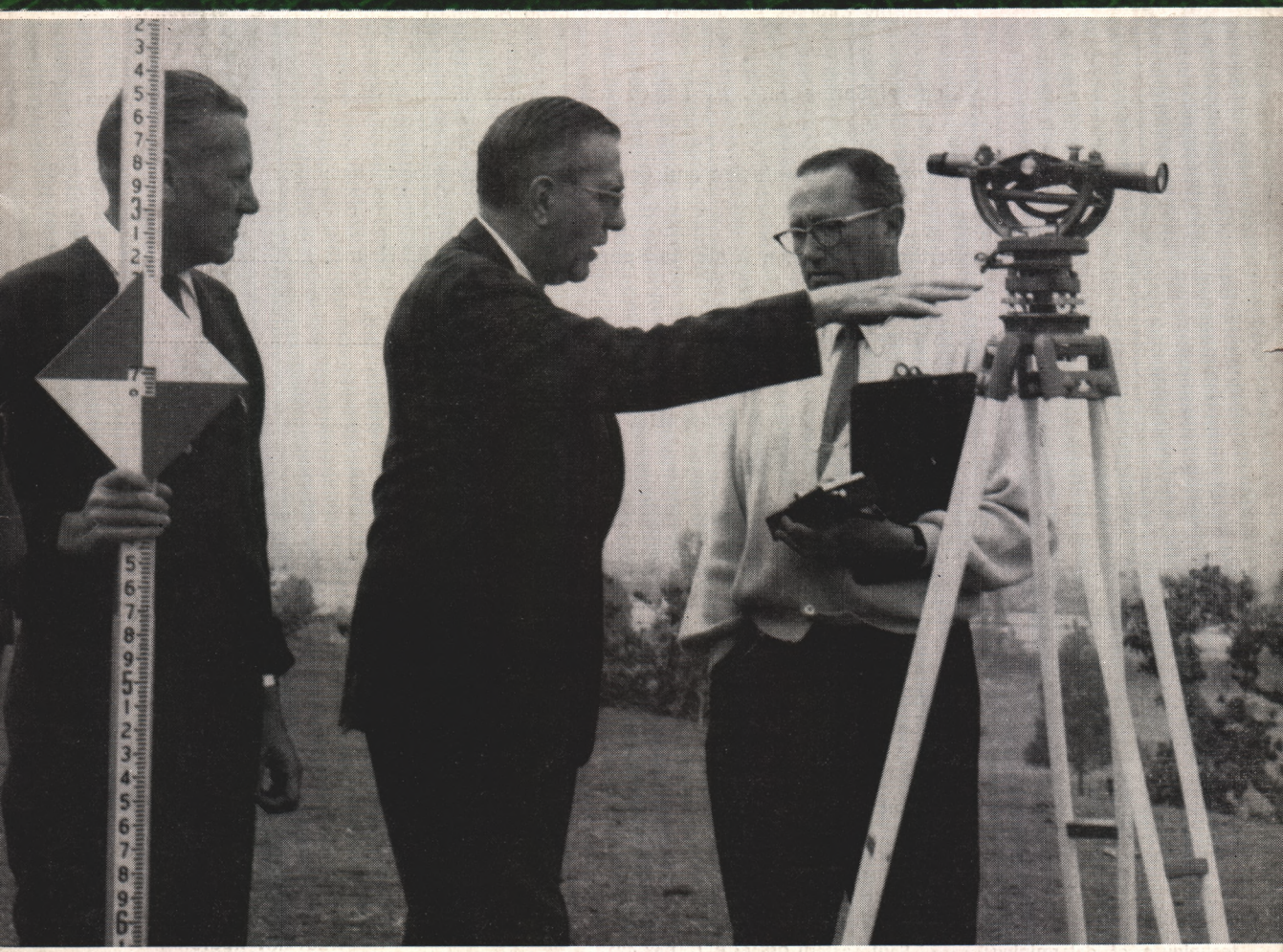
MAY 1967

# USGA GREEN SECTION RECORD

A Publication on Turf Management
by the United States Golf Association



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**A Publication on Turf Management by the United States Golf Association**



**VOL. 5, No. 1** **MAY 1967**



**Cover photo:** Accurate course measurement is essential for todays golf courses. Here (left to right) Harold Dawson of Southern California Golf Association, Lynn Smith of USGA Executive Committee and William Bryant, USGA and Southern California Golf Association Committeeman discuss the techniques of determining accurate yardage.

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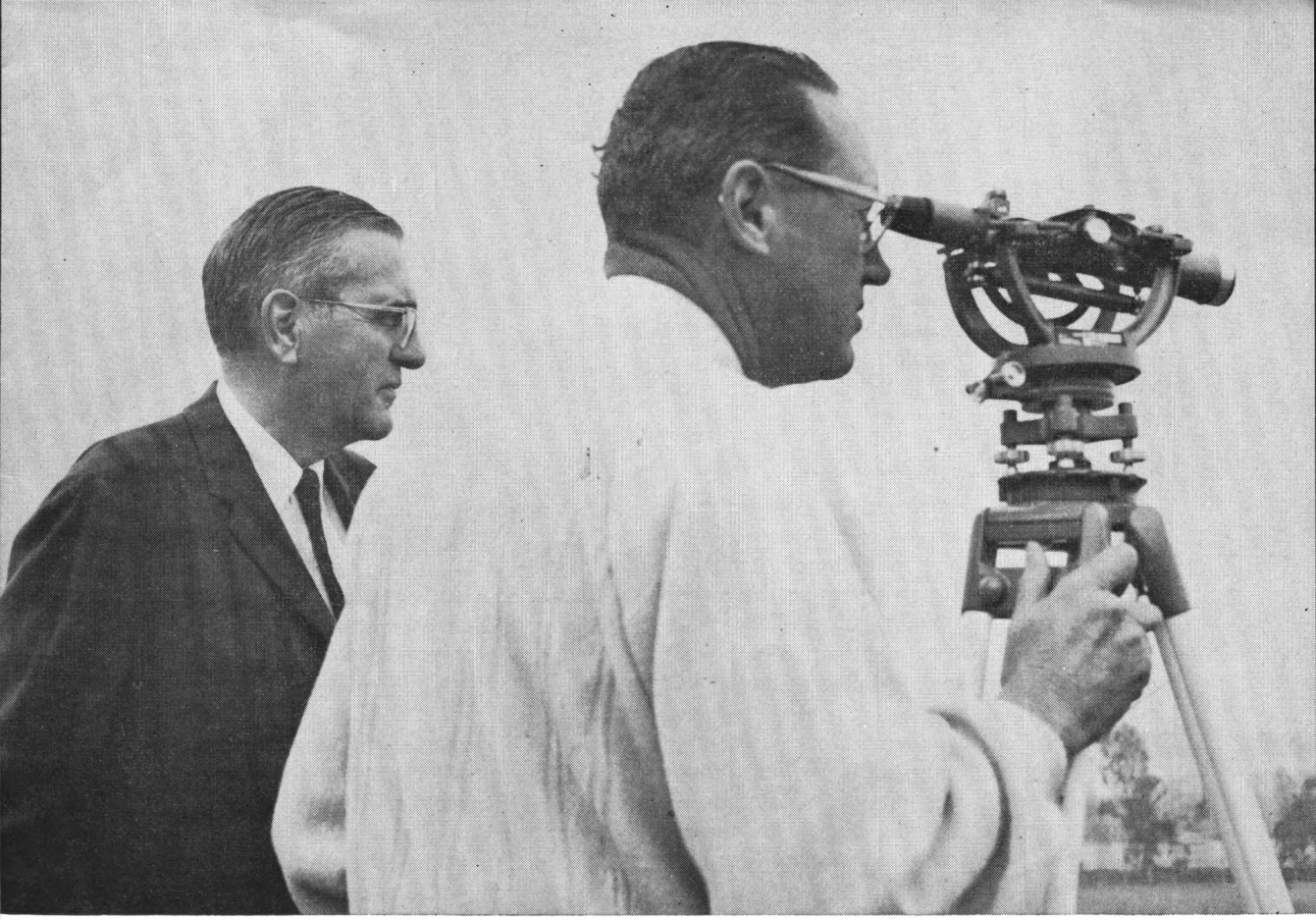


*"Air line" distance is the proper way to measure a golf hole. Lynn Smith looks on as Bill Bryant zeros in on the 'rod man' on the green.*

# Measuring Courses Accurately

by LYNN A. SMITH

In order to promote national uniformity, the USGA has adopted a new Course Rating System which places almost total emphasis on yardage. In the initial announcement that a new Handicap System was being adopted, the USGA made the following statement:

> "Yardage is the prime factor in rating comparative difficulty of holes and courses; in many cases, yardage is the only factor. Therefore, the USGA urges accurate measurement of every course."

The USGA Yardage Rating Chart for men is based upon three primary points: a hole 175 yards long is an even 3 par; a hole 375 yards long is an even 4 par; and a hole 575 yards long is an even 5 par. If these points be established on graph paper, a straight line drawn between them will establish all other points on the chart, and it will be found that each 20-yard segment will result in a change of one-tenth of a stroke. The spread on the Yardage Rating Chart for women is 18 yards.

### *Needed: Accuracy*

This makes accurate measurements to the nearest yard of great importance. A small error in measurement could throw the hole into the next higher rating, increasing it by .1 of a stroke, and repetition of such an error could distort the course rating. The necessity of accuracy is stressed in Section 16 of the **Golf Committee Manual and USGA Golf Handicap System with USGA Course Rating System** which has been revised as of January 1, 1967. This is required reading for anyone interested in course rating.

This manual stipulates that each hole shall be measured horizontally (air line) with steel tape or surveying instruments from the permanent rating marker to the center of the green along the planned line of play (usually down the middle of the hole). The suggestion is made that the measurement be made by competent authority, preferably by someone with knowledge of civil engineering. Knowledge of golf courses and how they are intended to be played would seem to be of equal importance.

*A Rating Committee at Work*

Bill Bryant and Harold Dawson have measured many courses for the Course Rating Committee of the Southern California Golf Association, and some of their procedures have been refined by practical experience over the years.

No course should be rated until a permanent rating marker has been installed at the side of the tee, preferably on the side nearest the green of the preceding hole where it may be observed by players walking onto the teeing area. Where the teeing area is long enough, markers are set for Championship, Regular, and Senior tees in the middle of the area commonly used for each type of play.

A measurement is made on every hole from the back of the tee to the Championship marker, to the Regular marker, to the Senior marker, and to the front of the tee to define the possible variation in yardage which can result from tee

*The steel tape, though an arduous task, is still one of the "recommended" methods for accurately measuring the course.*

marker placements. The length of the green is also measured in yards, and after the distance from the front of the tee to the front of the green has been determined it is possible to develop the yardage from any point on the tee to the front, middle, or back of the green.

Normal playing conditions are essential when a course is to be rated and this is the reason for multiple measurements to define possible variations. Frequently the Green Chairman or Superintendent will set the tees back and estab-

*There is only one way to measure a golf hole of this kind accurately. The steep bank and lake below make the use of surveyor's instruments mandatory.*

lish difficult pin sets to impress the Rating Committee without stopping to think that a higher rating will penalize his members by decreasing their handicaps. This is why it is so important to measure from the middle of the teeing area to the middle of the green and establish a yardage rating for the hole which disregards any temporary variation in distance or difficulty.

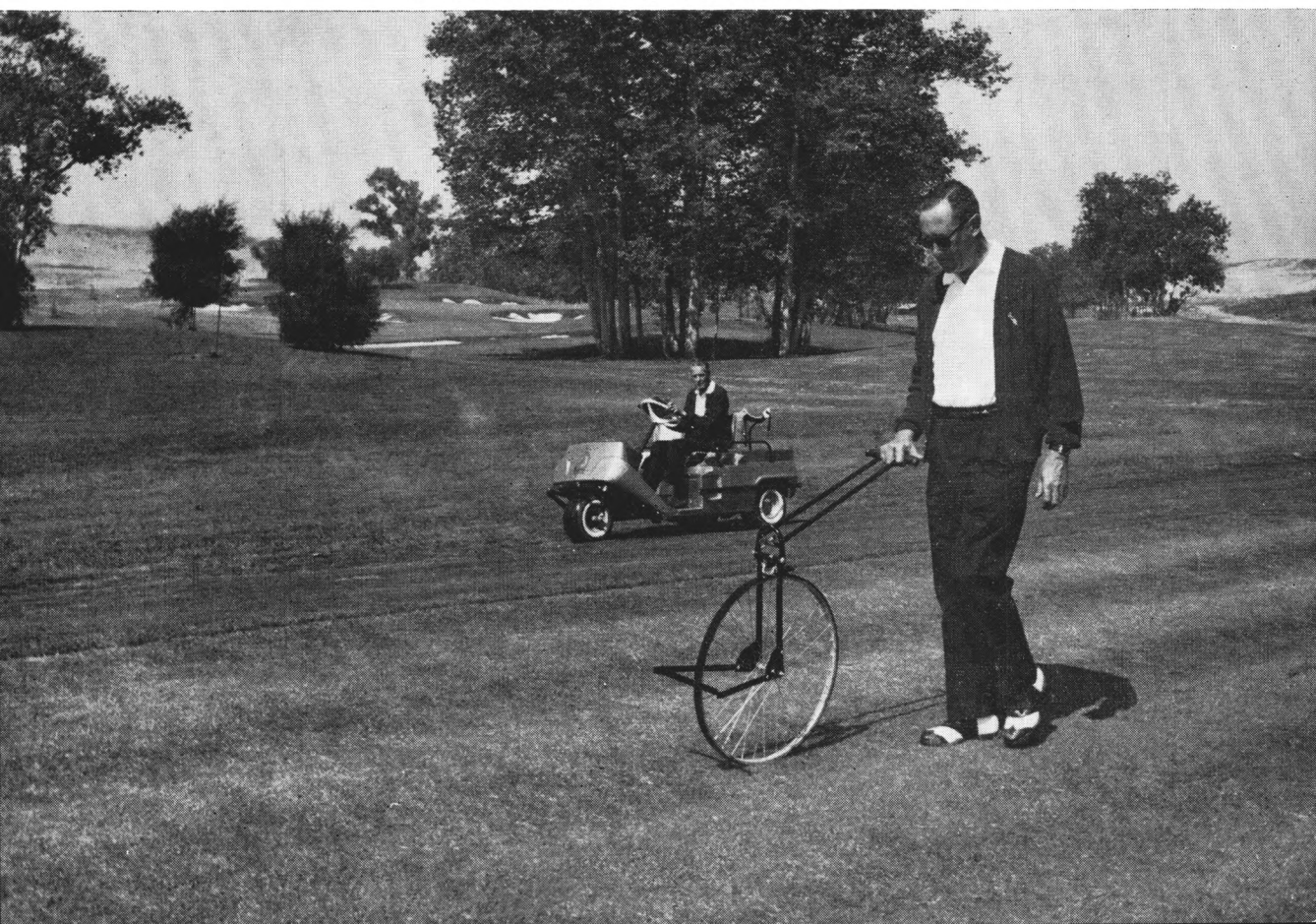
*Tools of the Trade*

A stadia, which is a version of a transit, is used for measuring, and the measurements of a reasonably level 18-hole course can be developed in about two hours with the use of this instrument. This requires one man on the instrument and another on the rod. A walkie-talkie radio is helpful for communication between them. For simple measurement of distance, some practice with the instrument and a comprehension of the necessary conversion charts is sufficient to develop a very precise figure for course yardage. The cost of the measuring equipment is approximately $250.

Measurement of level areas, such as tees and greens, can be expedited by use of a wheel in the hands of an experienced and careful operator. Comparisons of distance determined by steel tape, transit, or wheel on a level paved area approximately 200 yards long resulted in variations of inches among the three methods. The wheel registers two yards for each revolution on a counter and gives a faster result than other methods for the simpler measurements. However, it is subject to inaccuracies where the ground is not level.

The wheel can also be used for checking results obtained by other techniques. Where there are not too many problem areas, measurements for 18 holes can be checked in a little over an hour by the use of a wheel and an automotive cart. Obviously, however, it is of no use where a measurement must be made across a lake or some other obstacle, or where the distance must be measured from an elevated tee to the center of a green lying below. Actually, a 440-yard hole with two swales was measured by transit and by wheel with a variation of about one yard, and the comparative accuracy of the

*In the hands of an experienced and careful operator such as Bill Bryant, the wheel may expedite measurement of small, level areas such as tees and greens. Harold Dawson, Southern California Golf Association, looks on from the cart.*



*Two-way radios simplify and expedite the communication problem while measuring the golf course. Bill Bryant and Forrest Perriguey think they are a 'must' item for the team.*

two methods has been cross-checked in many other instances. Either method must be done carefully and the margin of error should be no more than this, which is far below 1%.

*Radar; In the Future?*

A radar method of measurement is also being studied, and this shows great promise. This involves bouncing a radio beam off a target and measuring elapsed time for its return. Technically this is already practical, but equipment cost is still exorbitant.

An article in the August 1958 **USGA Journal and Turf Management** suggested the use of aerial photographs to determine course measurements. While scale maps made from such photos are of great value for planning changes in the course, for computing management areas, and for many other uses, there has been some question raised about the degree of accuracy which can be attained throughout the entire course. Possibly errors resulting in differences in altitude from varying ground levels and from distortion caused by minor differences in lens angles suggest ground measurements may be simpler and more nearly precise.

*Judgment Now*

Regardless of the technique used, judgment must be used in some cases, particularly where a dogleg is involved. Here the measurement should be taken as the hole is intended to be played, regardless of whether some golfers might wish to gamble by taking a short cut to lessen the distance. Good course design always dictates that the risk shall be high.

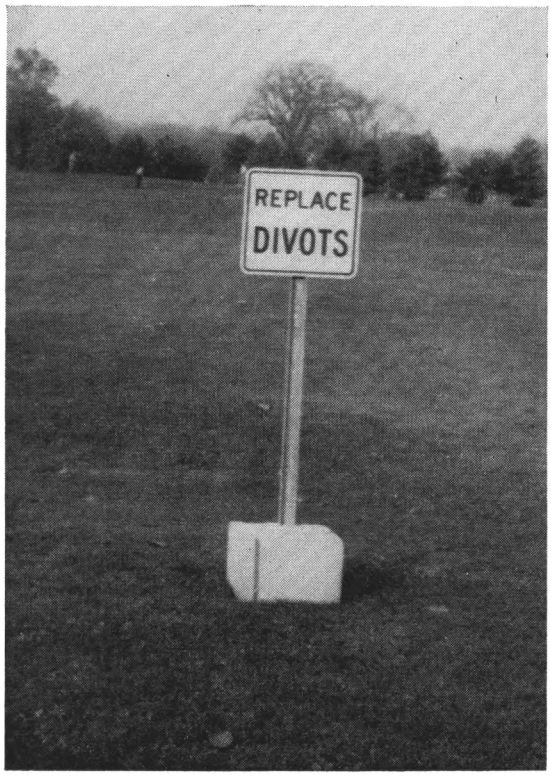
Yardage figures must be correlated with playing conditions. Thus the trajectory of a ball hit from an elevated tee will make it carry farther than the yardage might indicate. Two parallel holes of the same length, one uphill and the other downhill, will play differently. However, most courses have as many holes going up as down, as many holes with the prevailing wind as against it, and as many open holes as those closely trapped. It would be very exceptional for the overall adjustment of the yardage rating to be greater than the one-stroke maximum specified in the USGA system.

*Precise Yardages*

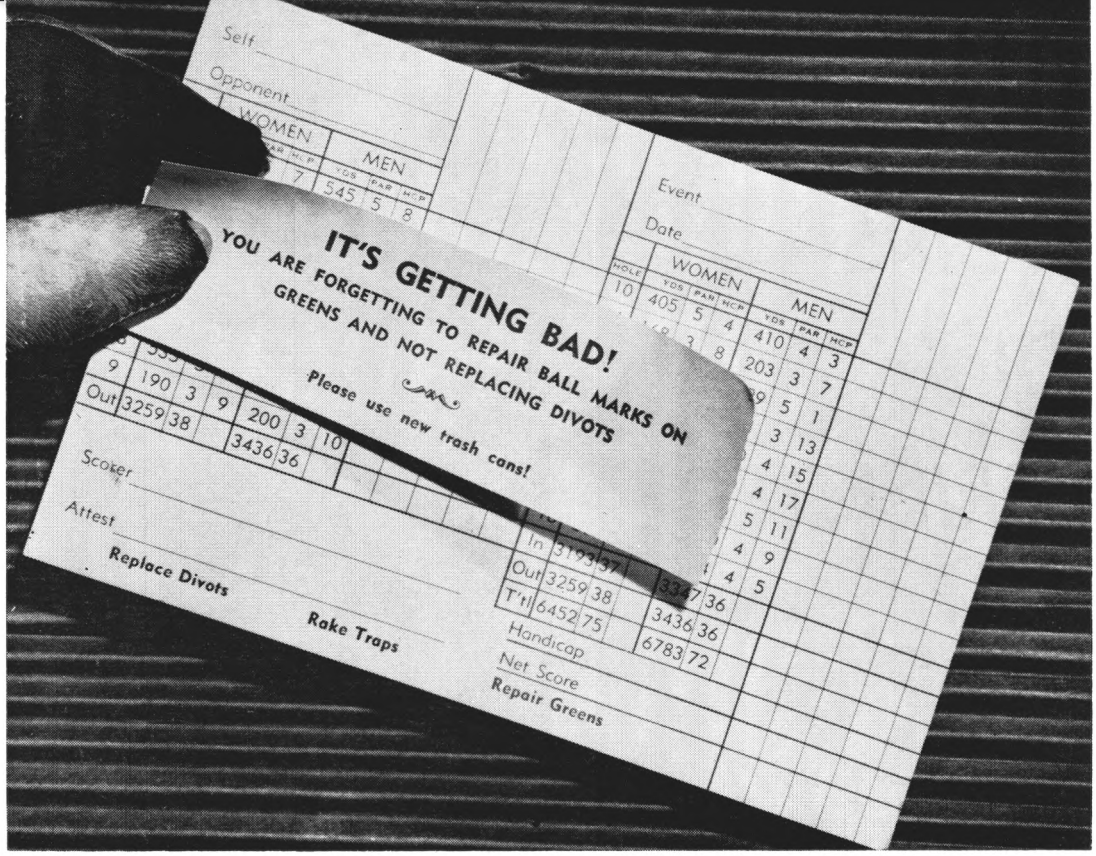
Application of the new USGA system is the responsibility of the district golf associations throughout the country, not of the individual clubs. It is essential that these associations insist upon an accurate remeasurement of every course to be sure that yardages are precise enough to make it possible to assign a meaningful course rating. It is probable that many courses have not been measured for many years in spite of changes which may have been made or errors which may have existed in the original survey. If this remeasurement is done, greater uniformity will result since all clubs will be on a fair comparative basis. The influence of differing views by different Rating Committees will be reduced to a minimum since yardage will be the prime factor in evaluating the playing difficulty of the course.

# SIGNS OF SPRING

***Some people are opposed to signs of any kind on the golf course. But there are occasions when a gentle reminder will pay handsome dividends in better golfing turf. Here are just a few illustrations.***




*Not only a reminder to the golfer to replace his divots, but (don't tell the USGA) an attractive 150-yard marker from each green (which the USGA does not recommend, but is not against the Rules of Golf). This sign can be moved weekly so there is no grass trimming problem.*




*A reminder from Rogue Valley Country Club. This short note in red ink is stapled to every score card as needed from time to time.*

*"Eeeeek, It's Alive ! ! !" That's right, it is a divot and it is still alive but, like so many other divots, it will not continue to live unless YOU replace it in the fairway from whence it was dislodged.*



*To be effective, a sign must first attract attention. Here is a good example of one from the first tee at Sierra View Country Club, Roseville, California.*

*This sign which greets golfers on the first tee at the Twin Ponds Golf and Country Club, New York Mills, N. Y., leaves no question as to their feeling about course care. Jim Girmonde, member, stands on the left and Tom Topp, Superintendent of the Bellevue Country Club, Syracuse, N. Y., is at the right.*

*Rogue Valley Country Club members (Medford, Oregon) showed considerable interest in this notice prepared by Manager Jim Dunlevy. Then they read the fine print and agreed it was an eye-catching good idea.*

# Control versus Confusion and Controversy

by ALBERT NEUBERGER, Agronomist, USGA Green Section

With the advent of many new and relatively effective insecticides there is some tendency to write insects off as a minor problem. Too often insect problems are not recognized and damage is attributed to some other cause. Too often growers who realize their problems plaster an area with whatever insecticide is on hand or whatever is cheapest. Too often insecticides are applied either improperly or at the wrong time.

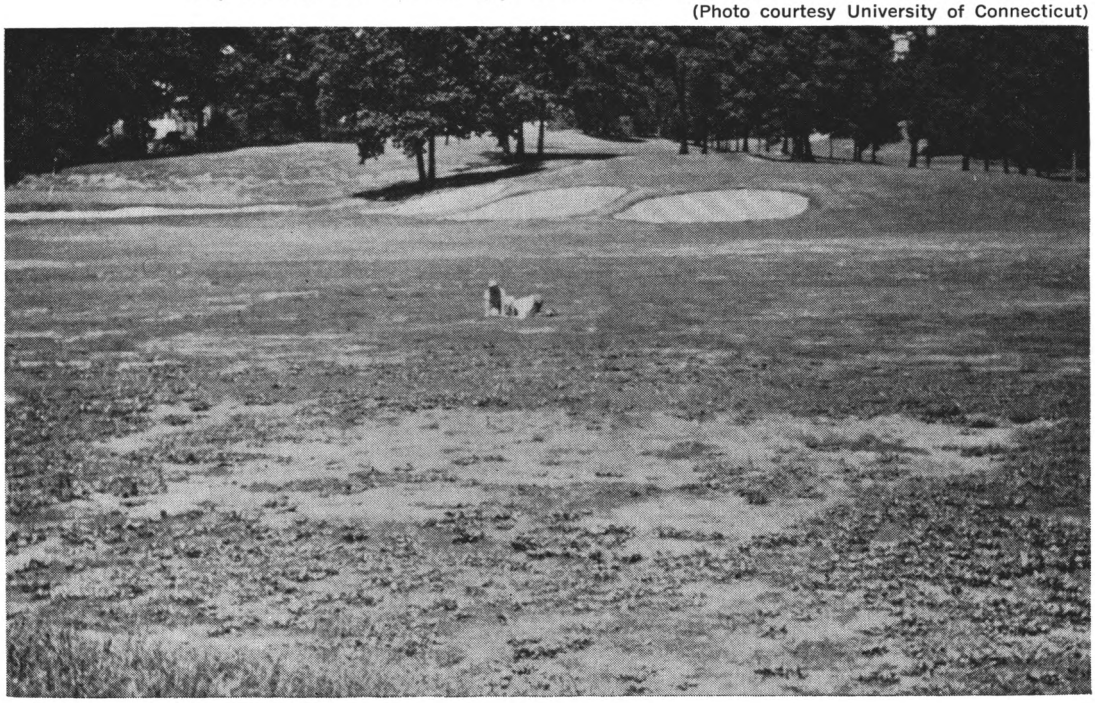
Control implies knowledge, and we **must** know what we are dealing with, when to deal with it, and how to deal with it. By knowing the pest and its life cycle, we determine when to deal with it. We should attack during its most susceptible period.

We must also determine what type of material would best suit our needs, such as a contact poison or a stomach poison. This is very important.

The indiscriminate use of pesticides has caused much concern and has resulted in a great deal of criticism, including the denunciation of pesticides in the book, **Silent Spring,** by the late Rachel Carson. While much of the information is presented in a very biased manner, unfortunately much of it is true. Sadly enough, golf courses are not above reproach in this matter.

Remember, as we improve conditions for our plant materials, we also make them more favorable for insect pests. Obviously, we cannot and must not disregard chemical control, but we must exercise extreme care and good judgment. Stay away from highly toxic, broad spectrum

*Unprotected turf and hungry chinch bugs—a poor combination.*
(Photo courtesy University of Connecticut)



*Chinch bug damage in apron (light area foreground) at Cornwells Golf Club, Eddington, Pa. 1965 was a good year for insects—any dry year is.*

materials! These can upset an entire ecosystem, be it golf course, farm, or forest. Use materials with a broad enough spectrum to control insect pests, yet specific enough not to harm desired flora and fauna.

The question of resistance frequently crops up. Suppose we have been using an insecticide successfully and suddenly we notice that our control is decreasing. Frequently, we just increase the dosage.

This is wrong! Here is some data on a well-known chlorinated hydrocarbon which once served as a good control for chinch bug, but because of indiscriminate use has now been rendered useless.

MEAN NUMBER OF HAIRY CHINCH BUGS
(Blissus hirtus Mont.)
PER SQUARE FOOT

| | September 23, 1964 | August 24, 1964 | September 23,1966 |
|---|---|---|---|
| CHLORINATED HYDROCARBON | 171.3 | 68.3 | 59.4 |
| UNTREATED CHECK | 89.0 | 25.1 | 14.2 |
| RATIO | 1.92x | 2.45x | 4.17x |

Data furnished by Dr. H. T. Streu, Rutgers University.

The counts were made on the **same** plots. Plots were treated annually and established in 1962. It is natural to find variations in chinch bug populations from year to year. However, the important factor is the ratio.

The resistance problem is not new, but it has been compounded by increased and improper use of pesticides. Insecticides **per se** do not cause resistance. Natural genetic mutations account for resistance, and insecticides just increase the pressure of natural selection. In other words, they speed up evolution of resistant strains.

Whenever you suspect resistance to be affecting control, you should change to a different class of chemical compound. By class I mean chlorinated hydrocarbon, organo-phosphate, carbamate, etc. If you change soon enough, perhaps you can come back to the original material, and once again achieve effective control.

Factors to be considered in selecting an insecticide are toxicity, speed of action, residual, formulation, application and cost. If we adhere to basic principals our control will be more effective, our costs will be less, our materials will serve us longer and better, and our critics will be silenced. After all, shouldn't these be our objectives?

# Northern Transition: Winter to Spring

by JAMES L. HOLMES, Agronomist, USGA Green Section

In the regions of cool season grasses, golf course superintendents try to anticipate trouble as winter ends and spring arrives. "Winter kill" or "spring kill" is quite common in the North and most of the serious damage takes place on putting surfaces.

There are specifically two types of damage that regularly occur: (1) extended periods of ice or snow cover will create an anerobic condition in the soil, and (2) desiccation or an insufficient amount of soil moisture to support plant life. Sometimes these conditions can be detected early and serious turf loss reduced.

*Desiccation*

Several precautions can be taken when desiccation or a shortage of soil moisture is anticipated. Where this condition is prevalent, golf course superintendents either place brush on greens, surround greens with snow fence, use large water tanks and apply moisture by hand whenever necessary, or use a combination of all three of these practices.

Occasionally, winter and spring weather is sufficiently dry so that water must be applied with a spray tank on three or four occasions throughout the season. At least 500 gallons, and never more than 2,000 gallons, are used on a 5,000-square foot area.

In severe cases, superintendents commence operating water systems even though the threat of freeze may exist. Under such conditions the system is drained back, at least in part, preceeding an anticipated cold spell.

*Ice or Snow Cover*

The other type of damage normally expected on putting surfaces results from an extended period of ice cover. Superintendents in the Chicago area have reached the conclusion that if a uniform layer of ice completely covers greens for periods longer than 25 days, every effort to remove or break the ice must be made. If a layer of snow is beneath the ice or the ice is rotten, i.e. full of holes or of a perforated nature, little damage is expected. Obviously, most severe damage occurs in low, water-holding areas.

Numerous operations are in effect for ice removal and include top-dressing with a dark material, breaking holes in ice with crow bars or other devices, or completely removing ice with front end loaders or other suitable equipment. Even though putting surfaces may be scarred by the heavy equipment, many superintendents believe it is easier to repair this type of damage than to re-establish a putting surface which has been severely "winter killed."

Also of interest is the association of severe "winter kill" damage following ice cover and the use of arsenicals. It appears that if arsenates are being used, or have been applied in the past, damage is more severe, especially in lower, moisture-holding areas. Therefore, for the superintendent who has used lead or calcium arsenate in the past, particular attention should be given to the 25-day limit for ice removal.

A considerable amount of research is being done in an effort to determine exactly what happens when bent and **Poa annua** turf become ice-covered for an extended period. To date no data have been uncovered which give very clear answers. The opinion seems to be that the primary factor is reduction or exclusion of

*When winter turns to spring, grass doesn't necessarily turn green. Winter Kill can be serious.*

available oxygen in the rhizosphere compounded with the probability that toxic respiratory products are not dissipated because the entire plant is encased in a sheet of ice. Research data further indicate that **Poa annua** is the first type of grass to exhibit damage; another good reason to eliminate this weed.

### *The Recovery Road*

If "winter kill" has been sufficiently severe regardless of protective precautions taken, and portions of putting surfaces are "killed out," a number of rejuvenation programs are followed. The damaged location is either completely removed and replaced with sod or the area is vigorously aerotilled and overseeded.

Following overseeding, the damaged area can be "greenhoused" with clear polyethylene plastic. It has been determined that bentgrass will germinate under plastic and commence growth even though the outside air temperature is not above freezing.

The use of plastic is time-consuming and laborious. The operation must be watched closely. Excessive heat can build up under plastic on a bright, sunny day even though air temperatures are quite low. Frequent removal may be necessary.

It is difficult to keep plastic in place on a windy day. Large staples made from coat hangers, rubber tires, or lath nailed to the ground can be used. Even with these problems, however, plastic cover is an excellent tool in returfing a green when celerity is necessary.

If plastic is not used and the damaged area is overseeded, it is of utmost importance that germinating seedlings be kept constantly moist until they mature to the first mowing stage. In the past four or five years the author has personally observed that overseeding with Seaside

*It is not the snow cover that brings on winter kill damage. Rather, a prolonged cover (25 days or more) of solid ice on putting greens causes havoc to turfgrasses, especially* **Poa annua.**

bentgrass has given better results than overseeding with any other type. If the damaged area is not extensive, sodding is frequently a better answer than overseeding.

### *Watch Out for Disease*

So we weather the winter, weather is warming and preparations are being made to establish top playing conditions. One of the most severe and often unrecognized problems to be faced is that of spring disease damage, primarily fusarium patch. This fungus can be active or damaging in extensive areas and can be completely unnoticed. The golf course superintendent would be wise to apply at least one application of a fungicide known to be effective against this disease.

Further, if a water soluble fertilizer is applied in early spring before grass has initiated a good, vigorous growth, fusarium patch disease is likely to be encouraged more than turf. Therefore, do not be in too big a hurry to apply fertilizer in early spring. Rather, delay it until a vigorous, healthy turf growth is initiated. Even if this first application of fertilizer is delayed until this time, it is still wise to keep a close check for activity of fusarium patch.

### *Rolling?*

Most golf course superintendents have come to the conclusion that it is not necessary to roll greens heavily in the spring. Rather, putting green mowers into regular use will suffice as rollers, with the exception of extreme cases of heaving where it is evident that heavier rolling is necessary.

### *Mowing*

Turf should be mowed as soon as growth has been initiated and there is enough new growth

to cut. If a vertical mowing program is needed, it should not be undertaken until the weather has definitely warmed and vigorous growth is assured.

For aerification, most superintendents have come to the conclusion that superior results are obtained if this operation is delayed until late spring or early summer. This makes sense because in the more northerly part of the country soils are loosened as a result of heaving earlier in the spring and further aerification is not warranted. However, by late spring or early summer, soils have begun to compact and aerification helps to relieve it.

# *It's Nice to Be Missed*

Recently a number of inquiries have been received concerning the fate of the 1967 Green Section Regional Education Conferences. For the past six years, the one-day educational meetings have been held throughout the East, Midcontinent and Western regions, usually in late March.

Last January it was decided that a new format would be tried in 1967. In lieu of regional conferences, a complete summary of the Green Section's New York Educational Conference (January 27) would appear in the March, 1967 issue of the **Record.** The topic "Modernizing the Golf Course—Revision and Renovation" was fully covered in that issue.

This type of national presentation, i.e. the printed word versus regional meetings, is on a trial basis this year. Your reaction to the new format is appreciated.

The March issue of the **Record** was well received. At the same time, apparently the regional conferences have been missed by many and that, too, is gratifying to the Green Section staff.

# *Work on Meyer Zoysia Recognized*

The USGA Green Section has been awarded the Registration Certificate for development of Meyer Zoysia. The Green Section work was undertaken in cooperation with the Crops Research Division of the U.S. Department of Agriculture. Meyer Zoysia has now been accepted by the Committee on Varietal Standardization and Registration of the American Society of Agronomy and USDA Agricultural Research Service.

Joseph C. Dey, Jr., Executive Director of the USGA, received the following letter from the Department of Agriculture Registration Officer, C. S. Garrison:

Dear Mr. Dey:

"Meyer Zoysia has been registered with the Committee on Varietal Standardization of the Crop Science Society of America and assigned registration number 12. A descriptive article was published in the January-February 1966 issue of **Crop Science.**

In accordance with the policy of the Committee, a certificate has been prepared for the developing agencies of this variety. We are pleased to enclose the registration certificate for retention by the U.S. Golf Association."

Sincerely yours,
G. S. Garrison

USGA GREEN SECTION RECORD
40 East 38th Street, New York, N. Y. 10016

# TURF TWISTERS

## ONE STEP BACKWARD

**Question:** Can you account for the degeneration which appears to take place in some Penncross bentgrass greens? For instance, we have two Penncross greens which were seeded a year earlier than our others. These have become puffy and off-colored, even though the management is exactly the same. (Massachusetts)

**Answer:** It seems most probable that you used poor quality seed on the two older greens. If the seed is not grown properly, Penncross can revert back toward one of its three parents. The present certification program has greatly reduced the amount of trash seed on the market. This seed is a result of a few unscrupulous growers who refuse to abide by the certification procedures. Use certified seed purchased from reputable dealers.

## YARDAGE MARKERS

**Question:** During the 1966 United States Open Championship, I understand the USGA allowed yardage markers on some holes. Is it now permissible to plant distinctive shrubs or trees in rough areas to mark the exact yardage to a green? (California)

**Answer:** The USGA erected several distance markers at 250 yards from the tee at the 1966 Open solely for the purpose of allowing spectators to know how far the players were driving.

Actually, nothing in the Rules of Golf prohibits use of markers indicating the distance to the putting greens. However, this does not alter the long-standing USGA policy of generally removing distance markers from courses entertaining Championships whenever possible.

## MY OLD KENTUCKY BLUEGRASS

**Question:** I would like to have your comments concerning bluegrass for use as a fairway turf in my area. (Indiana)

**Answer:** Common Kentucky bluegrass is gradually finding general disapproval as fairway turf in the Mid-west. For the grass to survive, it must be maintained at 1¼ inches and most of today's golfers strongly object to this kind of fairway lie.

At the present time, a number of commercial enterprises are selecting bluegrass which will withstand a shorter cutting height. Some look very promising. In addition, research stations such as Purdue and Rutgers Universities are working with bluegrass in an effort to develop strains that will form a suitable turf at ½ to ¾ inch height of cut. In that Kentucky bluegrass is apomictic (does not cross-breed readily), this work does have limitations.

As a result of current interest in bluegrass breeding and selection, more suitable types for use in golf turf will be forthcoming. At present the Merion strain continues to be the most suitable, if properly handled.