

# How To Combat Insect Pests

By RAY HUTSON\*

*Entomology Dept., Michigan State College*

A GREAT many complaints are received from golf courses concerning the infestations of newly set deciduous trees by various borers, chiefly the flat-headed apple tree borer. This injury can be eliminated by the precaution of wrapping or with a specially prepared double crepe paper with a filling of asphalt between the two layers.

There are a great number of various kinds of aphids that occur on different kinds of ornamental plants around golf courses. Such aphids are sometimes very annoying but in general may be controlled by judicious applications of a spray consisting of one pint of nicotine sulphate plus four pounds of thoroughly dissolved laundry soap in 100 gals. of water.

## Prevention Is Best Termite Remedy

We occasionally hear of difficulties with termites infecting fence posts, steps, bridges, pump houses, shelters, benches and other wooden structures on golf courses. The best remedy in dealing with termites is prevention. The use of treated lumber in building such structures will add very little to the cost and will more than adequately take care of the termite problem and, in addition, will pay dividends through the increased life of the structures in question. Perhaps many people have noticed that the cross ties sometimes used in making steps on golf courses seem to last forever. The reason for this is simply that cross ties are specially treated with creosote. Railroad companies have a routine procedure in termite proofing.

To the professional entomologist the list of insects infesting turf is not a particularly long one and under the conditions affecting farm crops, the control of these insects is not particularly difficult. However, on a golf course the demand for more smooth turf on the greens and fairways, adds complications.

On the other hand, on most crops affected by these insects available time and money for control is somewhat more limited than on a golf course, despite what any greenkeeper may say to the contrary.

Webworms, cutworms, June and Jap beetle grubs, wireworms, and ants are probably the insects most commonly giving trouble on golf courses. There are a number of other insects which may cause some difficulty occasionally but such outbreaks are in the nature of emergencies and cannot be anticipated.

Webworms of various kinds are found in different sections of the country affecting both greens and fairways. However, it is on the greens that the greatest annoyance occurs. This is partly due to the direct damage inflicted by the insects while feeding and partly due to the activities of birds in trying to use these webworms as food.

Full-grown webworms are not always affected by arsenical grub proofing of the turf, but it has been observed many times that turf which has previously been grub-proofed does not furnish a very good place for the growth of the young larvae. In other words, the webworm problem has not been nearly so pressing on those areas which have previously been grub-proofed.

## Several Kinds of Webworms

Webworms are of several different kinds. Some of them are susceptible to arsenical sprays, while some of them are not. Inquiry of the state experiment station entomologist will usually give you information regarding the matter of whether the local species are susceptible to arsenate of lead or other arsenical poisons.

In those states where it has been shown that the local species of webworms are not susceptible to the usual heavy spray of about 5 lbs. of arsenate of lead to 100 gals. applied over 1,000 sq. ft. of surface, the only recourse is to use one of the contact materials that have proved effective. Pyrethrum, cyanide, and carbon disulphide emulsion have all been shown effective against sod webworm. While these materials give immediate relief, they do not prevent reinfestations.

Pyrethrum, calcium cyanide, and carbon disulphide emulsion are emergency measures and should be considered as such. The usual methods of applying

\*Second half of GSA Convention Paper.



Greensmen who attended the Rutgers University (New Brunswick, N. J.) 13th annual one-week course in turf management, held Feb. 17-21, are shown above. F. G. Helyar was chairman of the conference.

these materials consist in spraying or sprinkling a comparatively concentrated solution over a designated measured area and then washing the material into the ground with a liberal watering. One pint of pyrethrum extract containing  $1\frac{1}{2}$  to 2% pyrethrum diluted sufficiently to permit its being sprayed or sprinkled over 1,000 sq. ft; 1 lb. calcium cyanide dissolved in 50 gal. of water and sprayed or sprinkled over 1,000 sq. ft. and then watered in is the usual way of applying these materials. Carbon disulphide emulsions can be best applied by using a proportioner.

One of the things to be considered in dealing with webworms is the possibility of confusing cutworms and webworms. This is easily done unless one is fairly observing. Again it may be noted that the state experiment station entomologist in every state is always glad to determine insects, and what seems to be sometimes a highly technical question for a greenkeeper is merely the matter of a glance to one trained in such matters.

Generally speaking, cutworms are smooth, heavy-bodied, and anywhere from one-half to two inches in length and rather slow moving. On the other hand, webworms are slim, and show pronounced tubercles or knobs on the different segments of the body, and the length seldom exceeds one inch. Webworms are very active. Cutworms can be readily controlled through the use of poison bran bait applied in the evening because the insects feed at night, the cost not to exceed 50 cents per green, whereas the matter of controlling sod webworm is, as has already been pointed out, a matter requiring the application of expensive materials.

When indications lead to the belief that

webworms or cutworms are working in the greens it is a good idea to mix up about a tablespoonful of any of the better known pyrethrum extracts in 10 qts. of water and pour it upon a suspected spot on the green. Any webworms or cutworms present will immediately pop out on the surface and can be examined.

Poison bran bait consists of bran, molasses, white arsenic, paris green and water. The material is mixed as follows: the white arsenic or paris green, and molasses are added to a gallon or a gallon and a half of water and poured upon the bran and thoroughly mixed together. This can be done on a garage floor or some other surface which can be thoroughly scrubbed afterwards, inasmuch as the material is quite poisonous. After the initial mixing more water should be added and mixed with the bran and arsenic until it forms nicely but will not drip water when squeezed. Some brans require more water than others because they contain more flour.

The wet bait is scattered in the evenings upon the greens, or other affected area where cutworm control is desired. The formula given will make approximately 50 pounds of wet bait which is sufficient for an acre of land; or, depending upon their size, from four to seven greens. The material should be broadcast late in the evening inasmuch as the insects come upon the surface at night to feed, and if the operation is carried on according to the directions and the bait spread at the rate indicated it should not be noticeable after the greens are clipped once. As a usual thing, if there is a population of cutworms present sufficient to warrant the use of the poison bran bait, there will not be enough left to be noticeable the next day whether the green

is clipped or not. One careful application of poison bran bait is usually sufficient to take care of cutworms.

As has been pointed out elsewhere, June beetles sometimes defoliate trees at night on golf courses, particularly oaks. The same thing may be said of the Japanese beetle, which however, differs in that it works upon other trees besides oak, and in the daytime. However, the grubs of both June and Japanese beetles work in the turf of golf courses and constitute a most serious problem. Practically everyone is familiar with the large, fleshy grubs of one or the other of these beetles and the chief thing that we may note at this point is that the June beetle has a three-year life cycle, whereas the Japanese beetle has a one-year life cycle. This makes little difference, insofar as the control measures for grubs are concerned, since this depends upon grub-proofing with lead of arsenate. Lead of arsenate at the rate of 5 lbs. per 1,000 sq. ft. has been found to keep grubs down to a point where they are not much of a problem.

This application should be put on every year for about three years until the soil is well impregnated with the material, after which the intervals can be lengthened. Application of arsenate of lead for grub-proofing greens is not a particularly complicated operation inasmuch as it depends upon mixing the amount for a thousand square feet with a sufficient amount of inert material, such as top-dressing, to give bulk, and then spreading the material over the green and raking and watering it in.

#### Chemicals Must 'Get Into' Soil

Of course, in building new greens and rebuilding old ones it is a good idea to mix the arsenical treatment with the top soil immediately beneath the turf, so that it will be in to the soil for a depth of two or three inches. This treatment has given very excellent control of both Japanese and June beetles.

In general, it may be said that this treatment does not injure the grasses commonly found on greens; however, in some of the dryer parts of the country, particularly where the soil contains certain soluble salts some injury has been noticed, although this has not been a particularly serious problem. In the experience accumulated over a period of years with this treatment, certain empirical rule-of-thumb principles have appeared, the most important one of which

The address given by W. J. Cameron of the Ford Motor Co. before the 15th annual convention of the Greenkeeping Supts. Assn. has been reprinted by the association. It's an interesting and inspiring talk on the relation of golf to American living. Copies may be had free by addressing the GSA, PO Box 106, St. Charles, Ill.

seems to be that it is a good idea to permit a period of two or three weeks to elapse between the application of arsenic and soluble fertilizers.

Wireworms occasionally cause trouble on golf courses but as a usual thing are not particularly troublesome. The wireworm that we have seen on Michigan golf courses is the so-called wheat wireworm, which is usually not found on land of good tilth. In other words, wireworms in Michigan are more likely to occur on poorly drained or acid soils and elimination of them by drainage and liming seem to be about the only things that are necessary.

#### Ants Cause Considerable Annoyance

Ants probably cause more annoyance and inquiry from greenkeepers than any other single group of insects year after year. Ants are of many different kinds and the treatment that is to be applied for their eradication is largely a matter of geography. In those regions where some of the particularly troublesome varieties of ants occur, seeking out and destroying the nest is about the only thing that can be depended upon for relief. Destruction of ant nests may be brought about in a number of different ways, among which I may mention the use of calcium cyanide, which works very well indeed for all kinds of ants, and the use of various baits. Ant baits may contain arsenicals, thallium sulphate, tartar emetic or certain other materials. In the Middle West, we have had very good results from poisoning ants with a simple mixture containing one ounce of paris green and one pound dark brown sugar. This is scattered in the haunts of the ants and results in excellent control.

As I have already indicated, there are other species of ants which require special baits. May I again suggest it would be a good idea to consult the entomologist of your state when troubled by ants, since he is pretty sure to be familiar with the proper kind of ant bait for the locality and state.

Occasionally difficulty is experienced on low-lying ground with slugs. Slugs are not insects but entomologists are asked

about them very often. Slugs belong to the same general group of animals as the oyster. The slimy trails left by slugs are very unsightly and when they become numerous they sometimes injure turf.

As a usual thing slugs occur under drainage conditions that should be remedied. However, in case this is not possible there are many good slug baits on the market containing as the active principle metaldehyde which seems to be specific for these creatures.

## Interesting Golf Program Peps Up Players

ELMWOOD Park at Sioux Falls, S. D., shows many municipal courses how to build up keen golf interest by a program of events and a prize list that beats anything else in this line that has come to GOLFDOM'S attention.

Pro Ed Livingston solicits the prizes from local merchants and gets 100% co-

operation. The merchants get good advertising in mention in the club's tournament program for the year and in the display of prizes in the clubhouse.

The men's competitive calendar starts May 3 and ends formally on Sept. 28, although, weather permitting, there are events that run the schedule into October.

Players who participate in the tournament events join the Elmwood Park GC for \$1. Spring and fall stags are held for the members.

There also is a women's event calendar with prizes awarded by local merchants.

One of the competitions is a Veterans' championship, open to members 50 and older. Livingston donates the prize for that event.

Rain fell for 20 days out of the first three weeks in April at Elmwood Park, but instead of moaning Livingston says Greenkeeper Cliff Anderson and his crew have worked overtime between downpours to get the course in great shape for its opening.

## Health Through Golf Is Cards' Theme

MANY golf club officials will recall the way Life Magazine last year featured activity at the Fort Wayne (Ind.) CC. Officials and managers wondered how Fort Wayne managed to get such heavy patronage from members.

The promotion activities of the club's sec.-mgr., Carl J. Suedhoff, is an important part of the answer. One of the most effective patronage promoting ideas Suedhoff has used is a series of mailing cards that do a strong selling job and bring business men out to the club.

Headings of these cards are: Golf Is Health Insurance; Golf Burns Up Surplus Fat; Walking to Health Over 18 Holes;

Get Away From Your Desk; Build Your Body Now; Many Business Men Die Between ages 50 and 60; Some Big Corporations Demand That Their Executives Play Golf; Golf Is Health Building.

These attractive two-color cards with a brief and convincing message on each one of them are mailed to members' offices on steady schedule. Other clubs have requested the Fort Wayne cards so earnestly that Suedhoff has been compelled to increase his press run on the cards and supplies them on a cost-sharing basis to other clubs.

If you want more dope on these cards, write Carl Suedhoff.

### ★ Walking To Health Over 18 Holes ★



Today the American business man is riding to his grave. He rides to his office . . . if he has a few blocks to go for a business appointment he hails a taxi.

HE SHOULD REMEMBER . . . that a pair of shoes is much cheaper than a castet . . . and that when a fellow is dead he misses so much.

Golf is recognized as health insurance . . . make arrangements to play two or three times weekly.

### ★ BUILD YOUR BODY NOW! ★



. . . spend less time building the bank account (this does not apply to men between the ages of 20 and 35). Many a man in his early sixties is sitting in a wheel chair on the porch of a stone mansion. He spent most of his life building a bank account.

Get out in the open . . . play golf two to three times every week . . . it's the best insurance you can buy.

Two of the Suedhoff cards used to 'sell' business men on the healthful benefits of golf, are reproduced above. The cards are in two-color.