USGA JOURNAL AND TURF MANAGEMENT

OPEN CHAMPIONS 65 YEARS APART

Sixty National Open Championships ago Horace Rawlins was the winner. That was the first USGA Open, and Rawlins, then 19, remains the youngest Champion of all time. He received a gold medal and $150 for his 91-82—173 score at Newport (R.I.) Golf Club. Ten professionals and one amateur entered. This month at Cherry Hills in Denver, Bill Casper, Jr., will defend honors he won a year ago at Winged Foot, Mamaroneck, N. Y. Casper's score was 71-68-69-74—282. There were 2,385 entries and Casper's prize money was $12,000—eighty times Horace Rawlin's prize.

JUNE, 1960

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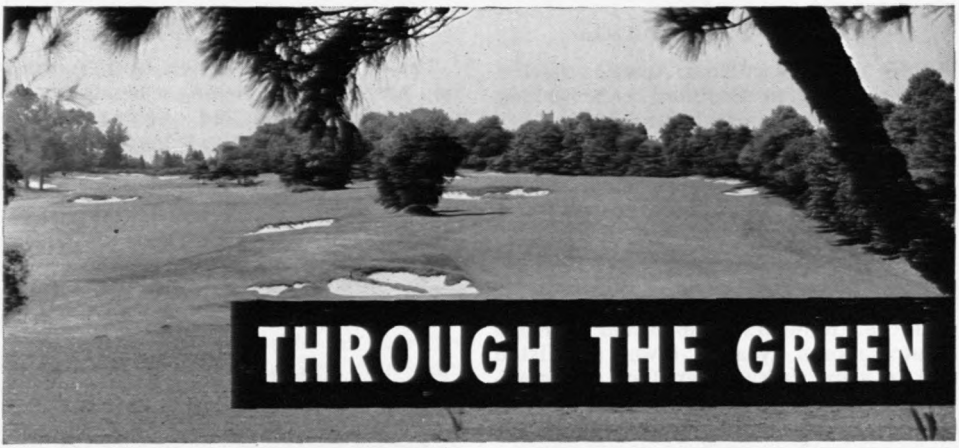
USGA COMPETITIONS FOR 1960

Championship or Team Match	Entries Close	Qualifying Rounds	Dates of Event	Location
Open	Closed	Held	June 16-17-18	Cherry Hills C. C., Englewood, Colo.
Amateur Public Links	Closed	†June 5-12	July 11-16	Ala Wai G. C., Honolulu, Hawaii
Women's Open	July 6	None	July 21-22-23	Worcester C. C., Worcester, Mass.
Junior Amateur	June 29	July 19	Aug. 3-6	Milburn G. & C. C., Overland Park, Kans.
Americas Cup Match***	——	——	Aug. 11-12	Ottawa H. & G. Club, Ottawa, Canada
Girls' Junior	July 29	None	Aug. 15-19	The Oaks C. C., Tulsa, Okla.
Women's Amateur	Aug. 3	None	Aug. 22-27	Tulsa C. C., Tulsa, Okla.
Amateur	Aug. 10	Aug. 30	Sept. 12-17	St. Louis C. C., Clayton, Mo.
Senior Amateur	Aug. 24	Sept. 7	Sept. 19-24	Oyster Harbors C., Osterville, Mass.
World Amateur Team	——	——	Sept. 28-Oct. 1	Merion G. C., Ardmore, Pa.

Amateur Public Links Championship:
† Exact date in each Section to be fixed by Sectional Chairman
*** **Americas Cup Match**—Men's amateur teams: Canada vs. Mexico vs. United States.



THROUGH THE GREEN

World's Busiest Course?

Are you a dealer in superlatives? You like to know the biggest, smallest, shortest, longest, best, worst, lowest, highest?

Here's a superlative for you to ponder. Where is the busiest golf course in the world?

A leading candidate, possibly the busiest, is the Rancho Municipal Course in Los Angeles where 129,607 rounds reportedly were played in 1959. This would include rounds of less than 18 holes. The Dyker Beach Course in Brooklyn certainly was among the most used with 103,604 rounds played there last year.

Several other courses in the Metropolitan New York area had from 50,000 to 90,000 rounds played within 12 months.

With New England winters what they are you might think that annual play would be low. But, a municipal course in Stamford, Conn., had 48,391 rounds in 1948. A 27-hole club in Hartford had 70,648, two Boston courses topped 50,000, and a course in Providence, R. I., had 66,373.

A course as far north as Portland, Maine, had 30,889 rounds in 1958.

During 1959 the 11 municipal courses in Los Angeles saw 849,917 rounds. Golf in California is in such a boom that every one of the 11 courses except a par-three layout, showed increases over 1958 traffic.

The Harbor Park Course had 65,441 rounds in 1959—its first full year in operation, and Harbor Park is only a nine-hole course.

Figures for traffic on many American courses surpass those for any other courses. For example, the busiest course in Argentina saw 63,000 rounds in 1958.

Golf in Scotland comes to a dead halt often during the winter. In mid-winter it is not light enough to play before 9:30 in the morning and too dark to play after 4 P. M. Even when it is light, the weather often is rainy or it is too cold, humid, or windy to play.

Despite all those weather handicaps, 33,039 rounds of golf were played over The Old Course at St. Andrews, last year. The adjoining Eden Course got 31,417 rounds.

Information Pool

The American Society of Golf Course Architects, during a recent meeting in Palm Beach, Fla., voted to establish an information pool in an attempt to help keep the rising costs of course construction as low as possible.

Statistics will make up much of the information in the pool. A summer meeting at Lachute, Quebec, during late June will summarize the data and recommendations submitted by course architects.

During the Palm Beach meeting Press Maxwell and Ralph Plummer, both of Dallas, Texas, were appointed President and Secretary of the Society, respectively, C. E. Robinson, Secretary-Treasurer and Manager of the Royal Canadian Golf Association, was appointed Vice-President. Total membership of the Society is now 21.

Irish Golf

It is not so far from America to Ireland as it is to Scotland and besides, Irish golf courses are just as good.

That is the theme of a drive by Irish tourist organizations to deal in on the traffic of golfing Americans going to England and Scotland for holidays.

To make arrangements and playing easier for visitors a list of more than 200 Irish courses has been compiled, along with their numbers of holes and standard scratch scores. Nearest towns are listed and in some cases green fees are specified.

All the information, plus a small description of some of the better known courses, has been published in a 20-page phamplet. It makes an impressive outlay.

Tourist Wooing

Before going on to other subjects, here is another verse on the same theme:

The fine old European sport of Wooing the American Golfing Tourist is now taken up by the Ulstermen.

The Government of Northern Ireland is distributing as widely as possible a comprehensive book of 100 pages on golf courses and golfing arrangements.

Northern Ireland is part of the United Kingdom and traditional British restraint is used in listing the attractions of such fine old courses as Royal Portrush.

Considerable information is given on each course listed, such as visitors' fees, routes to the course, short descriptions of courses. All in all, it's a fine guide to Northern Irish golf.

Lipstick

Ladies lipstick has been put to a new use.

Golf balls were daubed with red lipstick to make them stand out as they lay in the snow last winter at several American courses.

Last reports were that the scheme worked very well.

"Fairways"

The Cleveland District Golf Association has begun publishing a handsome 50-page publication called "Fairways." The magazine is profusely illustrated. News and pictures are published on many of the fine clubs in the Cleveland district. A section, called "Clubhouse of the Month," is one of the principal features. Harry Pollock, Secretary of the Association, intends publishing "Fairways" 10 times yearly.

Golf School

The University of Michigan and the Ladies PGA are collaborating on the first National Golf School for Women from June 27-July 1, 1960. The school will be on the Ann Arbor, Mich., campus.

The school is open to all women physical educators, coaches, YWCA leaders and recreation leaders. It is for beginners, intermediate and advanced players both in teaching and personal skills.

A professional staff, including Misses Marilynn Smith, Betty Hicks, Mary Lena Faulk and Jackie Pung is available.

University Courses

Ten years ago 102 colleges and universities had their own golf courses. The number is now up to 145 courses and about 25 more are expected in the next five years.

Before World War II about 50 colleges and universities had their own courses.

Golf Pictures

Golf is one of the most photogenic of all sports and beginning this year Golf Digest Magazine is sponsoring an annual competition for "Best Golf Photo of the Year." Prizes total $600. First prize will be $150. Selection by judges will be based primarily on how well the photograph tells the story.

Pictures, which must have been taken between November 1, 1959, and October 31, 1960, should be mailed on or before October 31, 1960, to Photo Contest Editor, Golf Digest, 1236 Sherman Ave., Evanston, Ill.

Source of Pay

The source of salary for giving golf instruction is not the determining factor whether a player has violated the Rules of Amateur Status.

A golf driving range operator wrote the USGA saying a young man would be hired who would pick up balls on the field, serve baskets of balls to customers, mow the grass, paint fences and do other maintenance work. He also would offer customers instruction in playing.

The range operator would not pay the man's salary. A relative of the man would pay.

The USGA decision was that employment for clerical or maintenance work at a driving range—or, a golf course, for that matter—is not a violation of the Rules of Amateur Status. However, giving instruction for pay is a violation regardless of the source of salary.

"Spoiled Junior"

What happens when a golfer hits a poor shot and then so forgets himself that he throws the flagstick, kicks bunker sand, wraps his club around a tree, slams his feet into the grass, reluctantly shakes his opponent's hand and stalks off the course?

All of that happened in a recent tournament. The player was called to task and his explanation was requested for consideration in connection with any possible future entries in other tournaments.

This particular player took his medicine and today he stands cleared.

Here is his confession and apology:

"To the USGA

I received your letter and I am sorry to say that the report is true.

Please accept my sincere apology for my actions in the tournament. I know better and I should have acted more as a grown up than as the spoiled junior that I was. I realize that the tournament committee went through a lot of preparation and expense and time of their own that they devoted to that wonderful tournament.

I also let my parents down for they went to the trouble of driving me there.

I wish to thank you for everything and I am very sorry for my stupid unsportsmanlike conduct of that day.

Sincerely yours ————————."

Locke Plays Again

Bobby Locke of Johannesburg, South Africa, has played his first golf since he was injured last winter in an automobile-train accident. Locke's car was struck by an electric train near Cape Town and the four times British Open Champion suffered head and eye injuries.

Locke put together a fine record in the U. S. Open. He tied for third in 1947, placed fourth in 1948, tied for fourth in 1949 and placed third in 1951.

Two-Face Club

Clubs which have more than one face designed for striking the ball do not conform to the Rules of Golf. The only exception is for the putter which may have two faces if the loft of both faces is practically the same.

A double-faced chip iron recently was submitted for approval. The club could be used by either a left or right hand golfer or it could be used when a stance was made awkward by a nearby tree or obstacle. The player could go to the other side of the ball and play from the other hand.

Rule 2-2d provides however, that "The club shall have only one face designed for striking the ball. However, the putter may have two faces if the loft of both faces is practically the same."

NEW MEMBERS OF THE USGA

REGULAR

Palo Alto Hills Golf & Country Club	Calif.
Country Club of Fort Collins	Ohio
Key Colony Golf Club	Fla.
Palm River Country Club	Fla.
Spring Valley Country Club	Ky.
Elks Golf Club (B.P.O.E Lodge No. 817)	Md.
Sun Valley Golf Club	Mass.
Penfield Country Club	N. Y.
Shawangunk Country Club	N. Y.
Silver Lake Country Club	Ohio
Clearfork Valley Golf Club	W. Va.

ASSOCIATE

Canasawacta Country Club	N. Y.
Homelinks Golf Club	Colo.
Raccoon Golf Course	Pa.
Victoria Park Improvement Association	Texas
Fond Du Lak Town & Country Club	Wis.
Hallie Golf Club	Wis.

GADGETS, GIMMICKS AND GOLF

By

JOHN G. CLOCK
President
USGA

You are on the tee of a 575-yard hole. You fit your fingers into the little molds of your driver's grip—immediately all the parts of your hands are in perfect placement. You adjust your harness—the one that guarantees you a perfect stroke every time. You swing. Out into the blue soars your drive. It stops 407 yards away. Your telescopic gauge tells you that you're exactly 168 yards from the target, and that you'd better allow for a 5-degree wind drift from the right. Your wedge with the wide-grooved face sets the ball down a scant two yards from the hole. On this particular course the hole is 7 inches in diameter, and your putt, aided by the mirror-like sighting device on your putter, for a 3 is easy.

This is a moderately fanciful view of what golf could become if the inventiveness of man were to have free, unchecked play over the equipment of the game. The result might be delightful, to judge from the hole we just played, but the game would scarcely be golf as we know it. Further, any so-called advantages over the present game would merely be relative, for everybody would be playing the same game.

To keep golf as golf is one of the functions entrusted to the United States Golf Association by its 2,400 Member Clubs. The clubs and their members have a tremendous stake in both the dollar value of their courses and the sporting values of the game. They must see to it that the relationship between their courses and the playing equipment is kept in balance. That is why, for instance, the USGA has limits for size, weight and velocity of the golf ball. With no restraints, a ball might be developed which could be driven 407 yards, as in the imaginary hole we played —and think what that could do to the golf courses throughout the country. The 6,000 courses and clubhouses in America represent a capital investment estimated at $1,370,000,000.

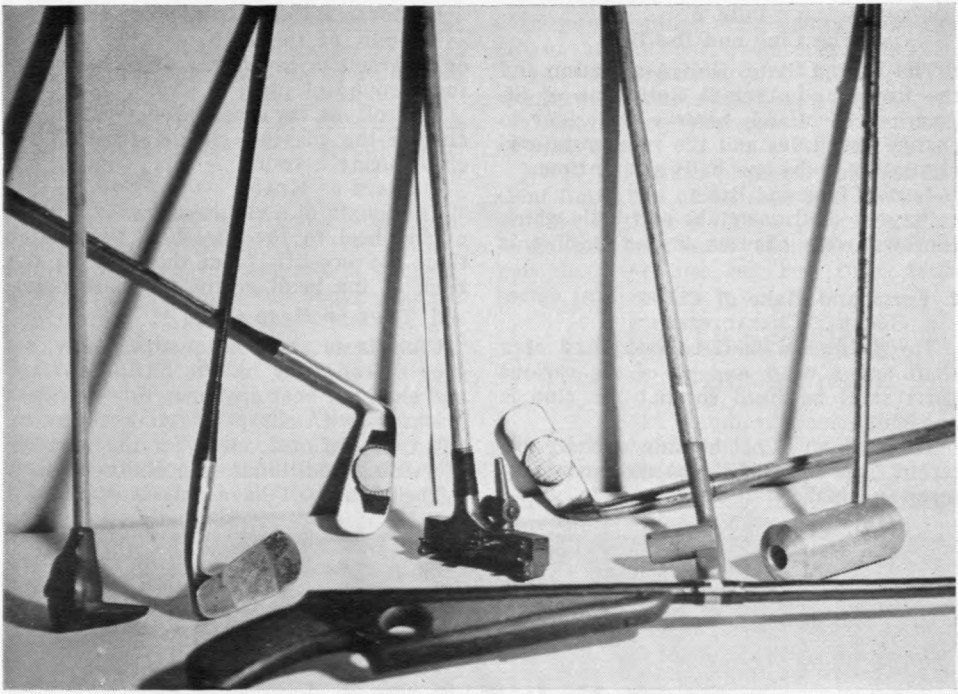
The imagination of golfing inventors has sent a stream of implements to the USGA for consideration over the years. An appreciable percentage of them conform with the Rules of Golf. The others constitute a sizeable collection in "Golf House," our headquarters in New York.

Putters constitute the widest variation in clubs submitted. Many have been devised with mirrors, spirit levels, directional gadgets, two different lofts, and screw-type heads suitable for adjustment during play. Probably the most complicated putter in "Golf House" is one with an intricate angle-and distance device, plus a directional pointer on top with a degree dial, and an adjustable clubhead.

There is one putter with the shaft attached at the toe. Another has a pistol grip handle. One has a movable material —mercury—which changes the balance of the putter. Others have weights, in the form of screws, to alter the balance. Still another has a concave putting face.

Unique variations on irons have been submitted frequently. A lofted club with teeth somewhat like a rake was designed to cut down on surface contact and facilitate shots with a floater ball in water and shots from sand and from high grass. Another iron has 20 holes drilled completely through the club face. There is a "pancake" wedge, so called because the head is almost round and measures 4x3 inches. An oversize No. 3 iron was submitted, almost six inches in length. One wedge has a section where a corkscrew shaft was inserted to give more spring. A sand wedge with a concave face was designed to ease the pangs of being bunkered. It is well known, of course, that the Rules limit the width and the angle of markings on iron club faces, but, "Golf House" has relics of other days when deeply slotted and ribbed clubs were not illegal.

Woods have been constructed to try to overcome either a hook or a slice. One of



PUTTERS?

Putters constitute the widest variations of clubs submitted to the USGA. A few of the strange variations: an odd-shaped putter with a circular face and directional pointers; one with the shaft attached at the toe so the user's head could be over the ball; a blade putter with a plastic insert attached to the clubface; an aiming putter with four different adjustments for angle and distance; another blade putter with a round metal insert attached to the clubface; one with a screw-type chamber at the top of the clubface with removable weights inside; a cylindrical putter, and a pistol-grip handle putter.

the oddest drivers has a wire running outside the clubhead up through the center of the shaft and adjustable at the top of the grip. The designer contended it gave substantially more whip to the club. The earliest steel shaft was perforated; it sort of whistled when swung.

What about the objective of the game —the hole itself? It is standardized at 4¼ inches in diameter and attempts to introduce different sizes over the years have been abortive. But recently someone devised an offset flagstick which was designed to be stuck in the rear of the cup; the net effect would have been to enlarge the rest of the hole when the flagstick was in position. Further, there was envisioned a broad, flat flagstick which, when offset at the rear of the cup, could have served as a sort of backstop for putts. Consequently, the Rules were amended for 1960 to specify that the flagstick must be straight, must be circular in cross-section, and must be centered in the hole (Definition 12).

Artificial devices have been created periodically to give golfers aid in gauging or measuring distance or conditions which might affect play, and in gripping or swinging the club. Such items do not conform with the Rules. Players of the game rarely have occasion to read Rule 2, which regulates the club and the ball, so I am quoting it below. It is basic in preserving golf as golf and in preventing people, with perhaps less than golf's best interests at heart, from making a mockery of our grand game.

Rule 2
The Club and the Ball

The United States Golf Association and the Royal and Ancient Golf Club of St. Andrews, Scotland, reserve the right to change the Rules and the interpretations regulating clubs and balls at any time.

1. Legal Clubs and Balls

Players shall use clubs and balls which conform with Clauses 2 and 3 of this Rule.

2. Form and Make of Clubs

a. General Characteristics

The golf club shall be composed of a shaft and a head, and all of the various parts shall be fixed so that the club is one unit.

The club shall not be substantially different from the traditional and customary form and make.

b. Movable Parts Prohibited

No part of the club may be movable or separable or capable of adjustment during a round of play.

The player or other agency shall not change the playing characteristics of a club during a round.

c. Shape of Head

The length of a clubhead from the back of the heel to the toe shall be greater than the breadth from the face to the back of the head at the broadest point.

d. Face of Head

Club faces shall not embody any degree of concavity on the hitting surface and shall not bear any lines, dots or other markings with sharp or rough edges, or any type of finish, made for the purpose of putting additional spin on the ball.

The club shall have only one face de-

IRON CLUB ODDITIES

Variations on iron clubs sent to the USGA for consideration have included an oversize No. 3 iron with a head almost six inches in length; a wedge with a corkscrew shaft inserted to give more spring; a lofted club with teeth somewhat like a rake, to facilitate shots with a floater ball and shots from sand and from high grass; a "pancake" wedge with a head almost round and measuring 4x3 inches; a sand wedge with a concave face, and an iron with 20 holes drilled through the clubface.

signed for striking the ball. However, a putter may have two faces if the loft of both faces is practically the same.

Iron Clubs. The face of an iron club shall not contain an inset or attachment. Markings on the face of an iron club shall conform with USGA specifications (see Note to this Rule).

e. SHAFT

The shaft shall be fixed to the clubhead at the back of the heel, either directly or by attachment to a neck or socket. The shaft and the neck or socket shall remain in line with the back of the heel, or with a point to right or left of the back of the heel, when the club is soled at address.

Exception for Putters:—The shaft of a putter may be fixed at any point in the head. (A putter is a club designed primarily for use on the putting green—see Definition 25.)

f. GRIP

The grip shall be a continuation of the shaft to which material may be added for the purpose of obtaining a firm hold. The grip shall be substantially straight and plain in form, may have flat sides, but shall not have a channel or a furrow or be molded for any part of the hands.

A device designed to give the player artificial aid in gripping or swinging the club shall be deemed to violate this Rule even though it be not a part of the club.

(Other artificial devices—Rule 37-9.)

Note: Players in doubt as to the legality of clubs are advised to consult the USGA. Specifications for markings on iron clubs have been issued to manufacturers.

If a manufacturer is in doubt as to the legality of a club which he proposes to manufacture, he should submit a sample to the USGA for a ruling, such sample to become the property of the USGA for reference purposes.

3. Weight, Size and Velocity of Ball

The weight of the ball shall be not greater than 1.620 ounces avoirdupois, and the size not less than 1.680 inches in diameter.

The velocity of the ball shall be not greater than 250 feet per second when measured on the USGA's apparatus; the temperature of the ball when so tested shall be 75 degrees Fahrenheit; a maximum tolerance of 2% will be allowed on any ball in such velocity test.

a. EXCEPTION

In international team competition the size of the ball shall be not less than 1.620 inches in diameter, and the velocity specification above shall not apply.

PENALTY FOR BREACH OF RULE: **Disqualification.**

Note: The Rules of the Royal and Ancient Golf Club of St. Andrews, Scotland, provide that the weight of the ball shall be not greater than 1.620 ounces avoirdupois, and the size not less than 1.620 inches in diameter.

HANDICAP DECISION

COURSE-WITHIN-A-COURSE

USGA Handicap Decision 60-4
References: Men - Sections 2-7, 6-1
Women - Sections 12-7, 16-1

Q: Our ninth hole is the farthest hole from the clubhouse. Consequently, in the winter when the weather is unpredictable, many of our girls do not wish to play the complete 18 holes. Some feel that if we play the nine holes which are near the clubhouse twice—thus making 18—we should be able to use these scores for handicapping. However, in order to play 18 holes in this manner, we do not play consecutive holes. We play them in this order to make up the nine—1, 2, 3, 13, 14, 15, 16, 17, 18. We then repeat this procedure, This order of playing is definitely not so difficult to score on as our regular 18-hole course.

It is my understanding that you must play the regular 18 holes consecutively in order to use the scores for handicapping. I would appreciate your ruling.

Question by: Mrs. Fred Brewitt
Bremerton, Wash.

A: Computation of USGA handicaps is based on "Handicap Differentials" which are the differences between gross scores and the course ratings of the courses played. Scores made on "unrated courses" are useless for handicap computations as the handicapper has no way in which to arrive at "Handicap Differentials."

If the course rating committee of your district golf association has assigned a rating to the nine-hole course comprised of holes 1, 2, 3, 13, 14, 15, 16, 17, 18 and it is a recognized course, scores made thereon must be used for handicapping purposes provided it is played twice in immediate succession.

ARE YOU KIND TO YOUR COURSE?

By

DR. MARVIN H. FERGUSON
Mid-Continent Director
USGA Green Section

It is a rare golfer who realizes how greatly he punishes the golf course as he plays. He thinks more often of how much the course punishes him.

An Arizona superintendent made the following observation recently. "If I began punching holes with a crowbar in one of the palm trees on the clubhouse lawn, my members would want to lynch me. However, those members don't realize that as they walk over the grass plants each day, they break them and tear them injuring the plants much more seriously than it is possible for me to injure a palm tree with a crowbar.

Wear and tear from the play of the game is expected on a golf course. No superintendent expects to find a green without ball marks after a heavy day of play.

There are, however, "great sins of golfers" which make the superintendent and the green committee chairman unhappy, damages the course, causes extra expense and adds to the work load. Most of these "sins" are the result of thoughtlessness. Few are deliberate injuries.

Some of them and their consequences are mentioned here:

1. Soft drink bottles, glasses or paper cups are left lying about.

The least consequence of this action is that the superintendent must use costly labor to police the area. If some bottles or glasses are missed, the result is broken glass on the golf course and perhaps a damaged mowing unit.

2. Climbing out of bunkers on the high side.

This offense does not occur often because it is simply easier to walk out on the low side but there are persons who believe the axiom that "a straight line is the shortest distance . . ." and the consequence is the breaking off of the lip of a sandtrap.

3. Failure to replace divots.

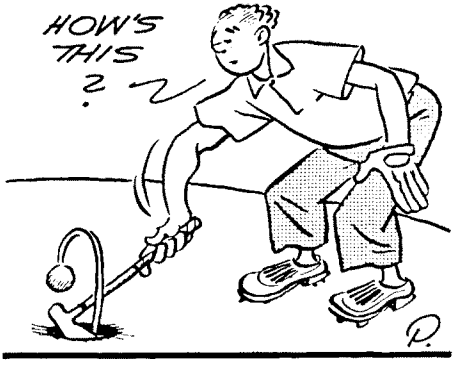
In many parts of the country the replacing of divots is overrated. Replaced divots seldom grow. However the replacing of the turf which is cut away by the club prevents the drying out of the portions of the plant beneath the divot and healing is not retarded by desiccation. More important, the replaced turf keeps the next player's ball from rolling into the divot.

4. Failure to repair ball marks.

This sin does more damage to the following golfer than to the course. However, their repair is time consuming. It is a job that must be done before the putt-

WISE REPAIRMAN

CLEVER BUT COSTLY



ing green can be mowed. If not, the turf that is pushed up by the force of the ball is removed by the mower.

5. Scuffing of turf by dragging feet or twisting on the greens.

To a superintendent who is proud of the appearance of his greens there is nothing more irritating than to find marks on the putting surface left by a golfer who failed to pick up his feet or who used "body English."

6. Leaning on a putter.

Obviously, such a practice depresses a spot in the putting surface, and if there are enough such spots, the superintendent will soon be asked why he let the greens get in such deplorable condition.

7. Using a putter to "hook" or "scoop" the ball out of the cup.

This trick saves stooping to retrieve the ball. It isn't easy to do and it takes a considerable amount of practice to become proficient at flipping the ball.

Unfortunately in the course of developing one's skill, many a lip of a hole is broken or damaged.

8. Jabbing the putting surface with the flagstick or replacing it carelessly.

Usually this damage is not deliberate. It simply results from indifference on the part of the handler.

9. Losing temper and cutting a divot from the putting surface with a putter.

Fortunately, this is a rare act. If there is one unforgivable sin on the golf course, this is it. Every golfer ought to be above this kind of action. Certainly he must damage himself more than the golf course when he allows himself to get so far out of hand.

10. The careless use of carts.

Carts should always be kept off putting greens, out of hazards, out of wet spots, and off steep side hills. Carts are capable of damaging the golf course seriously when used improperly but they may be no more damaging than maintenance equipment if they are used with care.

A PROFLIGACY RECORD, 19 ON AN OPEN HOLE

RAY AINSLEY
Set the Mark
at Cherry Hills

The Open Championship will again be at Cherry Hills, Denver, Colo., from June 16-18.

What does that make you think of? Ralph Guldahl who won there in 1938? Dick Metz who finished second?

With all respects to those fine players, an Open Championship at Cherry Hills leaves many people thinking of Ray Ainsley—the man who took 19 strokes on one hole.

That happened at Cherry Hills on June 10, 1938, and here in a reprint of an old USGA Journal article, is how it came about . . . . .

When the definitive history of the Open Championship is written, it will be concerned with many things besides such efficient performances as Ben Hogan gave at Riviera by making 16 birdies, 48 pars and going one over on only eight holes. His record 276 is only part of the saga.

Every duffer can take heart, too, from the fact that Ray Ainsley, of Santa Barbara, Calif., used 19 strokes—yes, 19—on a single hole to set the Open record for profligacy.

Had Ainsley holed out in one fewer, he would only have tied the record of 18 which Willie Chisholm made on the 185-yard 8th hole in the 1919 Championship at Brae Burn, Boston. The circumstances surrounding these two spectacular scores were quite different. Fortunately for the definitive historian, the two events have been appropriately recorded.

A National Hero

Henry McLemore, at the time a sports columnist, witnessed Ainsley's 19 and, tucking his tongue firmly in his cheek, filed a copyrighted story which the United Press permits us to reproduce. From the scene of the disaster, McLemore wrote:

"Ray Ainsley, Saturday was the most beloved man in the United States.

"Five million golf duffers recognized him as their beau ideal, hailed him as their vindication, their excuse for living.

"Ainsley, an unknown until Friday, bounded into fame when, playing in the Open Championship at Cherry Hills, he scored a 19—15 strokes over par—on the 16th hole.

"For almost half an hour he stood in a swift-moving creek that borders the 16th green and belabored his ball with blows. It is recorded that a little girl who witnessed his efforts to knock the ball from the creek turned to her mother when Ainsley finally got it out and said:

" 'Mummy, it must be dead now, because the man has quit hitting at it.'

"When he finally finished—with a sparkling 96—Ainsley was besieged on the clubhouse lawn. Hagen was forgotten. So was Jones. So was an assorted group of state governors, and so was Henry Picard, whose second consecutive 70 had given him the halfway lead.

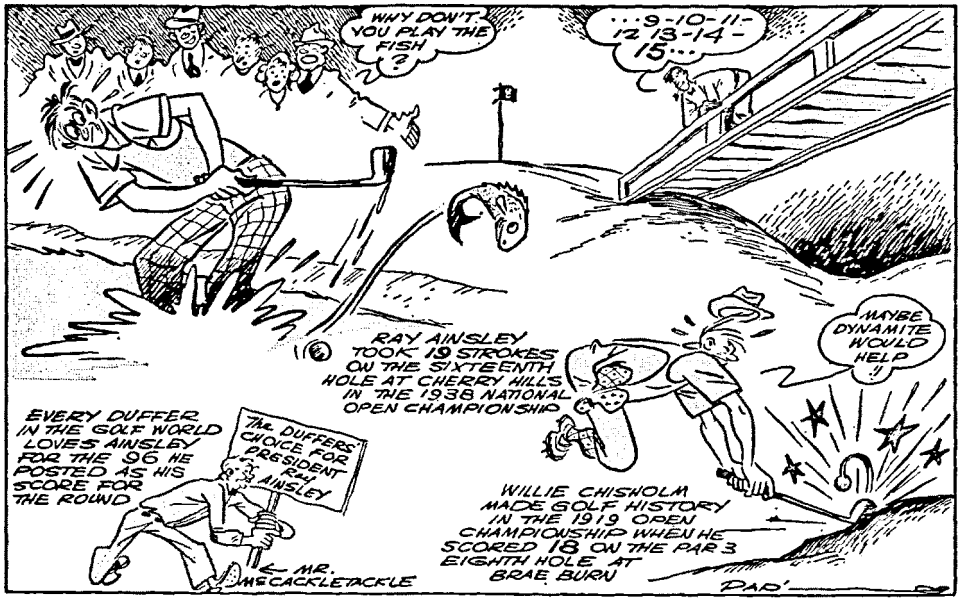
"The autograph hunters and the candid-camera filberts swarmed about him. It was obvious that the autograph hounds figured that the signature of any man who took a 19 on one hole in the Open would some day be worth more than the signature of Button Gwinnett or any other signer of the Declaration of Independence, and that the picture of a man who had perpetrated such a deed would outlive Gainsborough's Blue Boy.

"Ainsley's effort at the 16th will go down in sports history with the famed 'long count' of the second Dempsey-Tunney fight at Chicago. Just as Dave Barry became confused after Jack's knockdown of Gene, so did the official scorer become lost in a maze of figures as Ainsley swatted at the ball. After many strokes, the scorer turned to Ainsley's playing companion, Bud McKinney, and called,

" 'Pick up the count. I'm through.'

Battling the Current

"McKinney counted as high as he could, but, not having majored in mathematics, he quit after one of Ainsley's blows lifted a speckled trout high into the air. A



spectator suggested that Ainsley play the trout and not his ball, but as there is no USGA rule to cover such an emergency, the Californian took another notch in the pants of his diving bell and continued trying to hit the ball.

"He was a sad sight at this point. He was covered from head to foot with sand, and his clothes were soaking wet. Each time Ainsley missed the ball, the current would sweep it farther downstream, and he would have to run along behind it, trying to get in a decisive blow. No man ever showed more gameness.

"He scorned treacherous currents that swirled about him and threatened to sweep him into whirlpools. He ignored the dangers of boulders, seaweed and the incoming tide.

"Sharks nibbled at his ankles' but he kept whacking away.

"Passing ships sent out lifeboats, but he waved them aside.

"Finally, Ainsley backed the ball into a neutral eddy and caught it squarely on the head and it soared from the water.

"The spectators cheered—until they saw that it had landed beyond a tree on the far side of the green. An amphibian by now, Ainsley adapted himself to dry land with remarkable alacrity and strode into the bush. After much thrashing, the Californian beat the ball onto the green and putted it into the cup.

"Saturday he was sought by the curious who wanted to see and touch the man who had taken the highest score on a hole in the history of the Open.

"Ainsley, old fellow, give me a stroke a hole and I'll play you for 10 cents a hole. You sound like my meat."

Why Not a Lift?

As an epitaph, Morton G. Bogue, then chairman of the USGA Rules of Golf Committee, adds that he asked Ainsley why he had not availed himself of the privilege of lifting his ball from the water hazard under penalty of only one stroke.

"I thought I had to play the ball as it lay at all times," responded Ainsley, who at that point became a sadder but wiser man.

But as the USGA Executive Committee's annual report stated: "The fact that he holed out was an interesting commentary on the sportsmanship of the golf professionals of America."

Ball Runs Poorly for Willie

In one sense, Willie Chisholm perhaps should share equal honors with Ainsley. Each went 15 strokes over par on a single

hole. It might be argued that Ainsley was able to exceed Chisholm's score by a stroke only because he chose a par 4 hole and Willie a par 3.

The historian is again fortunate in the Chisholm case, because the man with the most remarkable memory in golf, Francis Ouimet, was a competitor at Brae Burn in 1919 and has contributed the following account of Chisholm's climatic mishap:

"In 1919 Walter Hagen defeated Mike Brady for the Open Championship after the two had tied at 301 at Brae Burn. Among the favorites was Jim Barnes, to say nothing of other fine players. Barnes had as his playing companion in the first round a Scot named Willie Chisholm.

"They were to start rather late, so Willie prepared for the ordeal by playing a few chip shots beforehand with Johnny Walker (Black Label).

"The ball was not running well for Willie, and he had more than his share of bad breaks over the first five holes. However, his courage was good, and when he made a 5 on the par-3 sixth, it seemed as though he had played himself back to his normal game. A steady 7 on the par-4 seventh more than confirmed this.

"There was much to look forward to on the eighth. It was only 185 yards long, and while the iron had to be played over a deep ravine, there were some 2s and many 3s made on the hole during the day.

"At the bottom of the ravine was a tiny brook, and in front of the brook were several large rocks, deposited there during the glacier period. As a matter of fact, that particular hole was a source of much annoyance to the members of Brae Burn because it was no easy climb from the brook up the steep bank—and it was steep—to the fairway and putting green. Therefore, the ever-obliging golf committee constructed a long wooden bridge which spanned the ravine, thus making the hole a more pleasant one to play. The bridge was completed for the Open that year.

"Barnes played a nice shot to the green and, gentleman that he was, stepped aside for Willie to do likewise. As Willie selected an iron, it could be seen he was full—of confidence—but as so often happens, he took a little too much turf, and while he carried the brook nicely, by two or three feet, his ball came to rest two inches beyond a large boulder.

"After reaching his ball and surveying the situation carefully, he called for his niblick, possibly thinking that, if he was to break a club, it might just as well be the niblick. I may say now that such a procedure was common in 1919.

"Jim in the meantime took up a position in the middle of the bridge where he could look down at Willie and help him count his strokes.

Bleeding Niblick

"After a few practice swings, Willie took his stance, held a firm grip on the club and let go at the ball. Unfortunately, the clubhead met the boulder first and bounced over the ball, giving off a few sparks and a sharp ring. This was a novel experience for Willie Chisholm, so he tried it again with the same result.

"Now that he was sure it was no mistake and that he had not been hearing things, he settled down to blast his way to the ball through the rock. After a series of ineffectual efforts to cut his way through to the ball, he suddenly decided to shift his tactics. By this time the sole of the niblick was red-hot and dented badly, but the shaft, of real stout hickory, stood up magnificently.

"Barnes, as one of the favorites for the title, was, of course bearing up splendidly. He did not say how much he enjoyed the performance, but he never left his observation post.

"As I have said, Willie changed his tactics. Now instead of striving to play toward the green, he chose to chip the ball away from the rock. This he did after the second effort. After a little more hard luck, Willie reached the green, perspiring; and then, as always when things are not going well, needed three putts. I am not sure whether or not Jim got his 3, but I do know he was thoroughly chilled waiting for his turn to play.

"Now came the real test. Willie tried his best to count his strokes, but since he had been working in the bottom of the ravine for the greater part of 30 minutes, he was not sure how many he had taken. As he was exhausted, he turned to Jim for help.

" 'Willie, you took 18 for the hole,' said Barnes.

" 'Oh, Jim, that cannot be so,' was Chisholm's reply. 'You must have counted the echoes.' "

INVEST $1 IN GOLF DAY FOR FUN AND THE GAME

8th Annual Golf Day June 11

. . . . . More than 600 boys attend colleges and universities through grants from various caddie scholarship funds and each of them draw assistance from National Golf Day.

. . . . . Through the use of National Golf Day proceeds the National Amputee Golf Association provides clubs for new members and arranges instructions.

. . . . . Many factors contribute to the growth of junior golf and one of the main factors has been money grants from National Golf Day proceeds.

. . . . . Golf courses of the future will be better because of contributions made possible by National Golf Day to the United States Golf Association Green Section Research and Education Fund, Inc.

That is a partial rundown of the benefits accruing each year from National Golf Day. The annual event comes up June 11. Once again golfers throughout the United States are urged to buy tickets for $1 and to play their National Golf Day rounds at almost any private, daily fee or public links course between June 5 and 11.

On June 11, Bill Casper, the National Open Champion, plays against Bob Rosburg, the PGA Champion, at the Firestone Country Club, Akron, Ohio. Theirs will be an 18-hole "Round of the Champion."

Golfers, using their USGA or other established handicaps, will pit their scores against the winner of the "Round of the Champion."

Those "beating" the Casper-Rosburg winner will receive National Golf Day medals from the PGA.

All men amateurs will play their normal handicaps. Ladies will be permitted to use their regular handicaps plus seven strokes. The Callaway Handicap system can be used by those without club handicaps.

The objective this year is proceeds of at least $100,000. A golfer can buy as many $1 tickets as he likes but he must turn in a card for each of his rounds.

Last year the PGA-sponsored event produced more than $90,000. In eight years more than $725,000 has been realized from National Golf Days.

The National Golf Fund, Inc., distributes the money accumulated through Golf Day. Net proceeds from last year's event were distributed to: Caddie Scholarship funds; U.S.G.A. Green Section Research and Education Fund, Inc.; Golf Course Superintendents Association Educational Fund; Junior Chamber of Commerce War Memorial Fund; National Amputee Golf Association; United Voluntary Services; U. S. Blind Golfers Association; American Womens Voluntary Services; PGA Educational Fund and the PGA Relief Fund; PGA Benevolent Fund.

Dr. Marvin H. Ferguson, National Research Coordinator for the USGA Green Section, said in describing benefits:

"Already the research financed through National Golf Day contributions is bearing fruit and the golfers of the nation are the beneficiaries. For example, the release of Tifway bermudagrass has recently been announced. This is a variety of bermudagrass that has come out of breeding work at the Georgia Coastal Plain Experiment Station at Tifton, Georgia.

"Investigative work on the physical factors which operate in the behavior of putting green soils has been pursued at Texas A. & M.

"Much of the research presently being supported by National Golf Fund money is of a fundamental nature. Such research seldom produces quick results. Yet the administrators of state experiment station efforts are more and more inclined to emphasize this kind of investigation. An example of such research may be found at the Pennsylvania State University.

"Another project of a fundamental nature is being carried out at UCLA. Dr. Victor Youngner has made use of "controlled environment" chambers to study the effects of light and temperature on the behavior of grasses."

GOLF'S UNWRITTEN RULES

BY
JOSEPH C. DEY, JR.
USGA Executive Director

Did you ever realize that an unwritten code is the source of the actual Rules of Golf?

The essences of the unwritten code have been clothed in words in a new book entitled "The Principles Behind the Rules of Golf." The result is an outstanding addition to the literature of the game. If you really want to know what the Rules are all about—in fact, what golf is all about—this little book of 102 pages is required reading.

Very few people in the world are qualified to handle the subject, and none is more qualified than Richard S. Tufts. His book is a labor of love from start to finish, down to his private publication of it. Mr. Tufts' work is the fruit of a lifetime of study of golf and most particularly as a member of the USGA Rules of Golf Committee from 1938 to the present, including the Chairmanship in 1954-55, and as a member of the Joint Negotiating Committee of the USGA and Royal and Ancient GC of St. Andrews in 1951-55-59.

"The Principles Behind the Rules of Golf" is not a case history of decisions on fine points. Rather, it treats of the broad and sometimes deep concepts from which the Rules spring—their philosophies and their ideals.

As Mr. Tufts has written: "Running through the Rules are underlying principles that, like the steel rods which lie below the surface of reinforced concrete, serve to bind together the brittle material and to give it strength." Mr. Tufts, who was USGA President in 1956-57, takes you on a guided tour "by following the thread of each principle separately as it weaves through the Rule Book."

There are two great principles of golf, as Mr. Tufts sees it.

First, "You play the course as you find it. This simply means that the player must accept the conditions he encounters during play and may not alter them to suit his convenience . . . One of the great features of golf is that it tests the player's ability to execute a great assortment of strokes under a perplexing variety of conditions. Golf would cease to be a game of skill if the player were permitted to get the best of the conditions which confront him through their elimination rather than to overcome them by the expert execution of his stroke.

Richard S. Tufts

"Golf, like life, is full of breaks . . . , one of its fascinations being in 'the way the ball bounces.' To be able to accept the breaks and still go on playing your game has always been one of the tests of the true champion."

The second "great principle" is that "You put your ball in play at the start of the hole, play only your ball and do not touch it until you lift it from the hole."

Mr. Tufts lists ten "working principles" of Rules-making, which include:

"In match play, only you and your opponent are involved, but in stroke play every competitor in the field has an interest in the results of your play."

"The penalty must not be less than the advantage which the player could derive from the particular Rule violation."

"Except for advice from those on his side, the player must play his own game."

"The Rules should not attempt to cope with the exceptional."

Copies may be purchased for $2 from Richard S. Tufts, Pinehurst, N. C.

A HUNDRED YEARS OF BRITISH OPENS

By

FRANK PENNINK,
British Golf Writer

One hundred years ago a character named Willie Park went round three loops of the Prestwick links in Scotland, a dozen holes each, in 174, winning thereby the Champion's Belt. One wonders what scores the great players of today would have returned with the implements Willie used—the woods more like hockey sticks, the irons akin to a set of plumber's tools, the fickle light ball. Conversely, what would Willie have shot with a modern, graded set of woods and irons and a precision-made ball? Doubtless he would have lopped many a stroke off his aggregate, despite the rough putting surfaces and bestial lies prevalent in those days.

What is certain is that Park was the first "Champion Golfer," that Tom Morris, Sr., was the greatest golfer of that era, and that in 1872 the Champion's Belt was replaced by the Cup—the same trophy to be offered to the world's golfers for competition at St. Andrews July 6-8. The winner will not only be able to take it home with him for a year, but an exact replica, specially moulded for the great occasion, will be his proud possession for ever.

The Open was played at Prestwick in Ayrshire until 1873 and then it began alternating between Prestwick, St. Andrews and the Edinburgh links of Musselburgh. The route was still over 36 holes. The victors, rightly, were the Scottish professionals, inheritors of their own invention. Tom Morris, Jr., emulated his father by winning four times. Jamie Anderson and John Ferguson both completed the hat-trick that was not equalled again until modern times—by Australia's Peter Thomson.

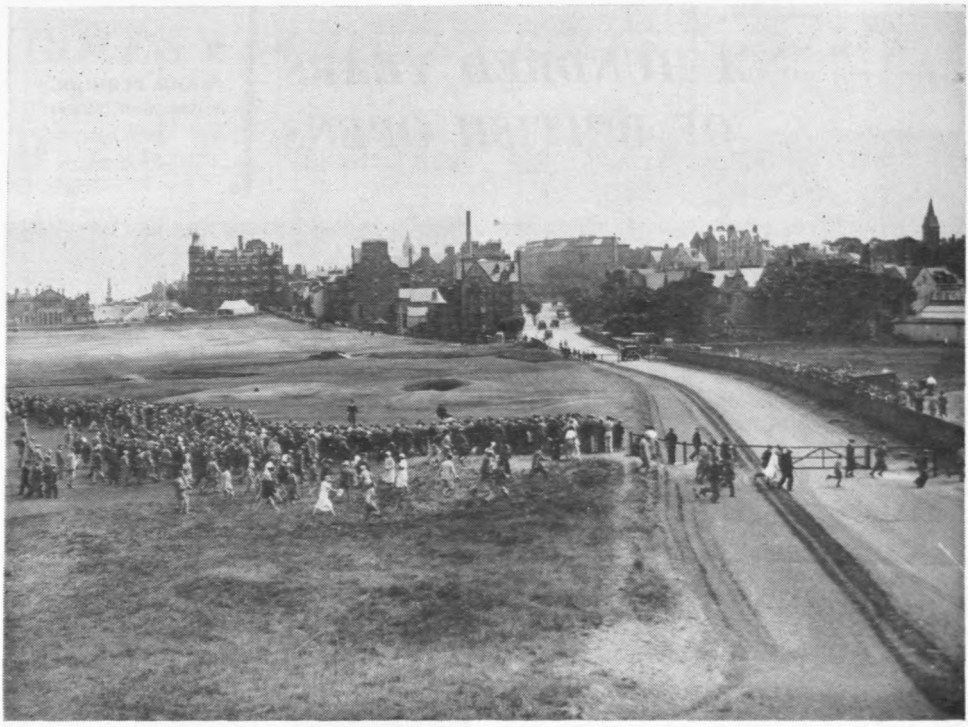
In 1890 John Ball became the first amateur to win. He was followed two years afterward by Harold Hilton, who won at Muirfield over 72 holes. Then there was the long stretch to 1926 before the third amateur, America's Bobby Jones, graced the cup with his name.

Frank Pennink

ABOUT THE AUTHOR

Mr. Pennink has been a player of note for 30 years. He was a member of the British Walker Cup team which won over The Old Course, St. Andrews, Scotland, in 1938. He has served golf, not only as a competitor, but as judge of talent for international teams and as a writer for magazines and newspapers.

One of the most memorable finishes of any Open was in 1878, when Anderson completed the last four holes at Prestwick in 3, 4, 1, 5, knowing that he needed 17 for victory. In sharp contrast was the "blow-up" of another Morris—old Tom's youngest son. He came to the 17th (Road Hole) on the Old Course, St. Andrews, with twelve strokes to win. Somehow he contrived to take nine and followed it



THE OLD GRAY CITY

The 17th "Road Hole"' on The Old Course at St. Andrews is one of the most decisive in golf. Many championship hopes have been wrecked on the par 4 which has as a background the Scottish city of St. Andrews. A paved road runs just behind the narrow green, waiting to catch the overhit shot. If the 17th, with the clubhouse of the Royal and Ancient Club to the left, plays its usual role in the Centenary British Open, July 6-8, it again will be a decisive factor on the Championship.

with a six. The terrors of the Road Hole were certainly greater then than now—more bare road, no grass and no exploder or wedge.

Prestwick was the prime-mover in golf during the last century. On Prestwick's initiative the event was played over 72 holes in 1892 and has continued so since. Three new links were added to the roster in 1892—Muirfield (vice Musselburgh), Hoylake and Royal St. George's, Sandwich. Each of the clubs contributed £15 (then worth $75) annually towards the prize list, the entrance fee of ten shillings supplying the balance.

An exciting period of Open history followed. It embraced the change from the gutty ball to the American-invented Haskell, rubber-cored ball with which Sandy Herd won his Championship in 1902. The period also included the halcyon days of the great Triumvirate—John Henry Taylor, Harry Vardon and James Braid. They dominated British golf, counting sixteen Opens between them. Each made his record more pleasurably remembered by his modesty, charm and dignity. We are indeed happy to have Taylor with us still, a hearty octogenarian at his native Westward Ho!, in Devon.

Vardon was famous for his brassie play, Taylor for his accurate mashie, and it was the cleek, and the power unleashed with it, for which Braid was best known.

The last Open to be played before World War Two was Vardon's sixth and last victory. The Championship, won in 1914 at Prestwick proved one of the most remarkable in the annals of the event.

Vardon's score was 73-77-78-78—306 to Taylor's 74-78-74-83—309. Braid began well but faded right out of the reckoning. Several factors made this Open outstanding. Firstly, Taylor and Vardon were by chance paired together on the last day —a forerunner of modern pairing—and everyone wished to see their duel. Secondly, each was striving to win his sixth Open.

Taylor not only caught his opponent but led him by three strokes with sixteen holes to play. Vardon retrieved one at the third hole, "The Cardinal," but it was really the next hole that decided the issue. Vardon obtained another perfect four, but Taylor found the sinuous burn on the right and took seven. Thereafter some 10,000 people saw Vardon gradually add to his one-stroke lead and it was his superb wooden club play that laid the basis of his triumph. The first-recorded incident with a cameraman, which made Taylor "start all over again" at the 3rd, adds to the historical interest of this last, pre-war championship.

More courses were added to the Open roster when the next, American-dominated chapter began. Walter Hagen and Bob Jones won seven titles, while Jim Barnes, Jock Hutchison, Tommy Armour, Gene Sarazen and Denny Shute also took the Cup across the Atlantic. The pre-Hitler period ended with six straight British victories, including two by Henry Cotton, possibly the best British golfer since the Triumvirate.

The history of the Open's prize-money makes interesting reading. Before 1893 the prizes varied in number and amount, but subsequently the pool was fixed at £100, the winner receiving £30 and a gold medal. In 1910 it increased to £125, advanced to £275 in 1927, as a result of the first "gate" the year before. The Open of 1931 saw £500 divided into 23 prizes; five years later £1000 was reached and £1500 in 1939. In those days the Pound Sterling was worth from $4.25 to $5.00. In 1953 the fund was raised another £1000, while the last two years have yielded £4,850 and £5,000, the winner receiving £1000. To celebrate Centenary year, the Committee has hoisted the graph sharply to £7,000—an undeniable risk, for it costs around £8,000 to stage the Championship. The pound is now worth $2.81.

Two great American golfers, Sam Snead and Ben Hogan, have won post war Opens. But the era has been dominated by two players from the Commonwealth—Bobby Locke of South Africa and Peter Thomson of Australia, each of whom has won four times—while it is possible that a third, Gary Player, the holder, also of South Africa, may prolong this Commonwealth dominance. We have regretted the lack of substantial invaders from the United States, though the reasons for their absence are known and understood, as well as the lack of success of the home brigade.

Some may wonder why the Old Course of St. Andrews, rather than Prestwick, where the event began, has been chosen for the Centenary Open. It is a question of crowd control in the main, while a secondary consideration has been the lack of length, by modern standards, of Prestwick. One has the last five holes particularly in mind.

As I write, the Old Course is resting for five months, without a ball being struck on those much-used, much-loved fairways and double greens, in preparation for its greatest days in July. The players will assemble soon after the Canada Cup is played at Portmarnock in the last week of June, and they will be assured of an especially warm welcome. We hope that the American Open Champion, accompanied by a string of Ryder Cup calibre players, will be present also, for here is a chance of an unique double—Champion of America in its Diamond Jubilee Open and Centenary Champion Golfer.

AMERICAN ENTRIES IN BRITISH OPEN

American professionals entering the British Open included Masters Champion Arnold Palmer, PGA Champion Bob Rosburg, former American and British Open Champion Gene Sarazen, Stan Dudas and Neil McGeehan.

American amateurs entering included Tim Holland and former British Amateur Champion Robert Sweeny.

65 YEARS OF THE OPEN IN FACTS AND FIGURES

A Collection of Significant Open Records

Here are the "A" through "Y's" of National Open Championship records. Beginning with "Admission Charge" they go through "Youngest Winner." There are no records beginning with "Z."

Bill Inglish of the Daily Oklahoman, Oklahoma City, did the original research on many of these records which have now been brought up to date in anticipation of the 60th Open Championship being played at Cherry Hills Country Club, Denver, Colo., this month.

Admission Charge—Admission charge was first levied in 1922.

Amateur's lowest 18-hole score—James B. McHale, Jr.'s 65 in the third round at St. Louis Country Club, Clayton, Mo., in 1947.

Attendance Record—43,377 for three days at Winged Foot Golf Club, Mamaroneck, N. Y., in 1959. 16,527 on the third day at Inverness Club, Toledo, Ohio, in 1957, was the highest for a single day.

Best Comebacks—18 holes—Jack Fleck, in 1955 at the Olympic Country Club, San Francisco, Calif., was nine strokes off the pace and came back to win. 36 holes—Olin Dutra, in 1934 at Merion Cricket Club, Ardmore, Pa., was eight strokes behind. 54 holes—Byron Nelson, in 1939 at the Philadelphia (Pa.) Country Club; Johnny Farrell, in 1928 at the Olympia Fields Country Club, Matteson, Ill., and Walter Hagen, in 1919 at the Brae Burn Country Club, West Newton, Mass., each trailed by five strokes. Gene Sarazen was seven strokes in arrears with 28 holes to play at Fresh Meadow Country Club, Flushing, N. Y., in 1932; he made a two on the ninth, a 32 on the second nine of the morning round and a 66 on the afternoon round to complete the 28 holes in 100 strokes and win by three.

Best Start by Champion—67, by Ben Hogan at Riviera Country Club, Los Angeles, Calif., in 1948 and at Oakmont (Pa.) Country Club in 1953.

Best Finish by Champion—66 by Gene Sarazen at Fresh Meadow Country Club, Flushing, N. Y., in 1932. Second low are 67's by Ben Hogan at Oakland Hills Country Club, Birmingham, Mich., in 1951, Jack Fleck at Olympic Country Club, San Francisco, Calif., in 1955 and Tony Manero at Baltusrol Golf Club, Springfield, N. J., in 1936.

Champions Who Led All the Way—Only three have led after every round—Ben Hogan in 1953; Jim Barnes in 1921, and Walter Hagen in 1914. Four other Champions have led or were in a tie all the way—Tommy Bolt in 1958; Charles Evans, Jr., in 1916; Alex Smith in 1906, and Willie Anderson in 1903.

Consecutive Winners—Five players have won the title in consecutive years: Willie Anderson 1903-1904-1905; John J. McDermott, 1911-1912; Robert T. Jones, Jr., 1929-1930; Ralph Guldahl, 1937-1938; and Ben Hogan, 1950-1951.

Continuity—Gene Sarazen teed off in 31 successive Opens from 1920 through 1954, a record. Sarazen played through 22 successive Opens from 1920 through 1941.

Entry Record—2,385 in 1959 at Winged Foot Golf Club, Mamaroneck, N. Y.

First Score in 60s—David Hunter, of Essex Country Club, Manchester, Mass., returned a card of 68 in the first round of the 1909 Championship at the Englewood Golf Club, Englewood, N. J. He finished with 313 and in a tie for 30th.

Finishes in First Ten—16 by Walter Hagen is the all-time Open record. Among still active players, Ben Hogan has finished in the first ten 14 times. Sam Snead is next with 11.

Highest Scores to Pace Field, 72 Holes—Modern high is 299 by Sam Parks, Jr., at Oakmont (Pa.) Country Club in 1935; 287 by Jack Fleck and Ben Hogan in 1955 at Olympic Country Club, San Francisco, Calif.; Hogan, in 1951, at Oakland Hills Country Club, Birmingham, Mich.; and Hogan, Lloyd Mangrum, and George Fazio in 1950 at the Merion Golf Club, Ardmore,

Pa. All-time high is 331 by Willie Anderson (winner in play-off with Alex Smith) in 1901 at Myopia Hunt Club, South Hamilton, Mass.

Highest 72-Hole Score—Professional John Harrison, 393, in the 1900 Open at the Chicago Golf Club, Wheaton, Ill.

Highest 36-Hole Cut—155 at Olympic Country Club, San Francisco, Calif., in 1955 (low 50 and ties).

Holes-In-One—Among those making holes-in-one during an Open were Bill Kuntz, 142-yard 11th hole at Oak Hill Country Club, Rochester, N. Y., in 1956; John Weitzel, 190-yard 12th hole at Baltusrol Golf Club, Springfield, N. J., in 1954; Zell Eaton, 158-yard 10th hole at Baltusrol Golf Club, in 1936; Leo Diegel, 146-yard 13th hole at Inverness Club, Toledo, Ohio, in 1931; Eddie Towns, in the 1922 Open at the Skokie Country Club, Glencoe, Ill.

Longest Championship—In 1931 Billy Burke and George Von Elm tied at the Inverness Club, Toledo, Ohio. The play-off was at 36 holes and it took two play-offs, or 72 extra holes, to decide Burke the winner by one stroke.

Longest Open Course—7,037 yards in 1937 at Oakland Hills Country Club, Birmingham, Mich.

Lowest 9 Hole Score—James B. McHale, Jr.'s 30 on first nine in third round at St. Louis Country Club, Clayton, Mo., in 1947.

Lowest Round—64 by Lee Mackey, Jr., (first round) at the Merion Golf Club, Ardmore, Pa., in 1950.

Lowest Second Round—66 by Johnny Goodman in 1933 at North Shore Golf Club, Glen View, Ill; Jimmy Thomson in 1937 at Oakland Hills Country Club, Birmingham, Mich.; Johnny Bulla in 1950 at Merion Golf Club, Ardmore, Pa.

Lowest Third Round—65 by James B. McHale, Jr., in 1947 at St. Louis Country Club, Clayton, Mo.

Lowest Fourth Round—65 by Walter Burkemo in 1957 at Inverness Club, Toledo, Ohio.

Lowest First 36 Holes—138 by Sam Snead at Riviera Country Club, Los Angeles, Calif., in 1948; by Ben Hogan at Northwood Club, Dallas, Texas, in 1952; and by Dick Mayer and Billy Joe Patton at Inverness Club, Toledo, Ohio, in 1957.

Lowest Last 36 Holes—136 by Gene Sarazen at Fresh Meadow Country Club, Flushing, N. Y., in 1932, and by Cary Middlecoff at Inverness Club, Toledo, Ohio, in 1957.

Lowest 36-Hole Cut—138 at Riviera Country Club, Los Angeles, Calif., in 1948 (low 50 and ties).

Lowest 72-Hole Scores—276—Ben Hogan (67-72-68-69) 1948. 278—Jimmy Demaret, 1948. 280— Jim Turnesa, 1948. 281—Ralph Guldahl, 1937; Julius Boros, 1952; Dr. Cary Middlecoff, 1956. 282—Tony Manero, 1936; Lew Worsham, and Sam Snead, 1947; Bobby Locke, 1948; Julius Boros and Ben Hogan, 1956; Dick Mayer and Dr. Cary Middlecoff, 1957; Bill Casper, Jr., 1959.

Lowest Scoring Averages (10 or More Opens)—Ben Hogan leads with 71.88 average for 62 Open rounds and a 72-hole average of 287.53. Sam Snead is second with 72.64 for 73 rounds and 290.55 over 72 holes in 18 Opens. Bob Jones competed in 11 complete Opens and had a 73.98 for 51 rounds and 295.91 for 72 holes.

Money Winners—Ben Hogan leads with $27,061.66 in 15 complete Opens, with Cary Middlecoff second with $13,751.15 in 11. Julius Boros is third with $13,520 in 10 Opens, Bill Casper, Jr., fourth with $12,800 in three, and Sam Snead fifth at $12,686.20 in 18. If Bob Jones had played as a professional, he would have won only $4,366.25 for his record of four Open titles and four runner-up finishes in nine consecutive Opens.

Most Wins—Three men have won four times: Willie Anderson 1901, 1903, 1904, and 1905; Robert T. Jones, Jr., 1923, 1926, 1929, and 1930; Ben Hogan, 1948, 1950, 1951, and 1953.

Most Times Runner-up—Sam Snead and Robert T. Jones, Jr., four times each.

Most Decisive Victories—11 strokes—Willie Smith, in 1899 at Baltimore Country Club, Baltimore, Md. Nine strokes—Jim Barnes, in 1921 at Columbia Country Club, Chevy Chase, Md. Seven strokes—Fred Herd, in 1898 at Myopia Hunt Club, South Hamilton, Mass., and Alex Smith, in 1906 at Onwentsia Club, Lake Forest, Ill. Six strokes— Laurie Auchterlonie, in 1902 at Garden City Golf Club, Garden City, N. Y.; Ralph Guldahl, in 1938 at Cherry Hills Country Club, Denver, Colo.; Ben Hogan, in 1953 at Oakmont (Pa.) Country Club. Five strokes—Willie Anderson, in 1904 at Glen View Club, Golf,

Ill. Four strokes—George Sargent, in 1909 at Englewood (N. J.) Golf Club; Julius Boros, in 1952 at Northwood Club, Dallas, Texas; Tommy Bolt, in 1958 at Southern Hills Country Club, Tulsa, Okla.

Most Sub-par Rounds, Individual, in Open—Three—Harry Cooper, 1936, at Baltusrol Golf Club, Springfield, N. J.; Ralph Guldahl, Sam Snead, and Ed Dudley, 1937 at Oakland Hills Country Club, Birmingham, Mich.; Byron Nelson and Ed Oliver, 1946 at Canterbury Golf Club, Cleveland, Ohio; Sam Snead, 1947 at St. Louis Country Club, Clayton, Mo.; Ben Hogan, Jimmy Demaret, Jim Turnesa, and Bobby Locke, 1948 at Riviera Golf Club, Los Angeles, Calif.

Most Sub-Par 72-Hole Totals, Single Open—Nine were under par in 1946 at the Canterbury Golf Club, Cleveland, Ohio.

Most Sub-Par Rounds in Career—16 by Ben Hogan. Sam Snead is second with 15.

Most Rounds Under 70 in Career—12 by Ben Hogan.

Most Strokes on One Hole—Ray Ainsley took 19 strokes on the par-4 sixteenth in the second round at the Cherry Hills Country Club, Denver, Colo., in 1938. Willie Chisholm took 18 on the 185-yard eighth hole in the first round at Brae Burn Country Club, West Newton, Mass., in 1919.

Oldest Winner—Ted Ray was 43 years 4½ months old, when he won at the Inverness Club, Toledo, Ohio in 1920. He was born March 28, 1877. The tournament was held in August. Oldest of the recent Champions is Ben Hogan, who was 40 when he won his fourth Open at Oakmont (Pa.) Country Club in 1953.

Pace-setters' Fate—The man who led after 18 holes has won only 12 of the 59 Opens. The man who led after 36 holes has won 18 of the 56 Opens at 72 holes. The man who led after 54 holes has won 28 of the 56 Opens at 72 holes, exactly half.

Play-offs — Play-offs occur approximately once every three Opens. The last was in 1957, between Dick Mayer and Cary Middlecoff, and it was the twentieth play-off in 59 Opens. There have been six three-man play-offs and 14 two-man play-offs. Four play-offs, in 1925, 1931, 1939 and 1946, have themselves ended in ties and required replays. Both Willie Anderson and Robert T. Jones, Jr., won twice in play-offs, and Jones participated in four. The most decisive play-off victory was Jones' 23-stroke margin over Al Espinosa in their 36-hole extension at Winged Foot Golf Club, Mamaroneck, N. Y., in 1929.

Poorest Start for Champion—Modern high is 76 by Ben Hogan in 1951 at Oakland Hills Country Club, Birmingham, Mich.; and Jack Fleck in 1955 at the Olympic Country Club, San Francisco, Calif. The all-time high is 91 by Horace Rawlins in the first Open at the Newport Golf Club, R. I., in 1895.

Poorest Finish for Champion—Modern high is 75 by Dr. Cary Middlecoff in 1949 at Medinah (Ill.) Country Club. All-time high is 84 by Fred Herd in 1898 at Myopia Hunt Club, South Hamilton, Mass.

Shortest Open Course—6,532 yards (in modern times) in 1947 at St. Louis Country Club, Clayton, Mo. The shortest in history was the Shinnecock Hills Golf Club, Southampton, N. Y., which measured only 4,423 yards in 1896.

Smallest Winner—Fred McLeod, 108 pounds, at Myopia Hunt Club, South Hamilton, Mass., in 1908.

State Hosts—Illinois is the state that played host for the most Opens, having staged 10. Pennsylvania and New York are tied for second with eight.

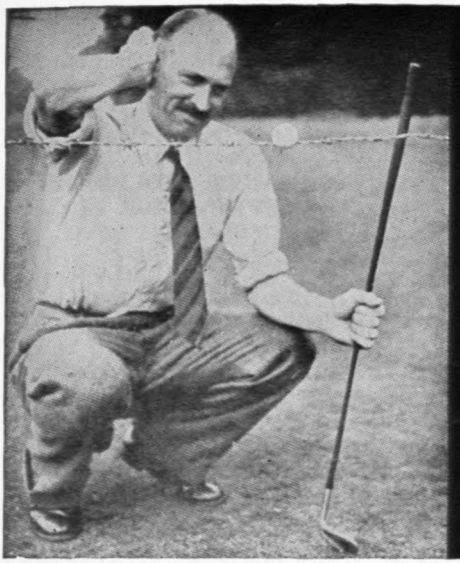
Under Par—The last player under par for four rounds was Ben Hogan, who was five under in 1953 at Oakmont (Pa.) Country Club.

Winners of Open and Amateur Championships—Six players; Francis Ouimet, Jerome D. Travers, Charles Evans, Jr., Robert T. Jones, Jr., John Goodman and Lawson Little. Evans, in 1916, and Jones, in 1930 won both in the same year.

Winners of Open and PGA—Seven players; Jim Barnes, Walter Hagen, Gene Sarazen, Tommy Armour, Olin Dutra, Byron Nelson and Ben Hogan. Sarazen in 1922 and Hogan in 1948 won both in the same year.

Winners of USGA and British Opens—Eight players; Ted Ray (England), Harry Vardon (England), Jim Barnes, Walter Hagen, Robert T. Jones, Jr., Tommy Armour, Gene Sarazen and Ben Hogan. Jones in 1930, Sarazen in 1932 and Hogan in 1953 won both in the same year.

Youngest Winner—Horace Rawlins, 19, at the Newport Golf Club, Newport, R. I., in 1895.



THE REFEREE

Decisions by the Rules of Golf Committees

Example of Symbols: "USGA" indicates decision by the United States Golf Association. "R & A" indicates decision by the Royal and Ancient Golf Club of St. Andrews, Scotland. "60-1" means the first decision issued in 1960. "D" means definition. "R. 37-7" refers to Section 7 of Rule 37 in the 1960 Rules of Golf.

BALL UNPLAYABLE—PROCEDURE WHEN DROPPING BACK IS IMPOSSIBLE

USGA 60-3
R. 29-2, 30

Q: A slices a ball off the tee and the caddie signals it probably is out of bounds. A then hits a provisional ball under Rule 30-1 which comes to rest in the fairway. However, it develops that A's first ball is in an unplayable lie in a shrub which is in bounds, so the provisional ball must be abandoned in accordance with the last paragraph of Rule 30.

Because of a curvature in the boundary line, it would not be possible to drop a ball behind where the unplayable ball lay, keeping that point between the ball and the hole, without being out of bounds. Is it permissible to return to the tee, where the original ball was played, add a penalty stroke, and continue with the play of the hole under Rule 29-2b(ii) even though a provisional ball, which was played on the incorrect assumption that the original ball was out of bounds, has since been abandoned?

Question by: LYNN A. SMITH
Pasadena, Calif.

A: Yes. The player has no other recourse. Since he cannot conform with Rule 29-2b(i), he must proceed under Rule 29-2b(ii).

As the original ball was not lost or out of bounds, the provisional ball had to be abandoned as provided in Rule 30-2.

OUT OF BOUNDS
1. NO HAZARD
2. IDENTIFICATION OF
3. STAKE NOT IN POSITION

USGA 59-48
D. 20, 21; R. 11-4, 17-3 Note, 36-6

Q1: The City has landscaped the areas surrounding the golf courses and has set the out-of-bounds stakes so close that on several holes sections of the bunkers are out of bounds.

Can any part of a hazard be out of bounds?

A1: Under Rule 36-6, the local committee is responsible for defining out of bounds and may designate any boundaries desired. The Rules of Golf make no provision for what may or may not be "out of bounds." Play may be prohibited from any area (Definition 21). Once an area is declared out of bounds, there is no

other classification which can be given it. There can be no such thing as a hazard within an out-of-bounds area. It may be a hazard if within bounds, but when out of bounds it is not recognized as such.

Q2: Must out-of-bounds stakes be so marked?

A2: When out of bounds is fixed by stakes they should either be marked to show their status or a note such as the following should be printed on score cards: " Out of bounds—Defined by the inside edge, at ground level, of large white stakes."

Q3: B sliced his tee shot and the ball came to rest between the second and the third out-of-bounds stakes. The second stake had been pulled up and set against a fence about fifteen feet to the right of its original position.

B agreed that his ball would have been out of bounds with the second stake in its proper place but contended that in this instance he had the right to line up his ball between stake No. 3 and stake No. 2 in its existing position.

A claimed that the ball should be lined up with stake No. 1 and stake No. 3.

Is A or B right?

A3: This case brings two principles into conflict: (1) that out of bounds is determined by the markers in place at the time of play, and (2) that out-of-bounds changes made by unauthorized persons should generally be disregarded. It is the duty of the authorities in charge of the course to see that boundaries are properly maintained.

As everyone involved in the cited case was aware of the normal location of the displaced marker, the local committee would have been justified in restoring the marker to its proper location and in deeming the ball in question to be out of bounds, provided no other ball was treated differently at the same location in the same round.

A committee's main job is to insure fair play as far as lies within its power, and under other circumstances the committee might justifiably rule differently from the above; in stroke play, it might even be necessary to cancel the particular round. The rule of equity—Rule 11-4—is paramount.

The case emphasizes that objects defining out of bounds are things fixed and should not be removed—see Definition 20 and Note to Rule 17-3.

Questions by: BEN SEIDLER
Miami Beach, Fla.

BALL UNPLAYABLE: PROCEDURE WHEN DROPPING BACK IS IMPOSSIBLE

USGA 60-4
D. 20, R. 29-2; 31-2; 35-1a,1c; L.R.

Q.1: Rule 29-2b(i): In 1959 and prior years, the Rule permitted the ball to be dropped as near as possible when the ruling could not be complied with for some reason. (a) Does this same privilege continue in 1960; and (b) If it does not, is the only alternative that the player must take the penalty of stroke and distance?

A.1: (a) No.

(b) Yes. If the player cannot drop a ball as specified under Rule 29-2bi), his only alternative is to proceed under Rule 29-2b(ii).

OBSTRUCTION: LOCAL RULE FOR A CONCRETE EDGING OF WATER HAZARD

Q.2: Definition 20: Indian Creek Island, on which this course is located, is a man-made island, earth from the bottom of Biscayne Bay having been pumped into a concrete bulkhead with a coping about two feet wide on its top. We have several holes of the course bordering Biscayne Bay and a ball frequently stops against this coping. Heretofore the Bay has been played as a lateral water hazard because occasionally at low tide, with the wind from a certain direction, considerable sand is exposed and it is permissible for a player to play from it. On account of this the coping has been considered an immovable obstruction.

Does the language of Definition 20 mean now that this coping is not an immovable obstruction, which would mean on frequent occasions that the ball would be in an unplayable lie?

If your answer to the first question, concerning Rule 29-2b(i), should be negative, it often would mean that a ball could not be properly dropped. If you can recognize the question that this poses, your suggestions would be appreciated.

A.2: The coping is not an immovable obstruction—Definition 20c.

Since the condition is abnormal with respect to balls lying through the green, the Club would be justified in adopting a local rule classifying the coping as an obstruction with relation to balls lying through the green. However, we would not recommend that this be applicable to a ball in the lateral water hazard. See USGA Appendix, Local Rules, item 2, on page 55 of the 1960 Rules booklet.

DAMAGE TO PUTTING GREEN. (1) WHY REPAIRING BALLMARKS WITH FOOT PROHIBITED (2) WHY REPAIR OF SCUFF MARKS PROHIBITED

Q.3: Rule 35-1c: It is my understanding that this Rule was made in order that the putting green would be as nearly as possible in the same condition throughout the day. The logical way to repair a ball mark is to repair it and then as a practical matter to tamp it down with the foot.

Will you please explain to me, unless there is some reason you prefer not to do so, why this prohibition? Also, does the prohibition include pressing down with a club or the hand? The point of my question is that the Rule, as I read it, makes something hard out of something easy and tends to defeat its purpose.

Why do you exclude tamping down scuff marks? My guess is you might think this was going a bit too far.

A.3: Repair of ball marks with the foot would make possible repair of areas other than the ball marks themselves. This would be undesirable and would violate Rule 35-1a. One of the basic principles of golf is to play the course as one finds it. The Rules permit the repair of ball marks only because they can cause abnormally inequitable situations.

Scuff marks can be so widely distributed over a putting green, especially around the hole, and would be so difficult to define for Rules purposes that a Rule permitting their repair could open the door for repair of any minor imperfection in the putting surface.

Questions by: J. SIMPSON DEAN
Miami Beach, Fla.

PROVISIONAL BALL: MUST BE ABANDONED IF ORIGINAL BALL UNPLAYABLE

USGA 60-6
R. 11-1b, 11-5, 29-2b, 30-2, 38-2

Q.1: At stroke play, a competitor played a ball from the teeing ground. The ball landed in a very wooded area, and he then played a provisional ball from the tee (assuming the original ball might be lost).

The original ball was located in a crevice, and entirely unplayable. After a search, the provisional ball was also found unplayable. A discussion took place between the competitor and his fellow-competitors. Their decision was that the original ball could be dropped back under penalty of one stroke.

My contention is that the provisional ball was in fact a second ball, after the original was found unplayable. Is it correct that the competitor could have dropped the second ball, under penalty of one stroke, and be playing 5; or played a third ball from the tee and then be playing 6? This was my decision in the case.

A.1: Your decision was wrong. Rule 30-2 requires that the provisional ball be abandoned if the original ball is not lost or out-of-bounds.

The competitor was right in deciding that he could proceed under Rule 29-2b (i) with respect to the original ball. Alternatively, he could have returned to the teeing ground and put another ball into play under Rule 29-2b(ii).

Although the competitor was correct in his procedure it appears that he was doubtful. In such a case, he has the right, under Rule 11-5, to play both balls and obtain a ruling before returning his card—see Rule 38-2.

PENALTIES: TIME LIMIT FOR APPLICATION, STROKE PLAY

Q.2: This occurred in 1960, but not in tournament play. If this had occurred in a tournament, would the player have been disqualified after the competition was closed? Since there was a discussion of the Rules, it seems that the competitor could have protected himself by playing both balls.

A.2: If the competitor had been wrong in his procedure, he could not have been disqualified after the competition was closed as defined in Rule 11-1b (unless he had given wrong information).

WATER USE ON THE GOLF COURSE

The USGA Green Section conducted its fourth annual Educational Program at the Biltmore Hotel, New York, January 29, 1960. The Chairman was William C. Chapin, Chairman of the USGA Green Section Committee. The Vice-Chairman was Edwin Hoyt, Northeastern District Chairman of the USGA Green Section Committee.

Moderators were Alexander M. Radko, Eastern Director, USGA Green Section, and William H. Bengeyfield, Western Director, USGA Green Section. Also participating were James L. Holmes, Mid-Western Agronomist, USGA Green Section, and Charles K. Hallowell, Mid-Atlantic Director, USGA Green Section.

The morning session was devoted to the topic, "The Mechanics of Applying Water."

The afternoon session was devoted to the topic, "Water Requirements of the Golf Course."

A part of the program was summarized in the April issue of the USGA Journal. The following summarizes the remainder of the program:

Quick-Coupling Sprinkler System

By T. T. TAYLOR
Northeastern Agronomist, USGA Green Section

The stationary quick-coupling system is the irrigation system most commonly used in the northeast region. There are also other types used, such as the traveling sprinkler, and hose system, to a limited degree. Fairway irrigation probably had its introduction in the East in the Long Island area. Adapting ideas originated in California and the West, Long Island proved to be a fertile field for the expansion of complete irrigation systems. Beginning with spot application of water and make-shift equipment, the contrast of color obtained between watered and unwatered areas had an immediate and lasting impact on the golfer. But there were stages of development through which complete irrigation was to evolve before finally attaining its present stage of development.

Because of a combination of circumstances, Long Island was particularly suited for exploratory fairway irrigation. The soil is sandy, the summers hot, dry, and windy, and their fescue fairways habitually browned off during the summer months. Green grass rather than turf texture and density became the measure of quality. The business boom of the 1920's contributed to the impetus of in-

stallations. During the depression of the 1930's, the national economy was not favorable for expenditures such as golf course irrigation, consequently, little, if any, expansion in golf course irrigation was noted. It was during the depression period that some reassessment was made concerning the unrestricted use of water and its relation to the tolerance by fescue, bluegrass, and the bentgrasses, which at that time were the grasses which were predominant in our northeast fairways. Having passed through the initial stages of complete irrigation, some important factors were beginning to shape our thinking; when to irrigate, how to irrigate, and where to irrigate.

Both the agronomic aspects and the mechanics involved in the use of water were to be evaluated. The agronomic aspect is a topic for discussion in itself and we are primarily concerned here with the mechanics of applying water. Keeping in mind that turfgrass management means both adapting grasses to water as well as the reverse of adapting water to grasses, it became evident that some adjustments in management must be made as a compromise in the use of irrigation systems. Today, in the Northeast there is a growing tendency to introduce more bent and bluegrass into irrigated fairway mixtures and less use of fescue. By this means it is hoped the playing period will be extended from the extreme of ample moisture in the spring through the drought periods of summer and into the more favorable growing conditions of the fall. As turf management adjustments are made to fit into irrigation requirements better fairway turf may result with judicious use of water.

This was the picture as we entered a period of prosperity and expanded development of complete irrigation about 1937. Activity in the expansion in golf course irrigation paralleled the economic recovery in other fields. Both new and old courses were thinking in terms of complete irrigation.

The fact that the quick-coupling system was the first type to really become established may account in part for its popularity. Also, at that time, installation costs were relatively reasonable with sources of municipal water supply quite accessible, and the simplicity and efficiency of operation were considered superior to other types which had not been fully developed. With its flexibility and adaptability to a wide variety of conditions as they existed in the Northeast, the quick-coupling system found ready acceptance in the field of golf course irrigation by those who were receptive, and financially able, to undertake a complete irrigation system.

These are some of the reasons why the quick-coupling sprinkler system predominates in the Northeast.

The golf courses of many clubs are now equipped with complete irrigation systems, and to them the complexities of irrigation are not new. All golf courses have the conventional system embracing the greens and tees; some have the partial, semi-complete, system which includes greens, tees, and landing areas. It is perhaps to those clubs whose systems fall into the categories of conventional and semi-complete that the installation and the mechanics of applying water by means of the quick-coupling sprinkler are of most interest, and in particular those whose antiquated systems have been in use for thirty years or more. Some brief comments here might be pertinent to their interests.

First, it is extremely important to employ an irrigation specialist.

Second, fundamentally the quick-coupling system is not intended for the unrestricted use of water. Usually one inch of rainfall per week is the unit of measurement commonly used to denote the amount of water necessary to keep grass alive. Therefore the source and distribution must be capable of supplying the equivalent of one inch of rainfall per week at any given time, either as a supplementary requirement to natural rainfall or as a maximum requirement during extended periods of drought.

Third, the effectiveness of irrigation is directly proportional to management rather than the mechanics of the system itself. Professional turfmen, both practical and technical, agree that the application of too much water may sometimes be more detrimental to turfgrass than too little.

In general, quick-coupling systems are designed with facilities capable of producing and distributing efficiently one inch of water per acre per week. Underground pipe is installed down through

the center of the fairway with outlet valves spaced according to the width of the fairway and the range of coverage and capacity of the sprinkler head. The sprinkler is attached to a coupler which is inserted into the valve, and with a single twist of the coupler, water is released from the valve to the sprinkler. The action of the water and the setting of the mechanism on the sprinkler determines the speed at which the sprinkler revolves. Special type sprinklers such as pop-up, part-circle, and low altitude sprinklers are available for tees, greens, and other specific areas. Various management practices are used in applying the water required, such as (1) alternate use of the valves and (2) grouping of certain areas as units of operation, taking advantage of the overlap as an adjunct to controlled application and labor modification, or to fit into specific operating hours determined by play or restricted use of water by local ordinances. The time required and the amount of water applied at any one time is regulated by the circumstances peculiar to each situation.

The comparative costs of installing the quick-coupling system is in between the completely automatic system and various hose systems. Installation costs depend on the conditions encountered and the obstacles to be overcome at each individual golf course. While installation costs may be higher than hose systems, they are considerably less than estimated costs of completely automatic systems.

From the standpoint of efficiency, under reasonably good labor management the quick-coupling system may be handled by one man under normal conditions, plus some extra labor for abnormal periods of drought or need for increased application.

The quick-coupling system is capable of efficient water distribution. It is flexible as to sources of water supply, and to the mechanics of operation such as required by players and local restrictions. Distribution to remote areas by means of hose or portable pipe is simple and various size sprinklers may be used to adjust coverage on any outlet.

In conclusion it would seem important to emphasize the following points with regard to any system of irrigation:

1. Management of water is more important than the simple mechanics of operation.
2. Installation costs should be considered with a view to maintenance and labor costs.
3. Sound judgment based on all available knowledge and technique should be used in determining where, how, and when to water.
4. Conservation of water is becoming more and more a matter of national concern and lack of support of conservation possibly could further restrict the use of water on the golf course.
5. The critical stage of fairway irrigation is the transition period from unwatered to watered turf—give the grass a chance to get adjusted to more intensive irrigation practices, or be prepared for **Poa annua** and weeds.

Turfgrass Culture and Soil Water Relationships

By DR. RALPH E. ENGEL
Associate Research Specialist in Turf Management
Department of Farm Crops, Rutgers University, New Brunswick, N. J.
Member USGA Green Section Committee

Golf turf is as good as the agronomic watering practices it receives. A good source of water, a good distribution system, or a good sprinkler system does not insure good turf; it merely makes the watering program easier or feasible. Also, the green that is wet enough to hold a golf shot pleases the golfer, but does not make for the best turf or the least turfgrass troubles. The needs of the grass cannot be compromised without harm.

A golf course that has consistently good turf, is always the highest tribute to the superintendent's watering program. Some accomplish this result with an inadequate watering system, poor drainage, and compacted or clayey soils. I have told students that we have many golf course superintendents who can grow grass on top of a table in summer. Unfortunately too many are doing this. Even though a superintendent can suc-

ceed in spite of such handicaps, it is a waste of his time and the club's money to work under such unfavorable conditions. Also, there are some courses that will always experience poor turf until bad conditions are corrected.

Good soil and water relationships start with understanding the fundamentals. How does water occur in the soil? How much water do soils hold? How fast will a turf accept water? What part of the soil moisture can turfgrass obtain? Why is good drainage and percolation important? What constitutes good watering? These are the questions.

How does water occur in the soil? Moisture in the soil can be divided into three parts, according to its value to the grass. First, unavailable water—this water is held so closely by the soil that it cannot be taken by the plant. Second, available water—this water is retained in close association with the soil particles by capillary attraction, but it is largely available to the plant. Third, gravitational water—this water drains off shortly if drainage is proper. It is superfluous and is harmful as it occupies air space and ruins soil structure. Some of you have questioned the technical basis for a golf course superintendent closing the course for several hours following a heavy rain. This permits the gravitational water to move out and reduces the chance for soil compaction.

How much water does a soil hold? A sandy loam soil may contain 17 pounds of water for 100 pounds of soil. About 4½ pounds of this water will be unavailable and 12½ pounds remains for the grass. A loamy soil contains an average of 25 to 30 pounds of available water for each 100 pounds of soil, or more than twice as much as a light sandy soil. The amount of water a soil will hold can be expressed in terms of the water required to wet the soil to a given depth. One-fourth inch of water will wet a sandy soil to a depth of 4 inches and a clay soil to slightly more than one inch. One inch of water fails to wet 5 inches of clay soil. Most of the year, roots should be deeper than this. To make the problem of small water applications more acute, the total amount of water applied does not penetrate the soil. Interception and evaporation prevent a large percentage of the small applications from entering the soil. The light application is largely a cooling treatment.

How fast will a turf accept moisture? A water infiltration rate of one to two inches per hour is usually good for traffic areas. Many areas do well to accept ¼ inch per hour. When penetration becomes this slow or slower, watering is very difficult.

What can be done about poor water penetration? (1) Change and improve soils that have high clay, low sand, and low organic matter content. (2) Utilize all methods of minimizing compaction, especially on the clayey soils. (3) Grow good turf. Apparently a good and growing turf keeps more channels open for water penetration. (4) Control thatch or excessive surface accumulation as this seriously interferes with the rate of water acceptance. Cultivation and spiking are aids to water penetration on thatch areas.

What is the effective rooting depth of turfgrasses? It is the soil depth to which a grass root system removes water before more water is necessary to avoid drought effects. Effective rooting depth may range from a fraction of an inch for bentgrass under stress to 36 inches for Kentucky bluegrass or bermudagrass growing in a well-drained favorable soil. The greater effective rooting depths make watering easier. Unfortunately, this depth varies seasonally for a grass area. Severe heat, heavy compaction, drought, disease, and excessive moisture can lead to sudden and serious loss of the root system.

Good drainage is critical to deep effective rooting. Why is drainage so very important for good root performance? Poor drainage frequently means a poor oxygen supply. This condition prevents the soil organisms from producing the available nutrients needed by the roots. Also, deficient oxygen hinders root absorbtion of water and nutrients, i.e. starvation, drought, and suffocation are the result of bad drainage.

The oxygen supply is rarely limiting if the soil will permit ready passage of water. Fresh water can carry enough oxygen to keep grass roots healthy. Thus, good internal drainage is fundamentally necessary.

How is good oxygen supply insured? This is done by (1) maintaining a porous turf surface, (2) using a soil texture that

is 65 to 80 percent sand and 5 to 10 percent clay, (3) using a soil that has a moderate amount of organic matter, (4) managing a soil to prevent layers, and (5) establishing good drainage at the base of the soil. These are basic requirements for good soil oxygen relations. Note they parallel the requirements for soil water management. Without these the task of maintaining good turf in severe weather becomes far more difficult than necessary.

What constitutes good watering? Good watering has three requirements: (1) Watering when the grass has the need. This is decided largely by the appearance of the grass, plus observation of the soil. Some grass types or species require water sooner than others. When grass roots are short or fail to function, the watering frequency must be greatly increased. High temperature increases the urgency for watering. "Blue" wilt on a turf area is a serious warning of urgent water need. The importance of avoiding unnecessary water and the criticalness of applying water prior to serious wilting cannot be over-stressed.

Some prefer to water well in advance of critical dryness. This may be necessary if the watering system is inadequate, but it should be remembered that any unnecessary use of water:

(1) Increases disease
(2) Ruins soil structure and brings compaction
(3) Encourages weeds
(4) Costs money

Watering should be timed carefully with rainfall. A predicted rainstorm or a forecast for continued drought should alter watering procedures.

(2) A second requirement for good watering is applying the moisture at a rate the soil will accept. The rate may be tediously slow, but nothing but harm and waste results from rapid application. Devise the system and techniques that give the proper rate.

(3) A third requirement of good watering is applying the amount needed to recharge the effective root zone. This may be two inches or more with deep rooted grasses or a fraction of an inch with a grass that has lost its roots.

Individual judgment is of greatest importance in watering. The critical moment requires immediate action. On behalf of the superintendents, I have the greatest admiration for the faithfulness and delicate attention they give to watering through a long hot dry summer.

Sprinkler Types for Golf Courses

By WILLIAM BERESFORD
Superintendent, Los Angeles Country Club, Los Angeles, Calif.

I consider it a great honor and privilege to present to you my experience with sprinkler systems on the West Coast. During my 32 years at the Los Angeles Country Club, the past nineteen as Superintendent of Grounds, we have operated eighteen holes (South course) on a hose system. This system was installed in 1911, a 6" main coming in at around 160 lbs. pressure which has since been reduced to 90 lbs. in the past 5 years causing some turmoil during the summer season. Most of the mains were oil well casing at that time, and are still in use. These mains were installed down the middle of the fairways; all laterals were galvanized; ¾" garden valves in boxes were spaced about 150 ft. apart; a few laterals were spaced in the rough for the convenience of watering trees and rough.

Tees and greens have adequate valves to insure proper watering. These are off to the side and around the greens and tees. Soils on this golf course are clay. They do drain fairly well yet hold moisture.

Good turf plays a very important part in the use of water. We, at The Los Angeles Country Club, are considered to have the finest fairways of Bermuda in the United States during 12 months of play. This grass is more drought resistant than any grass for this purpose.

Our irrigation season during normal winter rainfall starts April 1st until December 1st. All sprinklers used on fairways are rainbird No. 70's. It requires three men 8 hours, six nights per week to cover 18 holes which includes tees and greens. Each man has six fairways, six tees and six greens. He keeps 100 ft. of hose at each green, 50 ft. at each tee and

1,000 ft. for fairways. When he starts to irrigate, he screws on his sprinklers in the valve boxes one fairway ahead and follows up the next night with his hose until he makes his round. All sprinklers attached to hose are mounted on portable sled bases. The size nozzle we use is 1/4" x 3/16". The amount of water put on varies due to weather conditions. All instructions governing the length of time these sprinklers must run comes from my office daily. Much damage to turf has been caused by too much water. I believe in keeping the soil in a good moist condition to a depth of 12" but not saturated at all times, as grass cannot exist with wet feet. We average about ½" per week. This method of irrigation I can say is not the most economical today, when one considers labor at a seasonal cost of $9,600.00; hose replacement $750.00; and sprinklers and parts $200.00; which add up to a total of $10,550 for one 18-hole golf course.

No doubt a more modern system of irrigation will give us a much better set of figures however, I must admit this system has certainly given a lot of service with a very low cost of installation. It is to be replaced by a modern automatic system in the near future.

During 1928, the North course was rebuilt and at that time a new manual control battery system was installed coming in from an 8" service main which carried 210 lbs. pressure, but it has also been reduced to 157 lbs. maximum in the past 5 years.

All mains were installed down the center of the fairways; all laterals were galvanized; 1" risers were spaced at a distance of 65 ft. These batteries, on one control, carry as many as 12 to 14 screw-on sprinkler rainbirds No. 70. Tees also come under this system; greens are separate, using hose from valve boxes around the greens. No. 40 rainbird sprinklers are used on all greens, nozzle size 3/16" x 1/8". The soils on the North course are heavy clay fairways undulating, and poor sub drainage; yet this system has worked well through the years and continues to do so.

It requires three men, six nights per week to irrigate this course as each man cares for six greens, six tees and six fairways. All fairways are watered once per week; the length of time sprinklers are allowed to run depends on weather conditions. As I have stated before, keep the soil moist to a depth of 12" but not saturated. Each man carries a total of 24 rainbirds for fairway use; each green is equipped with two hoses and two sprinklers.

Seasonal cost of operation: labor $9,600.00; hose replacements $450.00; sprinkler replacement and parts $300.00, which adds up to a total of $10,350.00 for one 18 hole championship golf course. Figures do not seem to vary on these two systems; however, there is a difference in acreage: under hose system, South course, 90 acres; under battery system North course, 140 acres.

Irrigation of greens to me is very important, especially during July, August, and September when all Superintendents are at the mercy of unusual weather conditions. I have yet to gain confidence in any system other than the old standby—the hose with which you can change the location of the sprinkler from one location to another around the green. Too often at this season of the year when sprinklers are stationary, some areas of the greens will get too much water. As we find no two greens are alike in design and drainage, a good irrigator will change the location of his portable sprinkler every time he irrigates so that he avoids overwatering. Therefore, greens must be handled on an individual basis.

An estimated cost today to install an 18 hole hose system using transite mains and plastic pipe is about $90,000. Estimated cost of installing a manual system is about $110,000. When galvanized pipe is used, figures are about 15% higher.

Let me impress upon you, water and sprinklers alone will not give you a good golf course. It requires fertilization, aerification and weed control to build good turf which will require less water at a considerable saving in dollars and cents annually.

INSECT DAMAGE

Louisiana State University reports that insects nullify the work of one million working men annually. There are 86,000 named species of insects in the United States, and of these, at least 10,000 species are harmful to man or animals.

The Role of Water in Plant Growth

By DR. MARVIN H. FERGUSON
Mid-Continent Director and National Research Coordinator, USGA Green Section

Water is the most abundant material in a growing plant, usually comprising 80% or more of the plant weight, but in the plant's environment water is never found in a pure state. The essentiality of water for many plant functions and properties is beyond question.

It is a solvent for mineral nutrients and the complex substances manufactured within the plant.

It is a means of transportation for food materials and the medium in which these products move from one plant part to another.

Water is the source of the hydrogen which is combined with carbon and oxygen from the air to form carbohydrates by the process of photosynthesis. Photosynthesis is believed to be the underlying process which supports all life.

Evaporation of water from leaf surfaces provides refrigeration or temperature control for the plant.

Water may even be considered a structural agent. Plant cells containing an abundance of water are turgid and the plant stands erect. When there is a water deficit the cells are flaccid and the plant droops or wilts. This principle can be demonstrated with a toy balloon. Inflated fully, it will support a considerable weight. When only partially inflated it will support practically nothing. Many observers have noted that wilting turf suffers much greater damage from traffic than does well watered turf.

There are a great many anatomical and morphological plant modifications that determine a plant's ability to survive in a given environment with respect to water. These same modifications dictate to a considerable extent the management practices that must be followed.

The depth and form of a root system have a great deal to do with the behavior of plants in conditions of too much or too little moisture. The biochemical and biophysical characteristics of plants differs to such an extent that rice can grow in standing water while most other plants cannot, and the members of the cactus family can maintain water in their tissues even in severed parts under extremely hot and dry conditions.

Leaves of grass display many interesting anatomical differences that are correlated with the environmental conditions in which the grasses are found.

The grower of plants should learn as much as possible about the species with which he deals with respect to its water needs.

NOTE: This topic is discussed more fully in the November 1959 issue of the USGA Journal.

Water Requirements of the Golf Course

The Golfer's Point of View

By WILLIAM P. TURNESA
Knollwood Country Club, White Plains, N. Y.
USGA Amateur Champion, 1938 and 1948, British Amateur Champion, 1947

There are many varying opinions among golfers as to their likes and dislikes in the preparation of a golf course for tournament play. It is my opinion that with the exception of lightning-fast greens, the member who supports the Golf Club should enjoy the same well-groomed golf course that the professionals and top amateurs enjoy when teeing off in an important championship. Let us, therefore, begin with an imaginary round of golf at an imaginary golf course with you as my guest.

As we arrive at the first tee, I will impress you with the tee alignment. It is facing straight down the middle of the fairway, not toward the dreadful out-of-bounds on the left nor the timber laden rough on the right. The teeing area is clean, level and well-trimmed. It is watered but moderately dry. You will have no problem in selecting a choice spot for your initial drive. The markers are squarely set. The area is level, and the tee itself will not give you the impression of a down-hill or up-hill lie. The

grass is trimmed as close as possible in order for you to execute your drive or iron with the least possible resistance to the club head.

You will notice our fairways are watered. They are cut on the short side, and the grass is firm and strong. The ball rests well enough for a brassie lie—no clover, no hard pan nor crabgrass about which to worry. The bunker on the left of the green is well trimmed and freshly raked. The sand is uniform from top to bottom providing no possible way of escape without a sand wedge.

The greens, you will see, are uniform in speed throughout. They have color and freshness mostly as a result of watering. The putting surfaces are smooth and fast but not unreasonably so. A good shot will hold on them without too much trouble, but they are not saturated to the point where a half-hit two iron will come to rest on the target. The fringes are neatly cut, and in many cases a putter can be employed from these areas. The cups are cut clean and in reasonably flat areas. You need not worry about three putting from four or five feet.

I am sure you will agree that the watering system has done a great deal in maintaining the playing yardages of the majority of our golf courses which have been built prior to World War II. With the great advancement in the improvement of the golf club and ball, the watering system has saved many of our golf courses from the drive and pitch category. Therefore, in addition to the necessity of water for the cultivation of good grass, the irrigation system is also necessary for the golf course to retain its pride and self-respect. As a means of illustration, we at our club were reaching our No. 1 hole which measures 390 yards with a mere drive and nine iron. However, since we have installed a watering system, it is now necessary to use at least a drive and a five iron.

It is my opinion that most golfers like to play on fairways that are trimmed on the short side. That is to say, the grass should be cut to such a height that the ball can be clearly seen and reasonably set up in order to give the clubhead a chance to get it into the air without having to dig up an unreasonable amount of turf. It has been my own experience that many watered fairways have as a general rule been left to grow unreasonably long. This condition, I believe, is annoying to the golfer particularly since he is unable to control the speed or the flight of the ball due to the resistance applied to the clubhead as it travels first through the grass before making contact with the ball. This shot is commonly known as a "flyer."

I am of the opinion that if the fairway is watered, the rough should be allowed to grow to a height whereby a shot that does not find the fairway will not result in one more advantageously played out of the rough. This can be best illustrated on any given golf course particularly during the dry season when it is difficult to grow a reasonable amount of rough. Consequently, a tee shot landing in such rough will pick up an additional 30 to 40 yards of roll in contrast to one landing on a watered fairway with a net result of approximately 10 or 15 yards of roll. It is necessary therefore to justify a straight tee shot played in the fairway, and this can be done by growing the rough to a point where the lie is not one to be wanted.

Water Requirements of the Golf Course

The Golfer's Point of View

By WILLIAM HYNDMAN, III
Huntingdon Valley Country Club, Abington, Pa.
Member, 1959 Walker Cup Team

This discussion will be a description of the condition of a course as I think it should be for championship play. In order of discussion I shall consider greens, fairways and roughs, and tees.

For tournament play I like a very firm putting surface. I would prefer that the green not be watered for two to four days before the tournament. Certainly some light sprinkling may be necessary to keep the green alive but heavy watering immediately before a tournament should be avoided. This may be a surprising statement, but a firm green is desirable from several standpoints. The putting surface will remain true and free

from spike marks for a longer period of time. The green will be faster and it will require the player to execute a good golf shot if it is to hold on the green.

I believe that pin placements should be fair and I think that the sand traps should be well-manicured.

Fairways require different treatment. I think they should be cut closely so that the ball sits up well on the turf. Long grass sometimes causes the shot to be a "flyer" over which the player has little control. Before a tournament, perhaps the evening before the tournaments starts, the fairways should be heavily watered. This treatment reduces roll and consequently the player who hits a long ball is properly rewarded.

Tees should be very firm so that a good stance is assured, but tees should not be so compact as to make it difficult to insert a wooden tee. The turf on the tee should be cut closely. The placement of the markers should be given careful attention.

Some of these remarks may not be altogether applicable to water use on the course but they are my impressions of the conditions that should prevail on a properly conditioned tournament course. The judicious use of water is an important part of such conditioning.

Educational Program

The fifth annual USGA Green Section Educational program will be held in New York, Friday, January 27, 1961. Details will be announced later this year.

Electric Cables Warm Turf

Turfgrass growers in England have been combatting frost in turf areas by the use of electric warming cables. The cables are laid usually 6 inches deep and in parallel lines 6 inches apart. There must be very little deviation in the alignment of the cables, either laterally or vertically, because there must be uniformity of heating and possible malfunctions must be easy to locate.

Recently a machine has been developed which will lay two lines of cables at a time and which will place the cables in deviation. It is remarkable to note that this machine was developed, tested, and proved within the short period of seven weeks.

Electric warming cables presently are not used to any great extent in this country, but it is a refinement that well may be adopted for use in the United States.

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TURF MANAGEMENT

The book "Turf Management," sponsored by the United States Golf Association and edited by Prof. H. B. Musser, is a complete and authoritative guide in the practical development of golf-course turfs.

This 354-page volume is available through the USGA, 40 East 38th Street, New York 16, N. Y., the USGA Green Section Regional Offices, the McGraw-Hill Book Co., 350 West 42nd Street, New York 36, N. Y., or local bookstores. The cost is $7.

Fertility Level and Water

A high fertility level helps a plant to use water more efficiently. Experiments in Georgia have shown that 21 acre-inches of water are required to produce a ton of clippings from unfertilized Bermudagrass. When the equivalent of 1,000 lbs. per acre of 10-5-5 fertilizer was applied, only 8.2 inches of water was necessary to produce a ton of forage.

IT'S YOUR HONOR

Spirit of Giving

The following letter was received in answer to an appeal by the USGA to Member and Associate Member Clubs for contributions to a hospitality fund for the World Amateur Golf Team Championship.

To THE USGA:

On behalf of the Kurth Golf Course of Southwestern University we are enclosing herein our voucher for $10 as a contribution to your fund to be used for entertainment of the participants in the Second World Amateur Golf Team Championship for the Eisenhower Trophy to be played September 28th through October 1st at the Merion Club. We are very happy to make this contribution to this worthwhile project.

We would have been glad if our remittance might have been larger. However, ours is a college situation with no dues paying members; consequently the amount of our contribution must necessarily be paid out of the University's operating budget.

We hope the solicitation of funds will be quite successful in every way so that there will be ample cash to provide the traditional American hospitality.

I. J. MC COOK
Vice-President,
Southwestern University
Georgetown, Texas

"Noble Spirit"

To THE USGA:

Thank you for your letter of March 1 and the answers to the Rules. I am especially grateful for your kindly putting me on the mailing list to receive copies of all Rules Decisions. The Decisions will be of great help to our Rules Committee in the attempt of correct interpretation of the Rules.

I was very pleased to receive the February issue of the USGA Journal. All my fellow golfers read it with great interest and it goes from hand to hand. It is not only the source of valuable and interesting information. It represents the noble spirit of the Game and makes a man proud to be a member of the golf family.

In the article of the USGA annual meeting (Feb. 1960 issue) you mention the yardage rating charts for both men and women that have been adopted. We would be grateful you could send us this chart, because we are about to rate our courses this spring and it would serve us well as a basis for the rating.

I also received the sample copy of the Golf World magazine. I have to tell you with a pity that it is impossible for me (or anybody else) to subscribe it, because I cannot pay for it in your currency.

JIRI DAVID
Prague, Czechslovakia

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