Rev. Brasil. Biol., 28 (1) : 35-41
Abril, 1968 — Rio de Janeiro, GB

A NEW SPECIES OF "CYPHOMYRMEX" FROM COLOMBIA, WITH FURTHER REMARKS ON THE GENUS (Hymenoptera, Formicidae) [1]

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(With 4 text-figures)

While visiting the Museum of Comparative Zoology at Harvard University in July 1967, Prof. William L. Brown, Jr. showed me a series of *Cyphomyrmex* ants which he recently collected in Colombia, and which proved to be new to science. In order to continue the revisionary studies already done in this group (KEMPF, 1964, 1966) I here present the description of this species, together with additional locality records for other species already revised. I also append a reply to the criticism on my 1964 paper, made by Prof. Weber, of Swarthmore College.

The present study was performed with the aid of a fellowship granted by the "Conselho Nacional de Pesquisas" of Brazil. The material used is deposited in the following collections: Departamento de Zoologia da Secretaria de Agricultura de São Paulo (DZSP); Museum of Comparative Zoology at Harvard College (MCZ); this author's private collection (WWK).

Cyphomyrmex cornutus sp. n.

Worker (holotype) — Total length 3.9 mm; head length 0.96 mm; head width 0.85 mm; maximum diameter of eyes 0.19 mm; scape length 0.88 mm; thorax length 1.31 mm; hind femur length 1.31 mm; petiole width 0.32 mm; postpetiole width 0.40 mm. Fuscous brown; mandibles, funiculi, bottom of sides thorax, middle and hind coxae, tarsi brown to testaceous brown; dorsum of head and gaster nearly black. Integument opaque; densely and minutely punctate-granulate.

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[1] Received for publication November 8, 1967.

Head as shown in Fig. 1. Mandibles finely longitudinally rugulose with the dentition of the *"rimosus"* type, i. e. 5 teeth with a broader diastema between second and third basal tooth. Clypeus with a narrow, flattened anterior apron, the border of which is very gently convex and inconspicuously notched in the middle; on each side there is a prominent denticle. Frontal lobes very broadly expanded laterad, semicircular, covering the sides of head from above but exposing the preocular carina which curves mesad above the eye; circular area above antennal socket slightly impressed. Frontal area distinct and impressed. Frontal carinae sigmoidal, fading out before reaching the occipital corner. Front and vertex rather flat, without a median tumulus just behind frontal area and without a deeper transverse furrow in front of the short, toothlike vertical carinae. Eyes convex, with 9-10 facets across the greatest diameter. Supraocular tooth prominent. Occipital corners drawn out in a hornlike fashion. No postocular carinae present. Lower border of cheeks marginate. Antennal scape, when lodged in ventrally immarginate scrobe, surpassing the tip of the occipital spine by a distance exceeding its maximum width. Funicular segments longer than broad; I as long as II and III combined, apical segment (x) as long as VII, VIII and IX combined.

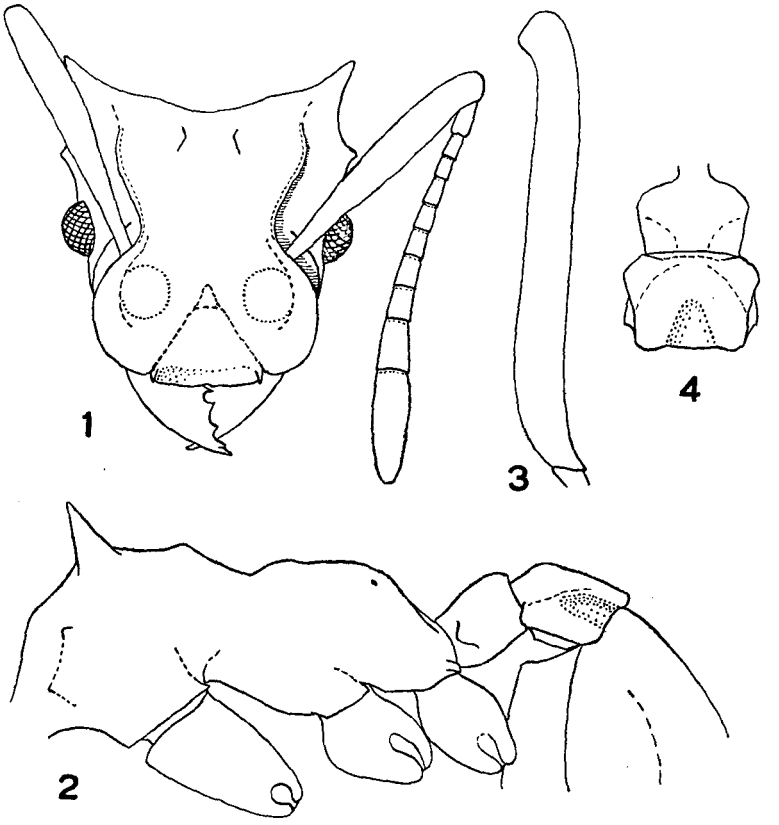
Thorax as shown in Fig. 2. Pronotum without median paired denticles, laterally submarginate, with a faint humeral and stronger postero-lateral tubercle; antero-inferior corner rectangular. Mesonotum with an anterior pair of very prominent spines, and a posterior pair of very low denticles. Meso-epinotal constriction moderate. Epinotum unarmed, lacking longitudinal ridges or tubercles on basal face. Epinotal stigma inconspicuous, not situated on a prominent welt. Hind femora (Fig. 3) not conspicuously broadened nor angulate beneath at basal third.

Pedicel as shown in Figs. 2 and 4; both lacking distinct dorsal ridges or tubercles. Petiolar node not noticeably constricted behind. Postpetiole posteriorly faintly bituberculate, shallowly impressed dorsally between tubercles and laterally below each tubercle. Gaster ovoid, tergum I laterally scarcely marginate; sternum I anteriorly truncate, the truncation finely marginate.

Pilosity decumbent to apressed, not scalelike; sparse, scarce and appressed on thorax; more abundant on gaster. Standing hairs confined to tip of gaster.

Female (paratype) – Total length 4.6 mm; head length 1.01 mm; head width 0.91 mm; eye length 0.24 mm; scape length 0.96 mm; thorax length 1.47 mm; hind femur length 1.41 mm; petiole width 0.37 mm; postpetiole width 0.61 mm; fore wing length 3.95 mm; hind wing length 3.07 mm. Light brown, thorax and appendages testaceous. Resembling the worker with the following differences: Eyes larger, with more than 15 facets across the greatest diameter. Ocelli small, lateral ones situated laterally on small tubercles. Lateral pronotal teeth distinct but short and blunt. Mesonotal scutum with a pair

of anterior strong teeth, for the rest almost flat; notauli feebly marked. Scutellum with postero-lateral margin of paraptera obliquely upturned; posterior apron bidentate. Basal and declivous face of epinotum subcontinuous, separated in side-view by an indistinct tubercular tooth. Postpetiole much broader, sides somewhat divergent caudad, posterior median and postero-lateral impressions deeper, tubercles stronger. Wings strongly infuscated. Anal vein not curving into cubital vein, but continuing distad after cross vein.



Cyphomyrmex cornutus sp. n., worker — Fig. 1: Head in full face view; fig. 2: thorax and pedicel in lateral view; fig. 3: hind femur in lateral view; fig. 4: petiole and postpetiole in dorsal view (Kempf *del.*).

Types — Colombia, Valle Dept.: 3.2 km east of Rio Aguaclara, on the old Cali Road, in rocky wet quebrada, collected on March 19, 1967 by R. B. Root and W. L. Brown, Jr., 20 workers and 3 females (holotype and paratypes); Mun. Buenaventura, March 16-17, 1967 (Bajo Calima), lowland rainforest, R. B. Boot and W. L. Brown, Jr. col. in rotten wood, 8 workers, 1 female (paratypes). More paratypes of each series were cursorily examined in the Museum of Comparative Zoology Collection at Harvard, to which the holotype will be returned. The remaining specimens are in my private collection (WWK).

Variation — The critical measurements of the worker caste exhibit the ensuing range of variation: Total length 3.4-4.2 mm; head length 0.83-1.01 mm; head width 0.75-0.91 mm; thorax length 1.18-1.39 mm; hind femur length 1.18-1.36 mm. The holotype is darkest, the lightest specimens (present in both series) are entirely yellowish brown; intermediate color phases are also present. The female specimens show a greater degree of variation. The alate specimen described above is distinct by a much bigger gaster (length 1.41 mm against 1.12-1.20 mm in the other specimens), a much broader and dorsally more deeply impressed postpetiole. The other specimens more or less lack the marked separation between basal and declivous face of epinotum and have the lateral pronotal tooth feeble or indistinct. The female from Mun. S. Buenaventura has only very weak anterior paired scutellar tubercles.

Discussion — *C. cornutus,* named after its hornlike occipital and mesonotal protuberances, belongs to the *rimosus*-group in the stricter sense on account of the following characters: preocular carina curving mesad above eyes and transecting the antennal scrobe which bears the same sculpture as the rest of the head and lacks a ventral limit behind the eye.

Due to the absence of paired midpronotal teeth, the worker of *cornutus* runs to *kirbyi* in my key (KEMPF, 1965: 163-5) but differs from the latter species in the hornlike occipital spines, the semi-circular frontal lobes, the spine-like anterior mesonotal teeth, the ecarinate basal face of epinotum.

Other closely related forms, although having well-developed mid-pronotal denticles, longer and anteriorly diverging carinae on vertex, much lower anterior and much stronger posterior mesonotal teeth, a deeper mesoepinotal constriction, carinate borders on epinotum, are *vorticis* and *salvini.* Workers of *vorticis* are distinct from *cornutus* by having the more expanded and unequally rounded frontal lobes covering the preocular carinae in full-face view; *salvini* workers, on the other hand, differ in having scalelike hairs, the petiole posteriorly constricted in dorsal view, the hind femora ventrally dilated and angulate at basal third.

NEW LOCALITY RECORDS FOR SOME *Cyphomyrmex* SPECIES

1. *Cyphomyrmex auritus* Mayr — Brazil, Espírito Santo State. Santa Teresa, 24-II-1967, 400 m, W. L. Brown, Jr. leg. (MCZ) (extension of range of the species, hitherto known only from São Paulo and Santa Catarina States); São Paulo State: Caraguatatuba, 2-IV-1963, K. Lenko leg. (DZSP n. 2141), Ubatuba, 13-VII-1967, P. C. Montouchet leg. 1 alate female (DZSP).

2. *Cyphomyrmex laevigatus* Weber — Peru: Tingo Maria, 12-III-1967, W. L. Brown, Jr. & W. Sherbrooke leg. (MCZ, WWK). Brazil, Pará State: Utinga near Belém, 12-VIII-1962, P. F. Darlington leg. (MCZ: B 151). These records fill the gap between the previous ones, i. e. Bolivia and Suriname.

3. *Cyphomyrmex paniscus* Wheeler – Brazil, São Paulo State: Caraguatatuba, 12-VII-1965, K. Lenko leg. 1 worker and 1 female (DZSP n. 4095). This is the first record for the species since the types were described from an unknown locality in Brazil; *paniscus* definitely belongs to the fauna of southeastern Brazil, as has been surmised in my previous revision (KEMPF, 1964: 20).

4. *Cyphomyrmex salvini* Forel – Costa Rica: Toro Amarillo nr. Guapiles, 9-II-1966, W. L. Brown, Jr. leg. (MCZ, WWK). – Colombia, Valle Dept.: TV Tower road, Salidito W of Cali, 1900-2100 m, 23-III-1967, R. B. Root and W. L. Brown, Jr. leg. (MCZ, WWK). The last record is a new southward extension of the hitherto known range of the species.

CODICIL TO THE *Cyphomyrmex* REVISION

My good friend and colleague, Prof. Neal A. Weber, of Swarthmore College, is justly famous for his studies of the biology of Neotropical fungus–growing ants. He was also extremely encouraging and helpful as regards loan of pertinent material when, a few years ago, I decided to start a taxonomic review of these ants which for many years have held his interest.

After the issuance of the first part of the revision of genus *Cyphomyrmex* (KEMPF, 1964), but before having seen the second part (KEMPF, 1965, published in March 1966), WEBER (1966) published a paper containing not only brief comments on several species of the genus, but also the reinstatement of synonyms proposed by myself. As Dr. Weber's action implies taxonomic changes with which I am unable to agree, I am forced to come foreward with my defense.

1. Subgenus *Cyphomannia* Weber – This optional category was founded upon the lone Bolivian species *laevigatus* Weber. It is indeed a striking species. The completely smooth thorax, devoid of the costumary tubercles, teeth and spines is unique. Nevertheless, the overall appearance and a set of characters which to my mind are useful for infrageneric grouping (without going into subgenera) show that *laevigatus* falls nicely into the *rimosus*-group, in a stricter sense, i. e. excluding the somewhat aberrant forms such as *longiscapus, costatus, wheeleri* and possible allies. The head of *laevigatus* is practically identical with that of *bicornis,* and the latter also lacks a pronotal and epinotal armature, only the mesonotum having an anterior pair of conical low spines and a posterior pair of inconspicuous welts; in addition, the petiole and postpetiole of *bicornis* are practically smooth as in *laevigatus* (cf. KEMPF, 1966: 177-9, figs. 4, 5, 23, 26, 32, 33). Moreover, WEBER is wrong in assuming that when I first proposed this case of synonymy (KEMPF, 1962) I had no direct knowledge of *laevigatus*-material. Already in 1961 (p. 518) I mentioned the specimens from Dutch Guiana which are perfectly identical with the types, available to me already by the end of 1962. Since *Cyphomyrmex* contains other

striking and morphologically isolated species (v. gr. *occultus, morschi, longiscapus*), there would be no end for decorative subgenera. Therefore, I consider *Cyphomannia* a useless burden which should stay buried for the sake of healthy taxonomy.

2. Group of *rimosus* – Dr. Weber did not fail in discovering a flaw in my grouping. The *rimosus*-group, which I already set up in 1962, did not quite live up to expectations. As a matter of fact, *longiscapus* and to a lesser degree also *wheeleri, costatus* and possible allies, do not completely conform to the group definition. While definitely distinct from the strictly homogeneous *strigatus*-group, they might be set apart as a third group within the genus. This situation has already been recognized in the second part of my *Cyphomyrmex* revision (KEMPF, 1965: 163, 166-7).

3. The *bigibbosus* problem – Previously the Amazonian *bigibbosus* was taken as a single species that included aside from the typical form also three subspecies: *faunulus, tumulus* and *petiolatus,* all based on single nest series, and more or less sympatric in their distribution. Having seen the types of the forms involved, except for the nominal subspecies, and nearly a hundred specimens belonging to this complex, I was able to distinguish what seems to be two sympatric species, a smaller one with posteriorly excised postpetiole, and a slightly larger one with the posterior border of postpetiole entire, (for additional characters, see KEMPF, 1964: 20-25) which were respectively given the oldest available names. If not entirely satisfactory, this classification allowed for a clear-cut separation of all material which so far has come to my attention, Surely, I did not see the type of the nominal *bigibbosus,* but WEBER's scant information (1966: 167) on the type falls in line with my definition, because it is even smaller than the smallest *bigibbosus* specimen examined by myself. WEBER states that by comparison between the types, his own *tumulus* (placed into synonymy of *bigibbosus* by myself) appeared to be subspecifically distinct, but fails to give any reason for it. The few characters which he cites in favor of the validity of the other race, *petiolatus,* are exactly the same ones which made me to separate it from *bigibbosus* and to place it into synonymy of *faunulus.* In short, as long as there is no factual evidence to the contrary, I shall maintain *bigibbosus* Emery and *faunulus* Wheeler as separate species, *tumulus* Weber as a synonym of the former and *petiolatus* of the latter.

4. WEBER's notes on *Cyphomyrmex* types. Aside from the comments on *bigibbosus,* already discussed, there is little else to say. However, I do object to his statement that *daguerrei* Santschi and *olitor* Forel are related with or close to, *rimosus.* Even a perfunctory perusal of my revisionary papers will show that such a statement is misleading, since both (types of each examined by myself) belong doubtless to the well-circumscribed *strigatus*-group (cf. KEMPF, 1964: 28-34).

RESUMO

O presente trabalho contém a descrição de *Cyphomyrmex cornutus* sp.n., espécie colombiana e relacionada com *C. kirbyi* Mayr, oriunda do mesmo país. Aquela difere desta pelos lobos frontais muito alargados e arredondados e os cantos occipitais guarnecidos de longo espinho. Acrescenta-se uma lista de novas localidades para *C. auritus, laevigatus, paniscus* e *salvini,* localidades estas que, em parte, ampliam o território das respectivas espécies. Por fim, contra a crítica levantada pelo Prof. Weber, se mantém a sinonímia do sub-gênero *Cyphomannia* e a classificação e sinonímia de *C. bigibbosus* e *faunulus* segundo a proposta em estudos anteriores.

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