country, and curiously seem to resemble it in general appearance. Their expeditions are made during the afternoon from the end of June to August, occasionally three times in the same day.

I wish to tender my sincere thanks to Prof. W. M. Wheeler for his valuable suggestions.

March 15, 1911.

ON *MELANETÆRIUS INFERNALIS* FALL.

By WILLIAM MORTON WHEELER,
Harvard University.

The singular Histerid beetle *Melanetærius infernalis* was first described by Fall in this journal in 1907¹ from a single individual taken at Pasadena, California, Dec. 1st, 1902, "from nest of unknown ant." While I was on a collecting trip during the past winter in Arizona and California Mr. Fall showed me the type specimen, which he had found in a collection obtained from a local entomologist who had died without leaving any information concerning the precise locality in which the beetle had been captured. By a strange coincidence, while I was collecting Dec. 1st, 1910, on the anniversary of the taking of this type specimen, I not only rediscovered the beetle but was able to ascertain the host-ant with which, in all probability, it normally lives. In a small canyon that enters the west side of the Gran Arroyo Seco near Pasadena, I found several nests of the typical yellow form of *Pheidole hyatti* Emery. All of these were under rather large stones, and from one of the nests, which was somewhat isolated and in the middle of the floor of the canyon, I took seven specimens of the *Melanetærius*. They were all quietly clinging to the under surface of the stone in the midst of the ants and made no effort to escape when the nest was disturbed. A few hundred yards from this spot and at the very opening of the side canyon into the Arroyo I found another colony of the same ant containing a single specimen of the beetle.

All of the specimens agree very closely with one another and

¹ Two New Myrmecophilous Histeridæ. Psyche XIV, Aug. 1907, pp. 68-70.

with the type, so that there is nothing to add to Fall's excellent description. The accompanying figure shows the generic characters of *Melanetærius* as distinguished from those of *Hetærius*, viz. the absence of the elytral striæ and longitudinal thoracic grooves, the peculiar shape of the sides of the thorax, the remarkable legs with the elongate grooves at the dilated apices of the tibiæ for the accommodation of the reflexible tarsi, the remarkable folded hind tibiæ and the foveolate or coarsely punctate surface of much of the body.

The sides of the elytra bear stubby yellow hairs and the legs and tips of the median thoracic tubercles have pointed hairs of the

Fig. 1. *Melanetærius infernalis* Fall.

same color. All these hairs are probably ant-alluring in function. It is, moreover, not improbable that the foveolæ are connected with exudate glands, but without a study of sections, this statement cannot be substantiated.

The typical form of *Pheidole hyatti* is very common in southern California, especially in the neighborhood of Pasadena, Claremont and Santa Barbara, where it nests in dry, open fields, usually under rather large stones but sometimes in obscure crater nests about the roots of plants in the chaparral. After finding the *Melanetærius* in two nests, I carefully searched all the *Pheidole* colonies which I encountered—several hundred in number—but the beetle was

not again seen. It is certain, therefore, that it must be very rare and local. Since the various species of *Hetarius* occur only with species of *Formica* or very rarely (*H. minimus* Fall) with species of *Lasius*, the occurrence of *Melanctarius* in the colonies of a Myrmicine ant is additional evidence, if it were needed, that Fall was right in regarding this beetle as the type of a distinct genus and not as an aberrant species of *Hetarius*.

THE SOUND-MAKING OF DIPTERA AND HYMENOPTERA.

By C. E. PEMBERTON,

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That many Diptera and Hymenoptera produce sounds in two distinct ways has been an accepted belief for a long time. One of these ways is by the rapid vibration of the wings in the air; the other one is by the forcible inspiration and expiration of air through the spiracles, especially the thoracic ones.

The production of insect sounds by organs other than the wings was probably first noted by Aristotle when he said that the tracheæ were set in vibration by rapid in- and out-rushings of air causing a vibration somewhat similar to that produced by certain reed instruments.

Dr. H. Landois in 1867 in a very complete and exhaustive paper on the sounds and sound apparatus of insects devoted considerable attention to the Diptera and Hymenoptera. He made some elaborate explanations to prove that sounds were produced by certain vibratory portions of the spiracles, and performed a number of experiments to verify his explanations.

Burmeister also has advanced the theory that flies produced sounds by forcing air violently through the spiracles thus producing a vibration loud enough to be heard, and similar theories have been advanced by others. Landois's work however is still probably the standard.

Landois experimented with the house fly, (*Musca domestica*) a flower fly (*Eristalis tenax*), a dung fly (*Scatophaga stercoraria*),