NORTH AMERICAN STAPHYLINIDAE ASSOCIATED WITH ARMY ANTS

By Charles H. Seevers

The army ants (Dorylinae) are primarily a tropical group and relatively few species occur within the United States. Twenty or more North American species of army ants are recorded in recent works (Smith, 1942; Creighton, 1950; Borgmeier, 1955), but many of these are poorly known and some of dubious validity.

This paper is concerned with some taxonomic problems involving Staphylinidae that live with two widespread species, Neivamyrmex nigrescens (Cresson), and Neivamyrmex opacithorax (Emery). Inasmuch as the species of Neivamyrmex are subterranean in nesting habits and frequently in raiding habits as well, they are not well known to most entomologists. In a recent publication dealing with the two species named above, Schneirla (1958) has done much to clarify the behavior and ecology of these species.

The staphylinid genera herein discussed belong to the tribe Myrmedoniini of the subfamily Aleocharinae. Inasmuch as the Myrmedoniini of existing catalogues and taxonomic works are a large, heterogeneous assemblage, it is extremely difficult to determine the positions of genera within the tribe as this time. For years the tribe Myrmedoniini has served as a catch-all for most Aleocharinae that have a 4, 5, 5 tarsal segmentation, and as a result is now a polyphyletic collection of myrmecophiles, termitophiles, and free-living genera. When many of the myrmedoniine genera are ultimately reassigned to new categories, the tribe in a more limited sense will include Drusilla Samouelle (= Myrmedonia Erichson), Zyras Stephens, and many closely allied genera, including those of this paper.

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It is advisable at this time to call attention to some genera of Aleocharinae other than Myrmedoniini that are associated with Neivamyrmex in the United States. Two species, Beyeria vespa Fenyes and Beyeria pulex Sanderson, have been collected only at lights but are evidently guests of Neivamyrmex. A species closely related to Beyeria pulex was recently collected by Drs. T. C. Schneirla and Mont Cazier from a colony of Neivamyrmex opacithorax in Arizona. This new species and Beyeria pulex belong to a new genus that I shall describe in a later paper. Beyeria vespa is closely allied to Acamatoxenus suavis Mann of Jalisco, Mexico, a species that lives with Neivamyrmex agilis Borgmeier. Another related genus, Pulicomorpha Mann, was recorded with Neivamyrmex peninsulare Mann in Baja California, Mexico. Beyeria, Pulicomorpha, and the undescribed genus may be distinguished from the genera of Myrmedoniini by the basally constricted abdomen, the second and third segments of which form a petiole.

Holotypes of the species described in this paper are deposited in the Chicago Natural History Museum. Paratypes are to be deposited in the Chicago Natural History Museum, American Museum of Natural History, and the Snow Museum of the University of Kansas.

The host ants were determined by T. C. Schneirla (Arizona specimens), Carl Rettenmeyer (Kansas specimens), E. O. Wilson (Alabama specimens), and Merle Wing (North Carolina specimens).

Acknowledgements. This study was completed during the tenure of research grants from the National Science Foundation; during the course of more comprehensive studies on the Aleocharinae I was able to examine Wasmann types in Maastricht, the Netherlands, and Casey types in the United States National Museum. For making available the material upon which this report is based I am indebted to Drs. T. C. Schneirla and Mont Cazier (American Museum of Natural History), Dr. W. O. Wilson (Harvard University), Mr. Carl W. Rettenmeyer (The University of Kansas), and Mr. Merle Wing (Raleigh, North Carolina).

HOSTS OF NEARCTIC ECITOPHILOUS MYRMEDONIINI

Neivamyrmex carolinensis (Emery)

Dinocoryna bisinuata Casey Florida, North Carolina
Ecitonusa foreli Wasmann

Neivamyrmex nigrescens (Cresson)

Dinocoryna carolinensis n. sp. North Carolina
Ecitonidia wheeleri Wasmann Texas, Arkansas, Kansas, Colorado, Arizona
Ecitoxenidia brevicornis n. sp. North Carolina
Ecitoxenidia brevipes (Brues) Texas
Microdonia kansana n. sp. Kansas
Microdonia laticollis (Brues) Texas
Microdonia occipitalis Casey Texas, Arizona
Microdonia retrusa Casey
Ecitopora tenella Wasmann
Microdonia sulcatula Borgmeier Kansas

Neivamyrmex opacithorax (Emery)

Dinocoryna arizonensis n. sp. Arizona
Dinocoryna schmitti (Wasmann) North Carolina, Alabama
Dinocoryna tibialis n. sp. Kansas
Ecitoxenidia alabamae n. sp. Alabama
Microdonia kansana n. sp. Kansas
Microdonia occipitalis Casey Arizona
Microdonia sulcatula Borgmeier Arizona, Kansas, Costa Rica

Labidus coecus (Latreille)
Ecitopora nitidiventris Brues Texas

MICRODONIA Casey


Casey was not aware of the myrmecophilous habits of the species of Microdonia and the genus has never been listed among those associated with army ants. Casey described occipitalis in 1893 and retrusa in 1911 but I find no basis for retaining the latter name. Wasmann (1900), not aware of the habits of occipitalis, described this species as tenella Wasmann and assigned it to his neotropical genus Ecitopora.

The genus Ecitopora, to which Microdonia is probably most closely related, occurs with Eciton and Labidus from Central America to Brazil and possibly in the Nearctic Region as well. I am unable to determine the generic position of Ecitopora nitidiventris Brues, a Texan species, as material has not been available.

Until I have had an opportunity to study the species of Ecitopora and to define the genus more accurately I shall make no attempt to contrast Microdonia and Ecitopora in detail. The species of Microdonia are small, slender, and dorsoventrally compressed as illustrated in fig. 1.

A Key to the species of Microdonia Casey

1. Pronotum more than one-half broader than long........................................laticollis (Brues)  
Pronotum less than one-half broader than long ........................................... 2
2. Apical margin of tergites 3-6 with 8 or 9 long dark setae (figs. 1, 4); tergites 4-7 subglabrous, almost impunctate; spermatheca distinctive (fig. 7)..........culcatula Borgmeier  
Apical margins of tergites 3-6 with 12-16 light-brown setae fig. 5); tergites 4-7 pubescent ........................................... 3
3. Pronotum two-fifths broader than long on the average (three-tenths to almost one-half); spermatheca distinctive (fig. 8) \textit{Microdonia \textit{kansana} n. sp.}

Pronotum one-fifth broader than long on the average (one-sixth to one-fourth);

spermatheca distinctive (fig. 6) \textit{Microdonia \textit{occipitalis} Casey}

**Microdonia occipitalis** Casey


(Austin, Texas; no host cited; United States N. M.)


\textit{Microdonia retrusa} Casey, 1911, Memoirs Coleopt., 2, p. 74 (Walnut, Arizona; no host cited; U.S.N.M.). \textit{New Synonym.}

**Material examined.**—TEXAS: Austin (types of \textit{M. occipitalis} and \textit{E. tenella}; 2 additional specimens). ARIZONA: Walnut (type of \textit{M. retrusa}). 15 specimens, S. W. Research Station, 5 miles west of Portal, Cochise Co., from 4 colonies of \textit{Neivamyrmex}, August 14—September 2, 1956; collected by T. C. Schneirla and Mont Cazier.

**Hosts.**—\textit{Neivamyrmex nigrescens} (Cresson)—Austin, Texas and S. W. Research Station (2 colonies). \textit{Neivamyrmex opacithorax} (Emery)—S. W. Research Station, Arizona (2 colonies).

Similar to \textit{suicateula} (fig. 1), except broader. Coloration varying from uniform testaceous (Texas) to testaceous with head, elytra, and several tergites brown (Arizona).

Head with dense medium-coarse umbilicate punctuation except for a smooth median area. Pronotum and elytra with a fine dense punctuation and a fine recumbent pubescence. Tergites densely, finely punctate and with a vestiture of fine pale recumbent hairs. Tergites (fig. 5) with 4 semi-erect dark setae on disk and one near each apical angle, and an apical row of 12-16 longer light-brown setae. Sternites densely pubescent.

Antennal length two and one-half times head width; segment 3 twice as long as segment 4; segments 4-10 incrassate, but not increasing in length; segment 4 three-fourths as long as broad and four-fifths as broad as segment 10; segment 10 three-fifths as long as broad, about one third as long as segment 11.

Maxilla and labium as in fig. 2; the large maxillary sinus and the elongated galea and lacinia are characteristic of the tribe.

Pronotum one-fifth broader than long on the average (the pronota of 18 measured specimens vary from 1.18 to 1.27 times broader than long); pronotal disk relatively weakly impressed on each half. Meso- and metasternal processes between middle coxae broad (fig. 3).

Spermatheca distinctive (fig. 6).

Length, 2.5-3 mm.

**Remarks.**—Most of the diagnostic characters given by Casey (1911,
p. 75) to distinguish *retrusa* from *occipitalis* are either exaggerated or incorrect. Casey had a single specimen of each of his species and attached too much significance to the small differences he recorded. Casey stated that *retrusa* is different in having denser sculpture, duller luster, smaller eyes, eyes farther removed from base, less stout antennae, darker antennae, less transverse pronotum, and in having an incised transverse basal line on pronotum.

The type specimen of *retrusa* does differ from the type of *occipitalis* in having the head punctures a little closer together, the eyes a trifle smaller, the antennae very slightly darker, and the eyes a trifle farther from base, but a series of specimens shows that these are only individual variations. The antennae of *retrusa* are doubtfully less stout and the pronotum is not less transverse than in *occipitalis*. The basal pronotal line referred to by Casey is not a surface impression at all but a dark reddish discoloration; it is present in the type of *occipitalis* as well.

**Microdonia kansana** Seevers, NEW SPECIES

Type from Lawrence, Kansas, collected April 5, 1957, by Carl W. Rettenmeyer, from a colony of *Neivamyrmex nigrescens*. 39 paratypes, Lawrence, Kansas, collected by Carl Rettenmeyer; 20 of which are from two colonies of *N. nigrescens* (E-101, June 28—July 7, 1955; E-261, April 5, 1957), and 21 from two colonies of *N. opacithorax* (E-262, October 18, 1957; E-263, June 6, 1958).

Coloration rufo-testaceous; head and some abdominal segments darker. Head with a dense, medium-coarse, umbilicate punctation, except for a narrow median strip. Pronotum and elytra with a fine, dense punctation and recumbent pubescence. Tergites densely, finely punctate and with a vestiture of fine, pale, recumbent hairs; apical margin with a row of 12-16 long, light-brown setae (fig. 5). Sternites densely pubescent.

Antennae two and one-fifth times the width of head; segments 4-10 transverse, incrassate (segment 10 one-fourth broader than segment 4 and a little longer); segment 4 about seven-tenths as long as broad; segments 7-10 three-fifths as long as broad; segment 11 three times as long as 10.

Pronotum relatively broad, about two-fifths broader than long on the average (the pronota of 21 specimens vary from 1.35 to 1.44 times broader than long); anterior margin straight to feebly sinuate; disk feebly impressed near lateral margins but not conspicuously so.

Spermatheca distinctive (fig. 8).

Length, 2.75-3.75 mm.

**Remarks.**—This species is distinguished from *occipitalis* by the broader pronotum, that averages two-fifths broader than long, the larger average body size (the size ranges of the two species overlap), and the distinctive spermatheca.
**Microdonia sulcatula** (Borgmeier), NEW COMBINATION

*Ecitopora sulcatula* Borgmeier, 1958, Studia Ent. 1, p. 229 (San Jose, Costa Rica; *Neivamyrmex opacithorax*, Borgmeier coll.)


Form (fig. 1) more slender than in the other species. Coloration from flavo-testaceous to light rufo-testaceous; head and antennae usually darker, sometimes a dark reddish-brown.

Head and pronotum with a dense, coarse, umbilicate punctation. Elytra densely, more finely punctured. Tergite 3 with a moderately dense pubescence but tergites 4-7 subglabrous, with a very sparse, minute punctulation and a few fine hairs. Tergites with 8 or 9 long, dark apical setae (fig. 4). Sternites with a dense, pale pubescence.

Antennal length two and two-fifths times the width of head; segments 4-10 transverse, incassate (segment 10 one-fourth broader than segment 4, but subequal in length); segment 4 about five-eighths as long as broad; segments 7-10 one-half to three-eights as long as broad; segment 11 three times as long as 10.

Pronotum (fig. 1) about one-fourth broader than long on the average (varying from 1.2 to 1.29 times broader than long); disk relatively strongly biimpressed.

Spermatheca distinctive (fig. 7).

Length, 2-3 mm.

**Remarks.**—My determination of the Nearctic specimens as *sulcatula* has recently been confirmed by comparison with a Costa Rican paratype that was kindly sent to me by Dr. T. Borgmeier.

The pronotum of *sulcatula* is more coarsely and less densely punctured than in *kansana* and *occipitalis*; the pronotal proportions are nearly as in *occipitalis* and different from those of *kansana*; the pronotal disk generally has more conspicuous impressions, the body form is generally more slender and the coloration paler than in the other species; the spermatheca is distinctive; tergites 4-7 are subglabrous and almost impunctate; tergites 3-6 have only 8 or 9 long setae in their apical row.

**Microdonia laticollis** (Brues), NEW COMBINATION


**Material examined.**—Texas: Austin (one specimen labelled cotype, Chicago Natural History Museum).

This species is distinguished by its relatively broad pronotum, which
is seven-tenths broader than long.

**Ecitopora** Wasmann


Borgmeier (1949) listed ten species of this ecitophilous genus and added a species in a later paper (Borgmeier, 1958). The genus was recorded from Brazil to Texas. Three species are transferred to *Microdonia* in this paper and the generic position of the Texan species, *nitidiventris*, is uncertain.

**Ecitopora nitidiventris** Brues

*Ecitopora nitidiventris* Brues, 1904, Psyche, 11, p.

The location of the type specimen of this species is not known, and even the late Dr. Brues did not know what had happened to it. The original material was collected at Austin, Texas in a colony of *Labidus coecus* Latreille.

**Dinocoryna** Casey


*Ecitonusa* Wasmann, 1897, Deutsch. Ent. Zeitschr., p. 218, pl. 2, fig. 4. new synonym.

Casey was not certain of the habits of *Dinocoryna* and stated that "the only known species is evidently myrmecophilous or still more probably termitophilous." There has been no discussion of the genus since that time and Wasmann was of course unaware that *Ecitonusa foreli* is the same as Casey’s *Dinocoryna bisinuata*.

*Dinocoryna* belongs to the Myrmedoniini in a restricted sense, and is most closely related to *Ecitonidia* Wasmann; in fact it may be difficult eventually to justify two genera. It is difficult to establish the limits of *Dinocoryna* at this time. Two of the new species included in the genus broaden the concept of the genus somewhat.

Borgmeier (1958) recently described a Costa Rican genus *Typhlonusa* that is doubtless very closely allied to *Dinocoryna*; its single known species is interesting in that it lacks eyes.

**A Key to the Species of Dinocoryna** Casey

1. Vertex of head bi-impressed (fig. 11); head from base to apical margin of clypeus longer than broad; distance from base of head to eye about two-thirds greater than eye length; head, pronotum, and elytra distinctively punctate (see description); tergites distinctively sculptured ............................ *carolinensis* n. sp. Vertex of head not impressed; head from base to apical margin of clypeus shorter than head width or subequal to the width; distance from base of head to eye equal to eye length or at most one-third greater; head, pronotum, and elytra with
medium-coarse, umbilicate punctation; head, thorax and abdomen without reticulation  

2. Pronotum very slightly broader than long; pronotum with only a faint indication of a median impression; head subequal in length and width; distance from base of head to eye about one-third greater than eye length; hind tibiae almost as broad as femora but strongly compressed medio-laterally.  

Prionotum at least one-third broader than long; pronotum with a distinct median impression; head one-tenth to one-fifth broader than long; distance from base of head to eye about equal to eye length; hind tibiae somewhat narrower than femora and only moderately compressed  

3. Pronotum almost one-half broader than long; anterior pronotal margin strongly bisinuate; pronotal sides converging appreciably so that the pronotal base is only three-fourths as broad as pronotum  

Pronotum one-third to two-fifths broader than long; anterior pronotal margin feebly bisinuate; pronotal sides converging feebly so that the pronotal base is five-sixths as broad as pronotum; head distinctly less than one-fifth broader than long  

4. Antennal segments 4-10 robust, not incrassate and not increasing in length and width  

Antennal segments 4-10 incrassate and increasing in length, the tenth segment about one-third longer and broader than fourth segment  

**Dinocoryna bisinuata** Casey  


**New synonym.**  

**Material examined.**—FLORIDA: Florida state (type of *D. bisinuata*).  

NORTH CAROLINA: Faisons (type series of *Ecitonusa foreli*).  

Coloration pale rufo-flavate.  

Head one-fifth to one-fourth broader than long; with a neck about one-half as broad as head; base slightly emarginate; vertex without impressions. Head coarsely and sparsely punctate; integuments smooth.  

Antennae robust, length about one-third greater than head width; scape stout, somewhat spindle-shaped; segments 3-10 cylindrical, slightly telescoped; segment 3 obtrapezoidal; segments 4-10 transverse, scarcely increasing in width and very little in length; segment 11 subequal to the three preceding segments combined.  

Pronotum almost one-half broader than long; anterior margin strongly bisinuate; disk with a shallow median impression somewhat oval in outline and not sharply delimited from the general surface (impression is about two-fifths as long as pronotum and one-fifth as broad); pronotum broadest subapically, its sides converging to the base which is only three-fourths as broad as the pronotum. Pronotum coarsely, umbilicately punctate, and with medium-fine hairs of moderate length; integuments smooth; pronotum with a moderate number of erect setae in a pattern found throughout the genus.  

Tergites and sternites conspicuously beset with many long semi-erect setae, often longer than the tergite or sternite, and numerous shorter semi-erect hairs.
**Dinocoryna schmitti** (Wasmann), NEW COMBINATION

_Ecitonusa schmitti_ Wasmann, 1897, Deutsch. Ent. Zeitschr., p. 281
(Gaston, North Carolina; _Eciton opacithorax_ Emery; Wasmann coll.)

*Materials examined.—NORTH CAROLINA: Gaston (type series in Wasmann coll.). ALABAMA: 1, Hurricane Creek, near Peterson, Tuscaloosa Co., October 26, 1947, E. O. Wilson, with _Neivamyrmex opacithorax._

Coloration testaceous.

Head about one-sixth broader than long; its base feebly emarginate. Head sparsely, umbilicately punctate; with sparse fine hairs becoming dense on postgenae.

Antennae more loosely organized than in _bisinivata_, the segments not telescoped, the pedicels visible. Antennae moderately stout; total length is only one-fourth greater than head width. Antennal segments 4-10 transverse, increasing in length and width; segment 10 one-third longer and broader than segment 4; segment 11 scarcely longer than the two preceding segments combined.

Pronotum one-third to two-fifths broader than long; apical margin feebly bisinuate; sides not converging strongly, the base about five-sixths the maximum pronotal width; median impression of the disk shallow, oval, not sharply delimited (its length about one-half that of pronotum and its width about one-fourth pronotal width). Pronotum coarsely, umbilicately punctate.

Tergites very sparsely punctate except moderately densely punctate near apex of segments 3-6; tergites with an apical row of long pale setae and shorter subapical hairs. Sternites with a conspicuous vestiture of very long pale setae on disk as well as on apical margin (these setae are frequently as long as the sternites).

Hind femora only moderately robust; hind tibiae relatively slender and subcylindrical, only about two-thirds as broad as femora.

Length, 2 mm.

**Dinocoryna arizonensis** Seevers, NEW SPECIES


Coloration flavate to testaceous.

Head one-tenth broader than long; coarsely, sparsely, umbilicately punctate. Antennae robust (fig. 9); segments 4-10 uniform in form and size, subequal in length and width.

Pronotum one-third broader than long; apical margin feebly bisinuate; base four-fifths as broad as maximum width; disk with medium impression nearly as long as pronotum and about one-fourth as broad; the impressed area impunctate except peripherally. Pronotum coarsely and sparsely punctate; the intervals smooth; with
sparse hairs of moderate length and longer setae in the pattern of the genus.

Tergites 3-6 with an apical row of 14-16 moderately long, pale setae and with shorter subapical hairs. Sternites with a very conspicuous vestiture of long, fine, pale setae on apical margin as well as elsewhere; these setae are nearly as long as the sternites and appreciably longer than the tergal setae.

Hind femora relatively stout; hind tibiae about five sevenths as broad as femora, strongly compressed medially.

Length, 2 mm.

**Dinocoryna tibialis** Seevers, NEW SPECIES

Type and one paratype from Lawrence, Kansas, collected May 26 and June 4, 1958, by Carl W. Rettenmeyer, from a colony of *Neivamyrmex opacithorax* (Emery).

Coloration rufo-testaceous, head darker.

Head, excluding labrum, subequal in length and width. Vertex without impressions. Sides of head behind eyes straight for a short distance and then converging slightly, the posterior angles distinct; distance from base of head to eye one-third greater than eye length.

Antennae robust, very similar to those of *arizonensis*; segment 3 obtrapezoidal, segments 4-10 cylindrical, uniform in size, segment 10 very little broader than segment 4; segment 11 slightly longer than the two preceding segments combined.

Head and pronotum sparsely, umbilicately punctate, and sparsely setulose; postgenae behind eyes more densely setose. Elytra sparsely and finely punctulate and pubescent. Pronotum and elytra with a moderate number of medium-length setae in the pattern of the genus. Head, pronotum, elytra, and tergites without reticulation; the integuments smooth and shining.

Pronotum only slightly broader than long; anterior margin feebly bisinuate; sides of pronotum converging moderately toward base, basal angles almost obsolete, the base strongly arcuate; pronotal disk very shallowly and inconspicuously impressed mediadly.

Tergites very sparsely and minutely punctulate and pubescent. Tergites 3-6 with about 14 very fine, medium-length setae on apical margin and with shorter subapical hairs.

Sternites with sparse, fine punctulation and with the intervals almost smooth; sternites with a conspicuous vestiture of numerous long, pale, semi-erect setae, mostly in apical and subapical rows, and with several rows of darker erect setae.

Hind tibiae a little shorter than femora and with their broadest diameter only a little less than that of the femora; hind tibiae and tarsi very strongly compressed.

Length, 3 mm.

Remarks.—This species seems to be the most generalized species of *Dinocoryna* yet discovered. In several respects it is intermediate between two species lines within the genus, one line including *bisinuata*, *schmitti*, and *arizonensis*, the other including *carolinensis* and probably *Ecitonidia wheeleri*. *D. tibialis* has a very feeble pronotal impression; all other species have pronounced pronotal impressions. *D. tibialis* has a sub-
quadrate head and pronotum; in the *bisinuata* line the head and pronotum are transverse; in the *carolinensis* line these structures are elongated. *D. tibialis* resembles the *bisinuata* group of species in the sparse punctuation and pilosity, and in having smooth, non-reticulate integuments. All species of the genus have robust, cylindrical antennae and a conspicuous vestiture of very long sternal setae.

**Dinocoryna carolinensis** Seevers, NEW SPECIES

Type and 10 paratypes from Southern Pines, North Carolina, collected April 16, 1949, by Merle Wing; with *Neivamyrmex nigrescens* (Cresson).

Coloration light reddish-brown.

Head slightly longer than broad; sides behind eyes straight, basal angles truncate; base straight; vertex conspicuously impressed medial to each eye (fig. 11). Surface of head with a rough texture resulting from a close-meshed reticulation and about 14 very coarse, umbilicate punctures on each half; the accompanying hairs short and inconspicuous.

Antennae very robust, similar to those of *arizonensis* (fig. 9); segments 4-10 not incrassate nor increasing in length; segments 4-10 uniform in size; segment 11 slightly shorter than the two preceding segments combined.

Pronotum one-fifth broader than long, broadest about two-thirds distance from base to apex; base about five-sixths as broad as maximum width; apical margin bisinuate, anterior angles prominent. Medial pronotal impression (fig. 11) long, moderately deep near apex, shallower basally; varying in width from one-fourth as broad as pronotum to one-fifth as wide basally.

Pronotum and elytra with a moderate number of very coarse, umbilicate punctures that are rosette-like due to fine radiating lines within the bounds of each puncture. The pronotum has a rough texture resulting from these punctures and the irregularly reticulated intervals. Each elytron has 40-50 of the same type of umbilicate punctures, but the intervals are smooth.

Tergites and sternites with a distinctive ground sculpture which appears to consist of numerous fine punctures and associated longitudinal strigulations; a fine recumbent pubescence is present. Tergites with about 6 long setae on the apical margin and about 4 slightly darker diskal setae. Sternites with a relatively dense pilosity of pale, recumbent hairs and numerous pale, apical and subapical setae; the latter are very long and are drawn out to extremely fine apical ends.

Hind tibiae more slender than femora, subcylindrical, not at all compressed.

Length, 2.5-3 mm.

**Ecitonidia Wasmann**


*Ecitonidia* is closely related to *Dinocoryna* and may have to be combined with it eventually. *Dinocoryna carolinensis* in particular shows affinities with *Ecitonidia wheeleri*. I believe that it is advisable to retain *Ecitonidia* until more is known about its tropical relatives. Bruch’s
Gallassma argentina is probably congeneric with wheeleri and there are doubtless other neotropical species to be considered.

**Ecitonidia wheeleri** Wasmann


*Host.*—The records all indicate that this species is restricted to societies of *Neivamyrmex nigrescens*, but whether it occurs throughout the range of the host is not known; to date this species has not been collected east of the Mississippi River although its host ranges from the Atlantic to Pacific coasts.

Ecitonidia wheeleri is easily recognized by the very deep median sulcus of the pronotum (fig. 10).

**Ecitoxenidia** Wasmann


Type species: Ecitoxenidia brevipes (Brues).

This genus is easily recognized by the distinctively carinate head and pronotum (figs. 12-15). Its closest ally is Ecitocolax Borgmeier (1949), known from Brazil and Costa Rica in societies of *Neivamyrmex*.

**A Key to the Species of Ecitoxenidia Wasmann**

1. Antennae relatively short, segments 2-11 combined shorter than pronotal width ——brevicornis n. sp.
   Antennae relatively long, segments 2-11 combined one-fourth to three-fifths longer than pronotal width

2. Antennal segments 2-11 combined one-fourth longer than pronotal width alabamine n. sp.
   Antennal segments 2-11 combined three-fifths longer than pronotal width

**Ecitoxenidia brevipes** (Brues)


Ecitoxenidia brevipes (Brues). Wasmann, 1909, p. 179.

*Material examined.*—TEXAS: Austin; three topotypes collected by W. M. Wheeler; in collections of California Academy of Sciences,
Chicago Natural History Museum, and Illinois Natural History Survey. The location of the type of this species is unknown. The host is *Neivamyrmex nigrescens* (Cresson).

Coloration reddish-brown.
Head subequal in length and width. Vertex (fig. 13) with a strong median carina from clypeus to a point behind the middle; occipital region with an oblique carina on each side, forming with the median carina an inverted Y. Head with a tubercle above each eye (the eye is almost invisible from above), from which a supra-orbital carina extends caudally to join a vertical postgenal carina.

Antennae relatively long; segments 2-11 combined three-fifths longer than pronotal width; antennal scape longer than broad; segment 2 subequal in length and width; segments 2-9 subequal in length, incrassate, segment 9 only about one-fourth broader than segment 2; segments 3-9 one-fifth to one-fourth broader than long; segment 10 longer and broader than any of segments 2-9; segment 11 only one-third longer than segment 10.

Pronotum three-fifths to two-thirds broader than long; form and surface contours distinctive (fig. 14); disk divided by two undulating carinae into three areas, the median area somewhat elevated above the lateral areas which are broadly concave.

Elytra broader than pronotum; their lateral margins elevated somewhat and sharply carinate; apical margins of elytra moderately deeply incised near apical angles.

Head, pronotum, and elytra appearing granulose due to a coarse, fine-meshed reticulation. Head and pronotum with short, sparse, feebly clavate setae. Elytra more densely setulose than head and pronotum, and with distinctly clavate setae.

Tergites shining, reticulation obsolescent; tergites 3-7 with fine recumbent hairs near base and with thicker, slightly clavate hairs apically; tergite 3 with a row of clavate hairs; tergite 4 with two irregular rows, tergite 5 with three irregular rows and tergites 6 and 7 with about four irregular row of clavate setae. Sternites densely clothed with fine, moderately long, recumbent hairs and a few erect hairs.

Length, 3 mm.

**Ecitoxenidia alabamae** Seevers, NEW SPECIES

Type from Hurricane Creek, near Peterson, Tuscaloosa Co., Alabama, collected October 26, 1947, by E. O. Wilson, from a colony of *Neivamyrmex opacithorax* (Emery).

Coloration light-brown.

Head subequal in length and width; its carinae similar to those of *brevides*.

Antennae long; in fact as long as those of *brevides*, but due to the relatively broad pronotum of this species, the antennal segments 2-11 combined are only one-fourth longer than the pronotal width. Antennal scape longer than broad; segment 2 slightly longer than broad; segments 2-9 subequal in length but increasing in width so that segment 9 is about one-third broader than segment 2; segments 3-9 only slightly broader than long (one-fifth broader at the most and in some cases subequal in length and width); segment 10 very little longer and broader than any of segments 2-9; segment 11 about one-half longer than segment 10.

Pronotum nine-tenths broader than long (relatively broad for the genus); with distinctive carinae (fig. 15).
Figure 1. Microdonia sulculata. Figure 2. M. occipitalis, ventral view of head. Figure 3. M. occipitalis, meso- and metasternal processes. Figure 4. M. occipitalis, spermatheca. Figure 5. M. sulculata, spermatheca. Figure 6. M. kansana, spermatheca. Figure 7. M. kansana, fourth tergite. Figure 8. M. sulculata, fourth tergite. Figure 9. Dinocoryna arizonensis. Figure 10. Ecitonidia wheeleri, head and pronotum. Figure 11. Dinocoryna carolinensis, head and pronotum. Figure 12. Ecitozenidia brevicornis. Figure 13. E. brevipes, head. Figure 14. E. brevipes, pronotum. Figure 15. E. alabamae, pronotum.
Surface sculpture and pilosity of head, thorax, and abdomen similar to *brevipes*.
Length, 3 mm. Although this species is of the same length as *brevipes*, it is a broader species, averaging about one-sixth broader in most of its parts.

**Ecitoxenidia brevicornis** Seevers NEW SPECIES

Type from Southern Pines, North Carolina, collected April 16, 1949, by Merle Wing, from a colony of *Neivamyrmex nigrescens* (Cresson).

Coloration flavo-testaceous.

Head (fig. 12) with distinctive carinae; the eyes almost completely hidden from dorsal view. Antennae (fig. 12) short and stout; segments 2-11 combined are shorter than pronotal width. Antennal scape short and stout, broader at apex than long; segments 2-10 cylindrical, subequal in length but increasing in width so that segment 9 is three-fourths broader than segment 2; segment 10 longer than any of the preceding segments; segment 11 a little more than twice as long as segment 10.

Pronotum seven-tenths broader than long; its surface contours distinctive (fig. 12).

Surface sculpture and pilosity similar to the other species of the genus.

Length, 2.6 mm.

**LITERATURE CITED**


