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ANTS OF THE DOMINICAN AMBER  
(HYMENOPTERA: FORMICIDAE).  
1. TWO NEW MYRMICINE GENERA AND  
AN ABERRANT *PHEIDOLE*

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Ants rival dipterans as the most abundant fossils in the Dominican Republic amber. Since they are also phylogenetically compact and relatively easily identified, these insects offer an excellent opportunity to study dispersal and evolution in a Tertiary West Indian fauna.

The age of the Dominican amber has not yet been determined, but combined stratigraphic and foraminiferan analyses of its matrix suggest an origin at least as far back as the early Miocene (Saunders in Baroni Urbani and Saunders, 1982). I am inclined to favor this minimal age (about 20 million years) or at most a late Oligocene origin, for the following reason. In a sample of 596 amber pieces containing an estimated 1,248 ants that I recently examined (439 now deposited in the Museum of Comparative Zoology), I found 36 genera and well-defined subgenera, to which may be added one other, *Trachymyrmex*, reported earlier by Baroni Urbani (1980a). Of these 37 taxa only three, or 8%, are unknown from the living world fauna (see Table 1). The relative contemporaneity of the Dominican amber ants contrasts with that of the Baltic amber, which is Eocene to early Oligocene in age (Larsson, 1978) and possesses 44% extinct genera; that is, 19 of the 43 genera recorded by Wheeler (1914) are unknown among living ants. The Dominican amber ants also differ to a similar degree from those of the Florissant, Colorado, shales, which are upper Oligocene in age and contain 8 of 20, or 40%, extinct genera (Carpenter, 1930).



Table 1. List of ant genera and well-defined subgenera known from the Dominican amber. CBU: recorded by Baroni Urbani (1980a-d) and Baroni Urbani and Saunders (1982). CBU/EOW: recorded independently by both Baroni Urbani (1980a-d; and with Saunders, 1982) and E. O. Wilson (hitherto unpublished). Generic names without accompanying initials represent determinations by the author and are recorded here for the first time. (\*) unknown in modern faunas.

Subfamily Ponerinae	<i>Oligomyrmex</i>
<i>Anochetus</i> (CBU/EOW)	* <i>Oxydris</i> , new genus
<i>Cylindromyrmex</i>	<i>Paracryptocerus</i> (CBU/EOW)
<i>Gnamptogenys</i> (CBU/EOW)	<i>Pheidole</i>
<i>Hypoponera</i>	New genus, near <i>Rogeria</i>
<i>Odontomachus</i>	<i>Smithistruma</i>
<i>Paraponera</i>	<i>Solenopsis</i> ( <i>Solenopsis</i> )
<i>Platythyrea</i>	<i>Solenopsis</i> ( <i>Diplorhoptrum</i> )
<i>Prionopelta</i>	<i>Trachymyrmex</i> (CBU)
<i>Trachymesopus</i>	[ <i>Zacryptocerus</i> : see <i>Paracryptocerus</i> ]
Subfamily Dorylinae	
<i>Neivamyrmex</i>	Subfamily Dolichoderinae
	<i>Azteca</i>
Subfamily Pseudomyrmecinae	<i>Dolichoderus</i>
<i>Pseudomyrmex</i> (CBU/EOW)	<i>Hypoclinea</i>
	<i>Iridomyrmex</i>
Subfamily Myrmicinae	[ <i>Leptomyrmex</i> = <i>Camponotus</i> ?, CBU/EOW]
<i>Aphaenogaster</i>	<i>Monacis</i> (CBU/EOW)
<i>Crematogaster</i> ( <i>Acrocoelia</i> )	<i>Tapinoma</i>
<i>Crematogaster</i> ( <i>Orthocrema</i> )	
<i>Cyphomyrmex</i>	
<i>Erebomyrma</i>	
* <i>Ilemomyrmex</i> , new genus	Subfamily Formicinae
<i>Leptothorax</i> ( <i>Macromischa</i> )	<i>Camponotus</i>
<i>Leptothorax</i> ( <i>Nesomyrmex</i> )	<i>Paratrechina</i>
<i>Octostruma</i>	<i>Prenolepis</i>

The purpose of this first article of a planned series on the Dominican fauna is to describe the three most distinctive new species encountered in any collection known to me: two new myrmicine genera (*Ilemomyrmex*, *Oxydris*) and a remarkable pheidoline which I have provisionally placed in the genus *Pheidole*.

### ***Ilemomyrmex*, new genus**

*Diagnosis (worker)*. Small, eyeless myrmicine possessing the following distinctive combination of features: large, flaring frontal lobes that are raised well above the antennal insertions and cover most of the clypeus in full-face view; shallow antennal scrobes with



posterior margins curving laterally to embrace the ends of the scapes; paired clypeal carinae close together and projecting beyond the remainder of the anterior clypeal margin to form a short concavity between them; narrow, 3- or 4-toothed mandibles (apical region indistinct in the single specimen available); and 12-segmented antennae with 3-jointed clubs.

*Queen (tentative association)*: Overall similar to worker, except that frontal lobes extend only part way over clypeus; mandibles are 5-toothed; and eyes and ocelli are well developed. (From Gr. *eilema*, envelope; and Gr. *myrmex*, ant).

*Type species*: *Ilemomyrmex caecus*.

### ***Ilemomyrmex caecus*, new species**

(Figs. 1, 2)

*Diagnosis (worker)*. Distinguished from all other known ant species by the combination of traits cited above for *Ilemomyrmex*. In addition, possessing a robust alitrunk with thick, triangular propodeal spines; and short, thick petiole and postpetiole, the latter with an acute, forward-projecting ventral spine.

*Holotype worker*. Head Width 0.51 mm, Head Length 0.58 mm, Scape Length 0.44 mm. Head coarsely rugoreticulate and completely opaque, the rugae near the rims of the antennal scrobes parallel to one another and following the contours of the rims. Entire alitrunk and waist similarly rugoreticulate and opaque, but the gaster is nearly smooth and is feebly shining to subopaque. Color (which may not have remained true in the fossil state) dark reddish brown.

*Queen (tentative association)*. Winged. Differing from worker as described in generic diagnosis. Head Width (across and including eyes) 0.52 mm, Head Length 0.54 mm, Eye Length 0.16 mm.

Based on a single (holotype) worker and one alate queen in separate pieces of Dominican amber; no further locality data. Both specimens have been deposited in the Museum of Comparative Zoology.

*Ilemomyrmex* resembles the Old World, principally African genera *CalRYPTomyrmex* and *Dicroaspis* in antennal form and the peculiar shape of the frontal lobes. However, it differs from them in the following important respects: its mandibles are narrower, with fewer teeth (5 or more in *CalRYPTomyrmex* and *Dicroaspis*); its antennal scrobe is much shallower; its subpostpetiolar process is better developed; its head is narrower and overall less modified from the primi-



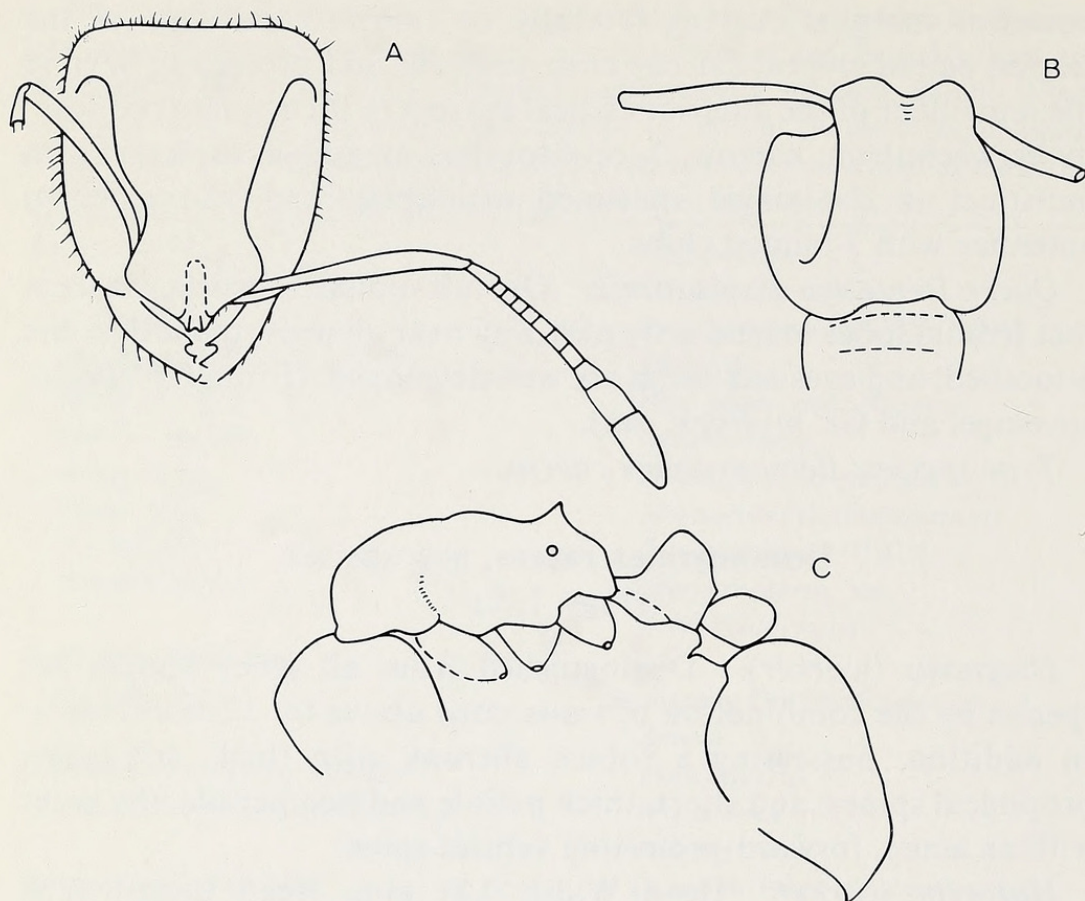


Fig. 1. *Ilemomyrmex caecus*. Holotype worker: A, frontal view of head; B, oblique rear view of head; C, side view of body.

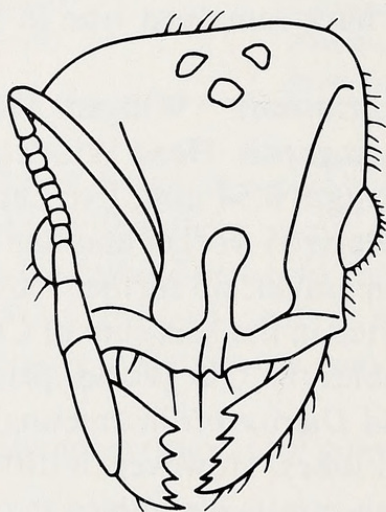


Fig. 2. *Ilemomyrmex caecus*. Frontal view of head of queen provisionally placed in this species.



tive myrmicine shape; and its hairs are thinner and less uniform and regularly distributed (furthermore, in *Calyptomyrmex* and *Dicroaspis* the hairs are blunt-tipped or, in the case of most species, spatulate or scale-shaped). In addition, *Dicroaspis* has 11-segmented antennae. I am inclined to regard the resemblance in frontal lobe shape between *Ilemomyrmex* and the two African genera as having arisen by convergent evolution.

### **Oxyidris**, new genus

*Diagnosis (worker)*. A very small myrmicine with closest overall resemblance to the South American genus *Oxyepoecus*, particularly in the general form of the antenna and waist; but differing in its lack of eyes, its 12-segmented antennae (11 in *Oxyepoecus*), in its 3 (possibly 4) mandibular teeth (4–5 in *Oxyepoecus*), and in its unarmed propodeum (angular or spinous in *Oxyepoecus*). (From Gr. *oxys*, sharp, acute; and Gr. *idris*, wise one; also to note resemblance to *Oxyepoecus*).

*Type species: Oxyidris antillana.*

### **Oxyidris antillana**, new species

(Fig. 3)

*Diagnosis (worker)*. Distinguished from all known ant species by the combination of traits just described for *Oxyidris*.

*Holotype worker*. Head Width 0.36 mm, Head Length 0.45 mm, Scape Length 0.30 mm. Antenna 12-segmented with 3-jointed club. Head densely and evenly rugulo-punctate (rugulae with longitudinal orientation) and opaque. Alitrunk and waist densely and uniformly punctate, and opaque. Gaster shagreened, subopaque. Color (which may be altered in the fossil state) light reddish brown.

Dominican Republic: Palo Quemado Mine, Santiago Province.

*Paratype workers*. Six additional workers, one each in 6 amber pieces from Palo Quemado Mine.

Holotype and paratypes deposited in the Museum of Comparative Zoology.

### **Pheidole tethepa**, new species

(Figs. 4, 5)

*Diagnosis (minor worker)*. An unusual pheidoline tentatively placed in *Pheidole*, differing from all known species of that genus by



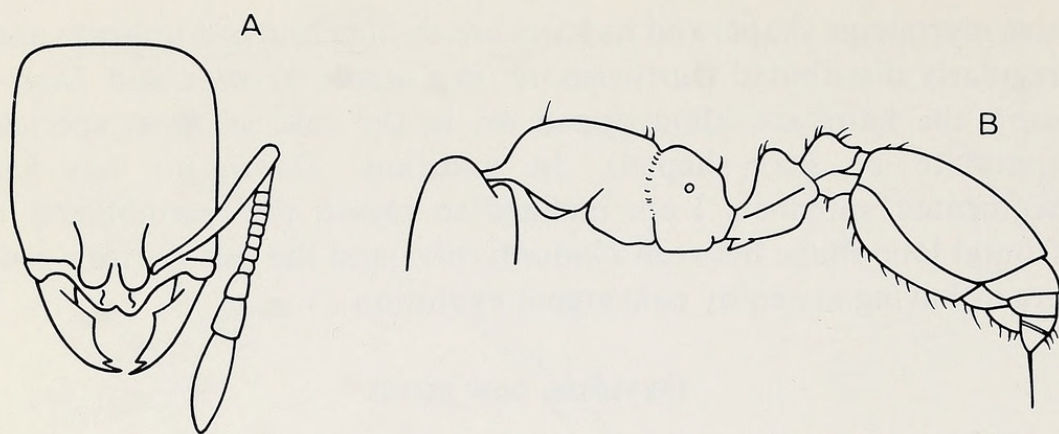


Fig. 3. *Oxydris antillana*. Holotype worker: A, frontal view of head; B, side view of body.

the bulging, more-than-hemispherical eyes, and proportionately very large mandibles. Pronotum armed with two well-developed spines, a trait shared with members of the Old World *P. quadrispina* group but not with any known living New World *Pheidole* species. (Gr. *tethepa*, amazed; referring to the eyes).

*Holotype minor worker.* Head Width exclusive of eyes 0.76 mm, Pronotal Width 0.43 mm. Eyes with approximately 30 ommatidia. Head sparsely rugose to rugoreticulate with predominantly longitudinal orientation. Pronotum with several transverse rugae. Rest of dorsal surface of alitrunk evenly shagreened and subopaque.

*Paratype minor workers.* Two individuals poorly preserved but clearly sharing the diagnostic traits of the holotype.

Holotype and paratypes in a single amber piece from La Toca Mine, Dominican Republic.

## DISCUSSION

Are *Ilemomyrmex* and *Oxydris* really extinct? If so, they are extreme exceptions in the generic ranks of the Dominican amber ants. It may be significant that both are small, eyeless, and possess narrow, sharp-toothed mandibles. In addition, *Ilemomyrmex* is distinguished by expanded frontal lobes and scrobes that together can mostly cover the antennae. In the living fauna these traits are characteristic of cryptobiotic, often scarce myrmicine ants that are among the last to be collected and recognized. Examples of such living genera that have been recently discovered or at least recognized as



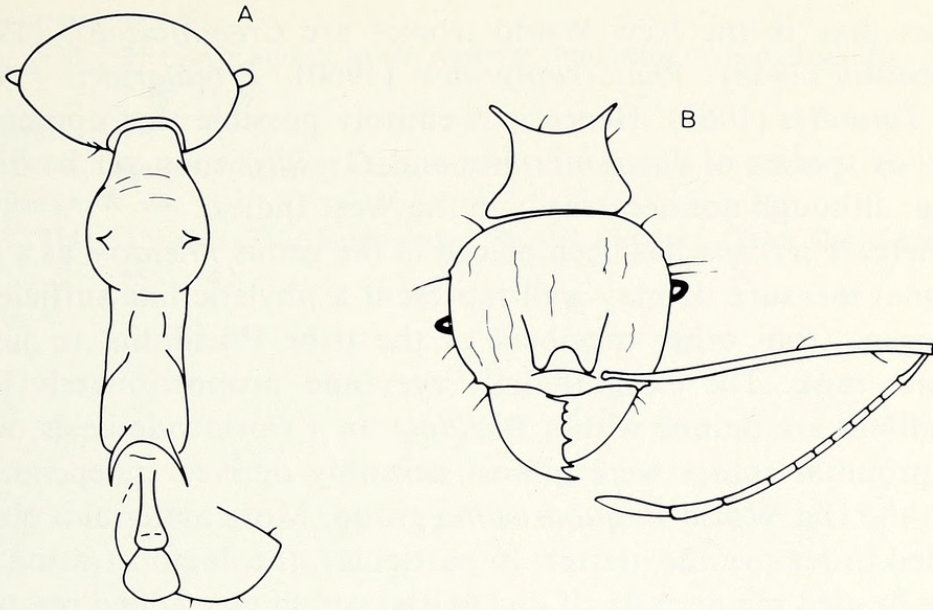


Fig. 4. *Pheidole tethepa*. Holotype worker: A, dorsal view of head and body; B, frontal view of head and pronotum.

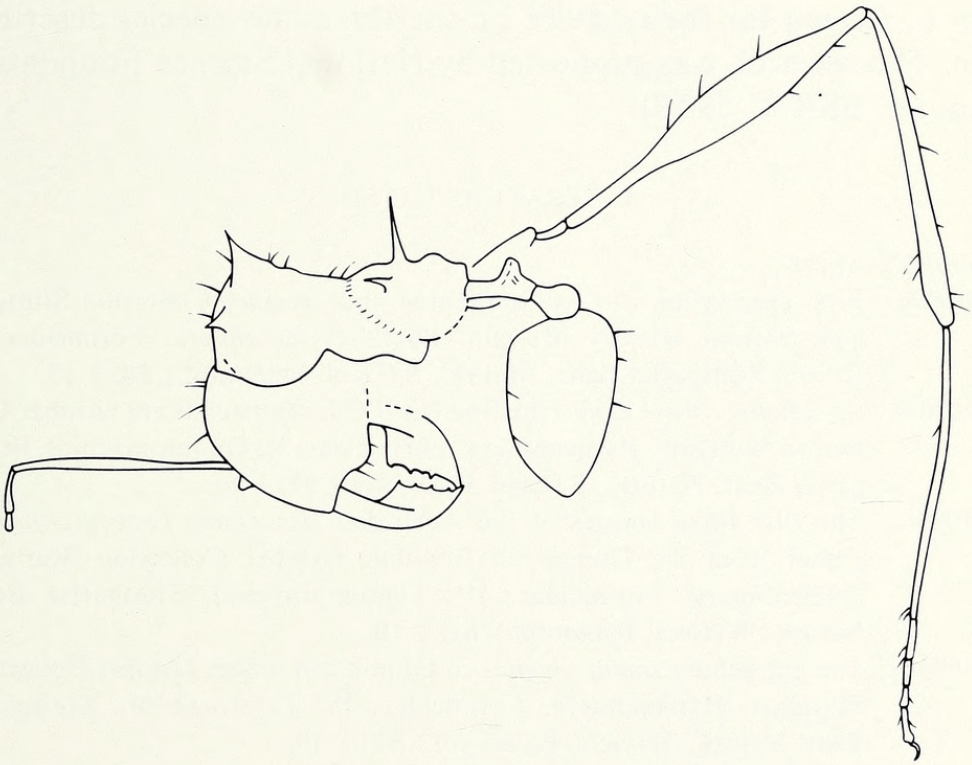


Fig. 5. *Pheidole tethepa*. Paratype worker from holotype amber piece, showing different view of body and head.



higher taxa in the New World tropics are *Creightoidris* (1949), *Dorisidris* (1948), *Phalacromyrmex* (1960), *Protalaridris* (1980), and *Tatuidris* (1967). Hence it is entirely possible that contemporaneous species of *Ilemomyrmex* and *Oxyidris* may yet be discovered, although not necessarily in the West Indies.

*Pheidole tethepa* has been placed in the genus *Pheidole* as a provisional measure. It may well represent a phyletic line sufficiently divergent from other members of the tribe Pheidolini to justify generic rank. The exophthalmic eyes and proportionately large mandibles are unique within *Pheidole* on a worldwide basis, while the pronotal spines were almost certainly derived independently from the Old World *P. quadrispina* group. More material is clearly needed to resolve the matter. In particular, the demonstration of a large-headed major caste (if one exists) would give added reason to retain *tethepa* in *Pheidole*.

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