

It should not be forgotten that aside from the matter of the holes, the work of the birds in and about golf greens is likely to be entirely beneficial. The destruction of cutworms in itself is very desirable, as they are certainly not in golf greens for the good of the turf. The birds collected on Arlington Farm had eaten a good many ants, insects which are constantly throwing up small mounds of dirt on the surface of greens, much to the disgust of golfers. Nearly a third of the food of the starlings collected consisted of ants. Billbugs and grasshoppers, insects also injurious to grass, were taken by the birds; and as is well known, robins are great consumers of earthworms, creatures which greenkeepers desire to eliminate from putting turf. As a final thought we need only urge what is apparent to all that the general value of insectivorous birds is such that aggressive action against them should not be undertaken except after thorough investigation and for important reasons. Fight insects directly and you will find that birds are your allies in the campaign.

Japanese Beetle Parasites Collected in Native Land

Four large shipments of Japanese beetle parasites were received recently by the Bureau of Entomology of the United States Department of Agriculture. They came from the field laboratory of the bureau at Yokohama, Japan, and were sent to the Japanese beetle laboratory at Moorestown, N. J.

Few people understand the difficulty and cost of obtaining, storing, and shipping these parasites. To get them, T. R. Gardner, entomologist in charge of the Yokohama laboratory, and his staff of Japanese assistants, had to search for weeks to collect the necessary species.

Two of these shipments consisted of Japanese beetle larvae parasitized by two species of flies. The other two shipments were adult wasps of a species native to Korea. In the case of one species of flies, the female flies had first to be caught, and then dissected under a microscope. Two or three of the minute larvae found within the larval sac were then placed on each grub of the host "Popillia" or Japanese beetle. These minute larvae would almost immediately enter their host. The grubs were then stored in "grub plots" out of doors for the winter, and shipment was made the following spring.

The shipments of wasps were in tins provided with all the necessities of life. They arrived in excellent condition. The first shipment, of 5,285 wasps, came through with 86.5 per cent alive; the second, about 5,700 somewhat older adults, with 64.7 per cent alive.

Most careful preparations must be made for expediting these parasites across the Pacific and this continent. Cablegrams are sent to clear the way for rapid delivery, and when once started they move on their route as fast as mail. In the meantime the laboratory here makes preparations for receiving them, and by the time they arrive is ready to store them properly or liberate them immediately, according to the species and the season. In some cases parasites received at one time of year must be held over until the proper time has come in the life cycle of the host beetles for their attack to be effective. It has been found, too, that better results are obtained when very large numbers of parasites are liberated at one time.