

by walking slowly up and down the tracks left by a mower. A low-pressure nozzle is essential for restriction at the outlet, and will cause the water to run into the barrel. Such a nozzle can be purchased with the machine.

### **"Air Pockets" and Brown-Patch**

By John Monteith, Jr.

It is usually found that certain greens on a golf course are much more frequently and severely injured by attacks of brown-patch than are others on the same course. This condition may be due to various causes. In many of these cases it is undoubtedly due to insufficient air drainage which results in "air pockets" over these greens.

Brown-patch is most likely to develop during periods of warm weather, especially when the grass becomes covered with dew early in the evening and remains so throughout the night. Grass blades, like our skin, are constantly giving off water in the form of vapor. If there is good air circulation this vapor is at once removed, but if quiet it will condense in the form of "perspiration" or dew. This formation of dew during a warm night makes conditions ideal for the development of brown-patch. Therefore, if there is a good breeze blowing over a green during the night to prevent the accumulation of dew the chances for an attack of brown-patch are much reduced, even if the temperature is high.

When going over a course it is a common experience to see the flag on a certain green hanging motionless while those on other greens are blown out by a relatively strong breeze. When one stands on such a green he notices that the air feels "dead" and sultry. If the wind continues in this manner throughout the night it is natural to expect that the grass on the greens where the breeze is blowing will be kept comparatively dry, whereas on the green with little air circulation the dew will settle early and keep the grass wet throughout the night. This "air pocket" is not necessarily on the lowest green of the course. It may be caused on any green, by a bank of trees or shrubbery serving to cut off the prevailing wind.

One clear case of such a condition was recently observed on the second green of the Algonquin Club in St. Louis. This green is located on high ground, but trees and undergrowth cut off the winds from the west and northwest. On the night of July 18 there was a gentle breeze from the northwest. On the morning of the 19th this green showed serious new developments of brown-patch, whereas on nearby greens which were exposed to the breeze there was practically no new brown-patch. Similar examples have been observed on numerous courses in various localities. In many of these cases it would not be practicable to take any action to correct this condition, but in a large proportion of the cases observed it could be corrected easily by simply cutting openings through the shrubbery in the direction of the prevailing winds. It would not be necessary to remove large trees as a rule, for if the lower branches and underbrush were taken out the wind could sweep through and over the green.

This is not to be interpreted as a recommendation supposed to control brown-patch completely. Unfortunately the problem is by no means so simple. Under certain weather conditions dew will settle on any green regardless of location. However, it is a precaution which in many cases could be quickly and cheaply accomplished and would prove well worth the effort in avoiding many attacks of brown-patch.