

redients are design, construction, science, and dedicated work. My home course (Guyan Golf and Country Club in Huntington, W. Va.) will forever bear the imprint of its long-time Green Committee Chairman, R. J. Foley, a professional horticulturist. He rebuilt all our greens and tried eight strains of grass before he found what would grow best in an area known as Pea Ridge (because reputedly even soy peas couldn't grow there). Mr. Foley was a one-man committee for over 20 years, and we still have a one-man Green Committee in C. McD. England, Jr. If you can find the right man and give him 100 per cent authority, you may be as fortunate as we have been at Guyan.

Mr. Foley is the oldest member of the USGA Green Section Committee in both service and age. No one has done more for golf in West Virginia, both as an expert on grasses and as an official in a game which he never played.

There are some incidental points which space will not permit me to discuss, such as the best time for watering being in conflict with

union attitudes; greens shrinking with mowing as more berms are thus created; cutting greens too close, especially convex surfaces such as Oakmont's No. 3 green in the 1962 United States Open; letting greens become too dry, thin, and crusty so that you can actually hear a ball roll (such as Augusta in 1950 on Nos. 10 and 13); topdressing never to be used before a competition, and never as a cosmetic, as unfortunately was used at Merion for the 1966 Amateur on Nos. 15 and 17, leaving no contact between the ball and the ground; and having the greens best for each championship, rather than saving them for another one, such as was done at Carnoustie for the 1966 British Amateur in anticipation of the 1968 British Open.

Finally, the guiding principle of what the player expects in greens is that, as much as possible, luck should be taken out of the greens so that the best player will have the best chance of winning. There is a line to be drawn between the difficult and challenging on the one hand, and the too difficult and unfair on the other.

Putting Green Design — Please Golfers, Ease Maintenance

by MARVIN H. FERGUSON, Mid-Continent Director, USGA Green Section

The first requirement of a putting green is that it provide good playing values to please the golfer and to test his skill. A putting green also should lend itself to economical maintenance. Contrary to the beliefs of some, there is no conflict between these requirements.

A plea for design which will permit economical maintenance frequently encounters the argument,

"You are asking us to sacrifice golf values for the sake of easy maintenance."

Conversely, an insistence upon good and interesting design from the player's viewpoint is challenged by an allegation that such a green will be costly to maintain. These arguments lack validity in most cases. Let us examine some of the major considerations in putting green design.

Size

The golfer prefers a green large enough to provide a variety of hole locations, but he objects to a green so large that it places too

great emphasis on the putting. He likes a green, or at least a target area, to be relatively small if the approach is a short one, and he prefers larger targets as the length of approach shot increases.

Now what does the golf course superintendent want? He wants plenty of cup space so that turf will have time to recover from the traffic in one location before it is used again. This rules out very small greens. If the approach is a short one and calls for a small target, the superintendent prefers that the green be larger with well defined and separated hole locations. On the other hand he knows that every maintenance operation is related to size of the putting surface, and that very large greens are expensive.

It appears then, that both the golfer and the superintendent prefer greens of moderate size, big enough to provide for variety and traffic rotation, but not so large as to overemphasize

No. 4. hole at Baltusrol Golf Club, Springfield, N.J. Looking from green back to tee. Green is large, two-level, green. Hole inflicts severe penalty if ball lands anyplace but on the green. An awesome hole from either direction.



the putting phase of golf and to add greatly to the maintenance cost.

Contours

Contours which exist in the form of gentle rolls and swales add interest to the game. They reward the player who has an ability to "read" the green. Such contours should not occupy so much of the putting surface however, that there are too few level places in which to locate the hole. An area of several feet in diameter around the cup should be flat, or gently sloping in a single plane. There should be no depressions which will trap water. Such areas are more susceptible to footprinting, and they react differently in their effect on a ball played to the green.

Maintenance requirements call for similar contouring, if for different reasons. Gentle slopes are necessary for surface drainage. It is preferable for water to be removed from the green in more than one direction. Steep slopes are hard to irrigate and sharp contours cause scalping by mowers.

For both maintenance and player interest, larger and steeper contours should be off the green or near the edge. There they are effective in challenging the golfer's skills in his approach to the green, they do not effect a reduction in the area available for cup setting, and they do not impose unfair situations for the player on the putting surface.

The Surface

Players want the surface of the green to hold a well-played shot. They also want a smooth, true, uniform surface that is unmarred by ball marks and footprints. This poses an apparent conflict. It is commonly believed that only a wet green

holds a shot properly, and that only a dry green will resist footprints and ball marks.

We disagree. A green constructed of a properly constituted soil mixture will resist footprinting and ball marks even when it is wet, and it will hold a properly played shot even when it is dry. The behavior of a turf surface depends greatly upon the character of the soil in the green. The proportions of sand, soil, and organic matter; the size, shape, and uniformity of sand particles; and the kind and amount of organic matter determine the stability and the resilience of the surface.

Such a surface is not a simple achievement. Fortunately, however, when construction is adequate to meet the players' preference, it also lends itself to effective maintenance. It provides for good infiltration of water and rapid percolation with the consequent diffusion of air into the soil.

All greens require routine maintenance, such as mowing, irrigation, aeration, topdressing, thatch removal, and the changing of the cup location. These operations are not cheap. However, they are no more expensive on a challenging, pleasingly contoured green than they are on a flat green without character.

The designer and builder must have an awareness of both needs. A challenge for the player is paramount. This is the reason for the existence of a putting green. On the other hand a green that is very difficult to maintain may fail to meet the needs of the player because it cannot be kept in peak condition.

The needs of both player and the turf manager can be met if the designer and the builder are aware of the needs and if they approach their creative task with a large measure of common sense.