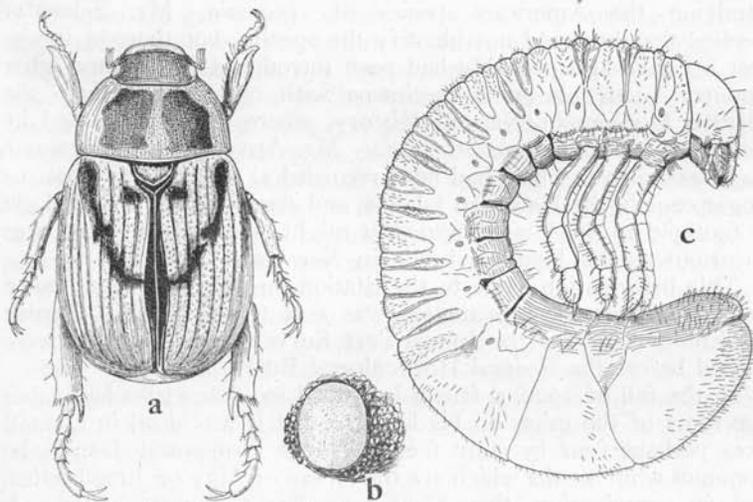


Connecticut Agricultural Experiment Station  
New Haven, Connecticut

A New Pest of Lawns

W. E. BRITTON, *State Entomologist.*

For the past three seasons, lawns in a portion of the Westville section of New Haven have been injured by grubs eating the grass roots causing dead and brown patches—sometimes small and again 15, 20 or more feet in diameter. This damage was



The Asiatic beetle, *Anomala orientalis*. a. adult beetle. b. egg. c. grub or larva. All enlarged about five times.

much more conspicuous the past fall than it has been before, and many complaints and inquiries have been received at the Station concerning the matter.

The insect responsible for the injury is a small brown beetle of the family Scarabaeidae, known to science as *Anomala orientalis* Waterhouse. We have called it the Asiatic beetle to distinguish it from the green Japanese beetle, *Popillia japonica* Newm., which

is now established in southern New Jersey and eastern Pennsylvania. As near as can be determined, it was brought to New Haven in balls of earth on nursery stock from Japan, prior to 1917, when the Federal Horticultural Board prohibited all further importations of plants unless the soil had been removed from the roots.

#### DISCOVERY OF THE PEST.

A few of the beetles were taken by Messrs. Zappe and Walden, Assistant Entomologists of this Station, on July 16 and 21, 1920, in the nursery just south of Edgewood Avenue. They were pinned up and put away with other material. On July 26, 1921, a few more beetles were collected in the same locality. They were immediately recognized as belonging to the genus *Anomala*, but were different from any species in the Station collection or that we had ever seen. Specimens were then sent to Mr. Charles Schaeffer of the Brooklyn, N. Y., Museum, who at that time was studying the American species of *Anomala*. Mr. Schaeffer replied that he could not identify the species, but thought it was not a native and probably had been introduced from some other country. Later he sent specimens with other material to the British Museum of Natural History, where it was identified by Mr. Arrow as *Anomala orientalis*. Mr. Arrow reported it was a Japanese species which had been recorded as a destructive pest of sugar cane in the Hawaiian Islands, and stated that if it should get a foothold in the United States, it might possibly prove to be as injurious as the Japanese beetle in New Jersey.

This information came to the Station on May 17, 1922, and a few days later the information was sent to the Federal Bureau of Entomology for the Insect Pest Survey, and the facts were placed before the Federal Horticultural Board.

In the fall of 1922, a friend informed me that grubs had eaten the roots of the grass on his lawn so that it was dead in a small area perhaps four by eight feet. At first I supposed them to be common white grubs which are the larvae of May or June beetles, but on examination, they seemed smaller and more active. A number were gathered, placed in a small tin box with a little soil and taken to the laboratory. They nipped each other with their jaws and all died. The following spring more material was obtained; only a few were placed in each box with plenty of soil so that they could not injure each other. On July 24, 1923, the adults were obtained and proved to be identical with the specimens collected in that vicinity two and three years before.

#### DISTRIBUTION.

The insect is not known to occur anywhere else in the United States except in Westville, New Haven, where it seems to be restricted to the area bounded by Chapel Street on the south, West Elm Street on the north, and from Yale Avenue to Forest Street. Of course it may develop that the pest has been carried out of this area on the roots of plants or in transporting soil, but no such separate infestations have been discovered.

In the Orient, this species is present in Japan and Hawaii, but apparently it is a native of the Philippine Islands, whence it has been carried to Japan and Hawaii.

#### LIFE HISTORY AND HABITS.

The adult beetles emerge during July and the females lay eggs in the soil. These eggs hatch in a few days and the young grubs feed upon the grass roots within an inch of the surface. On the approach of cold weather, late in October, when about half-grown, they go deeper into the soil for protection from the cold, coming near the surface again in the spring to resume feeding. They become full-grown in June and pupate in cells in the soil. There is one generation each year, though a few of the larvae fail to transform the first year and run over into the second season. The adult beetles apparently fly and feed very little and usually are found in the turf or crawling upon the stems of grass or weeds. In Hawaii this pest caused much injury to sugar cane ten years ago, and a parasite, *Scolia manilae* Ashm., was imported with a view to controlling it. The parasite was successful and in two years reduced the numbers to such an extent that it was difficult to find any of the grubs in the sugar cane fields. This parasite has been brought to this country as a possible check to the Japanese beetle, but does not survive the winters in the vicinity of Philadelphia.

#### DANGER OF SPREAD.

The natural spread of this insect is not as rapid as might be the case were it a strong and active flyer. However, there is great danger of starting new colonies whenever rose bushes or other plants are carried with earth about the roots, or in carting away rubbish from the garden or surplus soil from grading, especially when carried to a point outside the infested area. Property owners and tenants are therefore cautioned against allowing any soil to be carried away from their premises. If allowed to spread southward, *Anomala orientalis* might become a serious pest of various crops.

## CONTROL MEASURES.

The most promising control measures are treating the soil with something that will kill the grubs. Calcium cyanide and sodium cyanide, both dangerous poisons, have been used for this purpose. Either used at the rate of four ounces per square yard, and the ground well watered, will kill the grubs, but the vegetation will be injured. Carbon disulphide can now be made in the form of an emulsion which when applied to the soil will kill the grubs without injuring the grass and other vegetation.

## ERADICATION RECOMMENDED.

At our request, specialists were sent from the Federal Bureau of Entomology to review the situation, and on October 29, 1925, Mr. Loren B. Smith in charge of Japanese beetle investigations, with Messrs. B. R. Leach and J. P. Johnson, all of Riverton, N. J., visited New Haven and inspected the infested territory. Soon afterwards, Mr. Smith submitted a report recommending that a co-operative attempt be made to eradicate the insect from this section. To do so is estimated to cost at least \$25,000.00. Federal authorities expect that \$10,000.00 will be raised in Connecticut. Probably a part of this amount will be available from State funds, and the City of New Haven may be asked to make an appropriation. The Edgewood Civic Association, through a special committee, asks property owners and residents to contribute towards this sum; they can afford to do so if there is a prospect of becoming rid of the pest altogether, and many have already expended modest sums on their own premises which will avail them little unless eradication measures are carried out over the whole area. The plans include treating the entire area with carbon disulphide emulsion under Federal and State direction and after the most approved methods.

In case the efforts are not immediately successful in eradicating this pest, they will surely reduce its numbers to such an extent that little damage will be done, and the danger of spread will be small in comparison with present conditions. We believe, however, that the chances for success are excellent. If prompt measures for extermination, in the light of our present knowledge, could have been carried out with such pests as the gipsy moth and the Japanese beetle, many millions of dollars might have been saved by the American people.