

SOME MYRMECOPHILOUS PHORIDÆ FROM THE NEOTROPICAL REGION.<sup>1</sup>

BY CHARLES T. BRUES.

The several interesting flies described in the present paper have been sent to me through the kindness of Dr. Wm. M. Mann. During the course of his myrmecological excursions he never fails to obtain series of myrmecophilous insects and among these there are usually a few forms of wingless or subapterous Phoridæ. Those obtained by him recently in Mexico and Central America include several remarkable species taken in the nests of a number of ants, mainly with *Eciton* and *Pheidole*.

The types of the new species are deposited in the United States National Museum in Washington.

***Ecitomyia* Brues.**

American Natural., vol. 35, p. 347 (1901)

Since I described this genus nearly twenty-five years ago, the type species, *E. wheeleri* remained its only representative until 1923 when Borgmeier added two species from Brazil. The name *Ecitomyia* was originally applied as the Texan *E. wheeleri* was found to be regularly associated with *Eciton cæcum*. Borgmeier's two species were, however, found associated with *Solenopsis sævissima* var. *picea* and I now have a fourth species taken in Costa Rica with *Pheidole*.

It is evident therefore that the genus is by no means restricted to the driver ants although there can be no doubt that *E. wheeleri* is a true ecitophile and that it is restricted at least in Texas to association with *Eciton cæcum*. I have taken it many times and in considerable numbers, but never encountered it with any of the other species of *Eciton* that are common in that region.

*Ecitomyia* is closely similar to *Ecitophora* Schmitz and in error I once referred the type species to *Ecitomyia* (*Psyche*, vol.

<sup>1</sup>Contribution from the Entomological Laboratory of the Bussey Institution, Harvard University, No. 253.

30, p. 21, February 1923) although later in the same year I have correctly referred it to *Ecitophora* (*Zoologica*, New York, vol. 3, p. 439; (October 1923). As Schmitz has since pointed out on numerous occasions *Ecitophora* possesses well developed ocelli while these are entirely lacking in *Ecitomyia*.<sup>1</sup>

The Costa Rican species is most closely related to its northern congener, *E. wheeleri* Brues, but differs in chaetotoxy and considering its different host relations must I think be regarded as a distinct species.

### *Ecitomyia manni* sp. nov.

♀. Length 0.7-0.8 mm. Very similar to *E. wheeleri*. Eyes decidedly smaller in diameter than the third antennal joint. Post-antennal bristles large and strong, as long as the tennal joint; lateral bristles of the second and third row very weak, much smaller than the median ones. Lateral thoracic bristle nearly as long as the dorsum of thorax (.075 mm. as compared to .063 mm. in *E. wheeleri*). Wing as long as the dorsum, its bristles about 25 $\mu$  in length (compared to 13 $\mu$  in *E. wheeleri*). Second abdominal tergite not noticeably narrowed basally.

Type and two paratypes from Estrella Valley, Costa Rica (W. M. Mann). These were taken by Dr. Mann in April, 1924 in a nest of *Pheidole*.

<sup>1</sup>In his original description Schmitz speaks of the type of *Ecitophora* having been bleached in the preservative fluid and of the extreme difficulty in detecting the bristles of the front. In *Psyche* (l. c.) I have suggested that possibly Schmitz might have mistaken the insertions of bristles for the ocelli. This remark was certainly not intended as any criticism of this author's uniformly painstaking work on these extremely small insects. The writer appreciates only too well the difficulties of studying them when imperfectly preserved or when injured before or after preservation or even when the mounting does not allow one to turn the specimen into the proper position to determine minute characters. On finding finely preserved specimens agreeing almost exactly with Schmitz's description of *Ecitophora comes*, but without ocelli, I naturally supposed that the ocelli described were really the points where bristles had been inserted. Father Schmitz has however assured me that the condition of the type allows *three* ocelli to be distinguished. I wish therefore to make an apology for my seemingly very hasty remark which as indicated above was in no way intended to suggest any carelessness on the part of a most accurate observer. Further work also attests the accuracy of Schmitz's first observation as additional specimens of *E. comes* have since been collected and other species discovered.

As indicated this species differs from *E. wheeleri* by the much longer lateral thoracic bristle and wing bristles and in the form of the second abdominal tergite.

In addition to the above I have another most remarkable species which is referred provisionally at least to *Ecitomyia*. It certainly cannot be placed in any other genus so far described and differs also very conspicuously from the other very closely allied species of this genus in possessing a number of enormously enlarged bristles on the abdomen. These form transverse rows at each side of the tergites which are formed as in *Ecitomyia* as are also the head, thorax and wings. As I suspect that intermediate forms may be discovered it does not seem wise to make this the type of a new monotypic genus.

***Ecitomyia spinosa* sp. nov. (Fig. 1)**

♀. Length 1.5-1.7 mm. Head, thorax and abdominal plates and spots yellowish brown; abdomen pale yellowish white; legs brownish yellow; antennæ pale yellow; wings dark, almost black except at base. Head somewhat more than twice as broad as long, the anterior margin of the front rounded, more sharply so at the middle. Mouthparts very small, retracted within the oral cavity which is sharply carinate anteriorly. Eyes small, oval, about one-fourth as long as the head-height; ocelli entirely absent. Antennæ ovate, quite distinctly contracted at the apex; arista long, strongly pubescent, as long as the head-height. Four strong proclinate antennal bristles medially at the anterior margin of the front, the upper pair longer and set further apart; middle frontal row represented only by one lateral bristle near the eye; upper row of four about equally spaced. Thorax oval, twice as wide as long, with a strong bristle at each side and four across the disk; also a pair of smaller ones near the middle behind and another toward the side between the lateral pair of the transverse row. Wings reduced to small band-shaped pads as long as the dorsum of the thorax; the upper surface is convex, the tip more or less pointed and the surface strongly bristly, some of the bristles almost as long as the wing. Abdomen broadly ovate, the four apical segments forming a tube of rather

narrow diameter which is distinctly turned upwards in fully developed specimens; one stenogastric individual has the abdomen much smaller. Dorsal plates of the second to fifth segment present; the second large, with four strong bristles along the hind margin; the others much smaller, each with a pair of bristles

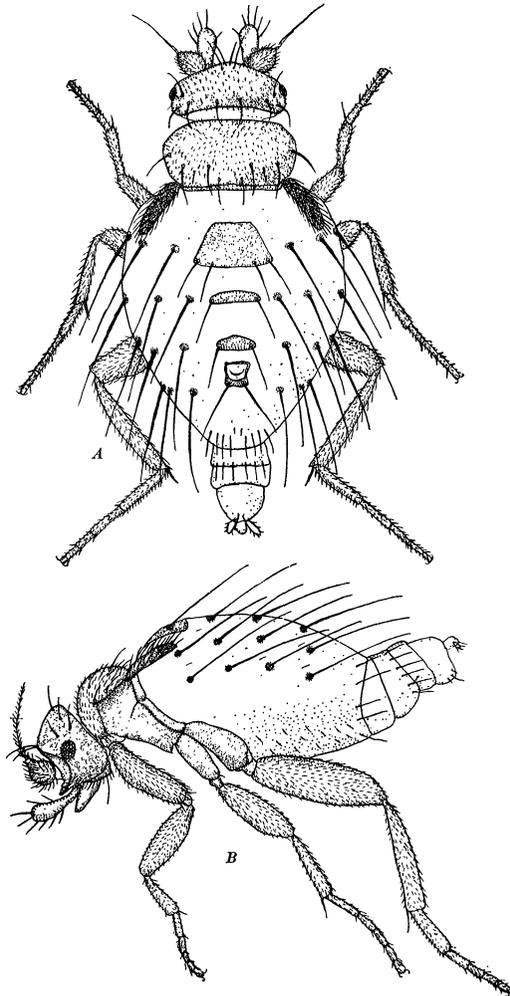


Fig. 1. *Ectomyia spinosa* sp. nov., female. A, dorsal view; B, ventral view.

placed behind close to the lateral angles. Fifth segment with a gland opening which lies within a quadrangular chitinous rim that arises from the front margin of the fifth plate. Abdomen bearing twenty-four greatly enlarged marchochætæ, each about as long as the hind tibia. These are arranged in four transverse rows, three bristles at each side of each abdominal plate. Where each is inserted to the pale abdominal membrane there is a small rounded dark brown spot. These stout, intensely black bristles are very conspicuous and together with the blackish wing pads give the insect a most extraordinary appearance. Legs rather long and not very stout; the hind femora rather noticeably compressed.

Type and three paratypes from Huascato, Jalisco, Mexico (W. M. Mann). These were taken in a nest of *Pheidole* sp. Another specimen from San Diego de Cocula, Jalisco, Mexico (W. M. Mann) was taken with *Eciton*.

The small wings are unusually dark and heavily chitinized, but are evidently very weakly attached to the body as one specimen has lost both wings and two others had only one wing remaining attached when I received them.

#### ***Ecitophora costaricensis* sp. nov.**

♂. Length with abdomen well extruded 1.6 mm.; without tubular apex of abdomen, 1.3 mm. Length of wing 0.30 mm.; of dorsum of thorax 0.24. Front with 14 bristles comprising four strong post-antennal ones of which the upper ones are twice as far apart as the lower, four in the lower frontal row disposed as a pair close to each eye with the outer bristle well above the inner one, six in an upper row close to the vertex with the lateral bristle near the eye margin. Head covered with coarse, well separated hairs, very conspicuous on the sides below the eyes; cheek with a strong downwardly directed bristle. Palpi rather slender, each with six strong bristles. Eye elongate oval, longer than the third antennal joint, but only about two-thirds as wide; ocelli present, well developed. Third joint of antenna subovate, as long as broad; arista distinctly longer than the head-height. Thorax above with eight bristles, one at each

anterior angle, one lateral one just behind the middle and four forming a dorsal line behind the middle with its lateral bristle quite close to the one in front of it; in addition there are two shorter bristles near the median line close to the posterior margin which are undoubtedly homologous to the scutellar bristles although there is no trace of a scutellum. Wing narrow, strap-shaped, strongly bent near the middle, its outer edge clothed with fine bristly hairs at the base and small bristles apically, and in addition with a series of five longer bristles each about half as long as the wing. Abdomen with the second tergite chitinized, one-third longer than wide, the base four-fifths as broad as the apex; anterior angles rounded, posterior ones sharply angulate; with the usual hairs and row of minute apical bristles. Third tergite absent; fourth very small, crescentic, with four marginal bristles; fifth a minute band with a circular ring behind enclosing the gland opening, with two minute bristles at tip. Posterior margin of second to fifth segments with a row of minute bristles; sixth segment bristly medially and at tip. Legs rather stout, the hind metatarsi unusually stout.

Type from Hamburg, Farm, San Jose, Costa Rica (F. Nevermann) taken with *Eciton* sp.

This species agrees closely with the previously described species. From *E. parva* Schm. it may be distinguished by the complete absence of the third tergite and longer wing bristles; from *E. bruchi* Schm. by the presence of 14 frontal bristles; from *E. comes* Schm. by the presence of eight dorsal thoracic bristles and a greater number of wing bristles; and from *E. collegiana* Borgm. and *E. aequalis* Borgm. also by the eight thoracic bristles. Heretofore no species of this genus have been reported outside of the South American continent.

### **Ecituncula** Schmitz

Tijdschr. v. Entom., vol. 66, p. LXXIX (1923)

Schmitz, Pub. No. 4, Mus. Nat. Rio de Janeiro, p. 26 (1924).

A species probably referable to this genus was taken by Dr. Mann in the nest of *Pheidole* in Mexico. It differs greatly from the type and only described species of *Ecituncula* in having

the abdomen beset with a large number of bristly hairs arranged in transverse rows. It differs also in having a lateral pair of well developed frontal bristles in addition to those present in the type species and also has the full number of mesonotal bristles.

There are no wings in either of the two specimens, but as the wings of some of these forms are very readily deciduous, it is impossible to be positive that wings may not have been present. In the species described on an earlier page as *Ecitomyia spinosa* some specimens had lost either one or both wings. As the attachment of the vestigial wing, in this form at least, appears to be very feeble and as microscopical examination does not readily disclose any indication of a rupture of the cuticle, I cannot feel perfectly satisfied on this point.

***Ecituncula setosa* sp. nov. (Fig. 2).**

♀. Length 1.0-1.3 mm., dependent upon the stenogastric or physogastric condition. Head, metathorax and basal abdominal plate dark brownish; antennæ and legs pale testaceous; abdominal membrane pale yellowish white. Head, seen from above, more than twice as wide as long; rounded at the sides and sharply rounded medially in front. Eyes small, about half the diameter of the antenna, with contiguous facets. Four post-antennal bristles near the anterior margin of the front, the upper pair farther apart than the lower one; middle frontal row consisting of four long bristles forming a pair rather close to each eye, the inner one of each pair much higher than the lateral one; ocellar row of four, the median ones nearer to each other than to the adjacent lateral one. Ocelli absent. Palpi of the usual form, with about five strong bristles along the margin. Antennæ oval, slightly acute apically, very densely pubescent; arista very short and thick, composed of three very distinct segments. Mesothorax about twice as broad as long, the sides rounded, slightly angulate just in front of the middle; with a large stout bristle close to each lateral angle and a transverse series of six across the middle of the disc. No trace of wings, although there is a small impression at each posterior angle of the mesothorax at the point where strap-shaped wings are attached in forms where

these are present. Metathorax forming a narrow band lying in a basal emargination of the abdomen. Abdomen in the fully developed physogastric form ovate, at least twice as broad as the head and thorax, widest near the middle of the second segment; dorsum with only one chitinized plate, that of the second segment and a chitinized ring surrounding the gland opening of the fifth segment; the second plate is about as long as broad at

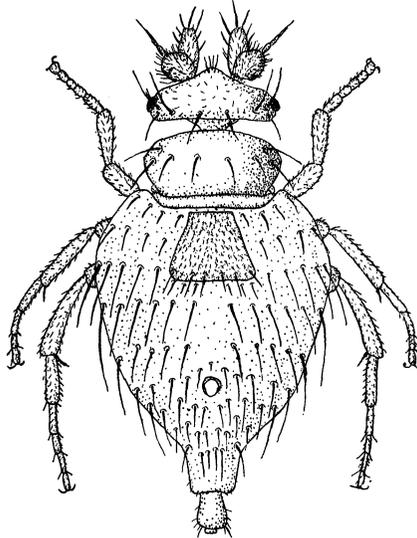


Fig 2. *Ectituncula setosa* sp. nov., female.

apex which is one-half broader than the base. Abdomen very bristly, the bristles arranged in about eight transverse rows very clearly aligned except near the narrow apex of the abdomen; the bristles are longer and stouter at the side of each row and the lateral bristle is in each case much the largest. Legs rather short and stout, with the usual minute bristling.

Type and one paratype from San Diego Cocula, Jalisco, Mexico, with *Pheidole* sp. (W. M. Mann).

***Puliciphora myrmecophila* sp. nov. (Fig. 3).**

♀. Length 1.0 mm. Head and thorax brownish yellow, darker above; dorsal abdominal plates piceous, the abdominal

membrane yellowish white; antennæ, palpi and legs pale brownish yellow. Four strong postantennal bristles, the upper pair nearly twice as far apart as the lower; other frontal bristles very weak except the two in the upper row between the ocelli which are long and stout; the lateral bristle of this row and the one within the eye-margin very small and scarcely differentiated from the frontal hairs which are unusually large. Three stout bristles below each eye above the oral margin. Proboscis stout, oval, nearly as long as the head height. Third joint of antennæ rounded, the arista rather strongly pubescent, one-fourth longer

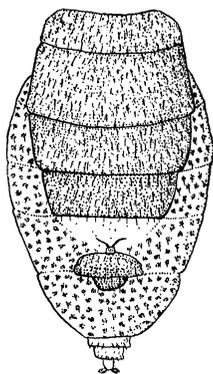


Fig. 3. *Puliciphora myrmecophila*, female, dorsal view of abdomen.

than the head height. Eye as large as the antenna; composed of about twenty-five facets. Thorax slightly wider than long, with a transverse series of six bristles behind, the median pair close to the hind margin and farther apart than their distance from the adjacent ones which are placed farther forward; lateral bristle placed at the posterior third of the mesonotum. Abdomen with six dorsal plates; first unusually long, the lengths of the plates 25:45:29:25:16:8. There is no distinct slit in the fifth segment for the opening of the gland but a transverse crescentic or almost semicircular clear area indicates its position. That this area represents the fifth segment is evident from the furcula (apodeme) of the sixth segment which extends forwards at this point (see fig. 3) although there is no segmentation of the sides of the abdomen to mark off the fifth segment. Sixth and also a small

seventh tergite present. Legs rather slender, the four posterior tibiae each with a single small apical spur; hind metatarsus with six transverse rows of bristles. The abdominal membrane is covered with conspicuous dark chitinized specks, each bearing a minute bristle; these extend also over the entire venter but are absent on the sides except on the last two segments.

Type and one paratype from Ototonilco, Jalisco, Mexico (W. M. Mann), taken in a nest of a species of Pheidole.

The absence of a distinct fifth tergite and the well developed sixth and seventh tergites seem to distinguish this form from any others described although to judge from his figure, it is possible that *P. pusillima* de Meijere may have a similar conformation of the abdominal plates. De Meijere indicates however only five tergites with a space between the fourth and fifth. In my specimens of the present form the apodemes described by Schmitz as arising from the sixth segment are very clearly to be seen arising from the anterior margin of the penultimate tergite. Under a very high power (oil-immersion) it is seen that they are attached to a small median plate more or less separate from the one I have called the sixth, but I think the larger part must be the sixth and not a seventh tergite.

### **Chonocephalus jamaicensis** Brues.

There is a single female of a species of *Chonocephalus* from Costa Rica bearing the label "with *Coptotermes niger* Snyder (Coll. F. Nevermann). After a very careful examination, I cannot distinguish it from *C. jamaicensis* Brues<sup>1</sup>. In Jamaica, at least, this species is not associated with either ants or termites and such seems usually to be the case with members of this genus although Borgmeier<sup>2</sup> has described *C. ecitophilus* taken with *Eciton* in Brazil. I am therefore satisfied that the association of the present specimens with termites is accidental.

<sup>1</sup>Psyche, vol. 22, p. 102; 1915.

<sup>2</sup>Deutsch. Ver. Wiss. u. Kunst. São Paulo, Jahrg. 3, p. 145; 1923.



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