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**WILLIAM L. BROWN**

**BIOLOGICAL INVESTIGATIONS IN THE SELVA  
LACANDONA, CHIAPAS, MEXICO**

**RAYMOND A. PAYNTER, JR., Editor**

**WITH ONE PLATE**

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Of the Peters "Check List of Birds of the World," volumes 1-3 are out  
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Press; volumes 5 and 7 are sold by the Museum, and future volumes will be  
published under Museum auspices.

## IV

ANTS FROM LAGUNA OCOTAL (HYMENOPTERA:  
FORMICIDAE)

By

WILLIAM L. BROWN, JR.

The ants from Laguna Ocotal were collected for the most part by Robert L. Dressler, and, unless otherwise indicated, the collections were made from epiphytes, particularly bulbous-based *Tillandsia*, growing in the pine forest or the adjacent tropical evergreen forest. Among the 21 species represented in the collection, 17 can be determined to species in accordance with present-day classifications; the remainder belong to difficult groups in need of revision, or else the sample is in some way unsatisfactory for species determination, so that identification is carried only to genus.

All of these species belong to the tropical American fauna, and all are either widespread in South and Central America or else range at least through Central America and extend northward into Veracruz and neighboring Mexican states. Very few ants have been recorded from Chiapas (see Brown, 1950, *Wasmann Jour. Biol.*, 8: 241-250), but with the present series we have accumulated a sample sufficient to confirm the expected close similarity of the Chiapas ant fauna to those of Guatemala and Veracruz. A few of the records of ants received from E. O. Wilson, collected by him in Veracruz during 1953, are mentioned below where relevant. I also possess a small number of Chiapas ants collected by C. J. Goodnight and L. J. Stannard during the last five years, mostly from soil and leaf-litter berlesates, including new species of dacetines and basicerotines that will be described elsewhere. The soil and soil-cover samples are, of course, quite different from the epigaeic-arboreal collections reported below; on the forest floor, *Wasmannia auropunctata* (Roger), small species of *Pheidole* and *Solenopsis*, *Prionopelta modesta* Forel, and several of the smaller Dacetini are the commonest forms, present in nearly every Berlese sample taken, while *Pachycondyla harpax* (Fabricius), *Ponera nitidula* Emery, *Ponera* spp., and *Brachymyrmex* are rather frequent.

As is well known, some of the forms listed below have been involved in considerable taxonomic uncertainty, due chiefly to unrecognized synonymy. Wherever such synonymy has become obvious from the augmented samples now available in the Museum of Comparative Zoology, I have taken the minimum formal steps necessary to list and justify it.

PLATYTHYREA PUNCTATA F. Smith

From a nest in a fallen log, August 3. Winged forms were present, the males being fully pigmented and apparently active, while most of the females were still in the callow stage or were not yet eclosed. Wilson found this ant foraging on tree trunks after dark in Veracruz and Cuba; the nocturnal tree-climbing habit seems characteristic of many members of tribe *Platythyreini*.

TYPHLOMYRMEX ROGENHOFERI Mayr

*Typhlomyrmex rogenhoferi* Mayr, 1862, Verh. zool.-bot. Ges. Wien. 12: 737, worker. Type locality: Amazonas.

*Typhlomyrmex rogenhoferi* race *robustus* Emery, 1890, Bull. Soc. Ent. Ital., 22: 40, worker. Type locality: Alajuela, Costa Rica. NEW SYNONYMY.

*Typhlomyrmex robustus* subsp. *manco* Wheeler, 1925, Ark. f. Zool., 17A (8): 2, worker. Type locality: Pablobamba, Peru. NEW SYNONYMY.

*Prionopelta marthae* Forel, 1909, Deutsch. ent. Zeitschr., p. 240, worker. Synonymy by Brown, 1953, Psyche, 59: 104.

This species is very widespread in the forested regions of tropical America, but a single female stray from a log is the first sample so far recorded from Chiapas. Series from different nests from many localities in the Museum of Comparative Zoology show wide diversity in size and in allometric characters, including relative head width, general robustness of body, and sculpture. However, there is often considerable variation in these characters within single nest series, and one particular series, from San Juan Pueblo, Honduras, leg. W. M. Mann, contains extremes of the variation as well as all intergrades; bracketed are the "diagnostic" characters for *robustus* and *manco*, as reviewed for types and metatopotypes, or both, of these two variants before me.

## NEOPONERA LINEATICEPS Mayr

A small colony of this rather uncommonly collected ant was taken from a *Tillandsia* base, which is apparently a preferred habitat. It has been taken in Veracruz and Costa Rica on several occasions, but this is the first record from Chiapas. The specific name derives from the peculiar coarse, regular longitudinal striation covering the central part of the upper surface of the head, a feature that will identify the species at a glance under magnification.

## NEOPONERA APICALIS (Latreille)

*Formica flavicornis* Latreille, 1802, Hist. Nat. Fourmis, p. 202, pl. 7, figs. 42B, 43 (?), worker, female, *nec* Fabricius. NEW SYNONYMY.

*Formica apicalis* Latreille, 1802, *ibid.*, p. 204, pl. 7, fig. 42A (?), worker.

*Neoponera Latreillei* Forel, 1905, Ann. Soc. Ent. Belg., 49: 161, *nom. pro* *N. flavicornis* (Latreille). NEW SYNONYMY.

*Neoponera apicalis* var. *verenae* Forel, 1922, Rev. Suisse Zool., 30: 90, worker. NEW SYNONYMY.

A single worker was taken foraging on an epiphyte. This species and the closely related *N. obscuricornis* Emery have been confused through the literature, and the confusion extends to most of the ant collections rich in neotropical material to this day. The outstanding differences between these two species as I see them are: (1) *N. apicalis* has the five or six apical funicular segments a bright, contrasting yellow, whereas in *N. obscuricornis*, the apex of the funiculus is little or not at all lightened, and does not form a sudden contrast with the rest of the antenna. Faded or teneral specimens may seem to be intermediate, but these are rare and are easily identified by the remaining characters. (2) *N. apicalis* has the sides of the petiolar node nearly flat, scarcely or not at all concave or sulcate just next to the posterolateral angles, so that these angles are blunt, whereas in *obscuricornis*, the same angles are thrown into relief by a slight but distinct sulcation extending along the posterior sides of the node from top nearly to base. (3) Of the two species, *apicalis* is slightly but distinctly larger on the average, though there is some overlap in size between the two forms. (4) *N. apicalis* is more opaquely sculptured than is *N. obscuricornis*, though both species are strongly opaque; direct comparison is really

needed to reveal the difference. A study of numerous nest series, in addition to stray workers, convinces me that the foregoing characters are consistently linked in one or the other combination. No difficulty has arisen in assigning fresh worker specimens to one or the other species, and no intergrades have been seen, despite the fact that the two species frequently occur in close proximity over a vast area reaching from the Amazon Basin to southern Mexico. In the Museum of Comparative Zoology, collections of both species at single localities have been made as follows: Kartabo and Kamakusa, British Guiana, leg. W. M. Wheeler; Barro Colorado I., Panama Canal Zone, leg. N. Banks; Laguna Encantada, Veracruz, leg. Q. Jones and R. L. Dressler; Pueblo Nuevo, near Tetzonapa, and Las Hamacas, near Santiago Tuxtla, both in Veracruz, leg. E. O. Wilson. Both species live in plant cavities in arboreal situations, but nothing has been recorded concerning their ecological occurrence in any detail.

While it seems clear enough that two and only two species exist in this complex, the application of names to these entities is still in some doubt. The earliest recognized description of a member of the complex appeared when Latreille claimed to have described two species at once, giving them the names *flavicornis* and *apicalis*. The former name was supposed by Latreille to apply to a *Formica flavicornis* earlier named by Fabricius, but Fabricius' insect is apparently an attine species having nothing to do with *Neoponera*; *flavicornis* is thereby a preoccupied name. Nearly everything about Latreille's characterization of *flavicornis* and *apicalis* is either confused or patently in error, and the confusion extends to the correspondence of the plate figures with their respective descriptions. No reliable difference is mentioned or shown by Latreille that will serve to separate the two forms, and the description of the antennal coloration, if nearly accurate, would indicate that both are referable to *apicalis* in the present sense. This is my interpretation, made without recourse to types, but a thorough examination of the original references in conjunction with fairly good samples of the complex shows that it is the simplest solution to a problem that bothered Latreille, Emery, and Wheeler, among others, to the point where the essentially simple species-to-species relationship became lost to view. The name *latreillei* is an objective synonym

of *flavicornis*. I do not follow Emery's "Genera Insectorum" assignment of *latreillei* as a variety of *obscuricornis* — an assignment which expressed his lack of confidence in *latreillei* as a named entity in his characteristically mild, but in this case totally confusing, fashion. The variety *verenae* was described by Forel in his familiar "final melange" paper of 1922, in which several other formicid variants, since synonymized by various authors, were named on the basis of the most doubtful-appearing evidence. Forel mentions no character that would serve to distinguish *verenae* from typical *apicalis*, and *verenae* comes from the middle of the range of the species.

#### NEOPONERA UNIDENTATA (Mayr)

*Pachycondyla unidentata* Mayr, 1862, Verh. zool.-bot. Ges. Wien, 12: 720, worker, female.

*Neoponera unidentata* var. *rugosula* Emery, 1902, Rend. Accad. Sci. Ist. Bologna, (n.s.) 6: 30, worker; variant spellings are "rugatula" of Santschi and "rugulosa" of Wheeler. NEW SYNONYMY.

*Neoponera unidentata*, Wheeler, 1929, Zool. Anz., Wasmann-Festband, pp. 29-30, typical form, with the following varieties: var. *eburneipes* Wheeler, p. 29, worker, female. NEW SYNONYMY. var. *maya* Wheeler, p. 30, worker. NEW SYNONYMY. var. *trinidadensis* Wheeler, p. 30, worker. NEW SYNONYMY.

Wheeler conceived the named variants above (plus also the "subspecies" *sulcatula* Santschi, *q.v. infra*, which belongs in the *crenata*, not the *unidentata*, complex) as "local varieties" based on differences in color, sculpture, form of petiole, pilosity and some lesser details. There is no doubt that variation exists in these various features, and it is clear that both Emery and Wheeler understood that the variation was graded from series to series even in the limited samples examined by these authors. It is also clear, from the present augmented sample drawn from many parts of the species distribution, that the different characters do not vary according to the same geographic plan. The region of the Upper Amazon Basin shows the strongest variation, especially in sculpture, and the range of the variation there leaves little encouragement for racemakers. While it is possible to trace some series to their general area of origin by the study of trends in individual characters, other samples are ambiguous or contradictory in the display of the same characters. Clearly,

a study of geographical variation by individual characters is required before further attempts are made to classify the populations making up *N. unidentata*.

At the Laguna Ocotal collecting area, the species is characterized in general by a petiolar node a bit less thick from front to rear, as viewed from the side, than in the average Amazonian series. However, I am unable to separate some samples in the Chiapas lot from some taken in the Amazon-Guianas region. According to the locality and the characteristics of the most extreme examples, I suppose the Chiapas series would fall under Wheeler's concept of var. *maya*. This species is common in bulbous-based *Tillandsia* at the Laguna, if Dressler's collections are a fair indication of relative abundance.

*N. unidentata* and *N. crenata* (Roger), and also *N. carinulata* (Roger), range widely over tropical America. All three inhabit plant cavities, and all are very similar in general habitus, but the types of petiolar node formation are widely divergent.

NEOPONERA CRENATA (Roger) ✓✓

*Ponera crenata* Roger, 1861, Berlin. ent. Zeitschr., 5: 3, female, *nom. pro*

*Ponera pallipes* Fr. Smith, 1858, p. 98 *nec* p. 87.

The series from Laguna Ocotal (and most collected elsewhere in southern Mexico) agree best with the form described by Forel as *N. stipitum*, of which a cotype rests in the Museum of Comparative Zoology. For the present, I am unable to find any satisfactory characters to separate *stipitum* from *crenata*, and I incline to the belief that a thorough study, with resort to the scattered types of these and other named variants of the complex, will see them all merged under the name *crenata*. Meanwhile, we may tentatively associate various morphological tendencies with the names attached to the several inadequate descriptions involved.

The populations of which I have samples vary widely in size from nest to nest, although intranidal variation is relatively restricted. Weakly correlated with size is the shape of the petiolar node; this correlation holds best at the extremes of the size range, but is poor in intergradient series. Larger specimens (ca. 11 to 12.5 mm. in TL, or total outstretched length of body, including head and mandibles) have the posterior nodal face vertical



throughout, and distinct from the dorsal face, and the compound eyes tend to be farther from the front of the sides of the head, e.g., Kartabo, British Guiana, nos. 60, 425, leg. W. M. Wheeler. These correspond to my idea of "typical" *crenata* (= *pallipes* F. Smith preocc.).

In smaller specimens, such as the Wheeler Kartabo series nos. 495, 708, 679, 286, 507, 671, 148 and 621, among many others, TL averages only 6 to 8 mm. In these, the eyes may be closer to the anterior cephalic margins and the posterior nodal face is often (not always) more convex, with the surface curving continuously into the dorsal face; such specimens correspond to *stipitum* Forel. It is worth noting that the female node, as usual among ponerines, is higher and thinner in lateral-view profile than in the workers from the same nest. This caste difference appears to have caused some confusion in the complex in the past.

A specimen from Espiritu Santo, Brazil (TL 8.8 mm.) and some others away from the Kartabo locality appear to be transitional between the large and small forms, but this would not necessarily preclude the specific distinction between two closely related forms where sympatric, as at Kartabo and elsewhere in the Amazon-Orinoco Basins (perhaps a case of "character displacement"). The intermediate forms seem to be the same as *moesta* Mayr, the var. *moesta* of authors. The polynomials *N. crenata fiebrigi* Forel, *N. crenata confusa* Santschi, *N. crenata confusa lata* Santschi and *N. unidentata sulcatula* Santschi seem from their descriptions to represent minor southern nest variants in the small-to-medium size range of the *crenata* complex; these names are almost sure to prove synonymous when properly studied. In view of the insufficiency of my present sample (though it is considerably better than exists in other collections known to me) and the difficulty of seeing all the types involved, I have left formal synonymy in this group to some future worker.

#### ECITON BURCHELLI (Westwood)

Workers were taken from a raiding column near the Laguna Ocotal camp. These specimens would undoubtedly be placed as "race *parvispinum*" by Father Borgmeier; however, the head

of the largest major (soldier) in the series is dingy yellowish-white in color.

PSEUDOMYRMEX PALLIDUS F. Smith

A few workers from a *Tillandsia*.

PSEUDOMYRMEX GRACILIS (Fabricius)

This is the common bicolored form of the species often known as var. or subsp. *mexicanus*. It may be that the bicolored form is suppressed in northern South America where other bicolorous species of similar size and appearance become common. The geographical variation of this complex, while outstandingly conspicuous, has never been carefully and thoroughly investigated.

PHEIDOLE PUNCTATISSIMA Mayr

Two colonies were taken in epiphytic plants.

PHEIDOLE spp.

Two indeterminate species of *Pheidole* were taken in *Tillandsia*. One of these is in the confusing *biconstricta* group, and the other is a much smaller species. *Pheidole* is one of the very large (1,000-plus named forms) ant'genera currently "out of control" taxonomically. Until adequate revisions of these groups become available, description of isolated new species only adds to the confusion and the unrecognized synonymy. Possibly one half of the names currently remaining unchallenged in *Pheidole* are synonyms of older names, and identification of species with any certainty is hopeless in most faunas, even where helpful preliminary revisionary attempts have been published.

PROCRYPTOCERUS SCABRIUSCULUS Emery

A stray worker from foliage. E. O. Wilson also took a worker during 1953 at Las Hamacas, near Santiago Tuxtla, Veracruz. This and the following two cephalotine species were determined from revisionary papers on the cephalotines by W. W. Kempf. The work of Father Kempf is refreshingly sound and useful as

compared to the majority of publications on neotropical ants with which the would-be identifier has to grapple.

PARACRYPTOCERUS CRISTATUS (Emery)

A stray soldier. E. O. Wilson took a colony of this species at Las Hamacas, Veracruz, on August 27, 1953, occupying three internodes of a living *Cecropia* tree about 15 feet tall in tropical evergreen forest.

PARACRYPTOCERUS SCUTULATUS (F. Smith)

A soldier and workers. The species is widespread from southern Mexico to Venezuela.

SMITHISTRUMA EPINOTALIS (Weber)

This little dacetine normally lives in plant cavities well above the ground. The collection at Laguna Ocotal was made from a *Tillandsia*, but collections from Veracruz, sent by N. L. H. Krauss and by E. O. Wilson, were taken from hollow twigs of standing shrubs and trees.

ACROMYRMEX OCTOSPINOSUS (Reich)

Foraging workers of this fungus-growing ant stole rice from the Laguna Ocotal camp. The species has been discussed at length by W. M. Wheeler (1937, "Mosaics and other anomalies among ants," Harvard Univ. Press. Cf. pp. 69-74), who detailed the ambiguity of the characters supposed to separate it from *A. hystrix* (Latreille). Wheeler suggested as a better separatory character the presence or absence of bilateral tubercles or carinae on the propodeal dorsum; however, Wheeler's own series of the two forms in the Museum of Comparative Zoology appear to grade through on this basis without a break.

The distinction of the "races" *echinator* Forel, *inti* Wheeler, *volcanus* Wheeler, *ekchuah* Wheeler and *cubanus* Wheeler seems to me at least as precarious as the specific separation of *hystrix* from *octospinosus*. The differences supposed to separate these forms are weak and variable, and seem to mark mere individual or nest varieties in some cases; even if they prove later to follow

to some degree geographical trends, there seems little to be gained by placing formal names upon these samples at this time. As seems to be the case with a large number of the subspecies so far described in the animal kingdom, these examples are based on entirely inadequate samples from restricted localities, and in their description scant thought seems to have been given to the overall trends in variation of the characters within the whole species.

AZTECA sp.

A small brownish form, represented by minor workers only.

BRACHYMYRMEX OBSCURIOR Forel

Specimens from *Tillandsia* seem to agree best with descriptions and other determined material of this species, though determinations in this genus are doubtful in the absence of anything better than Santschi's revision.

NYLANDERIA ?GUATEMALENSIS (Forel)

This slender yellowish form is usually placed as a subspecies of *vididula*, but since the taxonomy of this genus is so poorly worked out, I feel that it is better to accord provisional species rank to those names not obviously synonyms. The *guatemalensis* syntype in the Museum of Comparative Zoology is badly damaged, rendering the comparison uncertain.

CAMPONOTUS CIRCULARIS Mayr

Stray workers and a small colony or colony-fragment from *Tillandsia* plants.