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mower whirring in your ear, or wonder if some guy was going to amputate your left leg with a seven gang mower?

"The whole thing is ridiculous," Lyons growled.

He offered a solution, too. It's simple enough — night maintenance. If you don't think there's a case for it, Lyons offers these thoughts: There is less wear and tear on men and machines when they work nights; Close mowing at night is safer; There is less wind drift at night and thus spraying is made easier; Even stolons planted at night grow better than those planted in the daytime. Finally, if you work nights and sleep days, you won't suffer the agony of seeing golfers tear up your course.

Sixth Session

Six speakers were presented at the final education meeting by Tom Mascaro, West Point Products Corp. president, the chairman. They included: John E. Gallagher Amchem Products; Prof. John C. Schread, U. of Connecticut entomologist; Alex Radko, eastern rep for the USGA green section; Stan Fredericksen, Mal-

linekrodt Chemical Works; Harry W. Meusel, Yale U. GC supt.; and Dr. Michael P. Britton, U. of Illinois.

Aquatic Weed Control

Because water consumption increases eightfold in a generation, there must be a relentless battle against aquatic weeds, said John Gallagher, a research chemist. It has only been in the last five years that this has been fully realized and a concentrated attack made on the weeds that infest ponds, lakes, streams, irrigation ditches and other bodies of water.

Gallagher declared that herbicides can be used safely and effectively and that tests have pretty well proved that their residue is not toxic to fish. Wide scale weed control through herbicides, he pointed out, is considerably cheaper than carrying on repeated dredging operations to keep water sources cleaned out.

Much of Gallagher's material was presented through the use of slides. These showed the most common aquatic weeds; water hyacinth and water chestnut, both found throughout the U.S.; the water grasses such as coontail and cat tail, both widely distributed; and submersible weeds such as pondweed, of which there are 20

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or 30 species, and eel grass that comes in after other weeds are disposed of.

Battle Must Go On

Prof. John Schread conceded that Rachel Carson may have good reason for taking a stand against indiscriminate use of insecticides, herbicides and fungicides, but he added if these different eradicators are used with discretion there is no cause for alarm. So far as insects are concerned, Miss Carson apparently doesn't take into account that more than 1,000,000 different kinds are recognized and catalogued, and perhaps another 8,000,000 unidentified species are in existence. If a large scale war weren't constantly waged against the insect population, man would have to find a way to get to and live on another planet in a hurry.

In the endless battle that has been fought against insects and, of course, continues, most pests have been controlled, but it is doubtful if even one species has been made extinct. The history of insect migration, Schread said, is a fascinating one, but at the same time one that has to be contemplated with a good deal of apprehension. A species may migrate from one coast to the other within a gen-

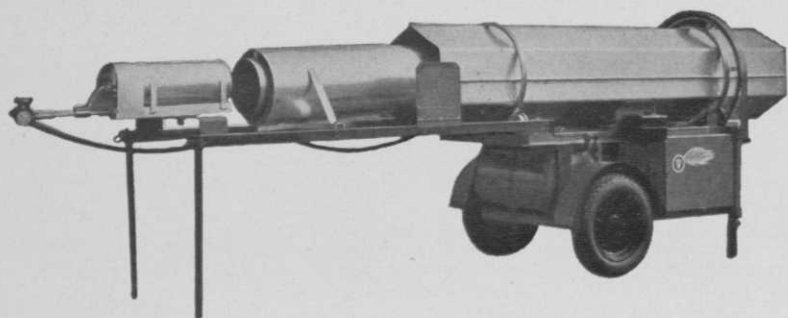
eration, and in the case of such as the Colorado potato beetle, may transfer its feeding ground from animals to plant life.

Many insects are imported, Schread stated, but most that infest turf are native born. The chinch bug, the popular new nemesis to lawns, spreads in hot and dry weather, hibernates through the winter if thatch is heavy, and is only destroyed when steady summer rains destroy both young and adults during the insect's heavy reproduction season. The sod webworm, on the other hand, survives when there are moderate to heavy rains. The earthworm, the scourge of putting greens in the '50s, but since controlled by chlorinated compounds, is washed to the surface during a heavy rain and literally can be raked away.

Winter Problems Intensified

Alex Radko, who is starting his 18th year with the USGA green section, offered a question that may continue to disturb supts. for some time: Why have our winter turf problems been intensified in the last three years? Radko didn't attempt to supply a specific answer, but
(Please turn to page 140)

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did suggest several alternatives. The trouble may be due to too much traffic through the season; too much play in the late season; turf is maintained in too soft or succulent conditions; it is mowed too close during the playing season; or it may be due to the weather itself that brings snowmold, buries the greens under a ice sheet and induces winterkill, or generates enough strong winds to cause intense desiccation.

"The supt. may be a victim of the system," Radko said. "He has been giving the players close-shaved greens for so long that to change now might excite a revolution. But it's questionable if turf, even as finely maintained as it is, is intended to be as closely clipped as it is during the summertime. It is fairly well established that high-cut turf is better fortified to withstand the rigors of winter. But whether the players would ever stand for the mowers to be set 1/16 or 1/8-inch higher is another matter."

What Causes Deadspot?

Stan Fredericksen, who followed Radko on the program, also posed a question for the audience. What causes the spring deadspot that is so prevalent in Bermuda

in the transition belt? Fredericksen explained that large, circular gray spots are common in U3 fairways throughout the entire Washington-St. Louis zone and to date nobody has come up with a fungicide that permanently eliminates them.

They recur annually in exactly the same spots they had been in the previous year. Later in the season weeds and crabgrass infest these infected areas.

"Northern agronomists think we are seeing things that don't exist," said Fredericksen, "but one of these days they are going to find that deadspot isn't an illusion because it is spreading northward. It showed up in Oklahoma 10 years ago. Deadspot was originally observed in southern Missouri back in 1936 by Bob Dunning."

In the last three years Fredericksen's Mallinckrodt firm has intensified its study of the mysterious condition which is due to desiccation or disease. It has compounded 100 products that have been used in the battle against deadspot and at present the company feels that there are two possible fungicides that may eradicate it. Two years ago it was felt there were 19 possibilities. A breakthrough

might have been made this winter, but uncooperative weather upset the control program. It is thought that it will probably take regular fungicidal treatment combined with improved fertilizing and more extensive thatch removal to finally solve the deadspot problem.

Supt. Grows Own Wilt

Along with supervising maintenance of the Yale University GC, Harry Meusel has devoted a good deal of time to studying the cause and effect of wilt. His conclusion is that the supt. grows his own wilt.

It comes about, said Meusel, on those bright days when turf is overwatered. The stomates, cell-like structures in the inner leaf blade, are extremely responsive to light. On a bright day they open up, so to speak, and if the turf is heavily watered, they are literally saturated. As a result, the plant's respiratory system is impaired and wilt sets in.

Muesel's studies show that heavy watering on cloudy days is not nearly so injurious to turf as it is on bright days. The conclusion is that the delicate stomates don't open up and thus aren't susceptible to drowning. Heat, he feels, has little to

do in the wilt process or, at least, it is not nearly as significant as the degree or incidence of sunlight.

Turf should not be fertilized during the wilt season, the Yale supt. stated, and neither should lime be applied to it. If either fertilizer or lime is applied at this time, along with overdoses of water, the sensitive stomates are further impaired and the degree of wilt is intensified. The safest way to water in the wilt season, according to Meusel's observations, is to use wetting agents along with only a light amount of water. The wetting agents have no effect on the stomates and enable water to penetrate to its roots. When enough water is stored in the roots, excessive transpiration doesn't take place in the leaf blade.

Disease Identification

Mike Britton, last to appear on the program, showed a series of slides that gave a pictorial review of the common turf-grass diseases. Copies of the slides, incidentally, are available from the Dept. of Plant Pathology, University of Illinois.

While the films were being shown, Britton told when the various diseases are likely to show up, how to make the

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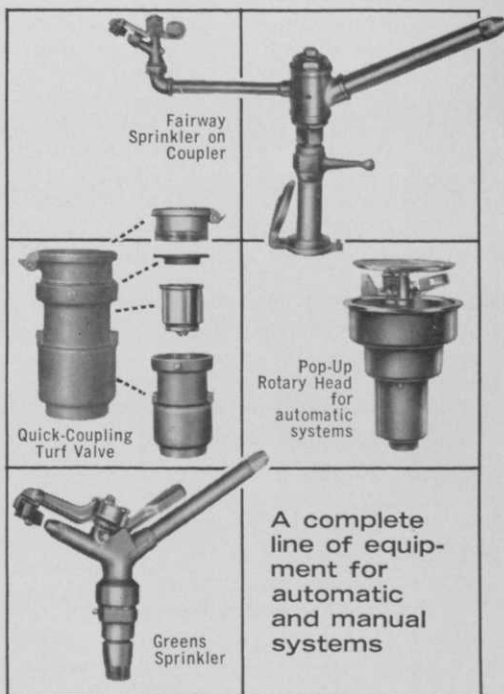
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sometimes minute distinctions that distinguish one disease from another, and how to treat against them from both a preventative and curative standpoint. The Illinois University pathologist called particular attention to helminthosporium, saying that it is difficult to detect although it can be expected to appear in late August or in September. It is probably due to a root and crown blight, he said, and may stem from injured grass. It is generally prevalent where there is an abundance of poa annua. One of the first places to start looking for it is in cup locations.

Seeks Federal Aid

Topeka, Kansas is seeking 30 per cent of the anticipated cost of a new muni 18 from the Federal Housing and Home Financing agency.

Foundation Publication

The National Golf Foundation, 804 Merchandise Mart, Chicago 54, publishes five books that cover the planning, building and operation of golf facilities.

USGA Releases Revised "Golf Rules in Pictures"

"Golf Rules in Pictures," a publication of the USGA, is now available in a revised edition brought up to date with the 1964 changes in the rules. It is a 96-page book with many definitive illustrations of salient points.

Originally published in 1962, Golf Rules in Pictures has been translated into Italian, Dutch and Spanish. Editions in Japanese and Swedish are to be published this year. Some 65,000 copies of the original version were distributed.

Edited by Joe Dey

Golf Rules in Pictures is published by Grosset and Dunlap, New York, and was compiled and edited by Joseph C. Dey, Jr., USGA executive director, with the aid of P. J. Boatwright, Jr. and C. Edmund Miller. There is an introduction by Wm. Ward Foshay, chairman of the USGA rules of golf committee.

The book is available at \$1.95 from the USGA and many pro shops and bookstores.