

# USGA Reports On Substitutes For Mercury Fungicides

By JOHN MONTEITH, Jr.

A FEW years ago the USGA Green Section, anticipating a shortage in mercury supplies, started tests to determine the value of some of the newer chemicals that offered possibilities as fungicides for turf. The tests were conducted at the Arlington Turf Garden and on nurseries of nearby golf courses, particularly the Chevy Chase club and the Manor CC.

The types of chemicals that were tested included: Diorthotolylguanidine, Manganese dimethyl dithiocarbamate, Mercaptobenzothiazole, Tetramethyl thiuramdisulfide, Dibenzothiazyl dimethylthiol urea, Ferric dimethyldithiocarbamate, Monoethanolamine, Diethanolamine, Triethanolamine, Sulfanilamide, and Piperidine pentamethylene dithiocarbamate.

Fortunately the list does not have to be memorized for most of these chemicals don't work as turf fungicides.

## More Than 100 Chemicals Tested

Among the more than 100 chemicals tested were several that showed some promise for brown-patch or dollar spot control. Some of them which checked diseases had to be ruled out because they burned the grass too much at concentrations needed for control. In other instances the rates needed were so heavy that the cost of any effective treatment appeared prohibitive. In other cases the control was sporadic and further testing will be needed before such materials can be generally recommended.

Results of some of the preliminary tests which were conducted by the Green Section were reported by George E. Harrington in the March 28, 1941, issue of *Science*, p. 311. There it was pointed out that, "some of the thiuram sulfide compounds have shown considerable promise. Of these, tetramethyl thiuramdisulfide (known commercially as Tuads, Thiurad, and DuBay 1205-U) has been the most effective to date."

The tests were made on different strains of creeping bent but no injury to the turf developed at any of the rates used.

The tetramethyl thiuramdisulfide was

mixed with sufficient dry sand to give it bulk enough for even distribution. It was then applied and the turf was watered lightly. Applications were made regularly throughout the season at weekly intervals. The results with this chemical as reported in the above mentioned issue of *Science* were stated as follows:

"This season's applications of the chemical at the rate of 4 oz. to 1,000 sq. ft. effected complete control of both diseases, whereas the untreated plots were 70% infected. In these series the turf was superior to that on the plots which had received treatments with mercury fungicides. Lighter applications were tried for the control of dollar spot. A 2-oz. rate gave just as effective control as a 4-oz. rate when repeated treatments were employed. Where the rate of application was reduced to 1 oz. to 1,000 sq. ft., from 7 to 15% of the area became infected."

Since the above tests were reported the Green Section has made further trials with this material in the vicinity of Washington and in other sections of the country. The material has continued to show much promise for the control of brown-patch and dollar spot as well as other diseases, the causes of which were not determined but which are generally classed under the category of "scald." The evidence also indicated that this chemical gave prolonged protection comparable to that of mercury treatments.

## Tested on Snowmold

Applications of this chemical were made also in the snowmold region during the falls of 1940 and 1941. The tests in the winter of 1940-41 were not convincing due to the fact that the snowmold injury in most of the areas where the tests were conducted was so light that definite conclusions were not justified. Fortunately, from the standpoint of the tests, during the winter of 1941-42 snowmold was more active in the areas where some of the tests were conducted.

The accompanying picture shows the result of one of the tests conducted at the Woodmont CC in Milwaukee, Wis. This

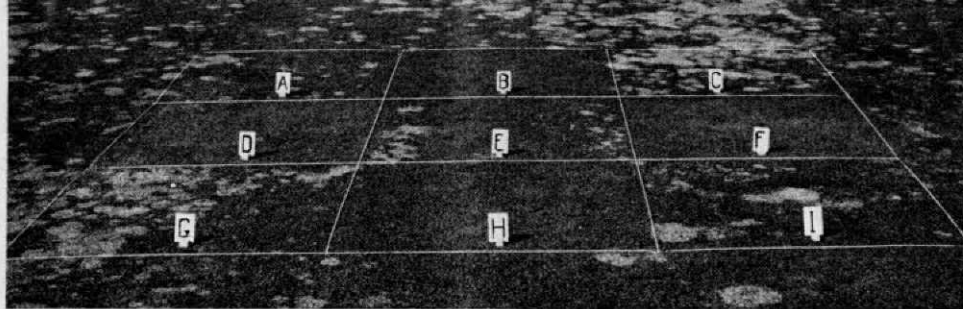


Photo shows complete control of snowmold with tetramethyl thiuramdisulfide at 4 oz. to 1,000 sq. ft. in plots B and H, and with a mixture of 1 part bichloride of mercury and 2 parts of calomel at the 4-oz. rate in plots D and F. The four corner plots show lack of control with another possible organic fungicide at the 3- and 6-oz. rates.

test was supervised by Dr. O. J. Noer, who took the picture this spring.

The center plot (E) received no treatment. The two plots on either side (D and F) each had received a fall treatment of 4 oz. to 1,000 sq. ft. of a mixture of one part corrosive sublimate and two parts calomel. The plots above and below the center (B and H) received a fall treatment of 4 oz. of tetramethyl thiuramdisulfide. The corner plots were treated with different rates of another chemical which was not effective.

We have also received a report from Prof. James Tyson telling of the results he obtained in duplicate tests he laid out on turf in Lansing, Mich. Professor Tyson reports that in the center plot (E) which received no fungicide the snowmold damage was severe, affecting 40% of the turf on one plot and 45% in the check plot in the duplicate series. In the plots treated with a combination of one part corrosive sublimate and two parts calomel no snowmold whatsoever developed. Likewise in plot "B", which received 4 oz. of tetramethyl thiuramdisulfide, he reports that no snowmold developed. In plot "H" in both series however some slight injury developed which he rated as 5% in one series and 10% in the other. His corner plots, as in the test in Milwaukee, all showed some damage from snowmold.

These tests indicate that when compared pound for pound with the corrosive sublimate-calomel mixture this chemical has real value for the control of snowmold.

Some of the other chemicals that have been reported recently as having been found to have merit for the control of turf diseases have not given anywhere near as favorable results in tests in Washington as they apparently have done elsewhere. Since none of these other chemicals have

been thoroughly tested throughout the country it is not wise to stock up with any of them too extensively until their value under your particular conditions has been more fully determined.

## PGA Pros Annual Tourney At Seaview Club, May 25-31

**T**WENTY-FIFTH annual PGA championship will be played over the Seaview CC course at Atlantic City, N. J., May 25-31, with a field of nearly 120 expected to take part. Although the Seaview layout is not classed as one of the tough courses of the country, there are several holes, notably numbers 2, 3, 6, 14, 15, and 17, that are expected to cause the pros quite a little trouble.

Vic Ghezzi, a private in the Army at Fort Monmouth, N. J., has been granted leave to defend his championship, according to Fred Corcoran, tournament bureau manager. Another entry will be Walter Hagen, who, at 49, will come out of retirement to compete again for the title he has won five times.

War conditions have forced a change in the amount of prize money, which was scheduled to be boosted to \$14,200 this year by action at the last annual meeting. However, it was recently voted that the increased prize money should not take effect until after the war. Therefore, the championship will be played for relatively the same prize amount as in the past—\$7,100. Railroad expenses will be paid as per usual custom. This year, however, only 32 are to qualify for match play and all matches will be at 36 holes. Net profits of the event are to be given to Army and Navy relief funds.