



That greensmen regard the educational sessions of the annual GSA meeting as serious business is evidenced in this shot. Note the pencils, ready to take notes, and the uniformly close attention being accorded the speaker.

GSA COVERS FAIRWAY PROBLEMS

AT THE recent annual greenkeepers convention, M. E. Farnham, Philadelphia CC, was chairman of the session on Fairway Renovation and Maintenance, a clinical huddle that probably will have definite effect on this year's maintenance work in many sections.

Dr. J. O. Pepper, entomologist, Penn State College, showed pictures of golf course insect pest operations and control.

Farnham, in beginning this part of the GSA educational program, said:

It has been our experience in Philadelphia that the primary improvement in fairway turfs has gotten us considerably into the planting and growth of bent grasses on the fairways. You all know that height of cut is a considerable factor when you are trying to grow bluegrass.

Fescue 'Out' In Philadelphia

We don't have luck with fescue in Philadelphia, which is the reason I don't mention fescue. The height of cut which favors bluegrass, it seems to me, is not a height of cut which is satisfactory for golf fairways, and after all, the height of the turf on a golf fairway, as I see it, is determined not by the grass you are growing but by what your golfers want.

As we get into this bent problem, we all know we can grow bent, perhaps to any extent we care to go into it, because we do want putting greens. True, we may have some treatments or practices with bent fairways which might not hold if we had a more satisfactory grass for fairways. But when we get into this bent angle of the thing, then we also have to fall back very rapidly on our friends, the entomologists.

At this time I am going to ask Prof. John Pepper, to take over and give us some of the story on the insect problem.

PROF. J. O. PEPPER: As far as control measures go, we in Pennsylvania are sticking entirely to arsenate of lead for Japanese beetle and our other grubs. We have Asiatics, ordinary May beetles, our June beetles, and several others of the

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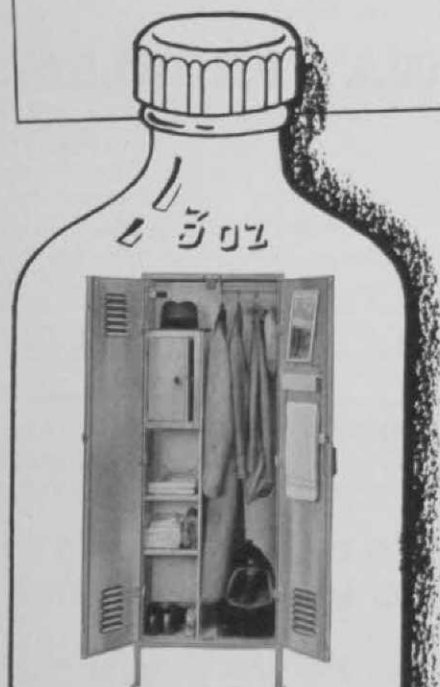
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scarab type feeding larvae, but we find in all cases that with lead arsenate we have been able to have satisfactory control.

Our standing recommendations are 10 lbs. of lead arsenate per 1,000 sq. ft. of turf. That is sometimes varied according to the varying conditions that we get up against. Sometimes a particular course would like to cover most of its fairways and in those cases they may not have money enough to apply 10 lbs. per 1,000 sq. ft., so they drop back to 5 lbs. per 1,000 sq. ft. and some even to 3 lbs.

I do feel that under a heavy larval infestation of Japanese beetle or any other grubs, it is necessary, if you want effective control immediately, to step up the control to 10 lbs. per 1,000 sq. ft.

When to Apply Arsenate

When can arsenate be applied? Any time when the ground is not frozen. Most people are making their application whenever they are most effective, and that is along in August and September, just after the beetles have deposited their eggs, and most of these eggs are hatched as tiny larvae. It is common sense that the smaller the larvae is, the easier it is to kill with the poison in the soil. With this 10 lbs. of lead we feel that we have protection for at least 5 years, and in most cases, 7 years. With 5 lbs. we feel it runs 3 to 5 years.

Many of our people are mixing arsenate with fertilizers and making one application do both jobs at the same time.

We have been able to mix it with most fertilizers except those straight nitrogen fertilizers such as nitrate of soda or sulphate of ammonia—we do not say put it with those. I do not like to see it mixed with hydrated lime and applied. But with some of the complete fertilizers that are being used in our territory, the arsenate of lead, if used immediately after it has been mixed with a fertilizer, at least the same day, can be put on and effective control obtained.

There again, though, there should be enough material added so that you will get an equal distribution of your arsenate of lead. If you are going to use fertilizer you may have to add filler occasionally so as to get the amount up. If we are applying the lead to sand, we like to have about five to ten times the amount of sand to the amount of arsenate of lead we are using so that we can be sure of getting

equal distribution. The material should be very definitely and very thoroughly mixed so as to get your equal distribution.

I want to deal with the cutworm problem and webworm problem, together. I find many people confuse these particular insects. In the very small stages they are easily confused. Webworm moths are only about a third the size of cutworm moths. You will see webworm moths flying around even during the day if you are walking through the grass, whereas cutworm moths will only be seen late in the evening or at twilight.

The immature stages can probably best be separated by this observation: cutworm larvae usually work down just under the surface of the soil at the grass roots, while webworm larvae work right on the surface of the ground and always in a web. And of course some of our men go farther to distinguish the difference between them to trace the little injured area back and see if they can find the hole where the webworm has gone down to pupate. You will find that cutworms do not dig a hole in the ground to pupate but usually crawl out and away from the green onto the taller grass in your approach to the green or on your fairways, where they will spin up and pupate.

In the control of these two types of insects we are up against some difficult problems. We have never attempted to do control work on fairways. All our work has been on greens themselves, because the fairway is so large an area to treat. However, the fairway is a constant source of reinfestation of the greens.

Pyrethrum Gives Effective Control

We have had our best control with pyrethrum. We have tried out a large number of materials and we have tried a great many directions from other states, but after all is said and done, pyrethrum has given us the most effective control. We have been using several of the standard brands of commercial liquid pyrethrum, diluting at the rate of one to four hundred.

The amount applied will vary. We want the turf thoroughly soaked down, and we feel that you are justified in using a gal-

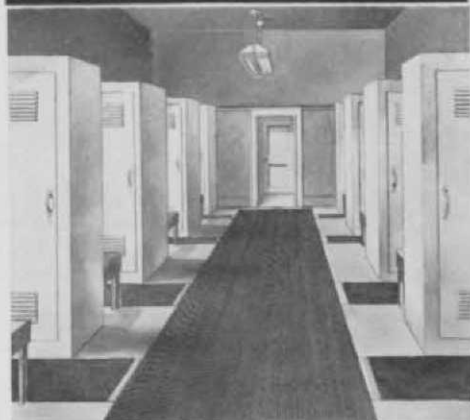
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Well, it had to happen! Miss Golf—1940 appeared as the first of the Miss Golfs who will feature publicity of GSA conventions. The first one named was the highly photogenic Betty Hutton, musical comedy actress.

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lon of the diluted material per square yard of turf. That will vary, of course, with the turf that you are working with, and with the different men. Where this is done you will see both cutworms and sod webworms begin to work their way to the top surface of the grass. We thought for a good while that many worms went back into the turf and continued to kill, but further investigations have proven that we have been getting an excellent control. Any worms that do go back in the turf are dead within a few hours afterwards.

Will Try Arsenate Again

We have heard a great deal about using arsenate of lead for these worms, but we have some greens that we know have been loaded with arsenate of lead, and still on those greens we have observed serious injury from both cutworms and webworms. I hope to do a little bit more work on that particular material another year so we can have a definite answer of either yes or no on that particular problem.

The hairy chinch bug we separate from the conch chinch bug. There is the problem that is hitting our fairways and particularly fairways where we have the bent grasses or velvet grasses. I have made the statement two or three times that I have never seen serious injury on short-cut grass on the greens themselves. However, I have had other people tell me that they have seen serious chinch bug injury on the green.

We have tried several materials on this particular insect. We get two generations in southeastern Pennsylvania—the first occurring in June and the next in August, running on up to cold weather.

It has been my experience—and I think many of our greenkeepers in that area will agree—that as far as economical and effective control is concerned, we have obtained it with tobacco dust. The dust that we have been working with has a three-quarters of one per cent to a one per cent nicotine content. At first we followed some specifications on the fineness of grind of this material that I don't think has altogether worked out satisfactorily for us.

The material we have found that worked best is the material in which all of the dust will pass through a quarter-inch mesh sieve. Now, that means we are going to have some fine material in that mixture and we are going to have some coarse material. I feel that in that way,

and from our observations in the field, we have had a longer effective period of liberation of nicotine than we would to have it all finely ground and volatilize too rapidly, probably, to give us the most effective control. We have been using the dust at the rate of 25 lbs. to 1,000 sq. ft. of turf. Of course, you can't figure that out definitely whenever you get on to a large fairway, but you can figure it fairly close.

There are two most important things on chinch bug control. Be timely with that application against the first generation in June (whenever I speak of June I mean in southeastern Pennsylvania). We try to apply that material when all of the old chinch bugs have come out of hibernation, deposited their eggs, and the majority of those eggs have hatched into the small, immature stages.

Don't Wait Too Long

The other important thing is to get equal distribution of material. You have about a week's time to make your application of material to get satisfactory control. So far we have not put on a second application in the majority of cases where we had that first application timed correctly and applied correctly. We have tried against second generation in August where nothing has been done against the first generation in June, by making two applications of this tobacco dust, but even there I don't think that the control has been nearly as satisfactory as whipping this thing in the beginning.

Ronald MacGregor In Fatal Accident—
Ronald MacGregor, oldest son of John MacGregor, former GSA and Midwest Greenkeepers Assn. president, died January 26 from injuries resulting from an elevator accident at the Crane company in Columbus, Ohio, where he was employed in the sales engineering department of the company. Services were held in Wheaton, Ill.

Mr. MacGregor, who was 27 years old, was born in Hastings-on-the-Hudson, N. Y. He came to Wheaton, Ill., in 1921, when his father became greenkeeper at the Chicago GC. He received his grade and high school education in the Wheaton schools and was given his degree from Antioch College, Yellow Springs, Ohio, in 1937. Surviving besides his parents are a sister, Hazel, and a brother, Barclay.