when I saw this month's issue of *American Heritage Magazine*, which is a very good historical periodical. This month it lists the 10 best automobiles ever made in the U.S. Nine of the ten were built prior to 1938. The one modern one was built in 1955.

I think we have to get rid of this notion that anything new can't be good. In modern architecture, that is an important thing to realize. The modern architecture period really came into focus in March, 1982, during the week of the Tournament Players Championship. If it can be pinpointed to a moment, it was when Jerry Pate threw Pete Dye and Deane Beman into the water beside the 18th green. Why did he throw them in? The reason is that something exciting was happening that week. A brand-new kind of golf course was introduced to the public on television. Something visually

exciting and different from anything the American people had ever seen before. It involved touring pros, and they have traditionally been influential in guiding the trends and thoughts of golfers. It was controversial. People had opinions on whether they liked the TPC or not. It got us talking about golf, about golf courses and about architecture.

For years, people inside the business, golf industry leaders, have been clamoring for changes in design to meet the changing conditions of the game. They wanted courses that required less care in an age of escalating maintenance costs and water shortages. They wanted courses that had more challenge with less yardage, due to escalating land costs. And they wanted more pleasure for recreational players while at the same time still keeping the challenge for the top player.

Pete Dye's TPC at Sawgrass attempted to answer these three desires in some innovative ways. I am not going to say that he answered them adequately, but he got us all thinking in a direction that has been good for the game. And he certainly was not the first to do it. The TPC wasn't even his first attempt at it. He had been doing that kind of course for the last 10 to 15 years, but the TPC embodied all that was new about modern architecture, and it probably will have the kind of influence on the game that the National Golf Links and Augusta National had in the first part of this century.

Twenty years ago Herbert Warren Wind wrote in *Golf Digest* that the ideal measure for a golf course was 7,400 yards "in order to make par for the pros the examination that par is supposed to be." Pete Dye's TPC, at 6,800 yards, was a departure from that thinking. Twenty years ago *Golf Digest* began ranking courses. The first ranking was called the 200 Toughest Courses in America. We used the USGA system of course rating, which is based mostly on yardage. The No. 1 course in the country was Runaway Brook, in Massachusetts, now called the International. It measured 8,000 yards. We quickly saw that was not the direction we should be going, and in succeeding years, we modified our criteria and changed the name of our ranking.

In 1969 it was called the 100 Most Testing Golf Courses. I think we were still preoccupied, if not with yardage, then with difficulty at that time. Resistance to Scoring is what we called it.

In 1971 we renamed it America's 100 Greatest Tests of Golf, and in 1975 it

was called, as it is today, America's 100 Greatest Golf Courses. The emphasis has been shifting away from length and difficulty toward interesting design.

NOW WHAT was so different about the TPC? I think we can break down the so-called innovations of the TPC into five categories. They are really not innovations, because they are things we have been seeing and have been in use for a couple of hundred years. One, the TPC was a shorter championship course. A year or two later, Pete built Long Cove, at 6,700 yards, and this has influenced other architects. I played Dan Maples's The Pit Golf Course last year, and I think from the back tees it is about 6,300 or 6,400 yards.

Two, Dye re-introduced the penal short hole. This is a hole that could best be described as a half par, a 2½, a 3½, a 4½ par. It is the equalizer, a challenge for the good player, yet the average player can still reach it. The 17th hole, the Island Green at TPC, is probably the most notorious example of a penal short hole.

Three, he brought back blind shots, where you can't see where you are going. He calls it a test of character and intelligence. "There is no such thing as a blind hole, once you have played it," he says.

Four, he brought to the TPC severely undulating greens and, as we have seen there and in others of his courses, undulating fairways. The pros don't like either of these very much because when they hit an A-type shot, they expect an A-type result. Too often at a Pete Dye course, an A shot gets a C result.

Five, the Natural Look. For better or for worse, Pete has extensively used waste bunkers and unkempt areas off the fairway. He has used different grasses, color contrasts with what he thinks are low maintenance. He says color contrast in grasses is as important as undulation.

Is this good? A friend of Pete's likes to say that Robert Trent Jones made golf course architecture a business, Pete Dye made it an art, and Jack Nicklaus made it expensive.

People ask us why we give so much attention or coverage to Nicklaus and Dye courses. The reason I think simply is that they are building the most lavishly expensive, most dramatically photogenic, most exciting, most controversial golf courses today. They are news events, and we cover them as such. Some people also contend that *Golf Digest* made them superstars, or that the media in general

made Pete Dye or Nicklaus a superstar and have given them an inordinate amount of power in the business. I think we have helped popularize them and enhance them, but their own design and word of mouth have really made them. Their own work has brought them attention.

Do they build the best golf courses today? Of the modern architects practicing today, with the exception of Trent Jones, they have more courses on the 100 Greatest than any of the others. It should be added that they also have been given the largest budgets and, in some cases, the best facilities to work on. So it would be a crime if they were not building today's best courses.

Are they too expensive? Pete Dye likes to say he is Robin Hood. He steals from the rich to give to the poor, the poor being the laborers who build his courses. I guess I am bothered, as Hannigan is, about the opulence of some. You go to the Vintage Club and they have an underground waterfall in the cart barn! But you can't really hold that against Nicklaus, Dye, or Fazio. People with a lot of money have always built expensive golf courses. The Yale Course was built 80 years ago and cost \$1 million.

You have to look at what these expensive courses have yielded. The PGA West Course in Palm Springs, California, is getting a lot of publicity these days. Some of it is negative, but Joe Walser will tell you that they have sold out 500 memberships before the course even was opened! Since opening on January 4, every starting time every day since then has been filled. The course cost \$5.4 million, which is a lot of money, but they are going to sell hundreds of millions of dollars of housing around it. Financially, it is a success.

DYE IS PERHAPS more concerned about maintenance than Nicklaus, but even Pete talks a better game than he plays sometimes. The TPC, for instance, is 412 acres, of which he claims only 60 have to be maintained. Two years ago, the maintenance budget there was \$900,000. On the other hand, where Dye does have more control at Long Cove, he says they used 30 percent less fuel than the next most economical club on Hilton Head.

Why are Jack's courses so expensive? I have put that to Bob Cupp, his chief designer. Simply, he says that Jack buys the best of everything — the best topsoil, the best putting surface mixes, the best irrigation, the best construction com-

pany builds his courses — and that drives up the costs. I guess if you can afford Nicklaus and Dye, the cost isn't too expensive. Part of the reason is the land these courses are built on. It is not as well suited to course construction as the land used in the early part of this century, and that drives up those costs. The TPC was a swamp before Dye built it. When these architects are given a good piece of land, as Dye says he was at Firethorn, a new course he just built in Lincoln, Nebraska, they can bring in a



Jerry Tarde

course under budget. Firethorn was built for \$1.2 million, including the irrigation system. He says there are a lot of Ray Charles holes there; the land was so good, even a blind man could build them.

When *Golf Digest* started publishing 35 years ago, it cost \$250,000 to build a golf course. The borrowing rate was 5 percent interest. The yearly debt you had if you wanted to start a daily fee course and build your own was about \$10,000 to \$15,000. Today, it costs \$2 to \$3 million to build a golf course, and the interest is in the neighborhood of 10 percent. So it costs you \$300,000 a year just to pay off a golf course. Joe Jemsek said at the PGA Show in Orlando that you just can't build and run a daily fee course for profit anymore. He thinks the future is in municipal courses that are subsidized by cities and in resort courses, where guest fees and building lots can pay for the course.

So what we are moving toward are these superdome golf courses, the TPC and PGA West, that the big resorts can afford. I am not sure that's so bad.

The other knock that you hear is that the new courses are too difficult. A better way of putting it is that they take

too long to play. But people enjoy a hard test of golf. Pine Valley is the No. 1 course in the country, and people brag about how many shots they take to play it. One of the solutions Nicklaus and Dye have offered is the use of multiple tees. Jack's new course in Loxahatchee, Florida, which certainly is difficult, won our Best New Private Course Award for 1985. It is 7,043 yards from the back tees, but there are four sets of tees, and from the front tees it is only 5,380 yards. Perhaps there should be a greater emphasis on getting members to play the tees they can enjoy. The USGA has taken a step in the right direction in getting rid of the term "ladies' tees" for the front tee markers.

IAM ALSO supposed to explain how the 100 Greatest Courses are chosen. We have a panel of 244 national and regional selectors. Over them is a national panel of 30 selectors. A course is nominated by architects, a new system we have started recently. (Before they were nominated by panel members, but architects nominate them now.) National panel members then must renominate them, and it takes three nominations by a national panel member for a course to be considered eligible for the list. We also have a rule that a course must be opened at least three years before it is eligible. That will give sufficient time to our panelists to play the course and also will diffuse the occasional over-enthusiasm that accompanies the opening of a spectacular new course.

After this list of nominated and eligible courses for the 100 Greatest is compiled, it is then circulated to our 244 regional selectors. They evaluate each course on a seven-criteria scale of 1 to 10. The seven criteria are shot values, difficulty, design balance, memorability, aesthetics, conditioning, and tradition. Seven criteria — 1 to 10 — 1 being poor and 10 being the best. A perfect course would get a 70 rating. We went to this kind of subjective/objective system to try to do a more accurate job of rating the courses within the 100 Greatest.

We often hear charges of politics in the ranking and I hope the new system will dispel some of that. PGA National, for instance, a Tom Fazio course, is somewhat controversial. It received more nominations last year than any other new course to be added to the list. That probably is because so many PGA members are part of our panel. So you would expect that if politics played a role in the decision, PGA National would be part of the 100 Greatest. As

it turned out, when the panelists, even the PGA members, came to filling out the ballot for the PGA National, they decided it wasn't good enough. I think when you have to put numbers down in seven criteria you sort of lose sight of the politics.

A criticism we are vulnerable to is that we give too much attention to Dye and Nicklaus. Part of that is because they have the big budgets and the big facilities behind them, the ones that would most likely make the 100 Greatest list. So we have created two other categories of recognition for architects — the Best New Courses of the Year and the Best Public Course. The Best Public is an every-other-year ranking and Best New is obviously every year. We have been able to recognize new architects like Dennis Griffith and Brian Silva. Brian designed, with Geoffrey Cornish, the Captains Golf Course, on Cape Cod, which is our Best Public Course of 1985. Dennis Griffith worked with Ron Kirby in doing Pole Creek, which was our Best Public Course of 1984.

We like to think the 100 Greatest and the other awards that *Golf Digest* bestows on architects and courses promote better design the way the Academy Awards promotes better picture making or the Pulitzer Prizes promote better reporting. Awards drive people to excel. I was talking with Bill Davis, the founder of *Golf Digest*, the other day on the phone, and he quoted Napoleon as saying, "If you give me enough medals I will win any war." And that is what we are trying to do with our course ranking. We are giving medals to architects and owners, trying to get them to excel and to solve the problems facing golf course architecture today.

Closing Remarks by FRANK HANNIGAN:

To put our discussions of Contemporary Golf Course Architecture in perspective, I would make one point to you. Name a handful of great golf courses that have one thing or a couple of things in common and the list will surely include Oakmont, Merion, Pebble Beach, the National Golf Links of America, and Pine Valley. What those golf courses have in common is that every one was designed by an amateur. In all but one case it was the amateur's first attempt at designing a golf course and, finally, he didn't take any money for doing the work.

Maybe golf course architects ought to think about that!

Reflections on Golf's Future

by C. GRANT SPAETH

Vice President, USGA, Menlo Park, California

(Editor's Note: Frank D. Tatum, Jr., was unable to attend the Conference because he was playing in a tournament at Pebble Beach, California. C. Grant Spaeth agreed to present Tatum's paper in full while condensing his own scheduled remarks to a few brief comments.)

THE TOPIC "Reflections on Golf's Future" is, I find, not an easy one. In my research for it, I came across a quote from Sam Goldwyn; "Never make forecasts — especially about the future." So I am simply going to capsule the material I do have while eliminating statistics on numbers of golf courses, numbers of golfers, etc.

If the past is any key to the future, we can look for the game to be relatively mature, relatively unchanging. In large measure, this will be true if the golfer — the amateur golfer that is — retains his

control over the destiny of his game. It seems to me that, regardless of what occurs during the course of the next 50 years, if the organizations of amateur golfers, i.e., city, regional, state, or national, continue to have no commercial objectives and are simply and solely concerned about preserving the game, then, whatever happens in those 50 years can be dealt with effectively.

In the field of turfgrass management, we can safely forecast the absolute certainty that less water will be available for our golf courses, particularly within metropolitan areas. With this forecast in mind, it is the amateur golfer who is investing heavily in research to develop grasses which, in fact, will not require high maintenance and particularly the high watering requirements that now seem necessary.

High technology clearly is going to try to change the game. Thus it is that amateurs, and in recent years the USGA, have spent enormous sums resisting changes, whether it is government or innovators or new patents, in order to protect the challenge and to preserve the game. And there is no one else around but the amateur golfer to resist these inroads. I personally see the inroads continuing and the litigation continuing. The amateur golfer is simply having to stand up and resist those challenges.

I could go through other aspects of the game, but you can do it just as well. I hope you will take with you the notion that ultimately the strength of the game depends upon amateur players spending some time and money to protect the game.

Sandy Tatum, as you all know, certainly exemplifies the sort of amateur golfer who spends a large chunk of his life on the mission I have just tried to describe. His paper conveys his depth of feelings about these issues.



C. Grant Spaeth

The Amateur Golfer and The Superintendent — Golf's Ultimate Partnership

by FRANK D. TATUM, JR.

President USGA 1978-1979, San Francisco, California

(As presented by C. Grant Spaeth)

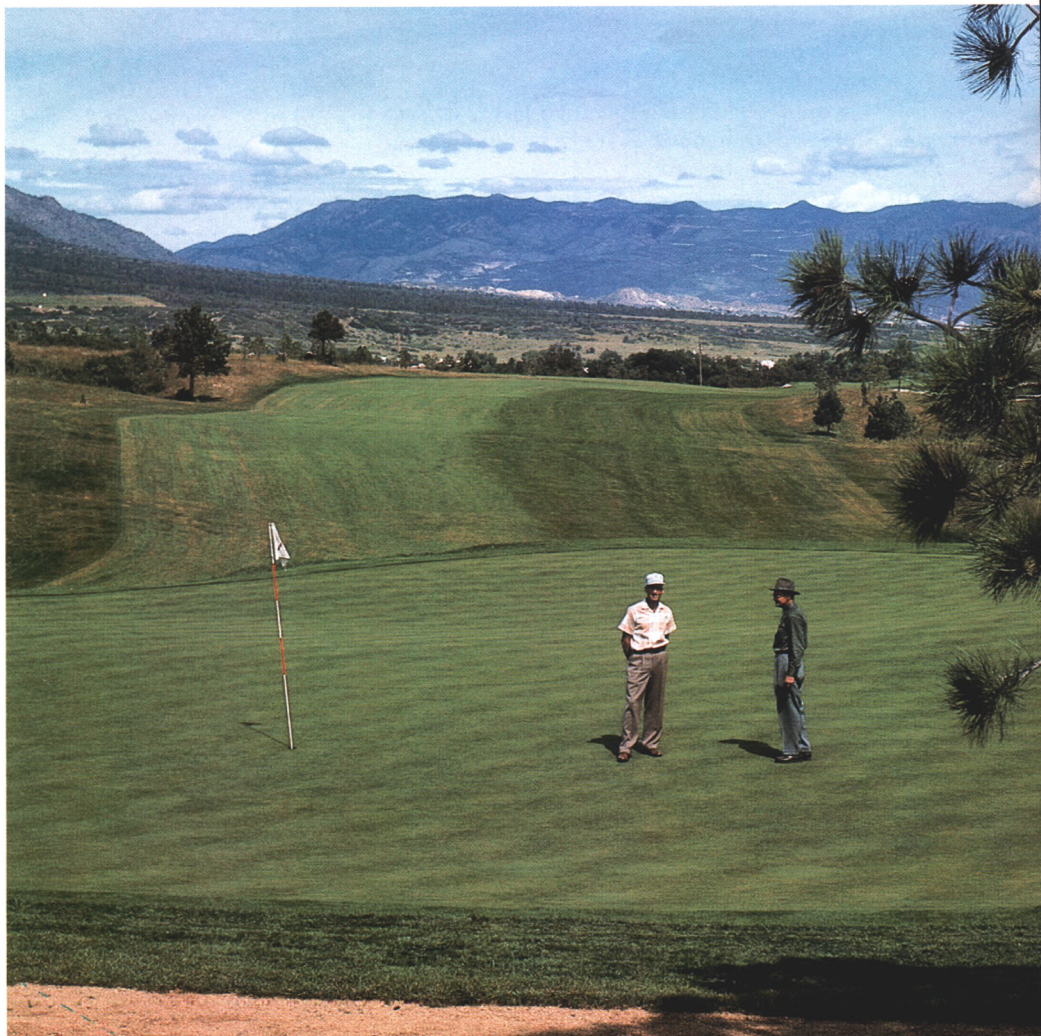
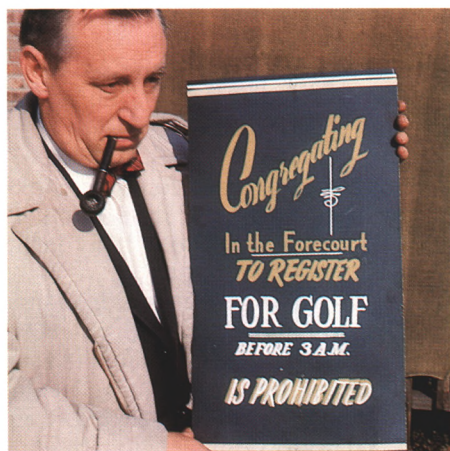
WE SHOULD start our analysis of this partnership by defining our terms. First, what and who is an amateur? The word amateur derives from the Latin word *amatore*, which roughly translated means "one who loves." Quite simply, therefore, an amateur golfer is one who loves the game.

Using that definition, we draw very different lines around who is and who is not an amateur. For example, I give

you Ben Crenshaw as the quintessential amateur golfer. On the other hand, Joe Hustler out there this morning at some golf course looking for a sucker to pick clean or Sam Salesman, whose sole reason for belonging to a country club and whose interest in the game begins and ends with how much he can extract from the playing of it, are anything but amateur golfers.

For our purposes here today, we should add a dimension to the definition of

amateur golfer: that is, while the word *amateur* takes care of the *heart* factor, there also is a *soul* factor that is encompassed in the designation of *true believer*. True believers are those who understand the metaphysical connections that distinguish the game of golf. Perhaps those connections can best be illustrated by something Alistair Cooke wrote in his foreword to a tour de force on golf written by Sir Guy Campbell, where, according to Alistair:



"Sir Guy Campbell's classic account of the formation of the links beginning with Genesis and moving step by step to the thrilling arrival of 'tilth' on the fingers of coastal land, suggests that such notable features of our planet as dinosaurs, the prairies, the Himalayas, the seagull, the female of the species herself, were *accidental by-products* of The Almighty's preoccupation with the creation of The Old Course at St. Andrews."

Having so identified one side of this partnership we are here considering, we need to define whom we are talking about when we identify someone as a golf course superintendent. Obviously, that person can be, and often is, a true believer amateur, but he also, quite distinctly, is something more. He is, for example, someone who regularly starts his day in the middle of the night. While his workplace certainly is air-conditioned and has a lot of sophisticated plumbing, it definitely does not have central heating.

His professional life is a never-ending battle with enemies of infinite number and variety, including an exotic array of fungi and a horrendous army of bugs.

TYPICALLY, he works with people who think developing turfgrass is a whole lot easier than maintaining a front lawn. They have to think so to retain some measure of self-respect, because our partner manages to develop 100-plus acres of turfgrass to such a condition as to make a typical struggler with 400 square yards of lawn turn green with envy. And then, however, all our hero hears about is two or three patches totaling a relatively few square feet where the bugs or the fungus or the golf carts have won a temporary victory in the war he wages with them.

The mortal combats in which he is locked also include those with the most monstrous monstrosity ever inflicted on the game — an infernal piece of turfgrass-consuming machinery masquerading under the name of a golf cart. I resist, reluctantly, the temptation to carry on in telling you how I think and feel about those abominations.

As if having to deal with the vagaries of nature were not enough, he has to schedule his maintenance to accommodate a calendar of events which looks something like the schedule of events for the Olympic Games.

Finally, he reports to someone identified as the chairman of the green committee. Now these chairmen of green committees are very important people in relation to this ultimate partnership we are considering. So important, in fact, that it is not a diversion to spend a bit of time identifying them as well.

In their lives beyond the green committee, most of these VIPs are at worst tolerable types and at best exemplary citizens. Some of them maintain those characteristics even after they become chairmen of green committees. But then, others somehow are transformed by such chairmanship, and the transformation involves:

- Immediate mastery of the art and science of growing turfgrass that makes obsolete the entire body of experience and knowledge known as agronomy.
- Absolute and ultimate wisdom pertaining to golf course architecture.
- Dictatorial approach to the relationship with the golf course superintendent that has Hitlerian overtones.

We should pause here, lest we begin feeling too sorry for this beleaguered battler with the elements, the fungi, the bugs, the golf carts, and the chairmen of green committees, and consider the benefits that flow to the superintendent in the pursuit of his profession.

Take, for example, his workplace. To compare the sight and the aroma of a beautiful golf course in the morning sunlight with the settings in which most of us are constrained to earn our livings, puts all of these tribulations I have been identifying in the proper perspective.

HIS RESPONSIBILITIES, moreover, provide very positive distinguishing features of this profession he is privileged to pursue. It is worth a few moments' focus on how those responsibilities affect our ultimate partnership. For example:

- What he does and how he does it determine whether the architect will have succeeded in providing the player with an experience both interesting and challenging.
- Beyond what the architect may have envisioned, the superintendent, by what he does and how he does it, makes fundamental philosophical decisions going to the heart of the game. To illustrate, in a real sense he has the final determination on such matters as:

- ☐ How much of a factor should length be in the playing of the game?
 - ☐ How important should it be whether the ball stays in the fairway or runs off into the areas beyond?
 - ☐ How important should the factors of bounce and roll be in the player's perception of the shot he is called upon to play?
 - ☐ How much should proper striking of the ball matter in terms of whether or not the ball will stay on the green to which it is hit?
 - ☐ To what extent does it matter that putting surfaces be consistent?
 - ☐ How much does it matter to have the pace of the greens at nine feet on the Stimpmeter as opposed to six feet?
- I cannot resist noting with regard to those factors that, in each case, the





answer essentially is determined by how much water the superintendent chooses to lay on the course. While I will spare you, as I have done with regard to golf carts, the full extent of my feelings on this subject, I am moved to say that the overuse of water is the ultimate cop-out for the superintendent who somehow has been persuaded that cemetery green provides the proper look for a golf course, and, furthermore, that such a cop-out is a gross breach of both the letter and the spirit of this ultimate partnership we are here considering.

THAT BRINGS us to an exposition of what is involved in this partnership, and that is the realization of the true meaning of this game called golf. The pursuit of that thought requires some further definition, because the term golf can have such very different meanings depending on how it is perceived.

Take, for example, the anonymous Oxford don who defined golf as a game that consists in "putting little balls into little holes with instruments very ill adapted for the purpose."

On the other hand, when you listen to the lyricism that can make positive poets out of true believer amateurs when they are describing their feelings about this game, it all comes into proper perspective.

For me, the game defines itself in terms of the characteristics required of anyone presuming to call himself or herself a golfer. First, there is self-reliance. When you are out there contemplating a golf shot, calling on the outer limits of your skill, you have no one going for you but you. Then, there is the capacity to deal with your inadequacies. In this connection I am reminded of the poor soul whose topped shot rolled into the water hazard fronting the 18th green. It was the final humiliation to which he reacted quite understandably.

First, he meticulously saw to it, one club at a time, that all of his clubs ended up in the water hazard with the ball. Next he removed the bag from his caddie's shoulder and deposited that in the water hazard as well. He then headed resolutely for the bar. Some hours later, after the sun had gone down, he reemerged from the clubhouse, returned to the scene of his humiliation, removed his trousers, waded into the hazard, located the golf bag, brought it back to the hazard bank, unzipped one

of the pockets, removed his car keys and, with suitable ceremony, redeposited the golf bag in the hazard.

And then there is the closely related requirement for the playing of this game of accepting responsibility for your own inadequacies. We are all familiar with the type who refers to the noise being made by some burrowing worm, or the racket being made by a butterfly flapping its wings as the cause of a lousy golf shot.

Related to that is the characteristic of understanding and accommodating the limits of one's ability. Trying too often to execute Nicklausian golf shots is a sure route to a nervous breakdown.

And then there is the strength of character required to blow the whistle on yourself. In a typically perceptive piece, stimulated by an incident at the Tournament of Champions in January, sports writer Jim Murray noted how distinctively different golf, in this respect, is from any other sport. With basketball coaches throwing chairs onto the court, baseball managers kicking dirt on the umpires, John McEnroe foul-mouthing legitimate line calls, and football players trying to get away with mayhem, Murray found it distinctly refreshing to have Sandy Lyle announce, after hitting a second shot from the rough onto the tenth green, that he had played the wrong ball, thereby turning what could have been a 3 into an 8. When queried about it later, in view of the fact that nobody but Sandy knew that he had played the wrong ball, he simply said that not calling the penalty on himself was unthinkable.

FINALLY, and in a way summing it all up, the true believer amateur is someone who can and does appreciate fully all of the characteristics that make golf such a truly beautiful game.

Therein, in essence, lies the key element of this ultimate partnership, where one partner, the superintendent, provides the beautifully playable playing surfaces and the other partner, the true believer amateur, mobilizes and brings to bear all of the characteristics that make what the superintendent has done worth the doing.

Having so identified and joined this partnership, we need some further definition of its purposes.

First, all of us should join in the USGA mission of preserving and promoting this ancient and honorable game.

We should note that promoting and preserving are not necessarily complementary activities. A lot of promoters hovering around this game are anything but preservers.

We should also note that it is worth preserving, not so much because it is ancient (although its antiquity helps to distinguish it), but because its heart and its soul derive from its being, above all, honorable.

The honorable part of it is given some distinctive emphasis by the fact that, in all of its long history, no one has reached the very pinnacle of this game who was not a person of distinctive character. In considering that remarkable distinction, contemplate the Tom Morrises, both old and young, Harry Vardon, Bobby Jones, Ben Hogan, Byron Nelson, Arnold Palmer, Tom Watson, and Jack Nicklaus. Is there any other game, or indeed any other activity, that has identified such an array of quality as the very best of their respective times?

While we are promoting, we should be promoting understanding among the partners — on the true believer amateur side, appreciation for all the incredible complexity involved in properly maintaining a golf course, and on the superintendent's side, what a relatively lousy experience it is to slog around an over-watered golf course.

Finally, I am moved to observe that if he had not been so involved in Elizabethan drama and if access to the game had been easier in the 16th century, William Shakespeare surely would have been a golfer. Why am I so sure? Because anyone with such poetry in his soul could not have resisted the game, given any exposure to it, and "To thine own self be true" has to be the ultimate credo of the true believer amateur.

While to be or not to be true to himself is a choice a golfer can make, no such choice is available to the superintendent in the pursuit of his profession. Nature does not allow him any counterpart of the self-conceded putt or the surreptitiously improved lie. Every decision the superintendent makes, good or bad, is inevitably reflected in the way the golf course looks and plays.

In that sense, therefore, they are unequal partners. In the much more important sense, however, of determining whether all that the game can be and mean is going to be realized, they are not just equal partners, but, indeed, golf's ultimate partnership.

THE BEST TURF TIPS OF 1985 — PART III

Ideas — Philosophical and Practical

by **JAMES F. MOORE**

Director, Mid-Continent Region, USGA Green Section



James F. Moore

I WOULD offer two turf tips — one philosophical and one practical. On the philosophical side, an observation I shared with my stepfather (who was a superintendent for many years) concerned the sometimes difficult relations between a superintendent and his membership. Certainly the two most unpredictable entities that have ever existed are people and nature. Of course, those of us in the golf game must work with both on a daily basis. Furthermore, only one individual has walked this earth who could truly predict the actions of people and nature. The moral is that as long as your success depends on people and nature, there are likely to be temporary setbacks in spite of your best efforts.

A tip that is far more practical stems from an idea shared with us by Larry Finke, golf course superintendent at Walden, on Lake Conroe, near Houston, Texas.

During my travels in the Mid-Continent Region, I have seen a wide range of pumping stations and structures to protect those stations. The greatest threats to this critical equipment are extreme cold and extreme heat. Larry has developed a building design that

efficiently deals with these problems while at the same time being quite affordable.

By using a combination of greenhouse glass and 2" x 6" lumber, a structure can be built that allows virtually unrestricted airflow across the electrical components of the station. The studs are spaced close enough together to prevent unauthorized entry while at the same time allowing air to circulate throughout the structure. The temperature inside

the station often is as much as 20 degrees cooler than it is outside, even in the hottest of weather.

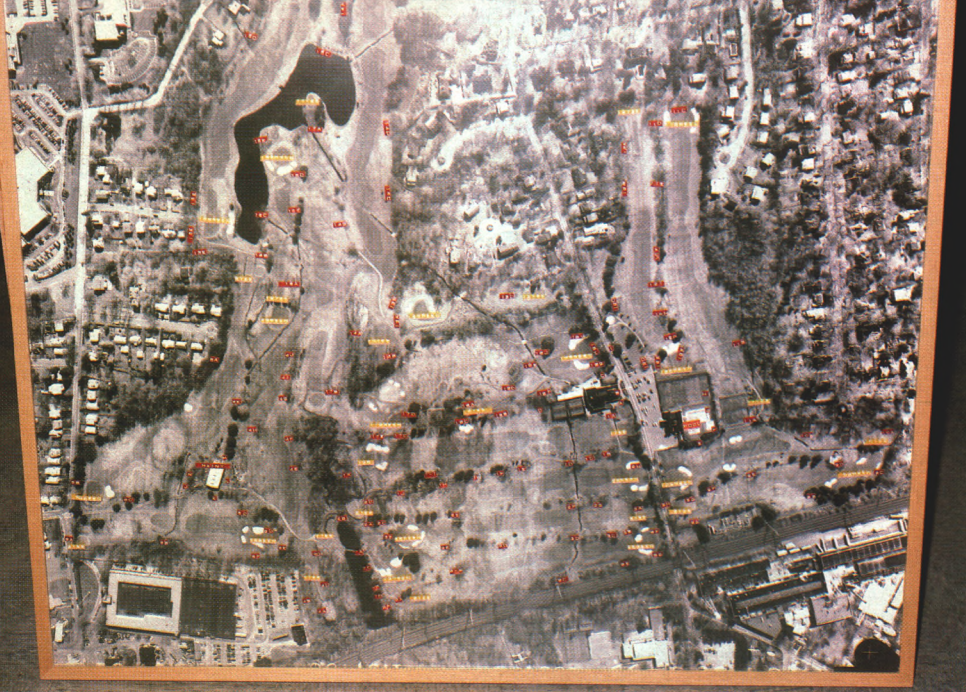
In the winter, pre-cut plywood covers the slats and a thermostatically controlled heater prevents freezing. This protects the station to temperatures as low as zero degrees. If further protection is needed, the plywood can be insulated and installed on the inside of the building.

This structure is relatively easy to build and costs less than \$2,000.



The new pumping station . . . summer and winter.





(Left) Tree inventory and maintenance record overlay.

(Below) Painting the course.



Aerial Photography and Maintenance Mapping

by GARY A. WATSCHKE

Agronomist, Northeastern Region, USGA Green Section

THE ABILITY to communicate plans and programs to both superiors and staff is of critical importance and often more than a little challenging. Many are aware of horror stories where daily work orders were misunderstood by crew members. Areas to be watered weren't, areas not to be sprayed were, and in some extreme cases, wrong trees removed.

Pat Lucas, golf course superintendent at the Innis Arden Golf Club, in Old Greenwich, Connecticut, has found that an aerial photograph of the golf course is a very effective means of orienting new employees as well as aiding him in giving detailed instructions, planning, etc.

A new aerial photo of Innis Arden was needed, so Pat painted all sprinkler heads with six-foot Xs and outlined all greens and fairways with broken white lines. The local power company cooperated by marking underground electric lines leading to the pump house and maintenance facility.

Making arrangements for an aerial photograph is no easy task itself. The

following conditions must be met for the project to be successful:

1. Clean course of fallen leaves and other debris.
2. Absence of snow or ice cover.
3. Trees should be in their dormant stage, without leaves or bud break, which would impair visibility.
4. Flyover should occur at noon, guaranteeing minimum shadows.
5. Clear weather conditions.

Gary A. Watschke



6. Adequate lead time for proper painting of the course.

The flyover was done in mid-March, and the photo turned out exactly as planned. It was mounted in a wood frame, recessed, and placed in a prominent area of the staff's quarters. In addition to the instantly improved orientation of crew members for daily work assignments, it was obvious that additional visual aids could be made in conjunction with the photo. The idea of designing different overlays to incorporate various maintenance programs proved valuable. A dozen pieces of clear plexiglass were purchased, each cut to fit precisely over the photo, yet held by the wooden frame. To date, the following overlays are in use:

1. Tree Inventory and Maintenance Record Overlay: Major trees are identified and coded. Complete history of maintenance work is recorded.

2. Wilt Map Overlay: All areas susceptible to wilt are recorded. Aids in training new irrigation personnel.

3. Crabgrass/Goosegrass Areas Overlay: Problem areas highlighted to help develop pre-emerge herbicide program.

4. Wet/Soft Areas Overlay: Helps new staff members familiarize themselves with problem areas on the course.

5. Weed Whip Areas: Allows summer help to identify areas to be cut prior to going out to their field assignments.

These are but a few programs Pat Lucas has maintenance mapped through the use of overlays. Certainly there are other programs for which maintenance mapping would be appropriate.

There is More to the Job Than Just Growing the Grass

by **STANLEY J. ZONTEK**

Director, Mid-Atlantic Region, USGA Green Section

BEYOND the science and mechanics of actually growing grass, today's golf course superintendent must not overlook the other vital elements of his job. This includes job recognition and communication within the club. This is my turf tip to you. Beyond growing the grass, do not forget those little extras that will improve your ability to communicate with the golfer and to effectively upgrade yourself professionally. They include:

A. A Secretary (Figure 1) — What business do you know that has a budget of over \$200,000 a year or more, employs five to 20 people a year or more, has the amount of paper work with time cards, payroll, inventory control, budgeting, reports, health and welfare records, etc., and does not employ even a part-time secretary? The obvious answer is, the maintenance operation of almost any golf course.

Those superintendents who employ a secretary find them indispensable. They free the superintendent from the paper work the job demands. I know of no way to improve the overall efficiency of operation of a golf course than to employ a secretary.

Need more convincing? Have someone call your office in your presence and when you are not there. It may be inter-

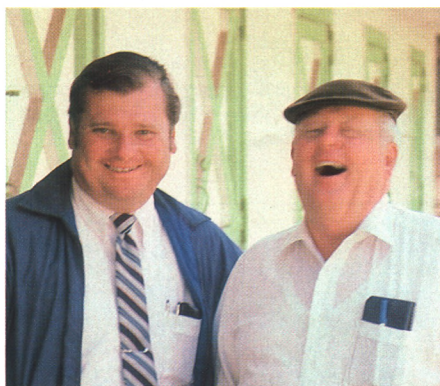


Figure 3. Stanley J. Zontek and Paul Boizelle.

esting to see how well a telephone message is taken, recorded and then given to you upon your return. Telephone finesse alone can justify employing a secretary. A mechanic or any other worker in the shop cannot be expected to be a secretary. Many miscommunication problems can be avoided with a secretary present.

B. Signs for Better Job Recognition (Figure 2) — Do all members and golfers at your course know your name? They should. After all, the superintendent is one of the key employees at any golf course. Golf is played on grass, and the better the turf, the more enjoyable the

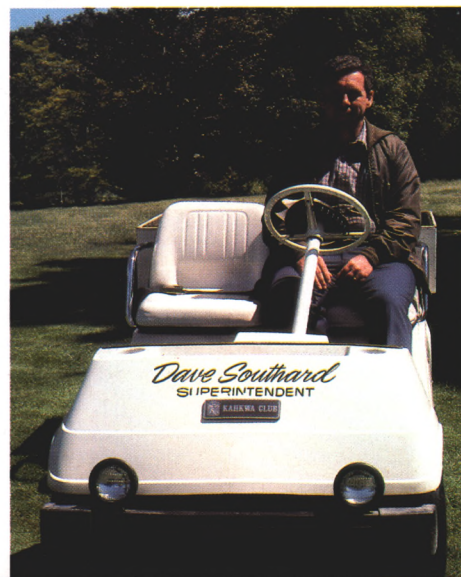
game. No one contributes more to the appearance, playability and general operation of a golf course than a superintendent, but he is usually the least known of the three department heads — the golf professional, club manager, and the golf course superintendent. The job does not permit the superintendent to stand on the first tee or at the clubhouse entrance every day greeting the golfers. Having communication tools can be of great help in providing identity for the golf course superintendent. He has earned it. If you don't believe that, see what happens to clubhouse and pro shop sales and operations when there are serious turfgrass problems on the golf course.

C. The USGA Green Section — Green Section Agronomists can be of real assistance to clubs and golf course superintendents (Figure 3). In addition to providing an unbiased sounding board for new ideas, new grasses, chemicals and equipment, etc., today's Green Section is an important management and communication tool. The Green Section has been actively involved with turfgrass management on golf courses for over 66 years. As times change, our service changes to keep pace with the game. Use us. We are here to serve you and better, more enjoyable golf.

Figure 1.



Figure 2.



TURF TWISTERS

ABUSED

Question: Although I have not seen any specific guidelines or recommendations for the use of liquid fertilizers on greens, they appear to be gaining in popularity and are believed to promote uniform growth. What do you think? (South Carolina)

Answer: Liquid fertilizers are effective in putting green management, but only as a supplement to normal granular fertilization. They offer a quick shot, and if applied at light rates (no more than $\frac{1}{8}$ pound to $\frac{1}{4}$ pound actual nitrogen per 1,000 square feet per application) immediately following a stressful situation, such as a tournament, aerification, or a moderate vertical mowing, will help grass recover more quickly. If used at all, consider a complete liquid fertilizer (i.e., one with N, P and K). In recent years, some superintendents have successfully applied the liquids at very light rates, along with fungicide applications. However, liquid fertilizers are easily abused. Overstimulation, shallow rooting, and wide leaf blades frequently happen in a short time if they are relied on extensively.

BUT NOT GUILTY

Question: I haven't seen or heard very much lately about Agent Orange (a mixture of 2,4-D and 2,4,5-T). What's the latest information on this material? Is it safe or not? (Wisconsin)

Answer: Agent Orange has been exonerated three times and specifically as a cancer- or birth defect-causing material. First came a not-guilty report from the Center for Disease Control, in Atlanta, Georgia, following a national study on veterans. Then a similar verdict from the Wisconsin Department of Veterans Affairs, and recently (July, 1985) a final report from the Royal Commission on the Use and Effects of Chemical Agents on Australian Personnel in Viet Nam. Agent Orange has been found not guilty of poisoning veterans. The Australian report noted, "The number of veterans with health problems is small, probably smaller than among their peers in the (non-veteran) community." Cancer rates among Viet Nam and non-Viet Nam servicemen were virtually identical in this study.

THAT'S FOR SURE

Question: What are the latest cost estimates for building a green to USGA Specifications? (Connecticut)

Answer: There are so many variables from one locale to another, it's difficult to be precise. However, you might start the bidding around \$4 to \$5 per square foot. Are you doing the work, or is a contractor doing it? Is irrigation included? Bunkers? Will fill be needed? How large a green? But there is one thing for sure. If the green is worth building or rebuilding, it's worth doing right. The USGA Specifications are about as right as you can be.