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**Miscellaneous Studies on Neotropical Ants. IV.
(Hymenoptera, Formicidae)**

Walter W. Kempf, O.F.M.

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Miscellaneous Studies on Neotropical Ants. IV. (Hymenoptera,
Formicidae)

Walter W. Kempf, O.F.M.
Convento de São Francisco, São Paulo

(With 26 text-figures)

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Introduction

The present study is a continuation of a series begun in 1960 (*Studia Ent. N. S.* 3: 417-466). Instead of dispersing in countless minor notes the information and results obtained by routine taxonomic activity, I decided to bring them together in more voluminous papers. This new installment presents significant new locality records for several rare or striking species, especially when new to Brazil, the description of five new species and 19 cases of newly discovered synonymy.

In the following pages, I deal principally with the genera *Gnamptogenys*, *Crematogaster* and *Camponotus*. As regards *Gnamptogenys*, already revised by Brown (1958), I add novelties on the specific and distributional level. *Crematogaster* and *Camponotus* are protean groups and badly in need of revision, toward which isolated building stones are given here.

Acknowledgments. — The material used in this investigation came from the following collections: Borgmeier collection (CTB), now incorporated in the Kempf collection (WWK); Departamento de Zoologia do Estado de São Paulo (DZSP), courtesy of Mr. Karol Lenko; Muséum d'Histoire Naturelle de Genève, Switzerland (MHNG), Forel collection, courtesy of Dr. Claude Besuchet; Museum of Comparative Zoology at Harvard University (MCZ), courtesy of Dr. W. L. Brown, Jr.; Naturhistorisches Museum Wien, Austria (NHMW), Mayr collection, courtesy of Dr. Max Fischer; Naturhistoriska Riksmuseet at Stockholm, Sweden (NRS), courtesy of Dr. Gunnar Hallin. To all these persons and institutions my heartfelt thanks for the loan of specimens and the generous cooperation. I also wish to thank the many industrious collectors who have kept me supplied with copious and interesting material, especially Dr. W. L. Brown, Jr., Mr. Fritz Plaumann, Mr. Karol Lenko, Cel Moacyr

Alvarenga, Dr. Carlos Alberto Campos Seabra, Father Luis Herbst, C.S.Sp., Father Reinaldo Mueller, O.F.M., Mr. W. Bokermann and others. Last not least, I am indebted to the «Conselho Nacional de Pesquisas» of Brazil, for supporting these studies with a continuing fellowship.

Note on measurements. — The head length is the maximum length of the head capsule, as measured between two parallel lines drawn perpendicular to the sagittal line through the anteriormost and posteriormost point of head in full-face view, wherever they are encountered; the head width is the maximum width of head either in front or behind the eyes; the scape length is the maximum straightline length of the segment, excluding the distinctly set-off basal articular condyle; the thorax length is obtained in sideview, by measuring between the anteriormost point of pronotum («neck» excluded!) and the posteriormost inferior «metasternal» angle. The remaining measurements used in this paper are self-explanatory.

Subfam. Dorylinae

Neivamyrmex gibbatus Borgmeier

Neivamyrmex gibbatus Borgmeier, 1953, Stud. Ent. n. 2, pp. 45-46, fig. 30 (Worker, female; Costa Rica: Hamburg Farm; Panama Canal Zone: Barro Colorado Island; Guiana: Kartabo). — Borgmeier, 1955, Stud. Ent. n. 3, pp. 347-349, Pl. 24, figs. 5, 5a, Pl. 34, fig. 9.

We have now the first Brazilian record for the species. In October 1961, Father L. Herbst, C.S.Sp. collected several workers at Pôrto Válter, Acre Territory, Brazil (WWK).

Neivamyrmex leptognathus (Emery)

Eciton (Acamatus) leptognathus Emery, 1900, Mem. Acc. Bologna (5) 8: 520, 525, fig. 15 (Male; Bolivia).
Neivamyrmex leptognathus: Borgmeier, 1955, Studia Ent. n. 3, p. 354, Pl. 36, fig. 8; Pl. 45, figs. 10, 17, 27.

Hitherto known only from the holotype taken in Bolivia, this species was again collected by K. Lenko at Serra Caraça, Minas Gerais State, Brazil, in November 1961, 2 males (DZSP, WWK).

Neivamyrmex laevigatus (Borgmeier)

Eciton (Neivamyrmex) laevigatum Borgmeier, 1948, Rev. de Ent. 19: 460, figs. 1-4 (Worker; Argentina, Chaco: Roque Saenz Peña).

We have now the first Brazilian records for the species, heretofore known only from the types, as follows: Brazil, São Paulo State: Agudos, June 1960, C. Gilbert leg. 18 workers (WWK n. 3508); Biritiba-Mirim, Mun. de Mogi das Cruzes, 1967, W. L. Brown & R. Crozier leg. workers (MCZ). In addition, there is also a new record from Argentina, Santiago del Estero: Tintina, J. C. Bradley leg. workers (Cornell University collection).

Neivamyrmex adnepos (Wheeler)

Eciton (Acamatus) adnepos Wheeler, 1922, Amer. Mus. Novit. n. 45, p. 2 (Worker; Trinidad: Port of Spain).
Neivamyrmex adnepos: Borgmeier, 1955, Studia Ent. No. 3, pp. 562-565, pl. 31, fig. 4 a-d (Worker; Costa Rica: San José).

On September 19, 1962, Brown and Lenko (BC-36) collected this species for the first time in Brazil, Amazonas State: Benjamim Constant (MCZ, WWK).

Subfam. Cerapachyinae

Acanthostichus femoralis Kusnezov

Acanthostichus femoralis Kusnezov, 1962, Act. Zool. LIII, 18: 126-130, figs. 2, 3b (Worker; Argentina, Formosa: Estación Ingeniero Juárez). — Kempf, 1964, Pap. Avuls. Dep. Zool. S. Paulo 16: 263.

This rather striking and easily recognized species of an otherwise difficult genus is now being registered for the first time from Brazil. K. Lenko discovered on July 28, 1965 a series of numerous workers at Fazenda Beija-flor, near Três Lagoas, Mato Grosso State, Brazil (DZSP n. 3494; WWK). These ants were detected under a decaying log on the ground, in a savanna of the «cerrado» type.

Cylindromyrmex longiceps Ern. André

(Fi. 1)

Cylindromyrmex longiceps Ern. André, 1892, Rev. d'Ent. Caen 11: 47-48 (Worker; Brazil).

Female. — Total length 9.30 mm; head length 1.79 mm; head width 1.09 mm; maximum diameter of eyes 0.53 mm; scape length 0.51 mm; thorax length 2.62 mm; hind femur length 0.69 mm; fore wing length 5.7 mm; hind wing length 4.3 mm. Black; mandibles, anterior portion of head, antennae, tegulae fuscous ferruginous; legs yellowish brown. Dorsum of head, thorax, petiole, tergum I and II of gaster finely longitudinally striate; on tergum III of gaster the fine striae are confined to the middle and vestigial only; sides of thorax indistinctly longitudinally striolate; tergum III laterally and tergum IV and V of gaster entirely finely punctate and subopaque; pygidium apically flattened and surrounded by a row of small denticles; antennal spaces minutely striolate; legs smooth and shining.

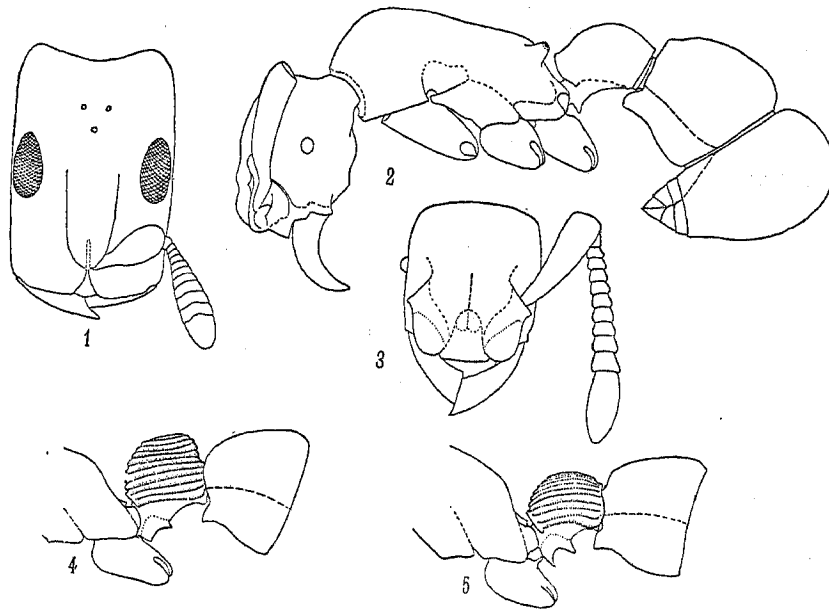


Fig. 1. *Cylindromyrmex longiceps* Ern. André, female, head. — Fig. 2. *Cnamptogenys pnedonax* sp. n., holotype worker in profile. — Fig. 3. *Idem*, head. — Fig. 4. *Gnamptogenys tornata* (Roger), worker, epinotum and pedicel in profile. — Fig. 5. *Gnamptogenys lucaris* sp. n., holotype worker, epinotum and pedicel in profile. — (Kempf del.)

Head as shown in Fig. 1: elongate, with parallel sides, the occipital border deeply excised. Mandibles with a few superficial striae, otherwise smooth and shining; chewing border edentate, apex pointed. Middle portion of clypeus excavate, triangular, laterally carinate, the carinae converging to a point between the closely approximated antennal sockets. Frontal carinae attaining the level of middle of eyes, the space between them being less than one third of head width. Eyes large and flat. Anterior ocellus at level of posterior orbit of eyes. Scapes short, broad and depressed. Funiculi likewise depressed, all segments broader than long, gradually increasing in width toward apex; apical segment longer than broad.

Thorax with subparallel sides. Pronotum, in dorsal view, as long as broad, its lateral border marginate; laterotergites shallowly concave. Scutum slightly broader than long, notauli indistinct. Declivous face of epinotum much shorter than basal face, laterally immarginate, dorsally bluntly marginate, situated at right angle

to the basal face. Catepisternum of mesothorax slightly convex. Metasternal flange rounded. All femora greatly broadened and compressed, the ventral face grooved with sharply marginate borders on basal half, the groove serving for lodging the tibia in repose. Wings infuscated, venation brown, pterostigma black; hind wing with 8 hamuli.

Petiole cuboidal, slightly longer than broad (29:26), sides practically immarginate, anterior corners projecting both in dorsal and lateral view; subpetiolar lobe low and blunt. Tergum I of gaster (postpetiole) about as broad as long (39:38).

Erect long hairs extremely rare on dorsum of head, thorax and abdomen; very short and erect hairs a little more abundant. Appressed pubescence visible only on terga III-V of gaster and all gastric sternites.

Specimen examined: 1 female, Brazil, São Paulo State, São Paulo City: Ipiranga, on side wide-walk along park, February 10, 1966, K. Lenko leg. (DZSP).

Discussion. — In Wheeler's key (1937: 444-445), the present female runs out with the Costarican *schmidtii* Menozzi, but differs conspicuously in the more elongate head, the more approximated frontal carinae and the very low petiolar lobe. The hitherto unknown female of *longiceps* agrees well with the description of the holotype worker, the only specimen so far known, so that the association of the castes does not suffer any reasonable doubt.

Subfam. Ponerinae

Amblyopone armigera Mayr

Amblyopone armigera Mayr, 1887, Verh. zool.-bot. Ges. Wien 37: 547 (Worker; Brazil: Santa Catarina). — Borgmeier, 1957, An. Acad. Brasil. Cienc. 29: 109-110 (Worker; Argentina, Córdoba: Alta Gracia). — Brown, 1960, Bull. Mus. Comp. Zool. 122: 182-183.
Stigmatomma (Fulakora) armigerum: Bruch, 1921, Rev. Mus. La Plata 26: 186-187, fig. 6 (Worker; Argentina, Córdoba: Alta Gracia).

Since Brown's revision (1960) of the genus, quite a number of new Brazilian records for the species are now available, as follows: Brazil, Rio Grande do Sul State: Erechim, July 1960, F. Plaumann leg. 1 worker; Pardino, 1000 m, September 1960, F. Plaumann leg. 2 workers; Sinimbu, 200 m, September 1960, F. Plaumann leg. 2 workers. Santa Catarina State: Ibicaré, 600 m, July 1959 and September 1960, F. Plaumann leg. 2 workers; Nova Teutônia, November 1957, F. Plaumann leg. 1 worker. Paraná State: Rio Azul, 1000 m, October 1959, F. Plaumann leg. 1 worker; Serra do Mar nr. Campo Largo da Roseira, May 1964, F. Plaumann leg. 1 worker. São Paulo State:

Barueri, 1967, in nest of *Camponotus rufipes* F., K. Lenko leg. 1 worker (DZSP); Salesópolis, Estação Biológica Boracéia, 1967, W. L. Brown, Jr. & R. Crozier leg. 1 worker (MCZ). All specimens, except the last two, in the WWK collection.

These records show that the species is not too uncommon in wooded areas of southeastern Brazil. All specimens came from sifted soil cover samples.

***Gnamptogenys pneodonax* sp. n.**

(Figs. 2, 3)

Worker (holotype). — Total length 5.5 mm; maximum length of head capsule 1.14 mm; maximum width of head behind eyes 0.98 mm; maximum width between frontal carinae 0.88 mm; scape length 1.09 mm; maximum diameter of eyes 0.12 mm; Weber's length of thorax 1.71 mm; hind femur length 1.09 mm; petiole length 0.67 mm; petiole width 0.53 mm; tergum I of gaster (postpetiole) length and width 0.91 mm. Dark reddish brown. Integument opaque, except for the antero-lateral portion of frontal lobes, tip of scapes, tip of femora, which are smooth and shiny. Mandibles, scapes, femora, tibiae and tarsi finely longitudinally striate. Head capsule, thorax, coxae, petiole and somite I and II of gaster finely reticulate-punctate; same parts, except coxae and declivous face of epinotum, also coarsely reticulate-rugose, the meshes enclosing deeply impressed foveolae. Body densely covered with standing hairs which are as long as the greatest thickness of scape; hairs on scapes and legs likewise long but rather oblique. Fine and extremely short pubescence, suberect to subdecumbent, between long hairs.

Head as shown in Figs. 2 and 3. Mandibular blades elongate triangular; the finely to vestigially denticulate chewing border about as long as basal border, both forming an obtuse angle; the blades, when completely closed, do not touch the straight, laterally rounded, clypeal border, so that a mandibular-clypeal interspace is present. Head capsule rectangular, sides straight and subparallel, occiput scarcely convex, inferior occipital angles with a drawn-out and marginate lobe, best seen in side-view. Frontal lobes greatly expanded, rounded and projecting in front, with a prominent tooth laterally, obliquely converging mesad behind tooth and fading out at level of eyes. The latter small,

noticeably convex, with 8-9 facets across the greatest diameter. Frontal area impressed. Frontal keel distinct, fading out at level of eyes. Antennal scape continuously incrassate toward apex, which projects beyond the occipital corners when lodged in position of repose. Funicular segments moniliform, segments II-X broader than long.

Thorax as shown in Fig. 2, lacking dorsal sutures and impressions. Pronotum anteriorly immarginate, antero-laterally impressed for lodging the prominent occipital lobes; antero-inferior corner rectangular. Epinotal spiracle situated on top of a prominent subconical tube, which takes the place of the epinotal spines of other species of the genus. Hind coxae without a distinct basidorsal tooth. Claws of tarsi I bidentate, of II and III simple (as in all «Alfaria»-group species!).

Petiole longer than broad, narrower in front than behind, sides scarcely convex, subpetiolar tooth pointed and prominent. Tergum I of gaster anteriorly narrowly truncate, as long as broad. Anterior lobe of sternum I entire, not cleft. Somite II strongly vaulted downward and forward, with its sternum greatly reduced.

Type. — Brazil, Amazonas State, Benjamin Constant, 18-28-IX-1962, K. Lenko leg. from sifted leaf mold, 1 worker (holotype, DZSP).

Discussion. — On account of the very strongly vaulted second somite of gaster, resulting in the under-turned apex, *pneodonax* belongs to the «Alfaria»-group and resembles *minuta* (Emery), *bufonis* (Mann), *simulans* (Emery) and *falcifera* Kempf. The laterally dentate frontal lobe and the prominent truncate cone on epinotum, the apex of which bears the spiracle (hence the name from Gr. *pneo* — breathe; *donax* — reed, pipe), are unique features that distinguish *pneodonax* from the afore mentioned species. In Brown's key (1958: 231) to the Neotropical species of *Gnamptogenys*, it runs to couplet 3, disagreeing with either lug. Its size is significantly larger than that of *minuta* (with which it shares the shagreened microsculpture), and the body integument lacks the very fine and even striation of *bufonis*, *simulans* and *falcifera*.

Additional differences of *pneodonax* from *minuta* are the following: The reticulate-foveolate macrosculpture of body; the apically stouter antennal scape (1/4 of head width); the drawn-out occipital lobes; the distinctly elongate petiole with acute subpetiolar tooth; tergum I of gaster (postpetiole) as long as broad.

Further differential characters that separate *pneodonax* from *simulans*, *bufonis* and *falcifera*, aside from those already mentioned, are as follows: Interfoveolar spaces raised to form a network of rugae; drawn-out occipital lobes stronger; anterior clypeal border straight, not convex (*falcifera* agrees in this respect with *pneodonax*); eyes convex and prominent; frontal keel distinct; declivous face of epinotum immarginate, not impressed.

Gnamptogenys mecotyle Brown

Gnamptogenys mecotyle Brown, 1958, Bull. Mus. Comp. Zool. Harvard 118: 318-319, fig. 42 (Worker; Bolivia: lower Rio Madidi).

Several workers taken by P. F. Darlington on August 21, 1962 at Pirelli Plantation, Iriboca near Belém, Pará State, Brazil (B-300) (received from my friend Prof. W. L. Brown, Jr.), constitute the first Brazilian record for this interesting species.

Gnamptogenys lanei Kempf

Gnamptogenys lanei Kempf, 1960, Stud. Ent. N. S. 3: 388-390, figs. 1-3 (Worker; Brazil, Amapá: Rio Amapari km 180).

This species, belonging like the preceding *mecotyle* to the *triangularis*-group (formerly subgenus *Parectatomma*), was heretofore known only from the lone holotype worker. The following material from the environs of Belém, Pará state, Brazil, seems to belong to the same species: Belém, 12-19-VIII-1962, K. Lenko leg. 1 worker (DZSP n. 2630); Reserva Mocambo nr. Belém, 18-II-1967, I. B. de Almeida leg., APEG survey collection n. 898, 6 workers (WWK).

These specimens agree with the holotype in all essential features but are of conspicuously larger size: head length 1.28-1.31 mm; head width 1.33-1.38 mm; thorax length 2.14-2.18 mm. In addition, the six lateral costulae of the promesonotum curve mesad in front and join those from the opposite side, forming in front of the pronotum six transverse costulae or parallel arches, much as in *mecotyle* (the remaining differences for both species given by Kempf, 1960: 390 are still valid). In spite of these discrepancies, I believe that the Belém specimens are conspecific with *lanei*.

Gnamptogenys interrupta (Mayr)

Ectatomma (*Gnamptogenys*) *interruptum* Mayr, 1887, Verh. zool.-bot. Ges. Wien 37: 543-544 (Worker; South America?).
Gnamptogenys interrupta: Mann, 1922, Proc. U.S. Nat. Mus. 61 (13): 3 (Honduras: Lombardia). — Brown, 1958, Bull. Mus. Comp. Zool. Harvard 118: 228, 235, 303-304 (Revision; Honduras: Lombardia).

Two specimens from southeastern Brazil agree perfectly with specimens from Honduras checked against the types by Brown. They are distinctive only by larger size: Head length 1.15-1.28 mm; head width 0.98-1.07 mm; thorax length 1.55-1.81 mm.

Specimens examined: Brazil, Paraná State: Rio Azul, 1000 m, October 1959, F. Plaumann leg. 1 worker (WWK n. 3149); Laranjeiras, April 1965, F. Plaumann leg. 1 worker (WWK n. 4119).

This is the first certain South American and Brazilian record for the apparently rare or cryptobiotic species.

Gnamptogenys tornata (Roger)

- Ponera tornata* Roger, 1861, Berl. Ent. Zeitschr. 5: 15-18 (Worker, female, male; Mexico: Vera Cruz).
Gnamptogenys tornata: Mayr, 1870, Verh. zool.-bot. Ges. Wien 20: 964 (Key). — Mann, 1922, Proc. U.S. Nat. Mus. 61 (13): 3 (Honduras: Ceiba, San Pedro Sula). — Brown, 1958, Bull. Mus. Comp. Zool. Harvard 118: 229, 236, 319 (Revision, synonymy, variation; S. Mexico to N. Colombia).
Ectatomma (*Gnamptogenys*) *tornatum*: Dalla Torre, 1893, Cat. Hym. 7: 26. — Forel, 1899, Biol. Centr. Amer. Hym. 3: 8, Pl. 1, figs. 9, 9a (Mexico, Tabasco: Teapa; Vera Cruz: Orizaba; Guatemala: Retaluleu, Pantaleon). — Forel, 1909, Deutsch. Ent. Zeitschr., p. 242 (Guatemala). — Skawarra, 1934, Oekol. Stud., p. 104 (Mexico, Vera Cruz: Mirador; Biol.).
Ectatomma (*Gnamptogenys*) *tornatum* var. *ericae* Forel, 1912, Ann. Soc. Ent. Belg. 56: 33 (Worker; Colombia: Santa Marta).

This species, revised by Brown (1958), is a close relative of *sulcata* and *acuminata*, with which it may be easily confused. Besides the character mentioned in Brown's key, also the maximum diameter of the compound eye as compared with the head length (oculo-cephalic index) appears to be helpful; *tornata* has smaller eyes, the index being 24-25, whereas the eyes in *sulcata* and *acuminata* are constantly larger, the index being 27-28.

Worker. — Total length 4.8-5.6 mm; maximum length of head capsule 1.07-1.20 mm; maximum width of head behind eyes 0.96-1.09 mm; scape length 0.88-1.01 mm; thorax length 1.60-1.78 mm; hind femur length 1.20-1.34 mm; cephalic index 90-91. Yellowish brown to light reddish brown. Regularly longitudinally costate. Anterior clypeal apron with sharply angular free corners. Mandibles smooth and shining, sublinear, sharply downcurved, basal margin distinctly longer than apical margin, both meeting through a single continuous convexity. Tip of scapes surpassing occipital border when laid back as straight as possible. Thorax lacking transverse dorsal sutures, the longitudinal costulae without interruption. Costulae on dorsum of thorax either longitudinal or more frequently transverse on (basal and) declivous face of epinotum. Hind coxae lacking a distinct basidorsal tooth. Petiolar node either slightly longer than broad or slightly broader than long; dorsum with the median 2-4 longitudinal costulae encircled by the lateral ones, which run transversely across the

anterior and the distinctly set off posterior face of node (Fig. 4). Subpetiolar lobe weakly to strongly bidentate, the teeth separated by either a shallow or a deep excision. Tergum I of gaster regularly longitudinally costulate.

Distribution. — From so. Mexico (Vera Cruz) through Central America to no. Colombia.

Specimens examined: Mexico, Vera Cruz: Playa Azul nr. Catemaco, 19-I-1961, W. F. Stoutamire leg. many workers in pseudobulbs of orchid *Laelia tibicinis*. — Guatemala: Quirigua, 13 and 14-I-1912, W. M. Wheeler leg. several workers. — Costa Rica: San José, 1940, H. Schmidt leg. several workers; s/loc. (vicinity of Limón on the Atlantic coast?), F. Nevermann leg. several workers (WWK).

According to Skwarra (1934: 104), this species nests in the soil.

Gnamptogenys lucaris sp. n.

(Fig. 5)

Ectatomma tornatum: Luederwaldt, 1926 (*nec* Roger, 1861), Rev. Mus. Paulista 14: 236 (Brazil, Santa Catarina: Ibirama; Biol.).

Worker (holotype). — Total length 5.8 (5.6) mm; head length 1.22 (1.17) mm; head width behind eyes 1.00 (0.96) mm; maximum diameter of eyes 0.25 (0.23) mm; scape length 1.07 (1.01) mm; thorax length 1.76 (1.73) mm; hind femur length 1.28 (1.25) mm (measurements in parentheses refer to the smallest paratype specimen, the holotype being the largest). Cephalic index 79-82; oculo-cephalic index 19-21.

Extremely close to *tornata* with the following significant differences: Mandibles smooth and shining but already somewhat triangular rather than sublinear, the apical margin being subequal to basal margin. Head more distinctly elongate, eyes comparatively smaller (see indices above!). Free corners of clypeal apron bluntly rectangular, not subdentate. Scape longer than head width. Both basal and declivous face of epinotum always longitudinally costulate. Hind coxae with a well-developed basidorsal spine. Petiole (Fig. 5) rather low, lacking a differentiated vertical posterior face on node above the gastric insertion; its dorsum strictly longitudinally costulate, the costulae meeting the posterior border at a right angle. Color rather reddish brown than yellowish brown.

Specimens examined: 3 workers, as follows: Brazil, Santa Catarina State: Ibirama (ex-Hamônia), August 1910, H. Luederwaldt leg. 1 worker (holotype CTB 2632, more specimens in DZSP: MP-15.493 paratypes); São Paulo State: Mun. de Iporanga, November 1, 1961, Lenko & Reichardt leg. 1 worker (DZSP, paratype): Minas Gerais State: Varginha, April 1927, T. Borgmeier leg. 1 worker (CTB 1468, paratype).

Discussion. — Menozzi, who had seen the Varginha specimen collected by Borgmeier, already recognized it as a form new to science. A closer examination and comparison with the numerous *tornata* material of my collection led me to confirm this suspicion and propose these southeastern Brazilian specimens as a new species. The additional though scant material from Ibirama and Iporanga vouch for the constancy of character differences. Furthermore, the territory of *lucaris*, as presently known, is separated from that of *tornata* by over 3000 km.

Biology. — Luederwaldt (1926: 236) found the first specimens of this species in Ibirama (identified by Forel, 1912, as *tornata*) on a shrub, devouring the remains of a dead beetle. The paratype from Varginha and Iporanga were taken in woodland.

Subfam. Myrmicinae

Crematogaster Lund

The cosmopolitan genus *Crematogaster*, with 63 presently recognized species in the Neotropical region, besides 43 subspecies and 58 varieties, ranks seventh in number of species among the ant genera of the region, but offers the more tantalizing taxonomic problems. Due to the overburdening of the most dominant and widespread forms with infraspecific variants and races — *brevispinosa* alone has 33 named infraspecific forms —, and the lack of a reasonable analysis of the truly amazing individual and geographic variation in this genus, identifications have nearly become impossible except in case of a handful of well-known or highly outstanding species.

While a full-scale revision of this group, on account of the difficulties involved in securing both types and abundant representative material, is still a matter of wishful thinking, there is nothing to prevent us from reducing this maze gradually by attacking individual problems which here and there already offer a solution. In the present paper a contribution is made toward this end, by establishing several hitherto confused species limits and pointing out a few obvious cases of synonymy which have come to my attention.

Five of the eight species treated below belong to the *distans*-group of Santschi's ill-defined subgenus *Neocrema*. The workers are distinctive by the postero-dorsally impressed postpetiole and the two-segmented antennal club; the females are relatively small «microgynes», with the same postpetiolar impression, and the veins in the apical field of fore wing greatly reduced; some have a completely unarmed epinotum.

In the synonymy for every species treated subsequently no attention is being paid to the emendation of the original generic name into *Crematogaster*, as advocated by Agassiz (1846). The original spelling is used throughout, although some of the authors did indeed use the rectified spelling.

Crematogaster erecta Mayr

(Fig. 6)

Crematogaster erecta Mayr, 1866, Verh. zool.-bot. Ges. Wien 16: 902 (Worker; Island St. Joseph). — Mayr, 1870, Verh. zool.-bot. Ges. Wien 20: 991 (Worker; key). *Crematogaster virgula* Forel, 1899, Biol. Centr. Amer. Hym. 3: 85 (Worker; Costa Rica; Panama: Bugaba). — Forel, 1904, Rev. Suisse Zool. 12: 36 (Brazil: Pará). — Forel, 1908, Bull. Soc. Vaud. Sc. Nat. 44: 48 (Female; Costa Rica: Pozo Azul de Pirris). — NOV. SYN.

Types. — A series of 8 workers, deposited in the Riksmuseum, Stockholm, type n. 66/154-161, each mounted on a separate pin, bearing the following labels: a) I. St. Joseph; b) Kinb. All seen.

Type locality. — According to Mayr (1866: 902), this is an American species. A doubt, however, persists concerning the identity of the «St. Joseph Insel». There are a St. Joseph Island off the shore near Corpus Christi, Texas, U.S.A., and two «Isla San José», one belonging to the Archipelago de las Perlas, on the Pacific side of Panama, the other, also in the Pacific Ocean, but much further north, in the Gulf of California, belonging to Mexico. Unless St. Joseph refers rather to a city or a village on one of the Antillean islands of Dominica, Martinique or Trinidad, I should say that the Panamanian island in the Pearl Archipelago is the best choice. Especially so, since it now appears that *C. erecta* is not uncommon and rather widespread in the Neotropical region.

The species belongs to the *brevispinosa*-group and is distinctive by the small denticles limiting laterally the metanotal groove, and the erect epinotal spines.

Worker (lectotype). — The critical measurements of the entire series (the lectotype is largest!) are the following: Head length 0.59-0.75 mm; head width 0.64-0.83 mm; maximum

diameter of eyes 0.13-0.16 mm; scape length 0.45-0.56 mm; thorax length 0.64-0.80 mm; petiole length 0.24-0.29 mm; petiole width 0.19-0.23 mm; postpetiole length 0.19-0.24 mm; postpetiole width 0.16-0.20 mm.

Chestnut brown; mandibles, trochanters, tarsi lighter. In general, integument rather smooth and shining; mandibles striate; clypeus with a few widely spaced and indistinct costulae; cheeks densely striato-rugose, the upper portion having striae which extend above eyes to level of posterior orbit of the latter, slightly converging caudad; the lower portion with striae which fade out in front of eyes; front, just inside frontal carinae, with a few faint short rugulae; dorsum of head with scattered fine piligerous punctures; pronotum transversely rugulose on anterior face, upper face on disc with coarser longitudinal costae, widely spaced, occasionally anastomosing, continued on mesonotal disc, which is laterally carinate; spaces between costae indistinctly punctate, quite shining. Metanotal groove closed on each side by a small denticle, distinctly visible in side-view. Basal face of epinotum with short, posteriorly diverging, rugulae, the interstitial punctulation more distinct. Declivous face of epinotum with a very light transverse striulation, almost smooth. Sides of pronotum smooth and shining. Mesopleura mostly sharply punctate, the central portion nearly smooth, also on base. Sides of spinotum with very fine and irregular rugulae, almost smooth. Sides of petiole and postpetiole finely and superficially sculptured, quite shining.

Head subquadrate, sides convex, occiput very slightly impressed. Eyes flat, removed from the occipital corner by a distance equal to their greatest diameter. Scapes in repose do not surpass the occipital corner. Funiculus with a 2-segmented apical club. Promesonotum highly vaulted (Fig. 6), pronotum above ascending face laterally obtusely angulate or tuberos. Descending face of mesonotum laterally carinate, carinae converging caudad toward the distinctly impressed mesonotal groove, which bears on each side a small denticle. Basal face of epinotum very short in the middle, soon grading into oblique declivous face, laterally with an erect spine which is as long as basal face, when seen from the side. Declivous face laterally immarginate. Epinotal stigma on corner between sides of thorax and declivous face, oval, large. Petiole oval, posteriorly bitubercular with an excised margination just in front of the somewhat lower posterior border. Subpetiolar tooth large, rectangular. Postpetiole subglobose, longer than broad, anteriorly a little drawn out into a short tubular neck.

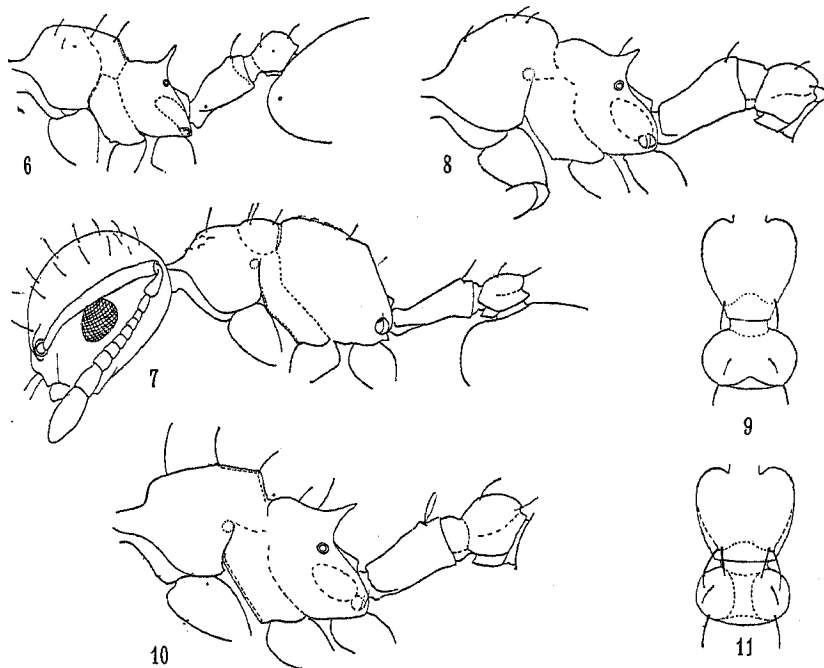
*Crematogaster* Lund

Fig. 6. *erecta* Mayr, paratype worker, thorax and pedicel in profile. — Fig. 7. *indefensa* sp. n., holotype worker, head, thorax and pedicel in profile. — Fig. 8. *distans* Mayr, lectotype, thorax and pedicel in profile. — Fig. 9. *Idem*, pedicel in dorsal aspect. — Fig. 10. *corticicola* Mayr, lectotype worker, thorax and pedicel in profile. — Fig. 11. *Idem*, pedicel in dorsal aspect. — (Kempf del.)

Standing hairs: a row on anterior border of clypeus, a pair of curved long hairs a little behind on each side, one above each antennal insertion, a pair of shorter hairs on vertex, a pair on each side of pronotum in a transverse row, a pair on mesonotum on each side in a longitudinal row, one on each posterior tubercle of petiole, two pairs of shorter hairs on postpetiole, rare but more generally distributed on gaster. Fine decumbent hairs on antennae and legs, subdecumbent on mandibles. Scattered appressed hairs on head, thorax and abdomen.

Female described as of *virgula* by Forel (1912); male unknown.

Additional specimens seen. — Costa Rica, s/loc. and date, 1 worker (syntype of *C. virgula* Forel). — Peru: Satipo, VIII-1937, Paprzycki leg. 4 workers. — Suriname, Dirkshop, V-1960, J. van der Drift leg. 2 workers. — Brasil, Pará State: Belém, 17-I-1959, D. Weil leg. 3 workers; same locality, Reserva Guamá,

13-VI-1966, I. B. de Almeida leg. 6 workers (nest in leaf stem of «Tatapiririca» tree); Maranhão State: São Luís, 15-I-1959, D. Weil leg. 3 workers. — Bahia State: Itabuna, VII-1919, E. Garbe leg. 1 worker (MP 19.998); Mato Grosso State: Chapada dos Guimarães, VII-1960, C. Amann leg. 7 workers; Pôsto Jacaré, Rio Culuene, XI-1961, M. Alvarenga & W. Bokermann leg. 8 workers (more specimens in DZSP, n. 1881). All specimens examined in WWK collection.

Synonymy. — A directed comparison between the type series of *erecta* and a syntype of *virgula* in my collection, proved that the latter is a junior synonym of the former.

Crematogaster cristata Santschi

Crematogaster (*Orthocrema*) *cristata* Santschi, 1929, An. Soc. Cient. Argent. 107: 294 (Worker; Brazil, Rio de Janeiro: Petrópolis).
Crematogaster (*Orthocrema*) *terricola* Borgmeier, 1929, Eos. 5: 210-211, Pl. 6, fig. 3; Pl. 7, fig. 7 (Worker; Brazil, Rio de Janeiro: Petrópolis). — NOV. SYN.

Two syntypes of *cristata* (one of them raised to lectotype, WWK) are perfectly identical with the type series of *terricola*. Both species were found at the same locality and probably taken by the same collector, T. Borgmeier. It is even possible that the types of both species are from the same nest series. Santschi's name, published in the first semester of 1929, takes precedence over Borgmeier's name published on Sept. 15, 1929.

The species is extremely close to the southern forms of *victima*, especially the ssp. *allegrensis* Forel and *nitidiceps* Emery, and I suspect that a thorough revision will eventually lead to extensive synonymy. Borgmeier's *terricola* was found nesting in the soil, an aberrant habit so far registered for only a few species of *Crematogaster* of the Neotropics. Specimens from Agudos, São Paulo State, in my collection, and extremely close if not identical with *cristata*, were found invariably as tree and twig-dwellers, whereas *allegrensis* specimens from Rio Grande do Sul State were usually found nesting in the soil or under stones. If the suspected synonymy will eventually hold true, than the nesting habits, on account of their plasticity, will lose their diagnostic value.

Crematogaster stollii Forel

Crematogaster stollii Forel, 1884, Bull. Soc. Vaud. Sc. Nat. 20: 373-375 (Worker; Guatemala: Retalhuleu).
Crematogaster hyperphyes Kusnezov, 1953, Fol. Univ. Cochabamba 6: 215-217 (Worker, female, male; Bolivia, Cochabamba: Río Chaparé). — Kusnezov, 1967, Act. Zool. Lill. 21: 163-164, Pl. 2, fig. 12 (Male). — NOV. SYN.

This interesting carton-nest-building species is the giant of the genus in the Neotropical region, and belongs to the *brevispinosa*-group. It occurs from Guatemala in Central America to the Amazon river drainage in Brasil and Bolivia. The workers vary greatly in size but are easily recognized by the relatively large epinotal spiracle touching the base of the epinotal spine. The two named varieties, *amazonensis* (Forel, 1904) and *guianensis* (Crawley, 1916), according to the description, seem to fall within the normal range of variation of the species and will eventually end up as synonyms; the status of the race *autrini* (Mann, 1916), to judge from the original diagnosis, is seemingly more problematical. On the other hand, *C. hyperphyes* Kusnezov, described on material from the Chaparé river valley in Bolivia, is certainly a synonym of *stolli* as shown by the description and the figure of the male head (Kusnezov, 1967).

In my collection, the species is represented by the following material: Suriname, s/loc., 5-III-1953, L. Schmidt leg. 1 female. — French Guiana: Maroni, Le Moulte leg. 1 female. — Brazil, Amapá Territory: Serra do Navio, 26-IX-1957 and 14-X-1957, K. Lenko leg. 15 workers and 1 female; Rio Anicoí, 17-VI-1959, J. Lane leg. 1 male; Rio Amapari, km 185, 9-VII-1959, J. Lane leg. 1 female, 1 male; Rio Felício, 26-VII-1959, J. Lane leg. 4 females; Pará State: Belém, 12-VIII-1962, K. Lenko leg. 8 workers (DZSP 2311, WWK); Tracoá, Alto Cururu, 1957, H. Sick leg. 5 workers, 1 female; Rio Branco Territory: Vista Alegre, 6-IX-1934, 1 female; Amazonas State: Benjamim Constant, IX-1962, W. L. Brown, Jr. leg. 6 workers (BC-86); Rondônia Territory: Madeira-Mamoré RR., camp 39, Mann & Baker leg. 3 workers; Mato Grosso State: Utariti, Rio Papagaio, VII-1961, K. Lenko leg. 4 workers (DZSP 1639, WWK). Bolivia: Santa Cruz de la Sierra, Noel Kempff Mercado leg. 14 workers, 1 female (WWK 3656).

***Crematogaster magnifica* Santschi**

Crematogaster (Neocrema) magnifica Santschi, 1925, Ann. & Bull. Soc. Ent. Belg. 65: 234-235 (Worker, male; Brazil, Paraná: Rio Negro). — Borgmeier, 1937, Arch. Inst. Veget. Rio 3: 234 (Brazil, Paraná: Rio Negro).
Crematogaster (Neocrema) magnifica var. *nociva* Borgmeier, 1937, Arch. Inst. Biol. Veget. Rio 3: 234, Pl. 1 (Worker, female; Brazil, Bahia: Agua Prêta — Uruçuca; Nest). — NOV. SYN.

A comparison between syntypes of *magnifica* and *nociva*, both in my collection (WWK), confirms the conspecificity. The differential characters of *nociva* fall in line with the general trend

of variation of the species. I propose to drop it as a synonym. The species (var. *nociva*) is a builder of carton nests; in southern Bahia State it is prejudicial to the cocoa plantations.

This form is quite close to *corticicola*. The worker differs in brighter color (head, thorax, pedicel: reddish; gaster and appendages: black or fuscous); larger size (thorax length 0.80-1.0 mm); much more abundant standing hairs on head, thorax and pedicel. The hind femora are almost as long as the thorax and longer than head length; the scapes in repose surpass the occipital border by a distance which exceeds their greatest thickness. The female is of the microgyne type and has an edentate epinotum.

New localities: Brazil, Minas Gerais State: Varginha, IV-1927, T. Borgmeier leg. 4 workers (CTB 1463). São Paulo State: São Paulo-Curitiba highway (BR-2), km 40, in woodland, May 1960, W. W. Kempf & Vitor dos Santos leg. 12 workers (WWK 4663). Santa Catarina State: Concórdia, VII-1958, F. Plaumann leg. 3 workers (WWK 2725); Itajaí, VII-1917, H. Luederwaldt leg. 2 workers (MP 19.864a). All specimens in my collection (WWK).

Crematogaster montezumia Fr. Smith

- Crematogaster montezumia* Fr. Smith, 1858, Cat. Hym. Brit. Mus. 6: 139-140, Pl. 1, fig. 1 (Worker, female, male; Mexico; nest). — Mayr, 1870, Verh. zool.-bot. Ges. Wien 20: 990 (Worker; key). — Forel, 1901, Mitt. Nat. hist. Mus. Hamburg 18: 65 (Biol., Syn.). — Forel, 1904, Rev. Suisse Zool. 12: 36 (Brazil: Rio de Janeiro State; Syn.). — Forel, 1907, Mitt. Nat. hist. Mus. Hamburg 24: 6 (Ecuador: Guayaquil). — Forel, 1908, Verh. zool.-bot. Ges. Wien 58: 366 (Brazil: São Paulo). — Luederwaldt, 1918, Rev. Mus. Paulista 10: 42 (Brazil, São Paulo: Ipiranga, Ilha de São Sebastião). — Luederwaldt, 1926, Rev. Mus. Paulista 14: 276 (Biol.). — Santschi, 1933, An. Soc. Cient. Argent. 116: 112-113 (Key to varieties).
- Crematogaster sulcata* Mayr, 1870, Sitzb. Akad. Wiss. Wien 61: 403 (Worker; Nova Grenada). — Mayr, 1870, Verh. zool.-bot. Ges. Wien 20: 991 (Worker; key). — Mayr, 1887, Verh. zool.-bot. Ges. Wien 37: 624 (Brazil: Santa Catarina; Variation). — Emery, 1890, Bull. Soc. Ent. Ital. 22: 53 (Costa Rica: Alajuela; Biol.). — Forel, 1899, Biol. Centr. Amer. Hym. 3: 84 (Female; Mexico). — Mann, 1916, Bull. Mus. Comp. Zool. Harvard 60: 443 (Brazil, Rondônia: Abunã). — NOV. SYN.
- Crematogaster montezumia* var. *sulcata*: Forel, 1904, Rev. Suisse Zool. 12: 36. — Emery, 1922, Gen. Insect. fasc. 174, p. 135.
- Crematogaster montezumia sulcata*: Forel, 1907, Ann. Mus. Nat. Hung. 5: 25 (Brazil, Santa Catarina: Blumenau).
- Crematogaster sulcata* var. *ramulinida* Forel, 1899, Biol. Centr. Amer. Hym. 3: 84 nota, Pl. 2, fig. 1 (Worker; Colombia: Sierra Nevada de S. Marta nr. San Antonio). — NOV. SYN.
- Crematogaster montezumia* var. *ramulinida* Forel, 1904, Rev. Suisse Zool. 12: 36. — Forel, 1908, Verh. zool.-bot. Ges. Wien 58: 366 (Brazil; São Paulo). — Luederwaldt, 1918, Rev. Mus. Paulista 10: 42 (Brazil, São Paulo: Ipiranga). — Luederwaldt, 1926, Rev. Mus. Paulista 14: 276 (Biol.).
- Crematogaster montezumia* var. *functa* Forel, 1911, Deutsche Ent. Zeitschr. pp. 300-301 (Worker; Brazil, São Paulo: Cubatão). — Luederwaldt, 1926, Rev. Mus. Paulista 14: 276 (Biol.). — NOV. SYN.
- Crematogaster montezumia cristulata* Santschi, 1925, Ann. & Bull. Soc. Ent. Belg. 65: 233-234 (Worker, female; Brazil: Santa Catarina). — NOV. SYN.
- Crematogaster montezumia* var. *proletaria* Santschi, 1933, An. Soc. Cient. Argent. 116: 113 (Worker, female; Argentina, Misiones: Profundidad). — NOV. SYN.

All authors of the past who have dealt with the problem, agree in accepting the variable *montezumia*-complex as just one

species which ranges from Mexico to southeastern Brazil and northeastern Argentina. The splitting of this complex into infra-specific entities obeyed either to a courteous conservatism (ex. gr. *sulcata* Mayr after being recognized as identical with *montezumia* was not straightforwardly synonymized but just lowered to varietal rank in order to preserve the name), or the fashionable urge to attach a name to any morphological variant deviating from the «type» which in the case of *montezumia* was never clearly defined.

As a matter of fact, the infraspecific taxa of *montezumia* were based on slight variations of size, color, sculpture (head and sides of epinotum), elevation of mesonotum, size of epinotal spine. That these characters vary at random is already evident by the fact, that several varieties occur side by side, or more rarely in the same nest series. The naming of such morphs, as advocated by Forel and Santschi, has resulted in a superficial classification of ill-described and poorly analyzed phenotypes, which rather hinders than furthers true taxonomic progress. The material at hand, although mainly of southeastern Brazilian origin, proves the case and prompts me to place all hitherto described infra-species of *montezumia* in well-deserved synonymy.

Worker. — Rather small, thorax length 0.65–0.80 mm. Color variable from light to fuscous brown. Antennae and legs with no or only a few standing hairs. Erect hairs on head more abundant, rare on thorax. Gaster with only erect hairs. Mandibles smooth, basolaterally striate. Antennal scape surpassing occiput when laid back as much as possible. Apical antennal club either two or three-segmented. Epinotum slightly inflated, epinotal spines much shorter than length of basal face, situated somewhat inside the posterior corners. Petiole elongate and subrectangular from above. Postpetiole postero-dorsally slightly impressed, dividing the segment into two ill-defined hemispheres, which in side-view overhang the posterior border.

Female. — Small, of the microgyne type, completely smooth and shining except for a few faint striae on cheeks. Epinotal spines present. Long hairs moderately abundant, either erect or inclined, on body and appendages.

Specimens examined. — Argentina, Misiones: Iguazu, N. Kusnezov leg. 9 workers (n. 6484). — Brasil, Rio Grande do Sul State: Porto Alegre, 6-XI-1929, P. Buck, S. J. leg. 2 workers, 1 female (CTB 5689); same locality, A. Schupp, S. J. leg. 4 workers (CTB 3432). Santa Catarina State: Itajaí, VII-1919,

H. Luederwaldt leg. 3 workers (CTB 2427, 3242); Gaspar, I-1958, R. Mueller, O.F.M. leg. 2 workers (WWK 2189a); Paraná State: Ilha do Mel, VII-1949, R. Hertel leg. 2 workers, 1 female (n. 16). São Paulo State: São Paulo, Ipiranga, several collections by Torres in 1906 and Luederwaldt in 1913 and 1916, 11 workers, 5 females (CTB 2079 *montezumia* Sm.: Forel det.; CTB 2075 *ramulinida* Forel: Forel det.; CTB 2350, 2413, 2414); São Paulo, Mato do Governo, 24-XI-1929, T. Borgmeier, O.F.M. leg. 1 worker (CTB 5151); Cubatão, XII-1907, Luederwaldt leg. 3 workers (CTB 2085: *functa* syntypes); Ilha São Sebastião, 1906 and 1916, Guenther and Garbe leg. 5 workers and 5 females (CTB 2073, 2429); Ilha dos Búzios, 25-X-1963, K. Lenko leg. 3 workers, 1 female (DZSP 3967). — Costa Rica: San José, 1940, H. Schmidt leg. 6 workers. (All specimens in WWK collection).

Biology. — *C. montezumia* is one of the few species that fabricates, and lives in, carton nests.

***Crematogaster indefensa* sp. n.**

(Fig. 7)

Worker (holotype). — Total length 2.8 mm; head length and width in front of eyes 0.59 mm; scape length 0.51 mm; maximum diameter of eyes 0.16 mm; thorax length and width 0.72 and 0.40 mm; petiole length and width 0.29 and 0.16 mm; postpetiole length and width 0.16 and 0.19 mm; hind femur length 0.64 mm. Fuscous brown, almost black. Integument smooth and shining; a few vestigial striae on cheeks; mesonotum, mesopleura, sides of pedicel segment finely reticulate-punctate and subopaque. Standing hairs scarce on head, thorax, pedicel and gaster; on thorax: 1 pair on pronotum; a transverse row of 4 hairs anteriorly and 1 pair posteriorly on mesonotum; 1 pair in front of posterior corner of basal face of epinotum; hairs on scapes and legs decumbent or appressed; sparse appressed or decumbent hairs also on thorax and gaster.

Head capsule as long as broad. Mandibles smooth. Anterior border of head gently convex in the middle; sides in front of eyes subparallel, posterior half of head semicircular, evenly rounded without an impression on occiput. Fronto-clypeal suture distinct. Frontal carinae half as long as width of intervening space. Eyes situated approximately at middle of sides of head, a little

closer to the mandibular insertion than to the posteriormost point of occiput, both distances exceeding the diameter of the eyes. Scapes when laid back as much as possible surpassing the occiput by a distance which exceeds the maximum thickness of the former. Funicular segments I, II, IX and X elongate; segments III-VIII about as long as broad; apical club 2-segmented, preapical segment twice as long as segment VIII.

Thorax as shown in Fig. 7. Pronotum twice as broad as long, very gently curved in both directions. Promesonotal suture vestigial, slightly impressed. Mesonotum transverse, slightly bulging when seen in profile. Mesoepinotal suture deeply impressed, with a deeply impressed groove extending back over anterior half of middle of basal face of epinotum. Basal face of epinotum inflated, in dorsal view somewhat broader than long, in side-view as long as declivous face, both laterally immarginate. Posterior epinotal corner in sideview obtusely angular, lacking completely epinotal spines or teeth. Catepisternum anteriorly marginate and carinulate. Orifice of metasternal gland situated dorsally on a round, bulbous swelling on metasternal angle. Epitonal spiracle round, situated beneath posterior angle of basal face.

Petiole twice as long as broad with parallel sides which converge in front toward the insertion; posterior piliferous tubercles blunt, not toothlike; subpetiolar tooth low, very blunt, inconspicuous. Postpetiole slightly transverse, with a shallow sagittal impression, deepening caudad, separating the two posterior bulges which distinctly project above posterior border in side-view.

F e m a l e (paratype). — Total length 4.0 mm; head length and width in front of eyes 0.69 and 0.64 mm; scape length 0.59 mm; maximum diameter of eyes 0.24 mm; thorax length and width 1.23 and 0.62 mm; petiole length and width 0.40 and 0.29 mm; postpetiole length and width 0.27 and 0.35 mm; hind femur length 0.80 mm. Brown; scapes infuscated; mandibles and coxae lighter. Completely smooth and shining. Pilosity more abundant than in worker; erect and suberect hairs rather numerous on dorsum of head, thorax, pedicelar segments and gaster; hairs on scapes and legs subdecumbent.

Head slightly longer than broad. Mandibles with a strikingly long chewing border, which is oblique and tapered into a sharp point at apex. Anterior border of head straight, vestigially emarginate in the middle. Head shape from above, frontal carinae and antennae as in worker. Eyes huge, separated from mandibular

insertion by a distance which equals their own diameter, from posteriormost point of occiput by a distance which exceeds their own diameter. Gular face flat to vestigially concave. Occiput drawn out beneath into a vestigial neck. Ocelli high up on vertex, next to occipital border in dorsal view. Thorax lacking completely epinotal spines; the basal face of epinotum indistinct, grading into oblique declivous face. Petiole elongate, sides diverging cephalad, forming a marked corner just behind the thoracic insertion, posterodorsal tubercles indistinct. Postpetiole distinctly transverse, broader than petiole, the node postero-dorsally impressed. Wings (only one shrivelled front wing preserved) clear, venation light brown. Apical field with similar reduction of veins as in *distans*.

The paratypes worker and the other paratype female agree with the above described specimens in all features, including measurements.

Types. — 2 workers (holotype and paratype) and 2 females (paratypes), from Villa Tumari, 1000 m, Chaparé, Bolivia, P. Wygodzinski leg., received several years ago from the late N. Kusnezov (n. 10.312), in my collection (WWK); additional material presumably in the Miguel Lillo collection at Tucumán.

Discussion. — On account of the inflated epinotum, the worker resembles *montezumia*, but differs in the complete lack of epinotal armature, smoothness of integument, and much scarcer pilosity. The female is closest to *distans* and *corticicola* which likewise have a completely unarmed epinotum. The strikingly oblique and apically pointed chewing border of mandibles and the greatly elongate petiole separates the female of *indefensa* from the afore mentioned species.

Crematogaster distans Makr

(Figs. 8, 9)

- Crematogaster distans* Mayr, 1870, Sitzb. Akad. Wiss. Wien 61: 402-403 (Worker; New Grenada = Colombia). — Mayr, 1870, Verh. zool.-bot. Ges. Wien 20: 992 (Worker; key). — Forel, 1912, Mém. Soc. Neuchâtel. Sc. Nat. 5: 11 (♀; Colombia). — Forel, 1912, Mém. Soc. Ent. Belg. 19: 218 (Colombia: Rio Frio, Barranquilla). — Bruch, 1915, Rev. Mus. La Plata 19: 350 (Argentina: Salta). — Forel, 1915, Bull. Soc. Vaud. Sc. Nat. 50: 356 (Argentina). — Santschi, 1918, Bull. Soc. Ent. France, p. 182 (subgenus *Neocrema*). — Luederwaldt, 1918, Rev. Mus. Paulista 10: 41 (Brazil, São Paulo State: São Paulo, Franca). — Gallardo, 1934, An. Mus. Argent. Ci. Nat. 38: 54, 56-57 (Worker; Argentina: Salta, Tucumán; key).
- Crematogaster distans paraensis* Forel, 1904, Rev. Suisse Zool. 12: 37 (Worker; Brazil, Pará State: Belém). — Forel, 1904, Ann. Soc. Ent. Belg. 48: 174 (French Guiana: Cayenne). — NOV. SYN.
- Crematogaster distans parviceps* Forel, 1908, Verh. zool.-bot. Ges. Wien 58: 369-370 (Worker; Brazil: São Paulo City). — Luederwaldt, 1926, Rev. Mus. Paulista 14: 275 (Biol.). — Borgmeier, 1927, Arch. Mus. Nac. Rio de Janeiro 29: 94 (Brazil: Rio de Janeiro). — NOV. SYN.
- Crematogaster distans* var. *cordinoda* Forel, 1912, Mém. Soc. Neuchâtel. Sc. Nat. 5: 12 (Worker; Colombia). — NOV. SYN.
- Crematogaster distans vanda* Borgmeier, 1929, Eos 5: 209-210 (Worker; Brazil, Rio de Janeiro State: Niterói). — NOV. SYN.

Types. — 4 workers (lectotype and paratypes) from the Mayr collection (NHMW) examined. Each specimen is mounted on a separate pin, bearing the following labels: a) Neu Gran. Coll. G. Mayr; b) *Cr. distans*, G. Mayr, Type.

Worker (lectotype and paratypes). — Total length 3.2-3.4 mm; head length 0.67-0.72 mm; head width in front of eyes 0.64-0.67 mm; scape length 0.53-0.56 mm; maximum diameter of eyes 0.14-0.16 mm; thorax length 0.74-0.78 mm; hind femur length 0.67-0.72 mm; cephalic index 93-96. Brown; integument smooth and shining: median stripe of head and gular face, mandibles, declivous face of epinotum, dorsum of petiole, postpetiole, scapes and legs; finely punctured and subopaque: cheeks, promesonotum and sides of thorax, sides of petiole; gaster superficially reticulate and quite shining. Erect hairs scarce in the following positions: 3 from middle of anterior border of clypeus; 1 pair on each side laterad of disc of clypeus (1 near anterior border), each inclined mesad; 1 on each side of pronotum; 1 pair on each side of anterior portion of mesonotum forming a transverse tier of 4 hairs; one at base of each epinotal spine; one on postero-lateral corner of petiole; one dorso-laterally on postpetiole and another from the tip of each posterolateral tuberosity; a few scattered ones on gaster; none on scapes and legs; these hairs are bristle-like, stiff, and usually not longer than maximum diameter of scape. Fine, decumbent or appressed hairs on body and appendages.

Head subquadrate, very slightly elongate. Mandibles smooth and shining, the chewing border with four teeth. Anterior border of head bisinuate, anterior apron of clypeus projecting and convex. Sides of head gently convex, slightly constricted in front, greatly rounded mesad behind, the occipital border straight in the middle or very faintly impressed. Posterior clypeal suture distinct. Frontal area obsolete, frontal suture more distinct. Compound eyes moderately convex, with about 11 facets across the greatest diameter, removed from the mandibular insertion by a distance which visibly exceeds, from the posteriormost point of occiput by a distance which scarcely exceeds their greatest diameter. Scapes when laid back as much as possible barely attaining the occipital border. Funicular segments 3-8 rather transverse than as long as broad, apical club consisting of two segments. Thorax as shown in Fig. 8. Promesonotum bulging, mesonotal disc laterally not sharply marginate. Mesopinotal constriction strong; mesopinotal suture deeply impressed, laterally margined

by a low carinule that does not project nor form a denticle in profile. Basal face of epinotum practically non-existent; after a narrow transverse bulge when raising from the mesoepinotal groove, the epinotum dips down continuously and obliquely to the petiolar insertion; sides immarginate, except for the pointed and apically greatly diverging epinotal spines. Petiolar node from above as shown in Fig. 9, anterior corners greatly rounded, sides convex, narrowed behind toward postpetiolar insertion. Postpetiole postero-mesially impressed, usually lacking a sagittal furrow; postero-lateral bulges projecting in side-view.

Female (undescribed). — *Microgyne*. Total length 4.7 mm; head length 0.91-0.93 mm; head width 0.83 mm; scape length 0.67 mm; maximum diameter of eyes 0.29 mm; thorax length 1.39-1.44; thorax width 0.72-0.77 mm; fore wing length 4.4-4.7 mm; hind wing length 3.1-3.2 mm; hind femur length 0.96-1.01 mm; petiole length 0.41-0.46 mm; petiole width 0.39-0.40 mm; postpetiole length 0.24 mm; postpetiole width 0.45 mm. Yellowish brown; gaster medium brown. Integument completely smooth and shining. Glabrous; minute appressed hairs on scapes and legs; funicular segments 2-10 with the customary covering of short, dense oblique hairs. Mandibles as in workers, chewing border short, not oblique, with 4 teeth. Head capsule with a gently convex gular face and without a slightly drawn-out occiput in the fashion of a vestigial neck. Thorax without epinotal spines and a differentiated basal face; epinotum sloping obliquely downward toward petiolar insertion. Petiole slightly to distinctly longer than broad. Wings clear, venation light brown, vestigial only in the apical field, as in *descolei* Kusnezov.

Distribution and specimens examined. — From Colombia to southeastern Brazil (São Paulo State) and northwestern Argentina (Chaco, Tucumán, Salta).

Aside from the types, I refer to the present species the following material (WWK collection): Peru, Cajamarca: Chilete, 900 m, 7-VII-1956, W. Weyrauch leg. 11 workers (n. 1144). — Brazil, Pará State: Belém, Goeldi leg. 1 worker (syntype of *distans paraensis* For.); Amazonas State: Rio Purus, III-IV-1929, Foerstenberg leg. 1 worker (CTB 5172); Rio de Janeiro State: Cabo Frio, VIII-1926, T. Borgmeier leg. 2 workers (CTB 1121); Campos, 25-X-1911, Azevedo Marques leg. 2 workers (CTB 4213), Niterói, XII-1921, Vanda Bartoldy leg. 5 workers (CTB 237, syntypes of *distans vanda* Borgm.), same locality, 20-XI-1927 and 17-VI-1928, T. Borgmeier leg. 6 workers, 3 females (CTB

3026, 4237), Marambaia, I-1960, R. Mueller leg. 3 workers (WWK 3320); São Paulo State: Agudos, 4 nest series collected on 17-III-1953 and 2-XI-1953, W. W. Kempf leg. 97 workers (WWK 346, 905, 946, 947), Barueri, 22-XII-1957, K. Lenko leg. 6 workers (n. 199), Campinas, Oliveira Filho leg. 6 workers (Col. Neiva n. 268, CTB 2580), Estação Cesário Mota, IX-1926, Oliveira Filho leg. 4 workers (CTB 5318), Ilha dos Búzios, 25-X-1963, K. Lenko leg. 6 workers, 2 females (DZSP 2983), Pedreiras, Schwebel leg. 4 workers (CTB 2557), São Paulo, Ipiranga, 1906, Lima leg. 4 workers (syntypes of *distans parviceps* For. MP 2421, CTB 2068), São Paulo, Instituto Biológico, 18-IV-1923, Dr. Sacca leg. 5 workers (CTB 4806).

Synonymy and variation. — The race *paraensis* by direct comparison between the respective types is certainly a synonym of *distans* s. str. The differences are negligible: mesonotum with only 1 pair of erect setae (a variable condition within the same nest series); epinotum without erect setae; epinotal spines a trifle shorter. The measurements of the single syntype of *paraensis* examined are the following: Head length and width 0.72 and 0.69 mm; scape length 0.53 mm; maximum diameter of eyes 0.17 mm; thorax length 0.75 mm; cephalic index 96.

The *parviceps* types show a slightly stronger sculpture, the head being finely rugulose and the reticulation of the gaster is a bit more pronounced. In addition, the head capsule has the posterior corners more rounded. The epinotal spines are variable in length and the following principle seems to hold: the stronger the sculpture the shorter the spines. Measurements of one syntype: head length and width 0.69 and 0.67 mm; scape length 0.53 mm; maximum diameter of eyes 0.16 mm; thorax length 0.77 mm; cephalic index 96. In spite of these slight discrepancies, *parviceps* is certainly a synonym of *distans*.

The var. *cordinoda* Forel, based on a variant of the type series of *distans*, is untenable and falls into synonymy.

The *vanda* types are distinguished by lighter color, and above all, the more reduced or superficial sculpture of the integument, representing another extreme of the normal variation of *distans*. The measurements of a single syntype are the following: head length and width 0.71 and 0.67 mm; scape length 0.56 mm; maximum diameter of eyes 0.16 mm; thorax length 0.77 mm; cephalic index 94. Doubtless a synonym of *distans*.

Closely related to, and probably synonyms of, *distans* s. str. are *distans pevsnerae* Forel (1912), from Venezuela; and *descolei* Kusnezov (1949). The latter species, based on a lone female taken at Ledesma, Jujuy, Argentina, according to the description and figures, including a photograph, is indistinguishable from the above described *distans* female except for the petiole which, indeed, is a bit longer than usual. Both are completely smooth and hairless, lack prolonged frontal carinae and have the wing venation in the apical field of fore wing greatly reduced. These peculiar morphological characters led Kusnezov to surmise that *descolei* is a workerless, parasitic species, a suggestion which is now totally disproved by the discovery of the *distans* female.

The remaining forms hitherto attached to *distans* belong to *corticicola*, which is raised to specific rank on account of both morphological and geographical reasons. The distinguishing characters for *distans* workers (as compared with *corticicola*) are the following: More or less uniformly brown (light to fuscous); mandibles practically smooth, lacking distinct striae; clypeus either smooth or only faintly rugulose; vertex smooth to very finely sculptured, always without distinct striae or rugae; pronotum without coarser, reticulate rugae; mesonotum usually not sharply carinate laterally and behind; dorsolateral piligerous tubercles on petiole generally blunt; standing hairs short and greatly reduced, none on vertex, one or two pairs on anterior portion of mesonotum, only one or none on epinotum, one on each petiolar tubercle. The shape of the petiole is highly variable; when seen from above it looks either as in Fig. 9, or is squadrate with parallel sides and a sudden posterior constriction; the postpetiole may either lack or more rarely have the sagittal furrow, which is always distinct in *corticicola*. The female is recognized at once by its completely smooth integument and glabrous condition.

The problem of the relationship of *distans* with *scelerata* Santschi (which I know through the var. *taperensis* Borgmeier) remains unsolved. The worker of the latter is more heavily sculptured, including the punctulate dorsal face of petiole; in addition, it has two anterior pairs of suberect setae on dorsum of postpetiole whereas *distans* has invariably one; the few females seen have projecting hairs at least on petiole and postpetiole: the *taperensis* female type is normally hairy and has punctulate cheeks, a female from Goiânia, Goiás, is completely smooth and bears hairs only on the petiolar and postpetiolar dorsum.

Biology. — *C. distans* is usually found on trees and shrubs. It has been found nesting in dead wood, internodal cavities of bamboo, abandoned carton nests of termites; specimens collected in Niterói were tending aphids.

Crematogaster corticicola Mayr, n. stat.

(Figs. 10, 11)

- Crematogaster distans* var. *corticicola* Mayr, 1887, Verh. zool.-bot. Ges. Wien 37: 625-626 (Worker, female, male; Brazil: Santa Catarina). — Forel, 1908, Verh. zool.-bot. Ges. Wien 58: 369 (Brazil: São Paulo City). — Luederwaldt, 1918, Rev. Mus. Paulista 10: 41 (Brazil, São Paulo: Ilha de São Sebastião). — Emery, 1922, Subfam. Myrmicinae, Gen. Insect. fasc. 174, p. 135. — Borgmeier, 1927, Arch. Mus. Nac. Rio de Janeiro 29: 94 (Brazil: Rio Grande do Sul).
- Crematogaster distans corticicola*: Emery, 1905, Bull. Soc. Ent. Ital. 37: 139 (Argentina, Chaco Austral: Benítez). — Bruch, 1914, Rev. Mus. La Plata 19: 219 (Argentina: Chaco Austral). — Gallardo, 1934, An. Mus. Argent. Ci. Nat. 35: 55, 57-59, fig. 20 (Worker: Argentina: Córdoba, Tucumán, Jujuy).
- Crematogaster distans* var. *rugiceps* Forel, 1911, Deutsche Ent. Zeitschr. p. 301 (Worker, female; Brazil, São Paulo: São Paulo; Paraná: Castro). — Bruch, 1915, Rev. Mus. La Plata 19: 530 (Argentina: Salta). — Luederwaldt, 1918, Rev. Mus. Paulista 10: 41 (Brazil, São Paulo: Botucatu). — Luederwaldt, 1926, Rev. Mus. Paulista 14: 276 (Biol.). — NOV. SYN.
- Crematogaster distans rugifrons* (error for *rugiceps*) Forel, 1912, Mém. Soc. Neuchâtel. Sc. Nat. 5: 11.
- Crematogaster distans rugiceps* Forel, 1912, Mém. Soc. Ent. Belg. 19: 218 (Brazil, São Paulo: Botucatu). — Forel, 1915, Bull. Soc. Vaud. Sc. Nat. 50: 356 (Argentina). — Menozzi, 1926, Zool. Anz. 69: 68 (Brazil, São Paulo: Mogi das Cruzes). — Borgmeier, 1927, Arch. Mus. Nac. Rio de Janeiro 29: 94 (Brazil: São Paulo, Paraná, Santa Catarina and Rio Grande do Sul States). — Gallardo, 1934, An. Mus. Argent. Ci. Nat. 38: 55, 59-63, figs. 21-23 (Worker, female, male; Argentina: Salta, Tucumán).
- Crematogaster distans rugiceps* var. *pullipes* Santschi, 1920, Ann. Soc. Ent. France 88: 379 (Worker; Argentina: Jujuy). — Santschi, 1929, An. Soc. Cient. Argent. 107: 295 (Brazil, Paraná State: Rio Negro). — Gallardo, 1934, An. Mus. Argent. Ci. Nat. 38: 55, 63 (Argentina: Jujuy). — NOV. SYN.

Types. — 6 workers (lectotype and paratypes) from the Mayr collection (NHMW) bearing the following labels: a) St. Catharina, Coll. G. Mayr; b) *Cr. distans* v. *corticicola* G. Mayr, Type. — 2 workers and 1 female (syntypes) of var. *rugiceps* Forel (WWK).

Worker (lectotype and paratypes). — Total length 3.5-3.7 mm; head length 0.69-0.75 mm; maximum diameter of eyes 0.16-0.18 mm; scape length 0.57-0.61 mm; thorax length 0.77-0.80 mm; hind femur length 0.69-0.75 mm; cephalic index 100.

This species is distinctive by its bicolored condition: head, thorax and pedicel are light reddish brown or red; gaster piceous; vertex often infuscated. Extremely close to the preceding *distans*, but showing the following differences: Mandibles striate; clypeus longitudinally strialute; cheeks usually with spaced rugulae; head quadrate to slightly transverse; pronotum with reticulate-rugose macrosculpture; mesonotum laterally and posteriorly sharply marginate and carinulate, discally striate; epinotal spines a trifle longer and more pointed; postero-dorsal petiolar piligerous tubercle pointed or dentate; standing hairs as in *distans*, but longer (cf. Fig. 10) and additional hairs above antenal socket, 1 or 2 pairs on vertex, 1 hair (seldom 2) on anterior corner of mesonotum, and 1 on posterior corner; 2 pairs on basal face of epinotum; 1 pair or even 3 hairs arising from each postero-dorsal petiolar tubercle (Fig. 11).

The female is easily diagnosed by its color, unarmed epinotum and abundant erect pilosity.

Specimens examined: Argentina, Salta: El Rey, N. Kusnezov leg. 6 workers (n. 8461)..— Brazil, Rio Grande do Sul State: Erechim, Campinas, XII-1954, G. Mazurana leg. 6 workers; Nova Petrópolis I, XI-1928, P. Buck leg. 9 workers, 2 females, 1 male (CTB 3472, 3483, 3490); Pareci Nôvo, X-1926, VI-IX-1927, B. Rambo leg. 10 workers, 2 females (CTB 1305, 1795, 1812); Pôrto Alegre, III, IV-1926, XII-1927, X-1929, P. Buck leg. 17 workers, 1 female (CTB 863, 1092, 1408, 1765, 5678); Três Arroios, XII-1954, A Kops leg. 2 workers. Santa Catarina State: Blumenau, 1918, III-1919, III-1931, M. Witte, F. Reiter, Weber leg. 12 workers (CTB 122, 672, 1144, 4399); Gaspar, 1928, Fontes leg. and XII-1953, I-1958, R. Mueller leg. 7 workers (CTB 4399, WWK 1128, 2168c); Florianópolis, I-1958, R. Mueller leg. 2 workers (WWK 2155d); Ibicaré, IX-1960, F. Plaumann leg. 3 workers (WWK 3617); Luzerna, I-1929, T. Borgmeier leg. 3 workers (CTB 4805); Nova Teutônia, 1956-1964, F. Plaumann

leg. 10 workers, 5 females, 1 male; Rio do Sul, I-1961, R. Mueller leg. 3 workers (WWK 4689); Seara, VII-VIII-1958, F. Plaumann leg. 6 workers (WWK 2701, 2737). Paraná State: Cel Queiróz, Amolafato, VI-1923, Exp. Zool. Polon. leg. 6 workers, 3 females (CTB 5220); Iguaçú, IV-1965, F. Plaumann leg. 3 workers (WWK 4487); Pôrto Vitória, X-1959, F. Plaumann leg. 6 workers (WWK 3201); Rio Azul, X-1959, F. Plaumann leg. 9 workers (WWK 3168); Rio Negro, VIII, XI-1928, I-1929, I-1958, VI-1960, M. Witte, T. Borgmeier, R. Mueller, W. W. Kempf leg. 34 workers (CTB 4763, 4768, 4782, 4769; WWK 2230, 4650); Rolândia, XI-1951, III-1953, W. W. Kempf leg. 48 workers (WWK 264, 266, 283B, 830); Taquara, XI-1930, M. Witte leg. 5 workers (CTB 5710); Volta Grande, IV-1949, Hertel leg. 2 workers. São Paulo State: Alto da Serra, V-1927, S. B. Pessoa leg. 2 workers, 1 female (CTB 1541); Campos do Jordão, II-1958, K. Lenko leg. 18 workers (n. 337); Ilha São Sebastião, 1906, Guenther leg. 3 workers (MP 2320); Itapeccerica da Serra, IV-1959, W. W. Kempf & V. dos Santos leg. 1 worker; Pedreiras, Schwebel leg. 4 workers (CTB 2559); Salesópolis: Boracéia, II-1960, F. Lane leg. 2 workers (WWK 3467); São Paulo City: I-1930, T. Borgmeier leg. 4 workers (CTB 5311), Ipiranga, 1908, H. Luederwaldt leg. 2 workers, 1 female (MP 11.568 syntypes of *rugiceps* For.), Jabaquara, II-1928, R. Spitz leg. 1 worker, 2 females, 1 male (CTB 4447), Santo Amaro, VII-1928, J. Lane leg. 4 workers (CTB 5063); São Paulo - Curitiba highway, BR-2, km 40, V-1960, W. W. Kempf & V. dos Santos leg. 2 workers (WWK 4665); Serra dos Agudos Grandes, XI-1963, F. Plaumann leg. 5 workers (WWK 3951); Serra da Cantareira, I-1960, W. W. Kempf & V. dos Santos leg. 1 worker (WWK 3391). Espírito Santo State: Santa Teresa, VII-1928, O. Conde leg. 1 worker, 1 female (CTB 4304); Vila Velha, X-1960, O. Seifert leg. 1 worker (WWK 3796) (All specimens presently in WWK collection).

Synonymy and variation. — By comparing *corticicola* and *rugiceps* syntypes and checking them against the above mentioned copious material it became clear at once that both are synonyms. Santschi's *pullipes*, according to the description and material from Rio Negro, Paraná, identified by himself, may likewise not be maintained and falls into well deserved synonymy.

As regards the differences between *corticicola* and *distans*, they may break down here and there in one or more characters, but the ensemble should always prove helpful in identification; the latter is a more northern species, which ranges from Colombia, Guianas and the Amazon basin

south to São Paulo State in Brazil and northwestern Argentine, whereas *corticicola* is a species of southeastern Brazil, and northwestern Argentine, both occurring side by side at least in the environs of São Paulo City, without showing intergradation or break-down of differential characters.

The specific differences between *corticicola* and *magnifica* (which imitates the former in color and sculpture) have already been given on a foregoing page under this species.

Biology. — The present species nests in dead wood, decaying logs, under bark and has been found tending coccids (Luederwaldt, 1926: 276).

***Monomorium pharaonis* (Linné)**

Monomorium pharaonis: Emery, 1905, Bull. Soc. Ent. Ital. 37: 120 (Brazil, Mato Grosso: Coxipó). — Wheeler, 1925, Ark. f. Zool. 17A (8): 29 (Brazil, lower Amazon River; Amazonas: Fonteboa; São Paulo: São Paulo; Rio Grande do Sul: São Leopoldo). — Eidmann, 1936, Arb. phys. angew. Ent. Berlin 3: 42 (Brazil, Guanabara: Rio de Janeiro, Botanical Garden; Biol.). — Brown, 1964, Ent. News 75: 14 (Brazil, Amazonas: Manaus).

The presence of tramp ants of Old World origin in South America has long been established, but their actual distribution has so far received very little attention. Here I give a few Brazilian records for the common Pharaoh or Yellow House Ant, *Monomorium pharaonis*, widely distributed over tropical and temperate regions of the world by commerce. The interesting part of these new records, based on material of my collection, consists in the numerous remote localities of central and northwestern Brazil, where civilization is of recent importation.

Specimens examined: Brazil, Acre Territory: Feijó, XII-1956, W. Bokermann leg. (WWK 1792); Vila Taumaturgo, II-1962, L. Herbst leg. (WWK); Pôrto Válter, X-1961, L. Herbst leg. (WWK). Pará State: Cachoeira do Mel, X-1928, A. J. Sampaio leg. (CTB); Jacareacanga, X-1959, M. Alvarenga leg. (WWK); Goiás State: Anápolis, III-1964, W. W. Kempf leg. (WWK 3895); Catalão, I-1954, W. W. Kempf leg. (WWK 1015); Vianópolis, III-1930, R. Spitz leg. (CTB 5417); Mato Grosso State: Corumbá, XII-1960, K. Lenko leg. (DZSP 1224); Jardim, I-1962, R. Mueller leg. (WWK); Ceará State: Fortaleza, VI-1962, J. A. M. Bastos leg. (WWK 3982); Espírito Santo State: Córrego Itá, I-1960, W. Grossmann leg. (WWK); Minas Gerais State: Itambacuru, I-1958, K. Lenko leg. (n. 342); Guanabara State: Rio de Janeiro, Manguinhos, 1934, V-1961, H. S. Lopes leg. (CTB 5694, WWK 3389), Bom Sucesso, XI-1926, Maturino leg. (CTB 1169); Guaratiba, no date, C. R. Gonçalves leg. (n. 10075); São Paulo State: Agudos, I-X-1952, W. W. Kempf leg. (WWK 684); Guaratinguetá, IX-1959, V. dos San-

tos leg. (WWK 3146); Monte Mor, XII-1965, J. Aferri leg. (WWK 4444); Santa Catarina State: Blumenau, 1921, M. Witte leg. (CTB 127).

In Catalão, Goiás, I collected the species on the dead trunk of an orange tree in the garden; in Agudos, a numerous colony with several females was discovered in the Seminary library between the covers of an old, loosely bound book. A resumé of the facts concerning the species is given by M. R. Smith (1965).

***Eurhopalothrix spectabilis* Kempf**

(Figs. 12, 13)

Eurhopalothrix spectabilis Kempf, 1962, Stud. Ent. 5: 27-28, figs. 25-27 (Female; Brazil, Santa Catarina: Nova Teutônia).

Worker (undescribed). — Total length 2.8 mm; head length 0.71 mm; head width 0.64 mm; scape length 0.45 mm; thorax length 0.77 mm; cephalic index 91. Ferruginous. Legs and funiculi of antennae medium brown. Outline of head and body shown in Figs. 12 and 13.

Mandibles very sparsely and finely punctate, almost smooth and quite shining; basal tooth represented by a broadly truncate lamella, followed apicad by approximately 9 small triangular denticles. Clypeus sparsely, rest of head more densely foveolate, intervals smooth and shining. Antennal scrobe with a prominent foliaceous and lamellate inferior border. Gular face of head bordered on each side by another carina (feebler than in female and not lamellate) running parallel to, and mesad of, the inferior border of the scrobe. Impressed and densely punctate area on occipital lobes, present in female, absent in worker.

Thorax densely foveolate-punctate, except on bottom half of sides and declivous face of epinotum, where the sculpture becomes feebler and almost obsolete; integument quite shining. Mesoepinotal suture distinct and impressed. Epinotal teeth compressed, lamelliform, the infradental lamella very broad and foliaceous, not receding below the tooth. Bulla of metasternal gland greatly projecting. Legs densely punctate and subopaque. Tibiae and metatarsi of hind legs somewhat broadened and compressed.

Petiole and postpetiole as in female, densely foveolate-punctate. Subpetiolar tooth elongate, fingerlike. Node of petiole excavate beneath posterior dorsal border, which is carinate and shows up as a tooth in side-view. Postpetiole postero-dorsally

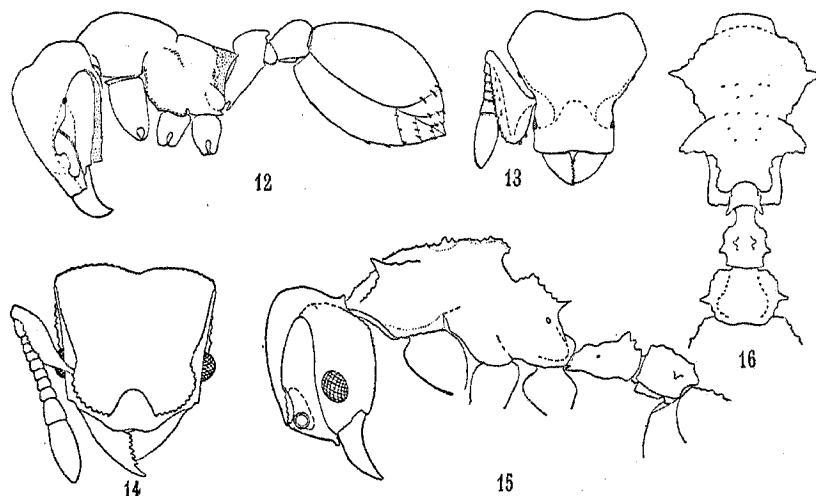


Fig. 12. *Eurhopalothrix spectabilis* Kempf, worker in profile. — Fig. 13. *Idem*, head. — Fig. 14. *Mycetosoritis explicata* sp. n., holotype worker, head. — Fig. 15. *Idem*, worker in profile. — Fig. 16. *Idem*, thorax and pedicel in dorsal aspect. — (Kempf del.)

with a pair of weak tumuli separated by a short, shallow, median furrow. Gaster somewhat more coarsely foveolate, but a bit shinier than pedicel. Tergum I with a transverse carinule on anterior border. Sting well developed.

Ground pilosity of body consisting of minute, decumbent and inconspicuous setulae, rising from the foveolae. Edge of inferior border of antennal scrobe, dorsal face of scape, legs and apical half of gastric sternum with small, decumbent, spatulate hairs. Larger, squamate or spatulate hairs present only on extensor face of tibiae, tarsi, apical half of gaster and leading edge of scape.

Specimens examined. — Brazil, São Paulo State: Barueri, taken from sifted nest material of *Camponotus rufipes* (F.) by K. Lenko, as follows: 5-III-1967, nest III, 3 workers; 19-III-1967, Nest VI, worker; 15-VII-1967, nest XVIII, 1 dealate female (All specimens in DZSP, 1 worker in WWK).

Discussion. — The worker possesses the same striking features as the female: the broadly truncate basal tooth of mandibles, the longitudinal carina bordering the gular face of head, the lamellate and foliaceous inferior border of antennal scrobe, the complete lack of large, spatulate or pompon-like hairs on head, thorax and pedicel. In addition, the broad, foliaceous infradental lamellae bordering the declivous face of epinotum and conspicuously receding beneath the epinotal tooth, and the carinate and projecting posterior border of petiolar node, are features

shared only by the otherwise completely different *lenkoi* Kempf; *pitulifera* Brown & Kempf, which has the normal complement of specialized hairs on head and a posteriorly rounded petiolar node, has also the infradental lamellae of epinotum very little receding or narrowed below the epinotal tooth.

Octostruma inca Brown & Kempf

Octostrum inca Brown & Kempf, 1960, Stud. Ent. N. S. 3: 185-187, figs. 16, 29 (Worker, female; Peru, Bolivia).

Hitherto known only from the vague localities «Peru» (workers) and «Bolivia» (female), this species has been rediscovered in Colombia by my friend Prof. Brown, who kindly gave me the permission to publish the pertinent data.

Specimens examined: 6 workers (more in MCZ), Colombia, Valle Dept. 3.2 km east of Río Aguaclara on the old Cali road, March 19, 1967, in a rocky wet quebrada, R. B. Root & W. L. Brown, Jr. leg. (WWK).

These specimens agree with the types (of which there is a good series in my collection) in overall resemblance, offering, however, several interesting smaller differences: 1) Size smaller: Total length 3.0-3.2 mm; head length 0.69-0.75 mm; head width 0.68-0.75 mm; (cephalic index 98-100); thorax length 0.80-0.85 mm. 2) Mandibles relatively longer, the two basal teeth partly fused. 3) Eyes absolutely and relatively smaller with about 20 facets (over 30 in the types). 4) Anteriormost row of specialized narrow and clavate erect hairs on head with only 4 hairs (6 in types). 5) Pronotum with 2 (instead of 2-4), mesonotum with 2 (instead of 4-6) specialized erect hairs. 6) Mesoepinotal constriction much deeper, dividing thoracic dorsum in two low convexities (profile almost flat in types). 7) Basal face of epinotum lacking median longitudinal ruga that forks posteriad; infradental lamellae (marginating declivous face) above not connected with each other. 8) Specialized erect setae on petiolar node 2 (2-4 in type), on postpetiolar node 4-6 in a single tier (8-10 in double tier in type); gastric erect hairs also less numerous. 9) Superimposed network of fine rugae absent on head, promesonotum and along posterior pleura and dorsal face of epinotum.

I first felt tempted to describe these Colombian specimens as a new species, but the overall similarity with the *inca* types is so striking that I desisted from the attempt, especially as the extent of infraspecific variation of this rare species is still unknown.

Biology. — Dr. Brown (personal communication) sent me the following data on the *Octostruma inca* collection: «In rocky wet quebrada with sheer rock walls in foothills, eastern slope of Cordillera Occidental. Vegetation in this area is lowland rainforest. The ants were found foraging in large numbers on the rock wall of the canyon and on the earth on its lip on one side. One group of workers was found tending coccids on an aroid stem. The nest was not found».

***Mycetosoritis clorindae* Kusnezov**

Cyphomyrmex (*Mycetosoritis*) *clorindae* Kusnezov, 1949, Act. Zool. Lill. 8: 444-445, Pl. 2, figs. 4, 5 (Worker; Argentina, Formosa: Clorinda).

Two workers from Porto Murtinho, Mato Grosso State, Father B. Kelber, O.F.M. leg. in April 1959 and July 1960 (WWK), and two workers from Corumbá, Mato Grosso State, C. R. Gonçalves leg., 18-X-1953 (n. 1672), belong to this species which is here recorded for the first time from Brazil.

***Mysotosoritis explicata* sp. n.**

(Figs. 14-16)

Worker (holotype). — Total length 3.4 mm; head length 0.78 mm; head width 0.78 mm; maximum diameter of eye 0.16 mm; length of scape 0.51 mm; length of thorax 1.07 mm; hind femur length 0.78 mm. Ferruginous; gaster somewhat infuscated. Integument opaque; finely and densely reticulate-punctate.

Head as shown in Figs. 14 and 15. Mandibles longitudinally striate, chewing border with 7 teeth, gradually increasing in size toward apex. Clypeal apron convex, slightly impressed in the middle; anterior half of median portion of clypeus vertical, posterior half becoming horizontal and being wedged inbetween the broadly expanded, semicircular, laterally denticulate, frontal lobes which continue obliquely caudad, after a slight constriction, as prominent and scarcely dentate carinae, reaching the occipital corner and limiting the antennal scrobe from above. Preocular carinae parallel, not curving mesad above eye but continuing backwards to join the frontal carinae slightly in front of the occipital corner, closing completely the antennal scrobe. Compound eyes moderately convex with about 10 facets across their greatest diameter, situated at a distance which is distinctly less than their own diameter from the mandibular insertion. Inferior occipital

corner rounded, indistinctly carinulate; inferior border of cheeks practically immarginate. Occipital border biconvex, impressed in the middle. Upper face of head densely covered with small piligerous pimples, which are less frequent and conspicuous on cheeks, gular and occipital face of head, completely absent inside antennal scrobe. Antennal scape attenuate at base, incrassate in the middle and again somewhat attenuate toward apex; leading edge not sharply marginate, antero-dorsal portion roughened by prominent and rather sharply pointed spicules. Apical funicular segment having the length of approximately one third of funiculus. Funicular segments II-VIII slightly broader than long.

Thorax as shown in Figs. 15 and 16. Pronotum flattened above, lacking midpronotal spines, laterally margined by a denticulate carina containing a larger, scarcely upturned, projecting spine. Antero-inferior pronotal corner obtusely angulate. Mesonotum with a broad, large, triangular, marginate, projecting lobe on each side, and posteriorly with a pair of rounded lobes below which the mesonotum drops down perpendicularly to the much lower basal face of epinotum. The latter bears a denticulate longitudinal carinule on each side, terminating posteriorly in a relatively small epinotal spine. Declivous face of epinotum laterally immarginate. Epinotal stigma small, situated on a prominent ridge. Pimple-like tubercles rare, a few on pronotal disc, several along the obsolete promesonotal boundary line and further backwards on mesonotum. Coxae, femora and tibiae scabrous due to the small, scattered and pointed pimples. Hind femora not incrassate nor dilated beneath at basal third.

Pedicel segments as shown in Figs. 16 and 16. Petiole scabrous with dorsally prominent, paired, bifid teeth and a stronger spicule projecting laterad; node approximately as long as broad. Postpetiole distinctly transverse, dorsally flattened to slightly impressed, the impression flanked by a row of low spicules; sides likewise spiculate, with a larger spine projecting from the middle of each side; postero-dorsal border vestigially impressed in the middle. Gaster oblong, ovate; anterior two thirds of sides of tergum I marginate, the area between the marginations covered with many blunt pimple-like tubercles. The same tubercles are scarcely visible on sides and on the sterna.

Body and appendages densely covered with bristly golden hairs which are mostly strongly recurved on apex or occasionally oblique and longer, especially on clypeus, leading edge of scape and on gaster.

A single paratype worker, slightly damaged, resembles the holotype in all features except for the somewhat larger size, shorter and less developed pronotal, mesonotal and epinotal spines. Its measurements are the following: Total length 3.5 mm; head length 0.80 mm; head width 0.80 mm; maximum diameter of eyes 0.16 mm; scape length 0.53 mm; thorax length 1.14 mm; hind femur length 0.80 mm.

Female and male still unknown.

Types. — Two workers (holotype and paratype), taken in the savanna south of the city of Anápolis, near km 46 of the Goiânia-Brasília highway, Goiás State, Brazil, on March 15, 1968, W. W. Kempf leg. (WWK 4858). Both specimens were foraging on the ground.

Discussion. — The striking features of this species warrant immediate recognition. But its generic placement offers some difficulties. The strongly expanded frontal lobes and carinae and the perfectly circumscribed antennal scrobe suggest affinities with the *strigatus*-group of *Cyphomyrmex*. The configuration of the thorax, however, is totally different. On account of the presence of erect and suberect hairs, the closely related genus *Mycetosoritis* still seems to be the best choice, although it must be admitted that this group, as defined by Emery (1922), is highly heterogenic. The type species *hartmanni* from Texas is quite distinct from the two South American species *asper* and *clorindae* (specimens of each species are in my collection), by lacking a completely closed antennal scrobe, inasmuch as both frontal and preocular carinae fade out shortly before reaching the occipital corner.

The present species is closest to *clorindae*, from which it differs in more expanded frontal lobes and carinae, in the completely different and unique configuration of the thorax, already described above, in the lateral carinules of epinotum which do not converge cephalad and do not fuse at the mesoepinotal junction, in the much more scabrous and less transverse pedicelar segments.

Subfam. Formicinae

Camponotus Mayr

Continuing with the piecemeal method of clearing up this confused and overwhelming genus, I present here preliminary revisions for several species in the groups of *Myrmocladoecus* (*triportitus* and *hedwigae*), *Pseudocolobopsis* (*macrocephalus* and *orthocephalus*) and *Hypercolobopsis* (*coriolanus* and *coptobregma*). The subgenus *Neocolobopsis*, for practical reasons, is sunk as a synonym of *Hypercolobopsis*.

Componotus (Myrmocladoecus) tripartitus Mayr

(Figs. 17-19)

Componotus tripartitus Mayr, 1887, Verh. zool-bot. Ges. Wien 37: 519-521 (Soldier, worker, female; Brazil: Santa Catarina). — Forel, 1912, Mém. Soc. Ent. Belg. 20: 79 (Brazil, São Paulo: Botucatu; Rio de Janeiro: Palmeiras).
? *Componotus tripartitus* var. *collegiana* Santschi, 1929, An. Soc. Cient. Argent. 107: 315 (Worker; Brazil, Paraná: Rio Negro).

Types. — A series of 3 soldiers (lectotype and paratypes) and 5 workers (paratypes) from Santa Catarina State, Brazil, in the Mayr collection n. 68/131 (NHMW), examined.

Mayr's original description is excellent and bears no repetition. I limit myself to giving several critical measurements of the types and the differential characters that separate *tripartitus* from its only close relative, *hedwigae* Forel.

Soldiers (largest specimen is lectotype). — Head length 1.33-1.65 mm; head width 1.26-1.54 mm; thorax length 1.73-2.00 mm; pronotum width 1.04-1.15 mm; mesonotum width 0.83-0.93 mm; epinotum width 0.48-0.56 mm; petiole width 0.69-0.78 mm. Cephalic index 92-94.

Workers (paratypes). — Head length 1.04-1.12 mm; head width 1.09-1.20 mm; thorax length 1.55-1.60 mm; pronotum width 0.93-0.98 mm; mesonotum width 0.72-0.78 mm; epinotum width 0.43-0.51 mm; petiole width 0.61-0.64 mm.

Soldiers are distinct not only by larger absolute size, but also by the relative increase in head length which is longer than broad (broader than long in the workers) and the shortness of the antennal scapes, which do not accompany the increase in head length (subequal to head length in workers, much shorter in soldiers).

C. tripartitus soldiers and workers differ from *hedwigae* as follows: 1. Erect hairs much scarcer, especially on thorax, petiole and gaster; none on occiput, few or none on pronotum, none on declivous face of epinotum; less than a dozen in a row on the upper face of the petiolar scale, the row being interrupted in the middle; 3 hairs on flexor face of femora; appressed pilosity on gaster very short, much shorter than erect hairs, quite inconspicuous (cf. Figs. 17, 18). 2. Head (Fig. 17) of major worker narrower, longer than broad, sides subparallel rather than diverging caudad; occiput straight to slightly excavate; scapes barely attaining occiput when laid back as much as possible. 3. Pronotum and mesonotum (Fig. 19) relatively narrower, as compared with thorax length; basal face of epinotum subquadrate, as long as broad, little inclined caudad; declivous face, when

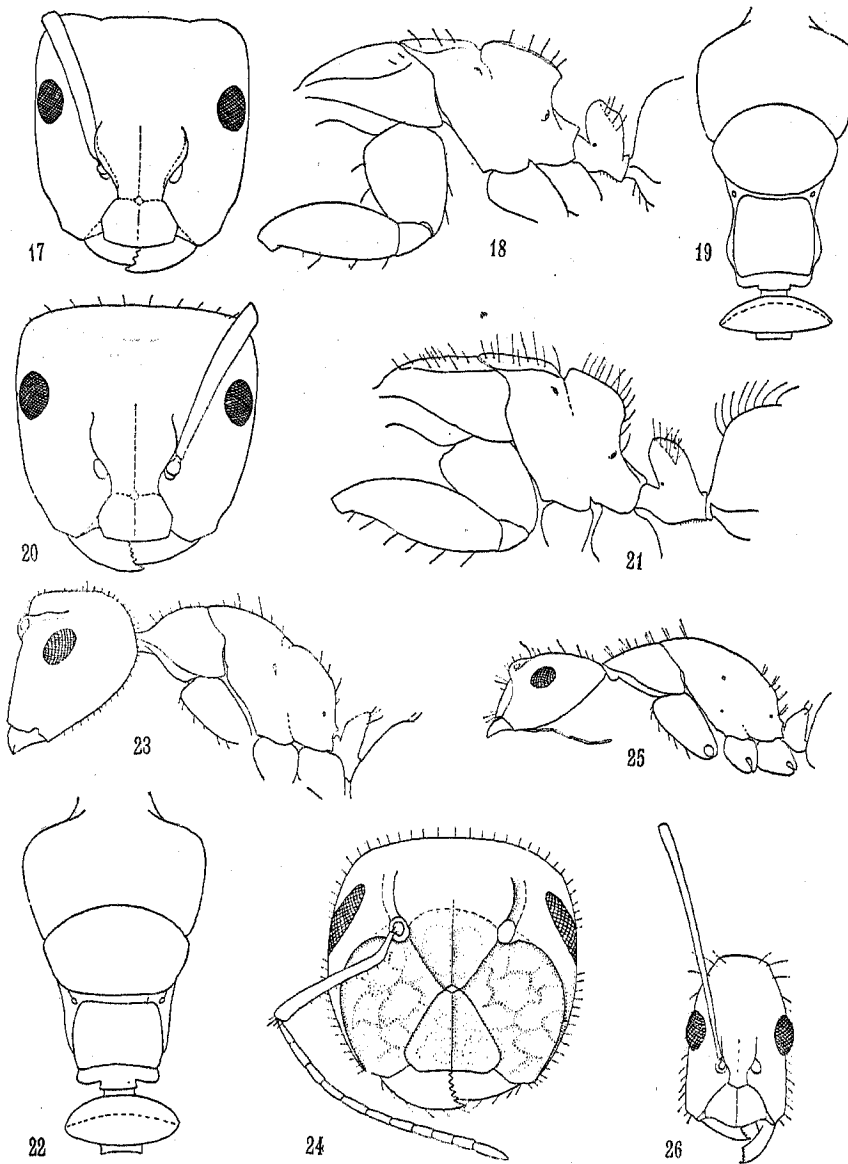
*Camponotus* Mayr

Fig. 17. *tripartitus* Mayr, soldier lectotype, head. — Fig. 18. *Idem*, thorax and petiole in profile. — Fig. 19. *Idem*, thorax and petiole in dorsal aspect. — Fig. 20. *hedwigae* Forel, soldier, head. — Fig. 21. *Idem*, thorax and petiole in profile. — Fig. 22. *Idem*, thorax and petiole in dorsal aspect. — Fig. 23. *coptobregma* sp. n., paratype soldier, head, thorax and pedicel in profile. — Fig. 24. *Idem*, head. — Fig. 25. *Idem*, paratype worker, head, thorax and pedicel in profile. — Fig. 26. *Idem*, head. — (Kempf del.)

seen in profile, always excavate (more pronounced in workers than in soldiers). 4. Petiolar scale with an obliquely inclined dorsal face (Fig. 18), the anterior border of which is sharply, the posterior border bluntly but distinctly marginate.

Distribution. — According to the material at hand, this species seems to be rarer than *hedwigae*. Both occur side by side at least in one locality, viz. Pareci Novo, Rio Grande do Sul State, Brazil. The species seems to be confined to southeastern Brazil. The northern limit is the State of Minas Gerais.

Specimens examined. — Brazil, Rio Grande do Sul State: Pareci Novo, 3-VIII-1926, B. Rambo, S.J. leg. 2 soldiers, 6 workers (CTB 1291); same locality, 10-XII-1927, P. Hansen, S.J. leg. 1 soldier, 1 worker, 1 female (CTB 3523); Pôrto Alegre, 29-XI-1928, P. Buck, S.J. leg. 1 worker (CTB 4809). Santa Catarina State: locality unknown, 3 soldiers, 5 workers (Types, NHMW 68/131). Minas Gerais State: Palmyra, 10-XII-1925, T. Borgmeier leg. 1 worker (CTB 566); Manhumirim, 17-VI-1962, F. M. Oliveira leg. 1 soldier, 13 workers (WWK 4178, received from Dr. Seabra).

Santschi's var. *collegiana* from Rio Negro (where *hedwigae* is abundant and no *tripartitus* specimen has since been collected) seems to belong to the present species, although for a definite synonymy an examination of the type appears necessary. The description is not sufficient for definite recognition. One may not be sure that Santschi had a correct idea of the typical *tripartitus*.

Biology. — Colonies collected in the State of Rio Grande do Sul (Pareci Novo, Pôrto Alegre) were found nesting in decaying wood, in the soft hollow stem of a plant, in the hollow of a thin twig.

Camponotus (Myrmocladoecus) hedwigae Forel

(Figs. 20-22)

Camponotus hedwigae Forel, 1912, Mém. Soc. Ent. Belg. 20: 79 (Soldier, worker; Brazil: Rio de Janeiro State). — Borgmeier, 1927, Arch. Mus. Nac. Rio de Janeiro 29: 159 (Brazil, Rio Grande do Sul and Rio de Janeiro States).

Types. — A series of 1 soldier (lectotype) and 4 workers (paratypes), from Rio de Janeiro State, E. Goeldi leg. in the Forel Collection (MHNG), examined.

Forel went to great lengths pointing out the differences that separate *hedwigae* from *tripartitus*, its closest relative. A careful examination showed, however, that a few of the characters given are not reliable, especially the lack of a prominent upturned lobe on the corner of the frontal carinae at their greatest expansion.

This lobe is sometimes indicated in some *hedwigae* specimens and, on the other hand, occasionally only weakly expressed in major and minor workers of *tripartitus*. Also the postero-lateral margination of head, being subject to variation, has no decisive diagnostic value. Nevertheless, both species seem to be sufficiently distinct to be maintained as separate and valid. In the following I give the critical measurements for the type specimens and the differential characters as compared with *tripartitus*.

Soldier (lectotype). — Head length 1.87 mm; head width 1.87 mm; scape length 1.25 mm; thorax length 2.13 mm; pronotum width 1.36 mm; mesonotum width 1.09 mm; epinotum width 0.72 mm; petiole width 0.88 mm. Cephalic index 100.

Worker (paratypes). — Head length 1.09-1.33 mm; head width 1.17-1.36 mm; scape length 1.09-1.15 mm; thorax length 1.57-1.81 mm; pronotum width 0.99-1.12 mm; mesonotum width 0.75-0.83 mm; epinotum width 0.48-0.53 mm; petiole width 0.62-0.68 mm.

C. hedwigae soldiers and workers differ from *tripartitus* as follows: 1. Erect hairs much more abundant, especially on thorax, including pronotum, petiole and gaster; occiput with a fringing row of hairs (Fig. 20); hairs also on declivous face of epinotum; well over a dozen hairs on dorsum of petiolar scale, without a median interruption; underside of fore and middle femora with a complete series of erect hairs, 5-6 on fore femora; appressed pilosity on gaster as long as abundant erect hairs and very conspicuous and numerous. 2. Head of major worker (soldier) broader, never longer than broad, sides more conspicuously curved and anterior half diverging caudad; occipital border straight to slightly convex; scapes slightly surpassing occiput when laid back as much as possible (Fig. 20). 3. Basal face of epinotum transverse, i. e. broader than long; declivous face, as seen in profile, straight, not distinctly excavate (this difference is more conspicuous in workers than in soldiers) (Fig. 21, 22). 4. Petiolar scale (Figs. 21, 22) lacking a distinctly marginate upper face, the anterior and posterior borders are indistinct and very blunt.

Distribution. — Likewise confined to southeastern Brazil, *C. hedwigae* appears to be the more common species, ranging from Rio Grande do Sul State to Rio de Janeiro State (Rio de Janeiro and Petrópolis).

Specimens examined. — Brazil, Rio Grande do Sul State: Sinimbu, IX-1960, F. Plaumann leg. 1 soldier, 1 worker (WWK 3584); Parci Novo, 24-III-1926, B. Rambo, S. J. leg. 3 workers,

2 females (CTB 1059); Barros-Cassal, IX-1960, F. Plaumann leg. 1 worker (WWK 3599). Santa Catarina State: Lança, I-1956, R. Mueller leg. 1 worker (WWK); Laurentino, I-1958, R. Mueller leg. 1 soldier, 2 workers (WWK 2123): Nova Teutônia, X-1956, VII-1959, IX-1960, X-1965, F. Plaumann leg. 3 soldiers, 18 workers (WWK 4166, 3731, 4712, 4801). Paraná State: Rio Negro, XII-1955, R. Mueller leg. 1 soldier (WWK). São Paulo State: Campos do Jordão, II-1957, T. Borgmeier and Isidoro Krebsbach, O.F.M. leg. 1 soldier, 1 worker (CTB); Salesópolis: Boracéia, Estação Biológica, 5-II-1960, F. Lane leg. 1 worker (WWK 3482); São Paulo, Serra da Cantareira, 25-II-1959, W. W. Kempf & Vítor dos Santos leg. 10 workers (WWK 2980); São Paulo-Curitiba highway (BR-2), km 40, V-1960, W. W. Kempf & Vítor dos Santos leg. 1 soldier (WWK 4670). Rio de Janeiro State: Petrópolis, 1918, 25-X-1949, 29-IX-1959, I-1956, T. Borgmeier, W. W. Kempf, C. Gilbert, O.F.M. leg. 4 soldiers, 12 workers (CTB 54, WWK). Guanabara State: Floresta da Tijuca, 2-XII-1959, III-1962, C. A. C. Scabra leg. 5 soldiers and 9 workers (WWK).

Biology. — This seems to be a forest species, living in dead wood, hollow twigs, or bamboo internodes, and foraging on trees and shrubs where it is not too rarely collected.

***Camponotus (Pseudocolobopsis) macrocephalus* Emery**

- Camponotus macrocephalus* Emery, 1894, Bull. Soc. Ent. Ital. 26: 169 (Soldier; Brazil: Mato Grosso, Santa Catarina, ? Rio de Janeiro; Bolivia: Salinas).
Camponotus (Pseudocolobopsis) macrocephalus Emery, 1920, Bull. Soc. Ent. Ital. 52: Ital. 52: 35-36 (Soldier; Brazil: Mato Grosso; ? Female; Paraguay). — Emery, 1925, Gen. Insect. fasc. 183, p. 158.
Camponotus (Pseudocolobopsis) macrocephalus geralensis Emery, 1920, Bull. Soc. Ent. Ital. 52: 36-37 (Soldier, worker; Brazil, Santa Catarina: Joinville, Guanabara: Rio de Janeiro; Female; Peru: Ocobamba). — Eldmann, 1936, Arb. phys. angew. Ent. 3: 96-97 (Brazil, Rio de Janeiro: Mendes; Nest). — Santschi, 1939, Rev. de Ent. 10: 329 (Argentina, Misiones: Loreto). — ? Kusnezov, 1951, Act. Zool. Lill. 12: 212 (Argentina, Misiones: Loreto). — NOV. SYN.
Camponotus (Pseudocolobopsis) luederwaldti Santschi, 1922, Ann. Soc. Ent. Belg. 62: 118-119 (Soldier, worker; Brazil, São Paulo: Ilha dos Alcatrazes). — Luederwaldt, 1926, Rev. Mus. Paulista 14: 399 (Brazil, São Paulo: Ilha dos Alcatrazes). — NOV. SYN.

Emery completed the description of the typical species in 1920, restricting it to the soldier from Mato Grosso and adding a lone female from Paraguay.

The specimens from Santa Catarina and Rio de Janeiro were raised to subspecific status, the soldier being different from the typical species in the following characters: 1. Head a bit more elongate and anterior half more densely punctulate and opaque.

2. Clypeus less depressed, the median keel more distinct, the lateral longitudinal impressions shallower and more superficial. 3. Frontal carinae closer to each other. 4. Color lighter: thorax, petiole, first segment of gaster and a narrow band of second segment ferruginous testaceous. A lone female from Ocobamba, Peru, is definitely associated with this form.

The following specimens in my collection (WWK) are referred to the typical form: Brazil, Mato Grosso State: Corumbá, Serra do Urucum, 28-XI-1960, K. Lenko leg. 5 workers, 1 soldier (DZSP 1111). Minas Gerais State: Tiradentes, I-1957, R. Mueller leg. 1 soldier. São Paulo State: Agudos, 30-V-1952, 15-X-1952, 18-IX-1953, 2-X-1954, XI-1957, 1-XII-1957, VI-1960, W. W. Kempf, C. Gilbert, G. Johnscher leg. 11 soldiers, 11 workers, 2 females, 1 male (WWK 433, 786, 886, 1213, 2043, 2058, 3509); Lorena, VIII-1955, A. G. d'Araujo e Silva leg. 3 soldiers, 1 female, 1 worker, 1 male. Paraná State: Rolândia, 10-XII-1956, W. W. Kempf leg. 1 soldier, 1 worker (WWK 1704). Argentina: Salta: Quebrachal, 1949, Lima leg. 2 soldiers, 4 workers (n. 3510a).

The characters of *geralensis* are shown by the following specimens: Brazil, Rio Grande do Sul State: Pareci Novo, 12-XI-1927, P. Hansen, S.J. leg. 1 soldier, 1 worker (CTB 3540). Santa Catarina State: São José, 1921, D. Venker, O.F.M. leg. 3 soldiers, 5 workers (CTB 216); Rodeio, XII-1955, R. Mueller, O.F.M. leg. 1 worker; Nova Teutônia, XI-1956, F. Plaumann leg. 2 soldiers. Rio de Janeiro State: Itatiaia, 1933, J. F. Zikán leg. 3 soldiers, 3 workers (CTB 5464); Petrópolis, 1918, V-1929, 2-XI-1944, T. Borgmeier, C. Spannagel, O.F.M., W. W. Kempf leg. 4 soldiers, 1 female (CTB 733, WWK). Guanabara State: Rio de Janeiro, X-1929, Oliveira Filho leg. 1 female (CTB).

The differences between the typical *macrocephalus* and *geralensis* are slight and fluctuating. Hence I propose to synonymize the latter with the former, until it is possible to show that *macrocephalus* is indeed divisible in good geographic races.

The types of *luederwaldti*, hailing from the continental island Ilha dos Alcatrazes, off the shore of São Paulo State (X-1920, H. Luederwaldt leg. 2 soldiers, 2 workers DZSP and WWK), and numerous specimens taken recently by K. Lenko on the Islands Ilha dos Búzios (27-X-1963, DZSP 2827) and Ilha da Vitória (III-1964 and IV-1965, DZSP 3978, 3979), likewise near the

São Paulo coast, are indistinguishable from *geralensis*, so that *luederwaldt* incides by all means in well-deserved synonymy.

This is a tree-inhabiting species, establishing its nest in cavities of hard wood or in hollow dead twigs.

Camponotus (Paracolobopsis) orthocephalus Emery

Camponotus orthocephalus Emery, 1894, Bull. Soc. Ent. Ital. 26: 169-170 (Soldier; Brazil: Mato Grosso).

Camponotus (Pseudocolobopsis) orthocephalus Emery, 1920, Bull. Soc. Ent. Ital. 52: 37 (Soldier, female; Peru: Vilcanota; Bolivia: Songo). — Menozzi, 1927, Ent. Mitt. 16: 339-340 (Worker; Costa Rica: San José).

As pointed out by Emery, this species is extremely close to the preceding *macrocephalus*. Soldiers and females are distinctive by the elongate, tectiform clypeus with a strong, elevated sagittal keel. As regards the second separatory character given by Emery for soldiers, viz. the dorsally incised thorax at the meta-epinotal suture, I find that it is not reliable. The characters for the worker caste have not been worked out because I have very few specimens definitely associated with soldiers.

Specimens examined. — Argentina, Misiones Territory: Loreto, 10-VIII-1949, N. Kusnezov leg. 1 soldier, 1 worker (n. 4842; cited by Kusnezov, 1951: 212 as *macrocephalus geralensis*), Eldorado, 1949, N. Kusnezov leg. 1 soldier, 1 worker. Brazil, Paraná State: Rondon, IX-1952, F. Plaumann leg. 2 soldiers; Goiás State: Aragarças, X-1954, H. Sick leg. 1 female, 1 male; Pernambuco State: Tapera, 29-XI-1929, B. Pickel, O.S.B. leg. 1 soldier, 1 male (CTB 5254).

Note. — Inasmuch as Kusnezov's Misiones material was proved to belong to *orthocephalus* and not to *macrocephalus*, it is also likely that Santschi's record from Loreto, Misiones is referable to the former and not to the latter species.

Camponotus (Hypercolobopsis) coriolanus Forel

Camponotus (Colobopsis?) coriolanus Forel, 1912, Mém. Soc. Ent. Belg. 20: 84-85 (Worker medium and minor; Brazil, Rio de Janeiro State: Colônia Alpina and Alto da Serra).

Camponotus (Hypercolobopsis) coriolanus: Emery, 1925, Subfam. Formicinae, Gen. Insect. fasc. 183, p. 160.

Camponotus (Neocolobopsis) scrobifer Borgmeier, 1928, Bol. Biol. S. Paulo, fasc. 12, pp. 66-69, figs. 2-4 (Soldier, worker; Brazil, São Paulo: Santos, Guarujá). — NOV. SYN.

The types of *coriolanus*, collected by Prof. E. Goeldi in what are today parts of the city of Teresópolis, are medium-sized and minor workers. The description agrees perfectly with the minor worker type of *scrobifer*, so that the latter is doubtless a junior synonym of *coriolanus*.

Specimens examined. — Brazil, Espírito Santo State: Santa Teresa, V, VIII-1928, O. Conde leg. 4 workers (CTB 4166). Minas Gerais State: Serra Caraça, XI-1961, K. Lenko leg. 1 worker (DZSP). São Paulo State: Salesópolis, Est. Biológica Boracéia, 5-II-1960, F. Lane leg. 5 workers (WWK 3465), same locality, 11-V-1961, K. Lenko leg. 1 soldier, 8 workers (DZSP 1467); Guarujá, Santos, 28-VIII-1910, H. von Jhering leg. 1 soldier, 1 worker (*scrobifer* types, CTB 3984).

The present species is closest to *divergens* Mayr (the type of which I redescribed and discussed in 1960: 458-460, figs. 40, 41, 45), but the soldier (worker unknown) of the latter differs in lacking the characteristic short, apically knobbed hairs on the truncate face of head, and oblique setae on antennal scapes and legs. Both species are close to *paradoxus* Mayr, but clearly distinct by not having the truncate portion of head circumscribed by a raised carinule. This character should be stricken from the subgeneric diagnosis of *Hypercolobopsis*, since it applies only to *paradoxus* and a new species to be described below. Consequently, *Neocolobopsis* Borgmeier (NOV. SYN.) becomes a synonym of *Hypercolobopsis* Emery.

C. coriolanus is a tree-dweller, nesting in cavities of wood and the hollow of dead twigs.

***Camponotus (Hypercolobopsis) coptobregma* sp. n.**

(Figs. 23-26)

Soldier (holotype). — Total length 9.0 (9.5) mm; maximum length of head 2.14 (2.08) mm; maximum width of head 2.16 (2.16) mm; length of scape 1.53 (1.55) mm; maximum diameter of eyes 0.62 (0.62) mm; length of thorax 2.80 (3.04) mm; width of petiole 0.61 (0.64) mm; hind femur length 2.00 (2.05) mm. Yellowish brown; truncated portion of head paler; thorax more brownish; gaster dark brown with paired anterolateral pale spots on tergum I-IV, the posterior border of which is pale and semidiaphanous. Integument rather shiny; truncate portion of head opaque, finely, sharply reticulate-punctate with superimposed coarse and irregular rugosities; rest of head very superficially reticulate-punctate; mandibles opaque, densely striate-rugose; thorax, scapes and legs superficially reticulate; petiole and gaster predominantly transversely striate-reticulate; sparse, scattered, coarse piligerous punctures on head, dorsum of thorax and on gaster.

Head (Figs. 23, 24) subcircular, not constricted in front at mandibular insertion, widest in front of completely flattened eyes, sides converging caudad behind eyes, occipital corners broadly rounded, occiput in full-face view gently convex. Truncate portion of head comprising clypeus, cheeks, lower portion of front, reaches upward and backward to antennal insertions; laterally marginate by a sharp, raised carina which curves mesad at level of eyes and joins anterior portion of frontal carina in front of antennal socket. Clypeus trapezoidal, little projecting in front, laterally obtusely angulate, shallowly emarginate in the middle; traversed by a sharp sagittal keel. Frontal area distinct. Truncate portion of front, between posterior border of clypeus and level of posterior orbit of antennal socket, likewise with a sharp keel that fades out above, turning into a short frontal suture that disappears on vertex; lateral borders of front marked by prominent diverging keels, the anterior part of frontal carinae, which become subparallel on vertex behind antennal socket, fading out at level of posterior orbit of eyes; frontal carinae flanked laterally by a deeply impressed antennal scrobe of equal length. Antennal scape gradually increasing in width from base to basal fifth where it is distinctly curved and flattened, with the leading edge acute up to the apical fifth of its length. Mandibles with 6 teeth, their lateral border sharply marginate only on apical half.

Thorax as shown in Fig. 23, its dorsum relatively narrow, laterally immarginate, and strongly transversely convex on promesonotum. Metanotum short but distinct, set off by sutures and somewhat impressed as seen in profile. Basal face of epinotum as long as declivous face, slightly flattened above with a weak sagittal impression. Petiolar scale cuneiform in side-view, apex rather sharp and transversely convex with a faint median impression. Apical spur of hind legs almost half as long as tarsite I (metatarsus).

Head with short, abundant, erect hairs (fringing hairs shown in Figs. 23 and 24) except on truncated portion which is glabrous. A few erect, short hairs on leading edge of scape, a few longer ones on apex. Thorax with sparse, longer, erect hairs among shorter appressed ones, which are not conspicuous. Apex of petiolar scale with three prominent hairs on each side of vestigial median notch. Gaster with sparse, long, oblique hairs among smaller appressed ones. Hairs on legs rather long, appressed, conspicuous; a few erect ones on coxae and flexor face of femora;

apex of tibiae and tarsal segments with a few stronger and spinelike hairs.

Worker (paratypes). — Total length 7.4-7.6 mm; maximum length of head 1.54-1.57 mm; maximum width of head across eyes 0.96-0.98 mm; length of scape 2.16-2.19 mm; maximum diameter of eyes 0.44-0.45 mm; length of thorax 2.56-2.66 mm; hind femur length 2.11-2.24 mm; petiole width 0.40 mm. Color and sculpture as in soldier, with the following peculiarities: Mandibles finely and rather indistinctly reticulate-punctate, quite shining; the entire head, clypeus and cheeks included, are superficially reticulate-punctate and shining; antero-lateral spots on gastric terga indistinct.

Head as shown in Figs. 25 and 26. Mandibles with 6 teeth. Clypeus with a sagittal keel. Frontal carinae subparallel behind antennal socket, fading out at level of middle of eyes; the latter moderately convex and somewhat prominent in full-face view. Antennal scape, when laid back as much as possible, surpassing the occipital border for more than half of its length. Occiput drawn out, truncate-conical. Maxillary palpi, reflexed backwards over the gular face, reaching the thoracic insertion. Thorax as shown in Fig. 25. Metanotum indistinct, only a mesoepinotal suture present, which is not impressed but visible in dorsal aspect. Petiolar scale narrower, longer and lower than in soldier.

Pilosity as in soldiers, but slightly more abundant, longer on head (fringing hairs shown in Fig. 26); scapes and legs with dense, oblique to subappressed hairs.

Types. — 2 soldiers (lectotype DZSP n. 2300, paratype WWK) and 12 workers (DZSP, WWK) taken by K. Lenko at km 21 of the «Estrada Manaus-Itacoatiara, Amazonas State, Brazil, on August 23, 1962. They were living in the forest, nesting inside a dry, hollow twig of a small tree.

Discussion. — This beautiful new species is closest to *paradoxus* Mayr from southern Brazil. The soldier differs in smaller size, shorter head, lighter color, rugose mandibles which are marginate only on apical half of lateral border, sharp sagittal carina of clypeus, frontal carinae between posterior corner of clypeus and antennal socket raised and keel-shaped, scape depressed and flattened with sharp leading edge, antennal scrobes more widely separate from each other, not longer than maximum diameter of eyes, shiny and superficially punctate integument of head (except truncate portion), the truncate part coarsely and irregularly rugose, thorax shorter and more compact, dorsally

more rounded, petiolar scale more compressed, fine, short standing hairs on thorax, petiole and gaster also more abundant.

The worker is likewise distinct by smaller size, lighter color, more abundant pilosity, above all the conspicuous, oblique to subappressed dense hairs on scapes and legs, the standing hairs on head; the latter is conspicuously longer, and the thorax deeper and shorter.

Note. — The subgenus *Hypercolobopsis* is a very small group of Neotropical tree-inhabiting *Camponotus*, in which the phragmotic adaptation of the head in the soldier caste has reached an extreme; the anterodorsal truncate portion reaches back to the antennal insertions and includes a greater part of the front. The thorax in both soldiers and workers is elongate with narrow, tectiform epinotum; its sculpture is reticulate-striolate, never coarsely punctate; the sides of the pronotum are completely rounded, lacking a sharp keel. The up-to-date composition, including synonyms, is as follows:

1. *coptobregma* Kempf, sp. n.
2. *coriolanus* Forel, 1912
= *scrobifer* Borgmeier, 1928
3. *divergens* Mayr, 1887
4. *paradoxus* Mayr, 1866
= *paradoxus janitor* Forel, 1908

C. christopherseni Forel, 1912, as pointed out previously (Kempf, 1960: 464-465), belongs to subgenus *Myrmeurynota* and is probably a synonym of *linnaei* Forel, 1886.

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