

A CONTRIBUTION TO THE BIOLOGY AND DISTRIBUTION OF ONE OF THE LEGIONARY ANTS,
ECITON SCHMITTI EMERY.*

M. R. SMITH,
A. and M. College, Mississippi.

This ant is of special interest because it is one of the few species of *Eciton* or legionary ants known to occur in the southern and central sections of the United States. The legionary or driver ants are most common to the tropics where they attract considerable attention on account of their remarkable foraging raids in which many arthropods and small vertebrates are killed and directly eaten by the ants.

In this country very little is known about *E. schmitti* Emery or any of the related species since the ants are mostly subterranean in habit and seldom seen. In view of this fact the writer thought that he might add to the knowledge of the feeding habits of this species by recording some observations which he has made during the past fall (1926). It was also thought worth while to briefly summarize here our present knowledge of the distribution and biological habits of this species.

Eciton schmitti Emery is at present known to be distributed in the United States from Texas and New Mexico eastward to North Carolina and from the Gulf States northward to Colorado and Iowa. It has been definitely recorded from the following states: Texas, New Mexico, Colorado, Missouri, North Carolina, Kansas, Louisiana, Mississippi and Iowa. The writer believes that careful collecting will reveal its presence in a number of other states, most of which lie within the range just mentioned.

This ant, like the other species of *Eciton*, does not appear to live long in any one nest but moves like a nomad from place to place occupying only temporary habitations. These moves are probably governed largely by the availability of food for them. Their nests occasionally have been found in the soil beneath stones and concrete sidewalks and the steps of houses. The colonies, judging from what the writer has seen of them, are moderately large in size. Unlike many ants, this species has

*A contribution from the Mississippi Agricultural Experiment Station).

only one female to a colony, this female being of huge size when compared to the workers. In this respect the female of *E. schmitti* Emery bears a similarity to that of a large termite queen. The female is from 13-17 mm. in length, is never winged and because of her large size and apterous condition is known as a dictyodiigyne. The males are also large and striking in appearance and resemble wasps more than they do ants. One of the peculiarities of this sex is the fact that the males, like the females, possess a single segmented petiole whereas the workers have a two segmented petiole. The workers are polymorphic, highly chitinized insects with exceedingly small eyes, which appear on the sides of their heads like small ocelli. Due to their vestigial eyes the workers depend on their sense of odor for a guide in traveling and for this reason they always follow a very definite trail.

Wheeler has taken alate males of this species in Texas on October 3rd and 13th and the writer has received specimens from Mr. O. W. Rosewall at Baton Rouge, Louisiana, which were captured there on the 16th of November. It would appear from these records that the males do not reach maturity until late in the season.

No one seems to have made any observations on the number of females produced by a colony or the time of year that they reach maturity. The females are so secretive in disposition that very few have been observed. The writer does not know of over three females in existence in the collections of this country, a fact which indicates their rarity.

According to Wheeler the odor of the workers is very disagreeable, similar to that of fecal matter and he attributes this to the fact that the ants feed entirely on flesh. The males and females have a pleasant odor and the workers seem to enjoy clustering around them. Wheeler says that he does not know of any ants in which the workers show such an extreme fondness for the sexed forms as do the workers of these ants. A colony which he kept in captivity was most active between five and seven o'clock in the evening, after this time their activity seemed to die down.

In Texas, Wheeler found that this ant robbed and fed upon the brood of other ants. He succeeded in identifying some of the appropriated brood and found that it belonged to the fire ant, *Solenopsis geminata* Fabr. and to several species of *Pheidole*.

He also noted that the ants fed on carabid beetles belonging to the genera *Harpalus* and *Pterostichus* and a species of undetermined termite.

During the past fall (1926), the writer encountered these ants on three occasions; each time they were engaged in raiding the nests of other ants. They were first encountered at McComb, Mississippi, on the forenoon of October 11th at which time the ants were observed carrying in their mandibles females and workers of the Argentine ant, *Iridomyrmex humilis* Mayr, workers of the ants, *Camponotus caryæ* subsp. *rasilis* Wheeler and workers of an undetermined species of termite. No larvæ of any of these forms were seen in the mandibles of the ants, but these may have escaped observation. All of the prey was secured from the base and trunk of a large oak tree. At Columbus, Mississippi, the ants were encountered a second time in the late afternoon of November 4th. At this time the ants were noted to be carrying workers of the following species: the small sugar ant, *Prenolepis* (*Nylanderia*) sp., the tiny thief ant, *Solenopsis molesta* Say and those of an undetermined species of termite. The prey was apparently secured from cavities in the soil beneath a pile of leaves. On the afternoon of November 13th the ants were observed for a third time at Mayhew, Mississippi. They were noted to be carrying termite workers and soldiers of the ant, *Pheidole vinelandica* Mayr. Some were seen carrying to their nest several carabid beetles, species undetermined. One of these beetles was decapitated and appeared to have been freshly killed. The nest of the ants was found in a slightly open grassy spot about eight feet from the base of a fence post from which they were getting the termite workers. The nest was so inconspicuous that the writer would never have discovered it had he not seen the worker ants returning to it with their prey. Although the workers of *E. schmitti* Emery were not observed to directly eat the species which they captured it is not presuming too much to assume that they did, as all species of the genus, so far as the writer is aware, are entirely carnivorous and there is every reason for supposing that they would eat ants as quickly as other insects. Wheeler has observed them feeding on the brood of other ants and this is in line with the assumption that they also feed on adult ants as well. Several years ago the writer received a note from Mr. Andrew Fleming of Sibley,

Mississippi stating that he had found the workers of *Eciton pilosus* F. Smith carrying workers of a species of ant in their mouths. The ants which the workers were carrying were sent to the writer for determination and he found them to be those of *Creamatogaster ashmeadi* Mayr an ant, which in this section nests in trees, plants, etc., never in the soil. All of the observations mentioned here seem to prove that the species of *Eciton* in this section at least, often feed on the adult ants as well as the brood.