

will be kept at every green to do the rotary sweeping with the broom just after each match leaves a green, and the players are not then allowed to use the carpet sweeper. This saves time, but frequently one man or caddie in a fourball match will spoil the line of a putt.

Local rules are essential when oiled sand greens are used, as to brush a putt the ball must be disturbed and replaced; also it is necessary to allow the cleaning of balls on putting greens, as occasionally a grain or two of sand will, because of the oil, adhere to the ball and if in putting these come between the club face and the ball a muffled shot usually results.

In laying out a course on which it is intended to use oiled sand putting greens it is a great mistake to design holes requiring a pitch shot onto a green. No matter how much back-spin is imparted to the ball, it can seldom be made to hold, because the base of the greens is too hard. This type of green can be made so that it is delightful to putt upon; but on the whole an indifferently good grass green is preferable, because it does not eliminate pitch shots.

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## Experience With Brown-Patch at the Morris County Golf Club

W. D. VANDERPOOL

About three and one-half years ago, in the middle of August, the newly constructed greens and fairways at the Morris County Golf Club, Convent, N. J., were in splendid shape, considering their newness. The weeds and summer grass had all been removed and they were ready for the usual light topdressing which is applied at that time of the year.

By September 1 six of the new greens and six of the new fairways were practically ruined. The greens were so badly damaged that it was necessary to turn them under and reseed them. The fairways were given a heavy topdressing of compost, seed was sown the following spring, and they are now in good shape.

In this article I am going to describe the conditions; but I can not offer any positive solution of the problem, at least as far as the fairways are concerned.

There is no question in my mind (and this conclusion has been corroborated by the Department of Agriculture) but that the cause of the damage was the brown-patch fungus in its most virulent form. It is a very serious matter if this form of blight is going to do such extensive damage.

Shortly after the grass was seen to be getting brown, we started with light topdressings and sprinkling; this, however, had the effect of stimulating the growth of clover, and did not help the grass. On my return, about the first of September, I found dead patches of grass, with the very green clover growing rankly and spreading every day.

The fairways were badly damaged in places; but the clover was not as abundant there as it was on the greens. The new greens were all seeded with a mixture of Chewings New Zealand fescue and German bent in the autumn, and when the disease struck them they had had about twenty months' growth. The fairways were sown about the same time as the greens, and redtop was substituted for the bent; the greater part of the

fairways was composed of Chewings fescue, which, up to the time of the disease, had made a strong and vigorous growth.

This gives a general idea of the proposition which we had to contend with, and we decided to analyze the situation and see what deductions we could make, with the following results:

1. All the damage done was confined to the area which had been recently woodland and had been cleared for the golf course.

2. Poor drainage had nothing to do with this blight, as the greens which appeared most affected were of the Cape and Redan type, both built up and both under-drained, with no possible chance of having any water remaining there.

3. Wherever the morning sun did not strike the fairways the damage was inconsequential.

4. Although there were four other greens built at the same time, by the same method of construction and with the top soil procured from the same place, these were scarcely damaged at all. Why was this? Our only answer is that they were not in the newly opened woodland.

What, then, can be done to prevent a recurrence of this trouble? From my experience and observation it seems that poor drainage was not the cause of the severity of the blight and that topdressing, such as we gave, did little good—it simply helped the clover. The remedy we now use (and we use it whenever we have hot and muggy spells in July and August) is Bordeaux mixture. We have had several periods during the last two years when the conditions were propitious for a severe attack. Whether the Bordeaux mixture prevented it or not, I do not know; but I do know that we have not had any severe recurrence of the blight. Possibly, as a severe disease makes a person immune from a recurrence, this attack may render the soil more or less immune. I do not know. This is merely a suggestion. The treatment of the fairways with Bordeaux mixture is out of the question, owing to the large area which would have to be treated; it would involve too great an expense.

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## The Brown-Patch Disease of Turf

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Until recent years practically every brown area that appeared on putting greens during the growing season was regarded as the effect of "sun scald." Now it is known that a fungus is responsible for many, if not for most of them. Drought and heat certainly cause the grass to burn, but the areas injured by disease are quite different in appearance from those injured by other causes. Whether the fungus disease is more prevalent now than formerly is not definitely known, since a critical study of the cause of browning was not made until 1914, when patches appeared in the turf experiments of Mr. Fred W. Taylor at his home near Philadelphia. These patches were particularly abundant on a strain of red fescue which Mr. Taylor transplanted from the Oleott turf garden, located at Manchester, Connecticut. The spots were a foot or less in diameter and very numerous. Mr. Taylor observed that they increased in size concentrically and that a fine white cobwebby covering could be seen on the newly formed patches in the early morning. This indicated a fungus as the causal agent; but laboratory examinations made at that time failed to