

signed to jobs and pay the tax on their wages. The relationship there is exactly the same as it is with a caddie-master at a golf club.

"As secretary of this club, I wish to protest against this ruling which appears to me to be so far-fetched and unreasonable. I cannot see how a caddie could possibly earn enough to qualify for benefits, or any common sense basis for holding that caddie fees should be taxable. Neither can I see how you could expect a correct accounting of their activities from golf clubs which are too small to maintain a systematic record. Secretaries of these golf clubs, just as officers in any volunteer social organization, perform their duties in order to try to keep the organizations going without any thought of compensa-

tion. Holding such organizations under the regulation of so many laws has multiplied their duties until they have become tremendously burdensome, and so do the taxes. Our own club, for example, must obtain 15 cents with which to pay tax for every dollar that it obtains, to keep going. This is in addition to making out all the reports that are required by the various agencies of government.

"As one who is doing his best to go along with governmental agencies and conform to their requirements, I want earnestly to urge you to arrive at a ruling which will more nearly result in compliance than in evasion because I feel sure that in many cases club officers will not even make a conscientious effort to comply with this ruling."

What War is Doing To Turf Treatment

By John Monteith, Jr.

FOR years many Americans have regarded European squabbles as nothing to concern us. Recent months, however, have demonstrated many ways in which European affairs may complicate American operations. One item which to most people would seem well removed from wars, is the control of diseases on our American putting greens. Nevertheless, the fact is that the war is actually having a decided effect on the cost of controlling brown-patch and dollar spot.

The most effective fungicides known for the control of turf diseases are those that contain mercury. It so happens that mercury is one of the metals extensively used in wars for the manufacture of fulminate of mercury, employed as a detonator for high explosives. Other mercury salts are also extensively used by the medical corps of armies.

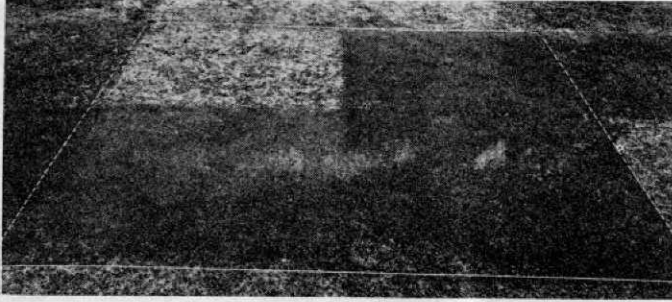
The big majority of the normal world's supply of mercury has for many years come from Europe—chiefly Spain and Italy. We produce in this country only a small percentage of our peace-time requirements. On the other hand, we have large quantities of mercury ore in the United States. This ore, however, is of low grade, which does not justify being extensively worked when the price of metallic mercury (quicksilver) is not well

above the normal level. It seems the development of new or abandoned mines is a slow process, so production is rather tardy responding to even a drastic rise of prices. Therefore, in spite of the stimulation of domestic mercury production the war in Europe will have a pronounced effect on the seemingly unrelated fight against turf diseases on the golf courses of this country.

Metallic mercury is ordinarily handled in flasks weighing 76 pounds. The average flask price in New York last August was \$84.41. In September it jumped up to \$140. And in March the price once went as high as \$183.

Corrosive sublimate contains approximately 74% of mercury. Thus to manufacture 100 pounds of corrosive sublimate it is necessary to use practically a flask of quicksilver. Because of its even higher mercury content, a flask of mercury will produce only about 90 lbs. of calomel. On the other hand, a flask will produce from 400 to 700 lbs. of some of the lower grade mercury fungicides commonly used on golf courses.

The other ingredients in these fungicides represent relatively negligible items of cost. For instance, the other ingredient of corrosive sublimate and calomel is chlorine. This material is a part of such



This turf test plot shows control of dollar spot with mercury combinations. Upper left square received no mercury. Upper right was treated with calomel; lower left with metallic mercury precipitated, or powdered chalk; lower right received oxide of mercury. These highly concentrated simple preparations of mercury all gave effective control of the disease.

cheap chemicals as common table salt. Their chemical relationship is indicated in the technical names sodium chloride (table salt), mercuric chloride (corrosive sublimate), and mercurous chloride (calomel). Since mercury is by far the most expensive ingredient of this group of turf fungicides, the prices must obviously increase most markedly for those compounds that contain the highest percentage of mercury.

At present prices many greenkeepers are tempted to switch from the standard disease treatments with corrosive sublimate and calomel to some of the preparations that have not changed in price. Before making such a decision one should figure the amount of mercury contained in the materials under consideration, since the actual mercury content is the chief measure of effectiveness of these fungicides as far as turf diseases are concerned.

Cost May Be Misleading

In buying fungicides it should also be remembered that some of the rates specified in advertising matter are not adequate for any but exceptionally mild cases of disease. Comparisons of costs of such low rates of applications of mercury with the heavier rates of the more concentrated forms are entirely misleading. It is the cost of protection throughout the season that is the important item to consider.

In cases of clubs operating on budgets that will not permit much expense for disease control, the wise plan would seem to be to continue to use the more concentrated forms of mercury rather than the diluted forms. Economies may be effected by using lower rates of these chemicals or by applying them at less frequent intervals. In this way more mercury can be applied at lower cost than is the case with the lower-grade mercury

fungicides, even though they may sell at prices that may appear attractive when compared with corrosive sublimate and calomel on the present cost-per-pound basis.

In order to reduce the cost of control, many mild cases of disease may be safely overlooked. Single greens or even parts of greens may be given treatments of fungicides as needed, rather than making general applications. Although decided economies may be accomplished by such means it should be perfectly obvious that they can be easily overdone. When a mild attack of dollar spot, for instance, appears in a scattered way on a few greens, it is a common practice to treat all the greens as a precautionary measure. If available funds require limited treatments this first attack may safely be ignored. Just because the grass recovers rapidly from this attack does not mean that all subsequent attacks can likewise be ignored. Where severe or frequent attacks develop it is false economy to spare the fungicide. The above procedure sums up to mean a balance of less chemical, but good chemicals and better judgment.

No Substitute Yet

The question of substitutes for mercury naturally is raised frequently these days. Unfortunately there is no satisfactory substitute in sight at present. Various chemicals have been found to check both brown-patch and dollar spot but none of them give the prolonged protection provided by the mercury compounds. Furthermore most of them that give any promising control are toxic to grass under unfavorable conditions.

In recent months there has been some loose talk about the various copper compounds—particularly Bordeaux mixture. This suggestion is by no means as new as

some individuals seem to imagine. Bordeaux mixture was one of the first fungicides used in agriculture and the first extensively used against brown-patch. It was later found that the copper accumulations resulting from its use caused severe damage to turf.

Some individuals who have never seen copper injury to turf may easily challenge its occurrence. Those who have seen it need no theories as to its non-existence and they recognize the costs involved in overcoming it. Copper poisoning does not develop in all soils—at least not as rapidly. As yet no one has determined where it may be toxic and where harmless. Tests with lime, contrary to some theories, have failed to overcome it.

No Saving With Bordeaux Mixture

One important fault in the reasoning of those who advocate economy in disease control through the use of Bordeaux mixture, is that they think in terms of costs per pound of Bordeaux mixture as compared with the mercury salts. An ounce or even half an ounce of corrosive sublimate is usually as effective as a pound of Bordeaux mixture. Therefore the price of Bordeaux mixture should be multiplied by at least 16 for a fair comparison. Add to this the absence of "hold-over" protection in the case of the copper compounds, which necessitates more frequent applications, and the fact that they do not control dollar spot and one fails to find any inducement to use copper rather than mercury compounds even at present prices.

The dye combinations containing malachite green are the most attractive substitutes for mercury. These, like the copper salts, must be applied more frequently than the mercury fungicides to control brown-patch. Also, as in the case of the copper salts, they are not very effective against dollar spot.

Recently prices of quicksilver have lowered slightly. What further changes occur will naturally depend on developments in Europe.

Midwest Greenkeepers Meet at Fox Valley—First 1940 outdoor meeting of the Midwest greenkeepers was held May 6 at Fox Valley CC (Batavia, Ill.), with Arthur Benson as host superintendent. An afternoon of golf and a fine dinner preceded the meeting at which the feature speaker was Alex Hornkohl, who talked on soil sterilization.

Calendar Does Grand Publicity Job for Kansas Course

PRAIRIE DUNES GC of Hutchinson, Kans., is declared by many authorities to be the world's best 9-hole golf course. It's in Kansas' sand dunes and has several holes that rival the finest of the famous Scotch seaside courses.

Ross Wilson, Prairie Dunes pro-mgr., doesn't claim that the course ranks among the world's most glamorous but he does say that it has 9 of the most picturesque and toughest holes in the mid-continent. His statement is warmly endorsed by many transcontinental golfers.

But, instead of merely telling how attractive its course is, the Prairie Dunes club gets out a calendar that gives a sample. The calendar carries a full color view of the green of the 165-yd. seventh. It's an idea that other clubs should adopt.

Iowa Greensmen Inspect ISC Experimental Turf Plots

MAY meeting of the Iowa Greenkeepers Assn., held May 14 at Iowa State College, Ames, was attended by 35 greenkeepers, who spent the greater part of the time checking over the many bent grass and bluegrass selections now growing on the ISC experimental grass plots.

At the meeting it was agreed that the Iowa association's greenkeepers would con-



Iowa's greenkeepers are shown looking over the ISC bent grass test plots and noting color, texture and density of the various bent grasses.

tinue to support the grass plots at the college at the rate of \$500 per year for five years. June meeting of the group is scheduled for June 11 at the Waveland course in Des Moines.