

Watering Putting Greens

There is still much difference of opinion as to the best time of day to water putting greens. Some rather extensive and well-planned experiments on the subject were once carried out by Mr. Frederick W. Taylor at Highland, near Philadelphia. If there were any differences in these plats due to time of watering, they were not appreciable. Of course, under other conditions pronounced differences might occur. The question has recently been raised again by a gentleman from Massachusetts. Perhaps the best data on the subject available are the judgments of men of long experience. That there is still difference of opinion in the minds of men who are well qualified, is apparent from the following statements recently received in reply to a questionnaire sent out on the subject.

"The latitude in which you are located, the soil you have to work with, and the kind of grass in your putting greens may have a large bearing on the watering problem, whether it be the frequency or volume of watering or the time of day it is done. Our experience has been that watering greens may be done at any time during the twenty-four hours without fear of damage. However, we prefer to do our sprinkling promptly after sundown, as we get away with the minimum amount of loss of moisture by evaporation at this time, with the long hours of the night ahead, and the effect is more beneficial and lasting."—*A. J. Hood, Plum Hollow Golf Club, Bedford, Mich.*

"I have never experimented with watering except during the day and in the evening. I have always gone on the theory that water put on in the late evening was less subject to evaporation and had time to soak in before morning. I have done lots of watering during the day and have never seen any ill effects from it except that without definite data to guide me I have assumed that it took more water to accomplish the same effect in the morning than it did in the evening. The possibility that to begin watering just before sunrise may have an effect on brown-patch is quite interesting, but I have not so far been able to arrange to experiment."—*Robert White, Wjckagyl Country Club, New Rochelle, N. Y.*

"I know that the proper time of day for watering putting greens is a moot question. However, I have always contended that the time to water was when the sky was overcast. We do all our watering after 6 o'clock in the evening. When it comes to a question of expense, it may be a little more expensive to water at night, as we have to pay more for labor, but it is really more convenient for the players, as it is not necessary then to move the hose, sprinklers, and other apparatus about. I have always had the impression that watering when the sun was beating upon the grass tended to injure it."—*Charles B. Macdonald, National Golf Links and Links Golf Club, Long Island.*

"It is my opinion that although watering during the heat of the day does not seem to cause serious injury to fine turf, yet infinitely more benefit can be derived from watering after sundown. To maintain a vigorous growth of creeping bent it is essential to keep the greens in a moist condition. Any one familiar with production of bent turf from stolons, is aware that there is a definite check in growth when the soil is allowed to get really dry. Having that requirement in mind, it can be seen that one should aim at obtaining the maximum amount of value from every gallon of water used. A green watered, say, at 10 a. m. in midsummer

will dry very rapidly. In four or five hours after watering, the turf is dry probably two or three inches down; whereas a green watered at 6 p. m. remains moist on the surface until the sun is well up the next morning, which, at 10 a. m., gives 16 hours as against four or five hours in the case of morning watering.

"Daily watering of 18 greens during the dry season of 1923 decidedly enhanced the quality of the bent on the greens and resulted in a far smaller amount of crab grass than in previous years. Exactly what the effect of such heavy watering over a period of years would be, I am unable to say. I have not spent one dollar in 1924 in additional labor for weeding greens, and I believe I am prepared to state that crab grass does not thrive on greens which are kept in moist condition.

"The relation of watering to the treatment for the two brown-patches is a matter to which I have given a little attention, and thus far I am strongly of the opinion that night watering is a preventive. There is a club in Delaware which waters its greens at night almost exclusively, and in 1923 they had not a single case of brown-patch. A green watered in the afternoon goes into the night in a condition which I believe is the most favorable for the development of brown-patch. My experience, although varied, has generally shown beneficial effects from heavy watering at 8 p. m., and I believe a green so watered throughout the season would suffer much less from little brown-patch than one watered in the day time.

"I favor watering every night in periods of heat and drouth. Such a practice not only keeps bent active and vigorous but also keeps out crab grass. Bent will grow and thrive in ditch bottoms, but crab grass will not. Having that in mind, I have always endeavored to keep greens well watered, and two years of such practice has convinced me of the wisdom of it. A green watered in the heat of the day never has the same sheen or luster on the turf that a really healthy green should have.

"Sprinkling at night is best for turf, and certainly best for the golfer, but watering facilities and costs are often the governing factors."—*R. Avery Jones, Baltusrol Golf Club, Baltusrol, N. J.*

"I am of the opinion that the best time to water putting greens is from 5:30 p. m. to dusk. A light preliminary sprinkling should be given, and this followed by a comparatively heavy sprinkling. There is less evaporation from watering in the late afternoon and evening than from watering in the day. The greens grow well through the night, and the water has sufficiently soaked in when the men arrive the next day for cutting. I am not averse to watering greens at any time of the day, provided it is done heavily enough when the sun is hot."—*Gordon Smith, Morris County Golf Club, Convent Station, N. J.*

"I concur in the opinion given above of our greenkeeper, Mr. Gordon Smith, with regard to practice in watering putting greens. With the prevalence of brown-patch, however, there may be some objection to watering in the evening, as I think this tends to promote its spread. Yet I know of one club which seems to have had considerable success with early morning watering, which washes away the scum which appears on the greens in the morning when brown-patch is prevalent."—*Wynant D. Vanderpool, Morris County Golf Club, Convent Station, N. J.*

"We have always found it advisable to water our greens in the evening or very early morning. This allows for a thorough soaking before the sun's rays strike the greens. If brown-patch is present, of course, we

recommend early morning watering, because of the results of experiments conducted by the Green Committee of the U. S. Golf Association."—*J. K. Bole, Mayfield Country Club, South Euclid, Ohio.*

"It is my opinion that if I were free to do exactly as I wished, and had all the money and facilities necessary, I would water greens at night, for the reason that it is cooler then, there is less evaporation, and the greens have a better chance to get in good condition for play. The difficulty with this is that I have never seen any sprinkling equipment that distributes the water evenly, and I have never been able to find a man who could go around in the dark and place the equipment so that the water is fairly evenly distributed. After trying out all sorts of equipment, and after watering greens for years at night, we have come around to the belief that the most practical system is to water the greens by hand, as early as possible, the first thing in the morning. We prefer watering by hand with an ordinary spray nozzle, because by so doing we are able to water the greens evenly and to give them exactly the amount of water we think they should have. We have watered greens at all times of day and night, and as far as I can see it does not make much difference as long as the water is evenly distributed and the greens get the amount that is needed. We feel, however, that it is better to water at night or in the early morning rather than during the heat of the day, because the application of cold water in the heat of the day must give the vegetation more or less of a shock, and the rapid evaporation would not seem to be desirable. However, I do not believe that watering at one time or another can make any difference."—*W. J. Rockefeller, Inverness Club, Toledo, Ohio.*

"We have always practised sprinkling the putting greens after 5 o'clock in the evening, and in very hot weather preferably after dark. My own judgment is that they could be sprinkled in the morning in the early hours, and that if sprinkled very early in extremely hot weather it might be better for them."—*W. A. Alexander, Old Elm Club, Fort Sheridan, Ill.*

"At Minikahda we have always done our watering at night, as at any other time it interferes with the play. We have a man who goes on duty each night at 5 o'clock and waters until 2 o'clock in the morning, with an hour out for midnight lunch. He waters 9 greens each night, so that each green is watered thoroughly every other night. The results have been satisfactory."—*Wm. F. Brooks, Minikahda Club, Minneapolis, Minn.*

"Heretofore we have been in the habit of watering our greens each night during the warm season, starting at about 5:30 or 6 o'clock, but during the season of 1924, due to a great deal of rain and much cooler weather, we watered the greens during the day time. Our greens have held up much better during the season of 1924 than ever before to my knowledge, but we attributed this to the weather rather than to any of our operation. The expense of watering at night is a little bit greater than in the day time, and the possibility of the men slacking on the work is much greater. However, the inconvenience to golf players is eliminated, which is quite a factor in keeping down complaints. I should perhaps add that I have not studied the problem of time of day for watering sufficiently closely to form any definite opinion in the matter."—*G. W. Fowler, Glen Echo Country Club, Normandy, Mo.*

"We have only one kind of grass on our putting greens, and that is Bermuda grass, which is a grass which does not require much watering,

growing better with simply the natural rainfall. However, in exceedingly dry seasons we sometimes do some watering, and have always followed the plan of watering at night. This has been followed empirically. We have no particular reasons for following this plan, except that we believe we get less evaporation during the night, and therefore a larger benefit from the moisture. I do not believe that Bermuda grass would be readily damaged by watering in the day time."—*Thomas P. Hinman, Druid Hills Golf Club, Atlanta, Georgia.*

"We have found from the cultivation of Bermuda grass here that the best results are from watering after the heat of the day. After 6 o'clock is better than earlier. Our Bermuda greens are not watered lightly but soaked about once a week. This, with daily cutting and monthly top-dressing, keeps them in very fine shape."—*C. B. Buxton, Dallas Country Club, Dallas, Texas.*

"In my judgment the time to water putting greens is when the surface lacks moisture. It makes little difference whether it is done in the early morning, midday, afternoon, or night. When possible without interference with play, I prefer day watering, because the workmen can see better how to more evenly apply the water and thus attain better results. Modern undulating greens can not be watered evenly by the sprinkler alone, as the water runs off the high spots, which rarely get enough soaking, and the low spots get more than is desired. I like a watering system that has a 1½-inch pipe to every green outlet, capable of being reduced to two ¾-inch outlets, to one of which the sprinkler is attached and to the other the hand hose. With this system the workman can only take care of one green at a time; while the sprinkler is playing generally, the hand hose is applying water to the high spots only. In this way a green can be evenly and thoroughly watered in a much shorter time, and the sprinkler changed more often to prevent water standing or running on the surface, a condition which at no time should be allowed to exist, since it injures the surface and is a waste of water.

"I much prefer watering every day, to the generally accepted theory of watering two or three times a week. If after the soil is once deeply moistened, sufficient water is applied each day to take care of the surface evaporation, the moisture below will be held for a long time and the necessity for long, deep watering will be avoided. Grass does not require excessive moisture, but just sufficient to supply its needs, and it should have this daily. A moderately moist soil is far better for the healthy development of turf than wet, soggy ground. It should be remembered that the roots of the bent grasses are very shallow, not more than 2 inches deep, necessitating the presence of moisture in the ground at all times, though not in excessive amount."—*Walter S. Harban, Columbia Country Club, Washington, D. C.*

Fall and Winter Top-Dressing of Putting Greens

By R. A. OAKLEY.

If the questions that come to the Green Section at this time of the year may be taken as an indication, there is a very general feeling that putting greens, in the northeastern part of the United States, at least, need protection of some kind during the winter. The feeling is particularly prevalent in the case of newly planted or seeded greens. It is apparently thought that the turf grasses in putting green condition will succumb to the low