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**A Synopsis of the Neotropical Ants of the
Genus *Centromyrmex* Mayr (Hymenoptera:
Formicidae)**

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A Synopsis of the Neotropical Ants of the Genus *Centromyrmex* Mayr (Hymenoptera: Formicidae)

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(With 10 text-figures)

The pantropical genus *Centromyrmex* of rare, termite-eating and burrowing Ponerine ants, occurring both in the Indo-malayan and Ethiopian regions, has at least three different and widely distributed species in the Neotropical realm.

The opportunity of proposing new synonymy and publishing new and interesting locality records gave me the necessary impulse for working out this present synthesis.

My heartfelt thanks go to Dr. Gunnar Hallin of the Naturhistoriska Riksmuseum (NRS) in Stockholm, Sweden, for the loan of the holotype of *C. bohemanni* Mayr; to Mr. Karol Lenko of the "Departamento de Zoologia da Secretaria de Agricultura de São Paulo" (DZSP) for the loan of specimens and general help; and to the "Conselho Nacional de Pesquisas" of Brazil for the stipend which made this research possible. Most specimens used for this study are, however, in this author's collection (WWK).

Centromyrmex Mayr

Centromyrmex Mayr, 1866: 894-5 (Type-species: *C. bohemanni* Mayr = *brachycota* Roger, monobasic). — Emery, 1890: 40, note 1 (Syn.). — Emery, 1911: 57. — Arnold, 1915: 38. — Wheeler, 1922: 646. — Wheeler, 1936: 207 (Bion.). — Borgmeier, 1937: 222. — Brown, 1953: 8-9 (Syn.). — Brown, 1963: 9-10 (Syn.).
Spatacomyrmex Emery, 1889: 489 (Type-species: *S. feae* Emery, monobasic).
Glyphopone Forel, 1913: 308 (Type-species: *G. bequaerti* Forel, monobasic).
Glyphopone (*Leptopone*) Arnold, 1916: 163 (Type-species: *G. (L.) rufigaster* Arnold, monobasic).
Typhloteras Karawajew, 1925: 128 (Type-species: *T. hamulatum* Karawajew, monobasic).

Generic Characters

(For Neotropical species only)

Worker. — Amber-colored to reddish-brown. Integument mostly smooth and shining, very sparsely punctate.

Mandibles elongate-triangular; chewing border much longer than basal border, the former more or less distinctly denticulate;

oblique mandibular line present. Clypeus postero-mesially prolonged caudad as a triangular area wedged in between moderately dilated frontal lobes, joining the deeply impressed frontal sulcus. Eyes absent. Antennal scapes flattened at base, their leading edge sharp; apically gradually incrassate; not extending beyond occipital corner.

Promesonotum laterally immarginate. Promesonotal suture present; mesoepinotal suture at best vestigial, usually absent. Mesial spur of middle tibiae narrow and pointed, of hind tibiae broad and pectinate; lateral spurs usually missing. Tibiae and tarsi of middle leg and tarsi of hind leg with a dense growth of heavy, spine-like setae.

Petiole as long as, or usually longer than, broad; subpetiolar process prominent. No stridulatory file on acrotergite of tergum II of gaster.

Female. — Similar to the worker and of approximately the same size. Compound eyes and ocelli well-developed. Frontal sulcus ending at antero-mesial ocellus. Wings as shown in Figs. 6 and 7.

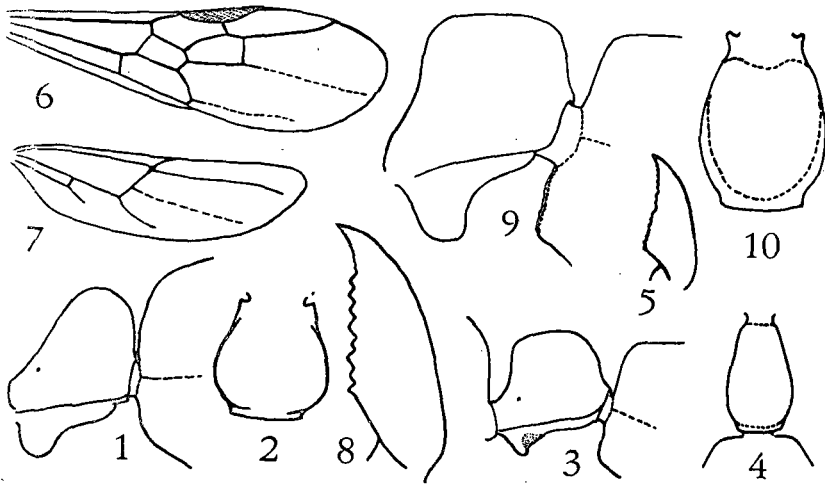
Male. — There is no published record for this caste from the Neotropical region. I have a lone male which seems to belong to the genus. But I forego a description of the specimen on account of the uncertainty of the association.

Larvae. — According to the detailed descriptions by Wheeler & Wheeler (1952: 604-5, Pl. I, figs. 1-10; 1964: 451, 458-61, fig. 18 I h), based on copious material from Java and Indochina, the larvae of *C. feae* are characterized by a "pachycondyloform" body profile, numerous (over 400) spine-like tubercles, which are extremely slender, simulating hairs, and distinctive mandibles. In the latter, the blade is indistinct; the proximal tooth is at the distal third and directed mesially. The larvae of the Neotropical species are still unstudied.

Neotropical species

- alfaroi* Emery, 1890 — worker, female
brachycola (Roger, 1861) — worker, female
 = *bohemanni* Mayr, 1866 — NOV. SYN.
 = *brachycola* var. *paulina* Forel, 1911 — NOV. SYN.
gigas Forel, 1911 — worker, female

Note. — *C. sculpturatus* Santschi, 1931, is a synonym of *Typhlomyrmex rogenhoferi* Mayr, 1862, according to Brown (1965: 74) who had seen the type.



Centromyrmex alfaroi Emery, female: Fig. 1. Petiole in profile. Fig. 2. Petiole in dorsal view. — *Centromyrmex brachycola* Roger, figs. 3-5 worker, figs. 6-7 female: Fig. 3. Petiole in profile. Fig. 4. Petiole in dorsal view. Fig. 5. Mandible. Fig. 6. Fore wing. Fig. 7. Hind wing. — *Centromyrmex gigas* Forel, worker: Fig. 8. Mandible. Fig. 9. Petiole in profile. Fig. 10. Petiole in dorsal view. (Kempf *del.*)

Discussion. — Brown (1953: 8-9) has pointed out that the difference based on the number and development of apical tibial spurs on middle and hind legs in tribe Ponerini is at best precarious and of no practical value at all. As a consequence, the subtribe *Centromyrmecini* Emery, founded precisely on this difference in spur characters, is untenable and falls into synonymy of subtribe Ponerini. As a matter of fact, all the Neotropical specimens of *Centromyrmex*, which I was able to examine, possess only the mesial spur on tibiae II and III, the lateral spur being either absent or so greatly reduced that it defies recognition by ordinary methods of taxonomic examination.

In our region, the ants of genus *Centromyrmex* resemble superficially those of genus *Wadeura* principally on account of the general habitus, the light color and the eyeless condition in the worker caste. *Wadeura*, however, differs in the shape of its extremely long, falcate, 4-5 toothed mandibles, in the finely punctate and subopaque integument, the weak subpetiolar process, the shorter clypeus, the postero-mesial portion of which does not project between the frontal lobes, and in the lighter and sparser armature of spine-like setae on middle and hind legs.

Typhlomyrmex, although belonging to a different tribe on account of its discordant larval characters (cf. Brown, 1965), offers in the imaginal stage some likeness to *Centromyrmex*, giving rise to possible confusion as in the case of Santschi, who described as *Centromyrmex sculpturatus* an ant already well known under the name of *Typhlomyrmex rogenhoferi* Mayr. In spite of its amber-colored integument and eyeless worker caste, *Typhlomyrmex* differs from *Centromyrmex* in smaller size, shorter mandibles, lack of the postero-mesial extension of the clypeus between the frontal lobes. The latter are scarcely lobate, not conspicuously projecting laterad. Dense, reticulate-punctate sculpture is present at least on head, which is subopaque. The middle and hind legs lack the burrowing apparatus, i. e. the heavy, spine-like setae.

So far as is known, the ants of genus *Centromyrmex* are specialized termite-eaters. For our region, the pertinent observations have been recorded by Luederwaldt (1926), Mann (1934) and Borgmeier (1937). According to their testimony, the ants live with, and feed on, termites (principally of genus *Syntermes*).

Key to the Species for Workers and Females

1. Petiole scarcely longer than broad, the anterior face of node oblique, the dorsal face completely rounded in profile (Figs. 1 and 2); clypeus with a prominent tumulus on disc *alfaroi* Emery
- Petiole distinctly longer than broad, anterior face of node perpendicular to elongate and straight dorsal face (Figs. 3, 4, 9, 10); clypeus without a tumulus on disc 2
2. Smaller species, thorax length not over 2 mm; mandibles minutely to indistinctly denticulate, chewing border forming almost a right angle with basal border (Fig. 5); petiole with a short and pointed subpetiolar process (Fig. 3) *brachycola* (Roger)
- Larger species, thorax length well over 2.5 mm; mandibles distinctly dentate on basal third, chewing border forming a very obtuse angle with basal border (Fig. 8); petiole with a prominent apically rounded to subtruncate subpetiolar process (Fig. 9) *gigas* Forel

Centromyrmex alfaroi Emery .

(Figs. 1, 2)

Centromyrmex alfaroi Emery, 1890: 40 (Worker; Costa Rica: Alajuela). — Emery, 1905: 115 (Female; Bolivia: Mapiro).

Type. — A lone worker (holotype) without antennae, presumably in the Emery collection in Genova; not seen.

Worker. — According to the original description, this species is larger than *brachycola*, smaller than *gigas* (the total length given for the holotype, a single-spread measurement, is 7.75 mm). Head broader than long with the sides converging cephalad. Clypeus convex, with an elevated median tumulus on disc, without a median longitudinal impression. Metapleura striate. Thorax strongly compressed at mesoepinotal junction, the basal face of epinotum grading continuously into the declivous face. Legs comparatively short and stout. Metatarsus of hind legs much shorter than tibiae. Petiole rather short, anterior face straight and oblique, dorsum completely rounded. Color dark ferruginous.

Female. — Total length 8.8 mm; head length 1.39 mm; head width 1.60 mm; maximum diameter of eyes 0.53 mm; thorax length 2.77 mm; hind tibiae length 0.99 mm; hind metatarsus

length 0.53 mm. Mandibles smooth and shining, with sparse, minute punctulae; mandibular line prolonged forward on sides as a shallow groove; basal half of chewing border distinctly denticulate, apical half forming a sharp cutting edge without noticeable teeth. Clypeus with the anterior border conspicuously convex, with a prominent median tumulus on disc. Antennal scapes almost reaching occipital corners. Compound eyes very large. Mesial spur of middle tibiae short and inconspicuous, not projecting beyond apex of tibia; lateral spurs missing both on middle and hind tibiae. Extensor face of hind tibiae with a few spine-like setae on apical half. Petiole as shown in Figs. 1 and 2. Gastric constriction weak. Sternum I of gaster without a prominent and marginate tuberosity beneath petiolar insertion. Wings (only hind wings preserved) hyaline, venation brown.

Specimens examined: 1 lone female, taken by Father S. Schwarzmaier on January 7, 1938 in Campinas, a suburb of Goiânia, State of Goiás, Brazil; W. L. Brown, Jr. det. (WWK). Another dealate female (DZSP) comes from the same State, and was taken by K. Lenko on Oct. 27, 1962 at Faz. Cachoeirinha, near Jataí.

This new record, the first for Brazil, extends the known range of the species, already collected in Costa Rica and north-western Bolivia, to central Brazil.

Centromyrmex brachycola (Roger)

(Figs. 3, 4, 5, 6, 7)

Ponera brachycola Roger, 1861: 5-6 (Female; Brazil: Minas Gerais).
Centromyrmex brachycola: Emery, 1890: 40, note 1 (N. comb.). — Emery, 1905: 114-5 (Worker; Brazil, Mato Grosso: Coxipó; Pará: Belém).
Centromyrmex bohemannii Mayr, 1866: 895, pl. 20, fig. 7 (Worker; Brazil: Rio de Janeiro). — Emery, 1905: 115. — NOV. SYN.
Centromyrmex brachycola var. *paulina* Forel, 1911: 287 (Worker; Brazil, São Paulo: Ipiranga). — Luederwaldt, 1926: 238 (Bion.). — NOV. SYN.
Centromyrmex sp.: Mann, 1934: 189 (Bolivia; Bion.).

Types. — Female (holotype) of *brachycola* not seen. Worker (holotype) of *bohemannii* (NRS) and worker (syntype) of var. *paulina* (WWK) examined.

Worker. — Total length about 6 mm. Head length 1.09-1.17 mm; head width 1.12-1.17 mm; thorax length 1.79-1.87 mm; hind tibia length 0.70-0.77 mm; hind metatarsus length 0.51-0.59 mm. Basal border of mandibles forming with chewing border nearly a right angle; chewing border finely and rather indistinctly denticulate (dentition often completely worn off) (Fig. 5). Head

subquadrate, nearly as long as broad, with subparallel and almost straight sides, occipital border gently excavate. Clypeus without a median tumulus on disc, its anterior border very gently convex. Antennal scapes fail to reach the occipital corners by a distance equalling its maximum width. Thorax smooth and shining, the sparse punctures inconspicuous; striation confined to the extreme metasternal angle. Dorsum of thorax at least slightly impressed at meso-epinotal junction; epinotum at a slightly lower level than disc-shaped mesonotum. Mesoepinotal suture absent. Thorax strongly compressed at mesoepinotal junction. Basal face of epinotum narrowed in front to almost a point, forming posteriorly an obtuse angle with declivous face, which is oblique. Mesial spur of mid tibiae narrow and pointed, projecting well beyond apex of tibia. Extensor face of hind tibiae lacking heavy, spine-like setae on apical half. Petiole (Figs. 3, 4) much longer than broad, the node laterally compressed; subpetiolar process relatively low and dentate. Sternum I of gaster without a marginate tuberosity below petiolar insertion.

Female. — Similar to the worker, of approximately the same size. Thorax length 1.92-1.94 mm. Maximum diameter of eyes 0.27 mm. Petiolar node somewhat shorter than in worker. Wings as shown in Figs. 6 and 7. Hind wing with 7 hamuli.

Distribution. — So far, this species is known only from Brazil and Bolivia. In Brazil it has been collected in the following states: São Paulo, Guanabara, Minas Gerais, Mato Grosso and Pará.

Specimens examined: 10 workers and 2 females, as follows: Brazil, São Paulo State: São Paulo, Ipiranga, Luederwaldt leg. 1 worker (syntype of var. *paulina*) (WWK); Agudos, December 4, 1955, W. W. Kempf leg. 1 alate female in leaf mold in woods (WWK); Pindamonhangaba, May 30, 1939, S. Schwarzmaier leg. 6 workers, 1 female (WWK); Guanabara State: Rio de Janeiro, date and collector unknown, 1 worker (holotype of *bohemanni*) (NRS). — Bolivia, Rosario on Lake Rocagua, Nov. 1921, W. M. Mann leg. 2 workers (WWK).

Discussion. — The original diagnosis of *bohemanni* contains a few mistakes that gave rise to the subsequent confusion. The holotype worker lacks the mesoepinotal suture; the mesonotum is not halfmoon-shaped but subcircular (the specimen is broken in two pieces at the promesonotal suture; the anterior end of the mesonotum, due to this accident, is deflected downward giving thus artificially the impression of a semilunar mesonotal disc); the length-width proportion of the petiolar node is 26:15, hence it is not twice as long as broad; the node again

is not so broad as the gaster (an evident mistake in the description, as Emery already pointed out in 1905: 115). Indeed, the type workers of *bohemanni* and *brachycola* var. *paulina* are perfectly identical and synonymous. Forel (1911: 287) puts much stress on the edentate condition of the mandibles of *bohemanni* and finely denticulate mandibles of var. *paulina*. Yet the denticles are more or less worn off in the former and other specimens of the same species.

Moreover, there is no good character known for separating the typical *brachycola* from *bohemanni* and var. *paulina*, placed here into synonymy of the former. Although the final word depends from an examination of the type of *brachycola*, it seems pretty safe to say that the presently proposed synonymy will hold true.

Bionomics. — The types of *brachycola* var. *paulina* Forel, just a few individuals, were taken from a nest of *Syntermes dirus* Burmeister (Luederwaldt, 1926: 238). The specific identification of the host species is somewhat doubtful, since the common *Syntermes* species in the São Paulo area is not *dirus* but *wheeleri* Emerson (cf. Araújo, 1958: 211-2).

Mann (1934: 189) has made the ensuing very important observation: "In Bolivia I found in a decayed log a populous nest of termites and in the same log was a colony of red hunter ants (*Centromyrmex*). In the chambers of the ants' home I noticed on top of each larva the body of a decapitated termite. Near by were piles of dead termites to provide a second helping". This observation probably refers to the above mentioned series taken at Rosario, Bolivia.

***Centromyrmex gigas* Forel**

(Figs. 8, 9, 10)

Centromyrmex gigas Forel, 1911: 287-8 (Worker; Brazil, São Paulo: Ipiranga). — Luederwaldt, 1926: 238 (Bion.). — Santschi, 1933: 106 (Argentina, Misiones: Loreto). — Borgmeier, 1937: 223 (Female; Brazil, São Paulo: Ipiranga; Rio de Janeiro: Manguinhos; Bion.).
Centromyrmex sp.: Kempf, 1959: 211 (Brazil, Amapá: Serra do Navio).

Types. — Syntypes in the collections of the Departamento de Zoologia da Secretaria de Agricultura de São Paulo (DZSP), of Forel and in my own (WWK).

Worker. — Total length about 12 mm. Head length 1.76-1.92 mm; head width 1.94-2.23 mm; thorax length 2.93-3.20 mm; hind tibia length 1.20-1.33 mm; hind metatarsus length 0.85-0.96 mm. Rather reddish brown than amber-colored, generally darker than *brachycola*. Mandibles (Fig. 8) distinctly dentate at basal half, chewing border forming an obtuse angle with basal border. Head distinctly broader than long, sides more rounded, converging cephalad. Occiput gently concave. Clypeus without a median tumulus on disc. At posterior end of frontal sulcus often a rudimentary ocellus. Mesoepinotal suture either absent or indicated by a faint transverse notch. Mesopleura often

divided by a transverse suture into anepisternum and catepisternum. Epinotum not so strongly constricted nor depressed as in *brachycola*; basal face often with a faint, saddle-shaped impression in the middle; declivous face less oblique than in *brachycola*. Metasternal angle more extensively striolate. Mesial spur of middle tibiae long and projecting beyond apex of tibia. Extensor face of hind tibiae with spine-like setae on apical half. Petiole as shown in Figs. 9 and 10; note the long subpetiolar process. Sternum I of gaster with a marginate tuberosity beneath petiolar insertion.

Female. — Head length 1.86-2.00 mm; head width 2.13-2.29 mm; maximum diameter of eyes 0.53-0.67 mm; thorax length 3.47-4.00 mm. Similar to the worker with the usual differences of the caste. Wings as in *brachycola*, hind wing with 8 hamuli.

Distribution. — The species is now known from the lower Amazon valley, southeastern Brazil and adjoining Misiones territory in the Argentine.

Specimens examined: 8 workers and 4 females, as follows: Brazil, São Paulo State: São Paulo City, Ipiranga, October 17, 1907, H. Luederwaldt leg. 3 workers and 3 females (syntypes, DZSP, WWK); same locality and same collector, August 23, 1908, 3 workers (DZSP, WWK); Rio de Janeiro State: Ilha Grande, June 12, 1944, H. Sick leg. 1 worker (WWK); Guanabara State: Rio de Janeiro, Manguinhos, Nov. 1945, H. S. Lopes leg. 1 worker (WWK); Amapá Territory: Serra do Navio, October 20, 1957, K. Lenko leg. 1 female (WWK).

Bionomics. — According to Luederwaldt (1926: 238), who discovered two colonies of the present species in termite nests of *Syntermes dirus* Burmeister (probably not *dirus* but *wheeleri*, cf. Araújo, 1958: 211-2), single colonies seem to consist of very few individuals and alate sexual offspring is found in the nest in October. One nest contained only three individuals (incipient colony?). H. S. Lopes, as reported by Borgmeier (1937: 223), found the same species at Manguinhos, Rio de Janeiro City, likewise in a nest of *Syntermes* sp.

Note. — Three stray females, one alate, from Brazil, Goiás State, Jataí, Fazenda Cachoeirinha, collected by K. Lenko on October 27 and 28, 1962 (DZSP, WWK), are of strikingly smaller size but seem nevertheless to belong to the present species, inasmuch as they agree in all diagnostic characters. The alate specimen measures as follows: Total length 10 mm; head length 1.44 mm; head width 1.60 mm; thorax length 2.80 mm; maximum diameter of eyes 0.45 mm. The hind wing possesses 10 hamuli. It is hard to say whether these are nanitic specimens of *gigas* or representatives of a closely related and still undescribed species.

Resumo

No presente trabalho se oferece uma síntese acêrca dos representantes neotropicais do gênero *Centromyrmex* Mayr. Duas formas, *bohemani* Mayr e *brachycota* var. *paulina* Forel, são colocadas em sinonímia de *brachycota* (Roger). Além disso, apresentam-se uma chave de identificação das espécies e novos dados de distribuição para as três espécies reconhecidas como válidas.

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