

MARCH 1964

USGA GREEN SECTION RECORD



A Publication on Turf Management
by the United States Golf Association



GREEN SECTION AWARD

Joseph Valentine, longtime superintendent of Merion Golf Club, now retired, receives the Green Section Award from retiring USGA President John Winters, Jr. (See story page 12).

USGA GREEN SECTION RECORD



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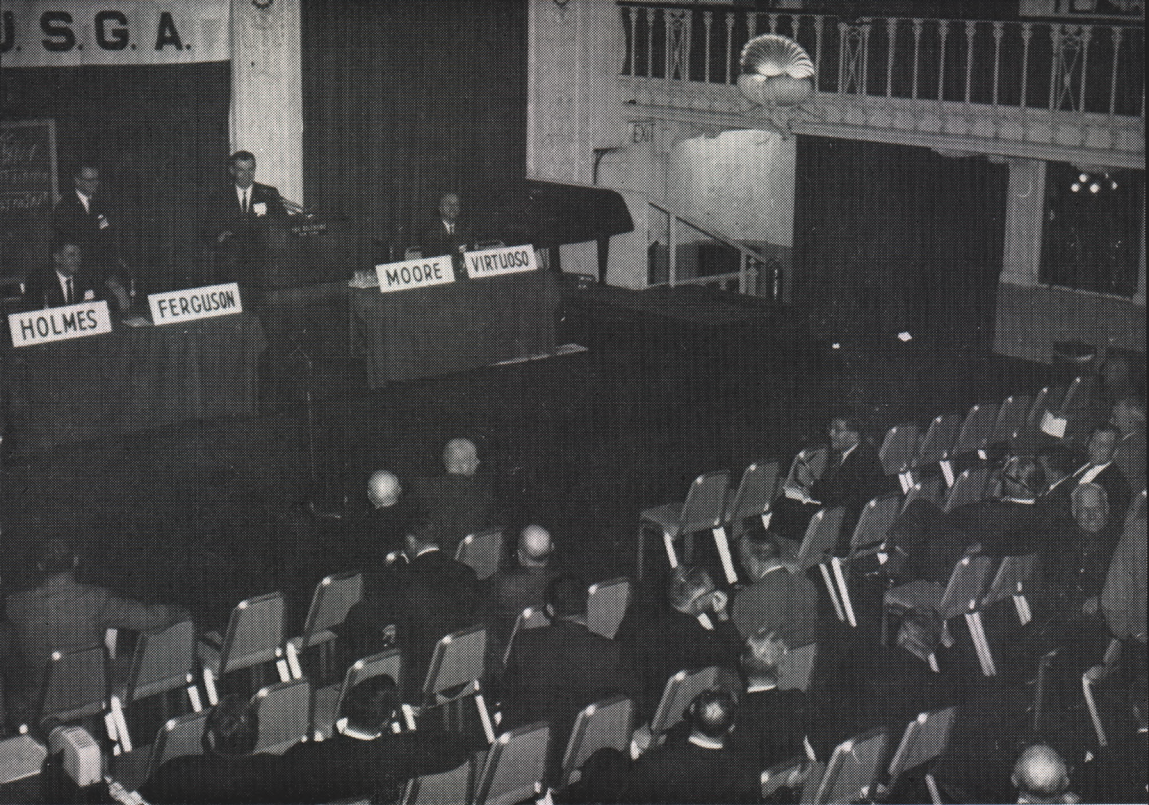
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The Putting Green

Various aspects of the Putting Green were dealt with during the day-long Educational Program of the United States Golf Association's Green Section at the Biltmore Hotel in New York on January 24, 1964. The meeting was conducted on a lively note under the able chairmanship of Henry H. Russell, Chairman of the USGA Green Section Committee. Mr. Russell was assisted by Bill Gove of Miami, a widely-known sales consultant. Abstracts of remarks made by various speakers are presented here.

IMPORTANCE OF THE PUTTING GREEN IN THE GAME

WILLIAM P. TURNESA, former USGA and British Amateur Champion

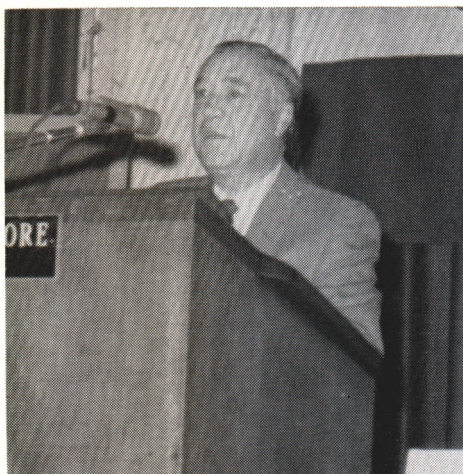
The putting green is the focal point of the game. In a perfect round of golf, 18 strokes are played from the tee, 18 from the fairway and 36 from the putting surface. Actually, most rounds of par or under are attained because the player used fewer than 36 putts.

Putting is a skill that may be gained by the high handicap golfer as well as by the scratch player. It would appear that the putting green serves to remove some of the advantage of highly skilled golfers over those of lesser capabilities. It is the approach shots

which tend to accent the differences in golfing skill.

It has been said that tournaments are won or lost on the putting green and an analysis of scoring frequently indicates that the winner did take fewer putts. However, the fewer putts are quite likely to be the result of skillful approaches, which get the ball close enough to the hole to permit holing out with one putt.

It is also true that lower scores have come about as a result of better putting surfaces. Greens that hold a well-



played shot and which permit a true roll of the ball give the player greater confidence.

Closely clipped, tight turf growing on a firm base is characteristic of many Scottish courses. Such a green is fast and requires a different type of approach. Despite the increased difficulty of approach, the green is fast and true and is seldom seriously marked by cleats or ball damage. The advantage of greens which are softer but more susceptible to injury, such as we have in the United States, is questionable.

William P. Turnesa

COURSE MAINTENANCE CENTERS ON THE PUTTING GREEN

W. H. BENGEYFIELD, Western Director, USGA Green Section

We would probably all agree that golf course maintenance *does* center on the putting green. So, to start off by being controversial, let's say that golf course maintenance *does not* center on the putting green! It centers on the golf course superintendent. The superintendent must have a plan and should know where his course is going. Like any progressive businessman, he must have a plan and give his program direction. Putting green improvement must start in the mind of the golf course superintendent.

Now, let's become mercenary. There isn't one of us who wouldn't like to make more money, and we can make more money. But first, we must become more valuable to our employer.

Our employers are golfers—right? And I defy you to show me a golfer who will not fall in love with an outstanding putting green. In fact, this is the golfer's weakness and, being mercenaries, we should exploit it to the highest. Let's never forget the fact that our reputation as golf course superintendents is made or lost by the putting greens we produce.

The Putting Green—that's the target; not just for today and tomorrow,

but for the professional lifetime of any superintendent. I wonder if you can identify the author of the following:

"In most parts of the country—the maintenance of a putting green in first-class condition represents the acme of accomplishment in grass culture. Good putting greens can be maintained only by constant, intelligent, and in most cases costly attention. To obtain a good putting green is one thing; to maintain it is another."

Any idea where these words came from?

Well, they are from another era; another time. Charles Piper and Russell Oakley wrote them in their book "Turf for Golf Courses," vintage 1917! In the 47 years since their writing, it's safe to say The Putting Green has wrecked the professional career of probably thousands of superintendents and perhaps as many green chairmen throughout the country. Conversely, good greens have been responsible for the "making" of all the outstanding and noted golf course superintendents today. The Putting Green can be your greatest asset. It also can be your greatest liability.

Money For Maintenance

Last year, one private 18-hole course in Southern California devoted 7,800 man hours to putting green maintenance. That's equivalent to four men on a 40-hour week working full time throughout the entire year on putting green maintenance! It represents a labor expense of \$21,000. In addition, \$7,000 was spent for material, supplies and equipment depreciation.

The total — \$28,000 — for putting green maintenance amounts to 25% of the course budget. Especially significant, however, is the fact that the 20 greens on the course account for only three acres of a total of 130 acres. So, 25% of the budget was devoted to about 2% of the total land area!

Now who will say this is not intensive agriculture! The Putting Green is the world's most expensive piece of agricultural real estate, and you are in charge of it. What a mercenary opportunity you have! In fact, what a challenge and what a great opportunity you have!

Now, any time a person is charged with such responsibilities, he is bound to have all kinds of "experts" nearby who are ready and willing to give "free" advice. Outside advice can be helpful and please don't shut it out completely. Perhaps the point can be summarized by the following quotation:

"An open mind is all very well in its way, but it ought not to be so open that there is no keeping anything in or out of it. It should be capable of shutting its doors sometimes, or it may be found a little drafty."

Today's golf course superintendent should consider outside advice, but he should check it closely as to source and motive. One should respect faith, but it is doubt that gets us an education.

A summary of this discussion of "Course Maintenance Centers on the Putting Green" would include:

1. The golf course superintendent is the important link in putting green maintenance.

2. He has an unlimited opportunity because golfers love outstanding greens.

3. Under his care is the most valuable piece of agricultural real estate in the world.

4. He is responsible for the final product, so he must choose his program and advice carefully.

Consistently outstanding putting greens are our goal. And where do they start? I believe they start in the mind of the golf course superintendent. He holds the key. And so, this closing thought:

If you think you are beaten,
you are;

If you think you dare not,
you don't;

If you want to win, but think
you can't,

It's almost a cinch you won't.

If you think you'll lose, you
are lost;

For out in the world we find
Success begins with a fellow's
will;

It's all in the state of mind.
Life's battles don't always go
To the stronger and faster
man.

But sooner or later the man
that wins;

Is the man who thinks he can.



William H. Bengeyfield

PUTTING GREEN DESIGN

CHARLES N. ECKSTEIN, USGA Green Section Committee

Fifty-four strokes of every round of par golf are theoretically played to or on putting greens — one shot to *the* green and two putts. No wonder good design of greens encompasses golfing values, that it encompasses maintenance considerations, and that there must be compromise between these factors.

What are golfing values? A shot to a green which must carry a sand trap and have enough backspin to hold on a downhill slope away from the line of play? A long putt downhill, curling over a slight mound, with a chance to take two more putts or a chance for a short one-footer? A course that you have to think your way around, weigh birdies or pars against double bogies, triple bogies, and worse? A course you never get tired of playing because wind, pin placements, and trap carries cause it to play differently every time?

All these conditions determine golfing values. We are concerned here with those 54 shots, the golfing values of the putting green.

Allow me to present my thoughts about golf values. I classify holes in terms of one-shot, two-shot or three-shot holes. The average player plays to a handicap of about 18. The greatest obstacle to improvement in most cases is lack of ability to attain distance.

Because distance to the green should be related to the size of the target, I consider size the No. 1 characteristic in evaluating a green. I believe that a one-shot hole 250 yards long should have the largest target (green), and that a short one-shot hole should have a proportionately smaller green. On longer holes, size of the target should vary proportionately with the length of the approach. As a result of this viewpoint I have called the first characteristic of any green its *size*.

The second characteristic is *shape*.

It may be described as (a) depth from front to back, (b) width from side to side, (c) outline of perimeter resulting from mowing or trapping.

The No. 3 characteristic is *location* or *orientation*. This refers to (a) elevation relative to fairway, (b) position relative to lines of flight, (c) location with reference to natural objects such as trees, water, boundaries, etc., (d) location with reference to other trouble, unplayable lies, etc.

Contour is the fourth consideration. A green may be (a) tilted, sloped or pitched in any direction, or combination of directions, (b) terraced, (c) undulating, (d) guarded by adjacent mounds not part of the green that require carries, (e) any combination of these.

The fifth characteristic is *trapping*. This device is used for (a) setting up the target, (b) creating mental hazards as to position, distance and carry, and (c) to provide penalties for poor shots.

Golfing Values

I firmly believe that these characteristics of a putting green determine golfing values. Hopefully, the designer will modify these characteristics to the extent dictated by maintenance requirements and playing problems.

With reference to our first characteristic, *Size*, we must abide by the following maintenance considerations: (a) Variable cup placement adds interest, spreads traffic, prevents soil compaction and actual wearing out of the grass, (b) Consideration must be given to the efficient use of fertilizer, labor in mowing, spraying, aerifying, spiking, etc., (c) Cost of original construction is a factor, (d) At least a 10-foot to 12-foot apron should be provided so that mowers can turn off the green, (e) Size of green must be in harmony with other factors or char-

acteristics such as shape, elevation, location, contour, and trapping.

Shapes of greens probably are less affected by maintenance problems than is any other factor. Even so, there should be consideration of the cost of watering, mowing from every direction, and traffic patterns to and from the green. How shape affects trapping or vice versa is an important factor in construction costs and costs of maintenance of traps thereafter. The approach areas must be considered in determining the shapes of greens.

Location of greens depends on (a) air circulation, (b) effect of tree roots and shade, (c) traffic patterns with reference to next tee, (d) maintenance of approaches to greens, (e) cost of varying elevations and how this in turn affects placing of traps.

Contour and Maintenance

The green characteristic that I call *Contour* affects maintenance so much that it undoubtedly is the basis of the entire subject. Let us consider that a good green must be constructed with (a) surface drainage for run-off, (b) gentle grades for maximum cupping area, (c) grades that will permit mowing in any direction to prevent scalping and undue wear, (d) consideration for collars and adjacent slopes, (e) provision for avoiding erosion of adjacent traps.

Contour definitely affects the size or area of a green. The amount of actual surface used for slopes and irregularities cuts down the available cupping area. As an example, a putting green may contain 5,000 square feet. But because of an irregular shape and the fact that there are surface irregularities occupying 30% of the area, the effective size is much reduced. Fair pin placement will dictate that it be no closer than 10 feet to the edge. (Note—USGA recommends 15-foot minimum). Thus, 2,600 square feet around the perimeter plus the 1,500 square feet occupied by slopes and irregularities

account for 4,100 square feet. This leaves only 900 square feet (an area 20' x 45') for effective cup placement. The use of gentle slopes will permit much more effective use of any given size of putting green.

The last characteristic of greens I call *Trapping*. This characteristic certainly is compromised by (a) cost of construction, (b) cost of maintenance, (c) drainage, (d) traffic, (e) mowing, (f) erosion.

I have played many courses in the Middle West, mostly around Chicago, and I have seen 18 greens all pitched from back to front with from 2% to 3% grades—drainage was the major consideration; 18 greens all elevated and pitched so as to be targets requiring no skill; 18 greens which all remind one of plates upside down; 18 greens all flat.

It is my impression that these are the things that make golf courses dull, and these are the courses you don't want to play. I am sure the reason that lengthening courses has been so much publicized is because the shots to the greens of most courses are too easy and uninteresting.

I spoke to many golf course superintendents in our area and they concluded that a small green today should be about 4,000 square feet and under no circumstances should a green be over 8,000 square feet in area. A green of this size will provide sufficient area for changing cups, maintaining traffic distribution, and caring for all maintenance problems. This size green also can create sufficient interest, require good shots, and require long and short putts. Golfers of all abilities can be kept happy and interested in that hole or that course.

The photographs of the USGA Green Section Educational Program on pages 2, 3 and 7 are courtesy of Joseph Gambatese.

CONCEPTS OF A PERFECT PUTTING GREEN — PANEL DISCUSSION

HOLMAN M. GRIFFIN, Green Section Agronomist, Moderator; MRS. ALLISON CHOATE, 1963 USGA Senior Women's Champion; DR. RALPH E. ENGEL, USGA Green Section Committee; JOHN P. ENGLISH, USGA Green Section Committee.

"Good greens, fast or slow, grainy or not, rolling or flat, can make a person a great putter one day and on the next, under the same conditions, render him a helpless, frustrated fool. Is it then the perfection of greens we're striving for, or are we on the quest of finding a human being who is simply not human? By asking this question I don't in any way wish to detract from the importance of having perfect greens. Don't ever let us mortals have an alibi for missing them!"

With these words, Mrs. Choate characterized the elusiveness of perfection in efforts to achieve a perfect putting green. A perfect green is perhaps unattainable. However, some desirable characteristics were given expression by the panelists.

Fast greens are desirable, but excessively fast greens slow up play. . . . A player is much more deliberate in stroking the ball on a lightning-fast green. . . . Medium-sized greens are preferable to extremely large ones. . . . A pitch to the pin is an easier shot than an extremely long putt.

"Much can be done to attain perfection by the players themselves. So often pit marks are not repaired but since they can be fixed at any time, more important are scuff marks made by spikes which cannot be touched by the following players. Dropping matches could be dispensed with, also cigarette stubs."

Dr. Engel outlined turf characteristics implicit in a perfect green as follows:

"**First**, a high density of leaf blades per unit area is necessary to give the ball a good level ride. A bentgrass that can grow densely and a good steady supply of nitrogen are especially important for good leaf density.

"**Second**, an upright position of the

leaf blades gives a truer roll of the ball. The right grass, good density, and frequent mowing give more vertical growth.

"**Third**, uniform growth, a rather obvious requirement, is easy for some grasses if they receive a light, steady fertilizer stimulation. Uniform growth is difficult to obtain if the green has a mixture of grasses that are very unlike in texture.

"**The fourth** characteristic of a good green is enough resilience and toughness to resist footprinting and stand one big day's wear in the cupping area."

Putting Green Faults

From the standpoint of detracting from desirability with respect to maintenance needs, the following faults were listed: (1) too few pin positions, (2) soils excessively sandy or clay-like, (3) a green badly drained — on the surface or internally, (4) a green that requires over-watering to hold a golf shot, (5) lack of a desirable grass, and (6) lack of sufficient area at the green site for work, equipment, and golfers.

While each golfer at a club may have in his mind's eye the picture of perfection, the pragmatist's question must be, "How much perfection can we afford?"

It requires a really honest golfer to concede that the putt he just missed was not the fault of the green.

"Because the golfer is usually interested in perfection of the green only at the time of play, his concept of perfection easily may conflict with that of the superintendent, who must of necessity look at perfection from a different viewpoint. Aeration may



L to R: Holman M. Griffin, Mrs. Allison Choate, Dr. Ralph E. Engel, John P. English

interfere temporarily with play but it means that later on the green will have a healthier root system. This and many of the other mechanics of greenkeeping may seem to cause the green to fall far short of perfection from the golfer's standpoint, but these mechanics are necessary for the superintendent to insure that the grass is as nearly perfect as possible all through the season."

CONSTRUCTION OF PUTTING GREENS — PANEL DISCUSSION

MARVIN H. FERGUSON, Mid-Continent Director, USGA Green Section, Moderator; JAMES L. HOLMES, Green Section Agronomist; SHERWOOD MOORE, Golf Course Superintendent; DR. ANDREW VIRTUOSO, USGA Green Section Committee.

Construction techniques and practices profoundly affect the playing qualities of a putting green. The soil mixture should be one that will support a good stand of grass, will be resilient enough to hold a well-played shot, and will be firm enough to resist pitting from the impact of balls landing from a high trajectory shot. Water should drain from the surface rapidly enough to permit play within a reasonable period of time following a rain.

Some contours are desirable from the standpoints of interest and surface drainage. However, the sharp undulations that make putts unfair and

The search for perfection continues and each new development brings us nearer to the goal which we can never achieve. To borrow a thought from the pamphlet describing the Green Section's purpose and work, "The whole record of man is a story of the search for the ultimate. Although it is never attained on this earth, man is never permanently frustrated. The search goes on."

which seriously limit cup space should be avoided.

Construction is equally influential in its effect upon subsequent maintenance—fertilization, irrigation, disease control, mowing, etc.—and will be affected by the type of soil which goes into the green, the drainage system and the surface contours.

The USGA Green Section has prescribed certain construction procedures which, if followed, will preclude many maintenance difficulties. It is believed that playing qualities also will be enhanced by use of a highly permeable soil mixture, an abrupt interface marking the trans-

ition between relatively fine and relatively coarse soil particles (thereby creating a suspended water table) and a gravel layer and tile drainage system. The correct soil mixture is extremely important. It must be resistant to compaction and quite permeable to water even after compactive forces have been applied. The mixture must be used in conjunction with a layer which will produce a suspended water table; otherwise it will be droughty. Finally, the mixture must support a good stand of turf.

Examples of greens that have been

built according to the specifications outlined in the Green Section publication were reviewed. It was determined that in every case where the greens have failed to behave properly, there has been a failure to follow directions exactly. The omission of one step can cause failure.

It was again pointed out that each step in the process has been designed to fit with the remainder of the procedure. Unless one intends to follow directions exactly, he should not begin to build greens by this method.

PUTTING GREEN GRASSES AND THEIR MANAGEMENT — PANEL DISCUSSION

A. M. RADKO, Eastern Director, USGA Green Section, Moderator; J. B. MONCRIEF, Green Section Agronomist; LEE RECORD, Green Section Agronomist; DR. G. B. SHUEY, USGA Green Section Committee.

Many golfers believe that all grasses are alike, and that if the greens at one course are better than those at another, it is because the one superintendent is more capable than the other. Of course, there are differences in the maintenance capabilities of men, but there are also great differences in the habits and qualities of putting green grasses. They respond differently to conditions of climate, exposure, water supply, nutrient supply, mowing practice, traffic and all the other factors which are imposed in varying degrees on golf course turf.

This discussion concerns the grasses used on putting greens and some of the management practices required. Many of the first bentgrass greens were planted to South German mixed bent. They presented a blotched and patchy appearance because of many different types of grass, but the putting qualities were quite good.

Bentgrasses which are used for putting greens to an appreciable extent include two strains, Seaside and Pennncross, which may be planted from seed. In addition, about 10 strains which must be established

vegetatively are used. Some of the attributes of the various strains are listed.

Seaside is perhaps the most widely distributed grass used for putting greens in the United States. Until the last few years, Seaside was the only creeping bentgrass of which seed was available. Seaside bent is a mixture of many creeping bent types. Because of this heterogeneity, some of the plants in the population derived from a Seaside planting will be adapted to almost any set of geographic, climatic, and management conditions that may be imposed. The individual plants which are best adapted are the ones which persist. An older planting of Seaside will take on a mottled appearance because of the development of individual plants.

Pennncross creeping bent is the only other creeping bent presently available from seed. Pennncross is a synthetic variety created by a plant breeding technique known as polycross. Three plant selections were made from a Seaside bentgrass population. These three plants were grown vegetatively until a sufficient quantity of material was available to produce the necessary

seeds. The three selections were planted in rows in such a way that free interpollination could occur. First generation seed of this cross are used to produce Penncross bent. While the population is quite variable genetically, it produces a turf which is uniform in appearance. Penncross is widely adapted, vigorous, and relatively disease-resistant. It requires a type of management aimed toward the prevention of mat and grain.

Creeping Bentgrass

Arlington (C-1): During the decade from 1930 to 1940, the USGA Green Section selected and evaluated nearly 100 creeping bentgrass selections. They were designated by "C" numbers. Arlington bent was the first of these. Its disease resistance is good; it is wear-resistant; texture is good insofar as leaf width is concerned, but the turf tends to swirl. It is seldom used alone on putting greens. Normally it is mixed with Congressional (C-19).

Congressional (C-19): Excellent dark green color; good texture; disease-resistant; early spring growth; cold-tolerant; not as wear-resistant as some other bents. In combination with Arlington (C-1), it makes an excellent turf which is adapted over much of the bent growing region of the United States.

Cohansey (C-7): Begins growth in early spring; displays upright growth; develops less thatch than most bents; very aggressive against *Poa annua*; excellent putting green turf; light green in color; does best in southernmost area of bentgrass adaptation; more susceptible to disease than other creeping bentgrass strains, but with a good preventive program of disease control, this is no problem.

Toronto (C-15): Dark green in color; finer bladed than most other creeping bentgrass strains; upright growth; cold-tolerant; excellent putting green turf; not as wear-resistant as some other bents; must be mowed

tight and often; well adapted to the Middle West.

Washington (C-50): Excellent putting green turf, but it goes off color in early fall with the first frost, turns a purplish color; greens up late in the spring; good growth in warm weather; upright growth; fine bladed bentgrass; characteristics similar to Toronto; disease resistance poor, but responds to a preventive program of disease control.

Old Orchard (C-52): Color and texture good; used on mid-western courses more than in the eastern area of bentgrass adaptation. One of the best bents where it is adapted.

Collins (C-27): Less aggressive than the C-1, C-19; this strain was used in combination with the C-1, C-19, and it blended in very nicely. However, C-27 is not on the market as widely as in past years and is no longer used in combination with the C-1, C-19.

Nimisila (selection made from Ohio): Dark green in color; upright in growth; good texture; becoming more widely used; good reports; appears to be doing quite well in southern areas of bentgrass adaptation.

Pennlu (10-37-4) (selection from Penn State University): Very dark green in color; it did not perform in the field on golf courses to match its performance at Penn State University where it was exceptionally good; reports that it became very fluffy and thatchy; very aggressive.

Velvet bent produces a very fine-bladed, upright growing turf. It has a limited area of adaptation in the United States. It requires careful management to prevent formation of thatch and is subject to iron deficiency chlorosis. When well-kept, the turf is the finest kind of putting green surface.

Southern Grasses

In the South, most putting greens are either common bermudagrass or Tifgreen. A few other grasses, such as Everglades, Bayshore and Texturf

1F, are grown to a limited extent.

Common bermudagrass is a coarse grass very difficult to manage. Putting greens require frequent, generous topdressings and vertical mowing. Common bermudagrass putting greens are very rapidly being replaced by the finer-leaved types.

Tifgreen (Tifton 328) is the South's most widely-used putting green grass. It is fine textured, vigorous and disease-resistant. Management problems involve the tendency of the turf to thatch and its attraction for sod webworms. These insects seem to consider Tifgreen an irresistible delicacy.

In most parts of the South, putting greens of bermudagrass are overseeded with cool-season grasses. Among the species used for overseeding are creeping bent, colonial bent, *Poa trivialis*, bluegrass, creeping red fescue, redtop and ryegrass. Opinions vary with respect to the value of these grasses for the purpose of producing winter turf. In a great many cases, mixtures are used, but again there is lack of agreement as to which species and how much of each should go into the mixture.

Perhaps some day we will have a hybrid that will incorporate the good qualities of bentgrass and bermudagrass to provide a grass for greens that will do equally well in both the North and the South. Some of these qualities would be—the heat tolerance of bermudagrass, the cold tolerance of bentgrass; the soft texture of bentgrass, the wear resistance of bermudagrass; the fine-leaved turf provided by bentgrass, the coarse rhizome and deep root system of the bermudagrass; the tolerance of bermuda grass to herbicides, the spring color of the bentgrass, and the summer color of the bermudagrass—to mention a few.

Bentgrasses respond to maintenance practices in spring and fall. During hot months they must be handled very carefully. Operations such as aerifying and vertical mowing are best con-

finied to the periods when grass is making rapid growth.

Bermudagrass management is a different matter. Its best growth period is the summer season. The season of careful management is the time of transition from warm to cool-season grasses in the fall and the change back to the warm-season grass in the spring.

The handling of water is one of the most important matters in putting green management, no matter what the grass may be. This implies that irrigation practices and drainage of excess moisture are both important. A large percentage of the troubles on putting greens are somehow connected with a shortage of water or an excess of water. Faulty irrigation and faulty drainage are the twin specters that haunt the putting green manager.

Fertilizing Practices

Fertilization practice varies because of grass type, length of season, other related and interacting maintenance factors, and because of the philosophy of the superintendent. Bentgrass is fertilized at rates varying from 5 to 20 pounds of nitrogen per 1,000 square feet per year.

Bermudagrass is fertilized at rates of 1 to 2 pounds of nitrogen per 1,000 square feet per month during the growing season. About one-third as much phosphorus and about two-thirds as much potash as nitrogen, a 3-1-2 ratio, is representative of common practice.

During the winter of 1962-63 winterkill was very serious in both the bentgrass and the bermudagrass growing regions. Many theories have been advanced to explain the damage. Without attempting to evaluate the theories, these practices may be recommended:

1. Assure good drainage and aeration.
2. Control snowmold and Fusarium patch.
3. Do not over-fertilize with nitro-

gen. Avoid lush growth. On the other hand, turf should enter the winter season in a vigorous, healthy condition.

4. Be sure there are adequate supplies of potash during the latter part of the growing season.

5. Do not allow putting green soils to dry out to the extent that desiccation will occur. Remember moisture in the form of ice may be removed from the soil through the process of sublimation. It does not have to melt to dry out.

6. Prevent the formation of ice sheets if possible. If they form, try to break them enough to permit aeration of the turf and soil.

More precise answers for the prevention of winterkill may become available when a greater amount of definitive research on the nature of the problem has been done.

Putting green management requires more skill than any other agricultural pursuit. The fact that putting greens are so universally excellent is high tribute to the men who keep them.

A New Tee at Pine Valley

By **ALEXANDER M. RADKO**, Eastern Director, and **LEE RECORD**, Northeastern Agronomist, Green Section, The United States Golf Association.

To construct a new tee at a golf course normally is a major task, a project that requires the cooperation of committees, the golf course superintendent, the professional and an architect. Many times, however, the club officials mentioned do the job on their own. Eb Steineger is such a superintendent . . . he tackles such a job with enthusiasm and vigor. Last winter he tackled the job of building a new tee on the 12th hole at the famed Pine Valley Golf Club, Clementon, N. J. To do it, he moved 2,800 cubic yards of soil. The site selected for the tee added 50 yards

to the hole but it was in a deep ravine. He scraped some soil and plants, and "blanketed" the steep slopes with natural vegetation such as evergreens, dogwood, blueberry plants, and some laurel.

The entire teeing area now looks so natural one would never know it was new. We would not have known, except for the fact that there was no sod on the tee when the picture was taken. The new tee makes the hole 380 yards long, to add to the problems of playing Pine Valley.

Eb Steineger raising a "blanket" of vegetation lifted from adjacent areas to cover slopes of the new tee, giving it that "natural look."



Vegetation in front and behind Steineger was newly laid; only the tee surface remained to be sodded.



Green Section Award to Valentine



Richard Valentine beams approval after presentation of Green Section Award to his father at USGA Green Section Educational Program.

Ask Joseph Valentine the chief function of a golf course superintendent and he'll say: "Providing year-'round playing conditions has been my life's work. That's the biggest contribution any superintendent can make to the game."

In naming Mr. Valentine the 1964 Green Section Award Winner, the United States Golf Association repaid him in part for the extent of his contribution during his 50 years as superintendent of the Merion Golf Club, Ardmore, Pa.

Joseph Valentine, now 77, retired in 1961 after an association of 54 years with Merion. It began in 1907 when he became a gardener's assistant. Named greenkeeper in 1911, he embarked on a career that took him to national leadership in golf course work. During his tenure he was one

of the first superintendents to switch from horse-drawn to tractor-operated mowers; a pioneer in the use of new chemicals and fertilizers; the discoverer of what has come to be known as Merion bluegrass; and, above all, a campaigner to keep his course in good playing condition throughout the year, even in the winter.

First Superintendent Honored

The first superintendent to win the Green Section Award "for distinguished service to golf through work with turfgrass," Mr. Valentine came to the United States as a lad of 20 with funds provided by a friend in America. His early preparations in his native Italy were for the priesthood.

Mr. Valentine has been active in many organizations outside golf—a member of the Order of Brotherly Love, the Knights of Columbus, George Washington Society, and the Italian-American Citizens' League. He was chairman of his local draft board from its inception. During World War II, he drafted two of his three sons. One of his sons, Richard, succeeded him as superintendent at Merion in 1961.

The presentation of the award, the replica of a permanent plaque that hangs in "Golf House," USGA headquarters in New York City, was made at the Green Section Educational Program in New York, January 24, by John M. Winters, Jr., retiring USGA President.

Mr. Valentine is the fourth recipient of the award. The first, in 1961, went to Dr. John Monteith, Jr., of Colorado Springs, Colo. Prof. Lawrence S. Dickinson, of Amherst, Mass., was the 1962 winner and last year's recipient was O. J. Noer, of Milwaukee, Wis.

John Kealty—Story of the '63 Open

John Kealty, golf course superintendent at The Country Club, Brookline, Mass., was called "the real story" of the 1963 USGA Open Championship by Clarence W. Benedict, newly installed President of the USGA. In making the report of the Championship Committee at the USGA Annual Meeting in New York City, January 25, Mr. Benedict spoke of the tricky winds at the Open, of Julius Boros' steady play, the challenge of Arnold Palmer and Jacky Cupit and the commendable attitude and conduct of Jack Nicklaus at a mass press interview immediately following his failure to make the 36-hole cut.

But all these, Mr. Benedict said, were secondary to the story of John Kealty. He described Mr. Kealty as a proud man, one who would not be satisfied with anything less than perfection in the preparation of his golf course for the Championship.

In the fall of 1962 the golf course at The County Club was in superb condition. There was every reason to expect that this condition would

exist at the time of the Championship. However, the winter of 1962-63 was devastating. When spring came there were acres of dead turf. In Mr. Benedict's words, "John Kealty's world had come crashing down around him." But Mr. Kealty did not have time for despair. He began to put the course back in condition. A period of drought followed the arrival of warm weather and this added to the difficulty of preparing the course for the Championship.

Mr. Kealty and Al Radko, USGA Green Section Agronomist, called up all their knowledge, skill and patience in attempts to grow turf quickly. By the time of the Championship, the course was in playable condition. It was not in top condition, and no one was more aware of the deficiencies than was John Kealty. Yet without the quiet devotion, fortitude, and cooperative attitude of this man, the Championship might have been played under much poorer conditions.

John Kealty truly was THE story of the Open.

COMING EVENTS

March 16

Turf and Grass Conference
South Plains College
Levelland, Texas

March 18-19

Turf Short Course
University of Maine
Orono, Maine

March 23-24

USGA Golf Course Management
and Golf Officials Conferences
Ambassador Hotel
Los Angeles, California

March 25-26

USGA Golf Course Management
and Golf Officials Conferences
Sheraton-Cadillac Hotel
Detroit, Michigan

March 27-28

USGA Golf Course Management
and Golf Officials Conferences
Bellevue-Stratford Hotel
Philadelphia, Pennsylvania

April 13-15

Southeastern Turfgrass Conference
Tifton, Georgia

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TURF TWISTERS

GREENS AND FERTILIZERS

Question: "- - - you might be able to help me - - -. I am securing information that we can use to advise superintendents in Arkansas on how they should fertilize their greens." (ARKANSAS)

Answer: Two mimeographed sheets that we furnish to our Green Section Visiting Service subscribers are enclosed. These thoughts about fertilization are based partly upon research and partly on observations and experiences of successful golf course superintendents.

FERTILIZATION OF BENTGRASS GREENS

Fertilizer for greens should provide nitrogen (N), phosphorus (P_2O_5), and potash (K_2O), in the ratio of 3-1-2. Use 1/2 pound maximum of nitrogen per 1,000 square feet per month on bentgrass in hot weather, and one pound per month during cool months. This will provide about 9 pounds of N per 1,000 square feet per year.

If the 3-1-2 ratio material is used, you will apply three pounds of P_2O_5 and six pounds of K_2O . These nutrients do not leach readily and may be applied in spring and fall when weather is cool.

FERTILIZATION OF BERMUDAGRASS GREENS

Fertilizer for greens should provide nitrogen (N), phosphorus (P_2O_5) and potash (K_2O) in the ration of 3-1-2. Use two pounds of nitrogen per 1,000 square feet per month on bermudagrass in hot weather and one pound per month during cool months when the greens have been overseeded with cool season grasses. This practice will provide about 18 pounds of N per 1,000 square feet per year.

If the 3-1-2 ratio of materials is used, you will apply six pounds of P_2O_5 and 12 pounds of K_2O . These nutrients do not leach readily and may be applied in spring and fall when weather is cool.

Some superintendents add a little potash during the summer months. Amounts up to 1/2 pound of Muriate of Potash (60% K_2O) per 1,000 square feet may be applied during the summer if it is watered in promptly.

MOWING BUFFALOGRASS

Question: At what height should buffalograss for fairway use be mowed? Should clippings be removed? (KANSAS)

Answer: Buffalograss should be mowed at one inch or perhaps a little shorter. It should be mowed frequently enough that no more than 1/2 inch of the leaves is cut off at any mowing. If mowing is accomplished as often as this, the clippings will disappear into the turf and there will be no need for removing them.