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.