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

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(With 11 text-figures)

Summary

Introduction

This paper is a continuation of a series on the New World ant fauna, destined to gather and record scattered new taxonomic and faunistic information gleaned from routine taxonomic activity. Previous installments have been published in this same journal in preceding years: (Stud. Ent. n. I: 1960, 3: 417-466, n. II: 1962, 5: 1-38, n. III: 1964, 7: 45-171, n. IV: 1968, 11: 369-415).

Aside from giving the description of four new species and proposing three new synonyms on the specific level, I also present important new locality records for species that are poorly known or seldom collected.

Acknowledgments. — The material used in this investigation came from the following collections: Departamento de Zoologia do Estado de São Paulo (DZSP), courtesy of Mr. Karol Lenko, and my private collection (WWK). I whish to thank to a great many collectors that have enriched my collection and my knowledge of ants over the years; their names are registered at the appropriate places. Special thanks are due to the «Conselho Nacional de Pesquisas» of Brasil for financial support in the form of a monthly stipend and even more for positive encouragement to proceed in my research.

Note on measurements. — The head length is the maximum length of the head capsule, as measured between two parallel lines drawn perpendicularly 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, unless noted otherwise; the scape length is the maximum straight-line length of the segment, excluding the distinctly set-off basal 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.

Subfamily Dorylinae

Labidus mars (Forel)

This distinctive and apparently rare army ant in genus *Labidus*, revised by Borgmeier (1955: 121-3), was so far known from northeastern (Ceará and Pernambuco) and central Brasil (Goiás). It is now recorded for the first time from southeastern Brasil: São Paulo State, Barueri, Jan. 28, 1967, K. Lenko leg., many workers taken from a raiding column (DZSP 4156, WWK).

Subfamily Ponerinae

Gnamptogenys bruchi (Santschi)

Ectatomma (Parectatomma) bruchi Santschi, 1922, An. Soc. Cient. Argent. 94: 241-2 (Worker; Argentina, Córdoba: Alta Gracia).
Gnamptogenys bruchi: Brown, 1958, Bull. Mus. Comp. Zool. Harvard 118: 227, 236. — Kempf & Brown, 1968, Pap. Avuls. Zool. S. Paulo 22: 94.

A single stray worker, taken from forest soil on Fazenda Barreiro Rico, near Anhembi, São Paulo State, Brasil, on February 14, 1969, W. W. Kempf leg. (WWK 5586), belongs definitely to this species, recorded here for the first time from Brasil.

G. bruchi is very closely related with *nigrifrons* Borgmeier from Peru, *turmalis* Kempf & Brown from the Panama Canal Zone, and *hartmanni* Wheeler from southern United States. They are distinguishable upon differences in small details, but it is quite possible that more material will eventually close the gaps and show that all of them are nothing but conspecific variants (cf. Kempf & Brown, 1968: 94).

This São Paulo specimen has the metanotal impression a bit more conspicuous than in the type, so that this character is hardly useful for specific separations in the present group of closely related species.

Thaumatomyrmex paludis Weber

Thaumatomyrmex paludis Weber, 1942, Bol. Ent. Venezolana 1: 68-70, figs. 1-2 (Worker; Venezuela: Isla Tortola, Orinoco Delta).

A lone worker taken by K. Lenko at Manaus, Amazonas State, Brasil, on September 3, 1962, is the second record for this seemingly rare species, taken for the first time in Brasil (DZSP 4272).

Neoponera cavinodis Mann

Neoponera (Neoponera) cavinodis Mann, 1916, Bull. Mus. Comp. Zool. Harvard 60: 414, Pl. 2, fig. 14 (Worker; Brasil, Rondônia: Porto Velho).

Hitherto known solely from the lone holotype, this species was collected recently at Benjamim Constant, Amazonas State, Brasil, Sept. 18, 1962 by W. L. Brown, Jr., several workers (BC-13; MCZ, WWK) and at Barra do Tapirapé, Mato Grosso State, Brasil, Nov. 1964, by B. Malkin, 1 worker (WWK).

Subfamily Pseudomyrmecinae

Pseudomyrmex unicolor (Fr. Smith)

Pseudomyrma atra Stitz, 1933, Mitt Deutsch. Ent. Ges. Berlin 4 (5): 69-70 (Worker; Brasil: São Paulo). — NOV. SYN.

In previous studies (Kempf, 1958: 439-41; Kempf, 1967: 9) I have established the identity of the present species and shown that *mutilloides* Emery and *unicolor* var. *anceps* Santschi are its junior synonyms.

After comparing the description of *atra* Stitz with authentically determined specimens of *unicolor,* I have now come to the conclusion that also the former is a synonym of the latter. The only discordant feature in Stitz's description is the reference to the pronotum length, which is said to be half as long as the mesonotum, indeed an unusual and improbable condition for any *Pseudomyrmex.* I presume that Stitz made here a mistake in the diagnosis: one and a half times as long as the mesonotum is the exact proportion.

The occurrence of *unicolor* in São Paulo State, Brasil, is now being confirmed by a worker specimen with yellow petiole, taken on November 25, 1963 by E. X. Rabello at Poá, in the environs of São Paulo city (DZSP). Other new records for *unicolor* are from Brasil's capital city, Brasília, Federal District, February 19, 1964, H. M. Canter leg. 1 worker (DZSP) and from Barra do Tapirapé, Mato Grosso State, December 14, 1962, B. Malkin leg. 1 worker (DZSP).

Pseudomyrmex phyllophilus (Fr. Smith)

This species, better known by its junior synonym *muticus* Mayr (cf. Kempf, 1961: 386-90; Kempf, 1967: 8-9) is a typical denizen of the southern regions of Brasil. A lone worker, taken on June 1st, 1965 by G. Cisneiros at Prado, Recife, Pernambuco State, Brasil (DZSP) marks a significant northward extension of the known range of *phyllophilus.*

Subfamily Myrmicinae

Crematogaster corticicola Mayr

After my recent revision of this species (Kempf, 1968: 394-7), I have seen several workers taken by G. Cisneiros, on June 1st 1965 at Prado, Recife, Pernambuco State, Brasil (WWK, DZSP). This is an interesting record inasmuch as the present species has never been taken north of Espírito Santo State in Brasil.

Oxyepoecus vezenyii (Forel)

Monomorium (Martia) vezenyii Forel, 1907, Ann. Mus. Nat. Hungar. 5: 20-1 (Worker; Paraguay: Puerto Max).
Oxyepoecus vezenyii: Ettershank, 1966, Aust. J. Zool. 14: 145, figs. 114-119 (Worker).

Specimens from southern Brasil, in my collection (WWK), doubtless belong to the present species, heretofore known solely from the type:

Brasil, Santa Catarina State: Luzerna, Jan. 1963, Fr. Libório Schmitt leg. 2 workers; Nova Teutônia, July 1959, May 1960, October 1963, F. Plaumann leg. 12 workers, 1 female; Seara, July 1958, F. Plaumann leg. 2 workers; Rio Grande do Sul State: Erechim, August 1956, F. Plaumann leg. 1 worker.

These specimens agree with the original diagnosis except for the following details: Promesonotum more polished, the striae or rugae are very fine and confined to the sides, the disc being completely smooth; the transverse costulae on basal face of epinotum are more numerous, there being at least 8 instead of 6. Even so, the specific identity of the above specimens seems to be reasonably sure.

The f e m a l e is still undescribed. Total length 3.1 mm; head length 0.65 mm; head width in front of eyes 0.54 mm; scape length 0.43 mm; funiculus length 0.65 mm; maximum diameter of eyes 0.11 mm; thorax length 0.84 mm; thorax width 0.43 mm; hind femur length 0.46 mm; petiole length and width 0.33 and 0.30 mm; postpetiole length and width 0.19 and 0.35 mm. Reddish yellow with the mandibles, three apical funicular joints, legs lacking the reddish hue. Resembling the worker with the usual caste differences. Mandibles elongate, sublinear, chewing border with 4 teeth. Ocelli small. Thorax with bluntly marked shoulders. Pronotum transversely but faintly rugulose, nearly

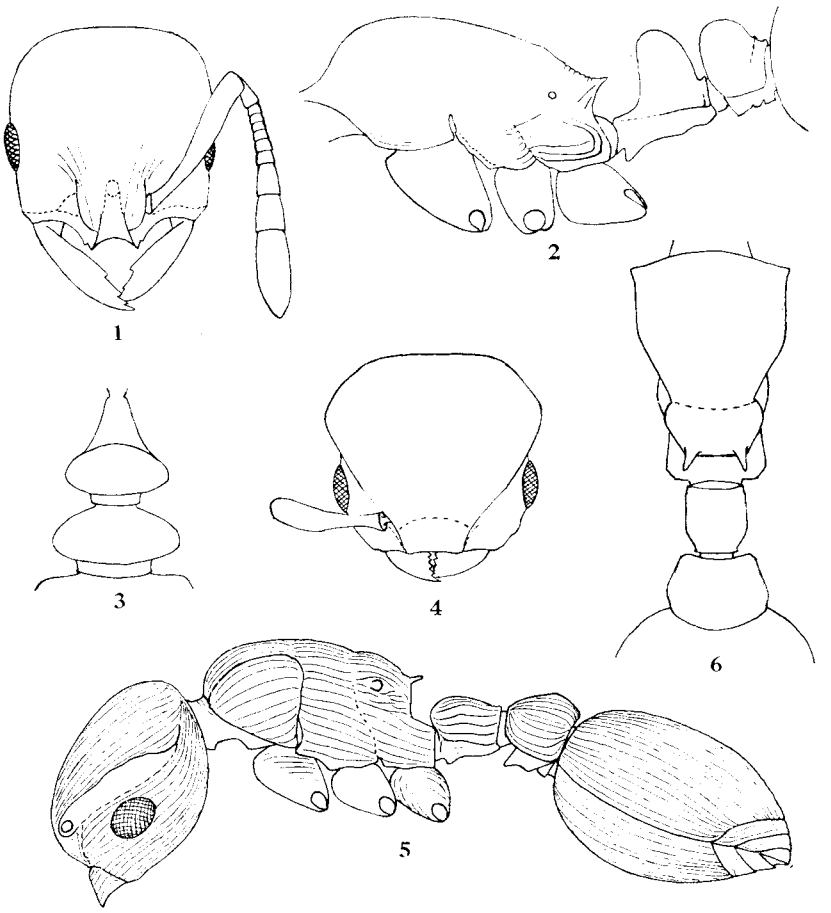
smooth. Scutum smooth with heavier piligerous punctulae; scutellum entirely smooth. Basal face of epinotum transversely costate, with 8-10 costae which continue downward and obliquely forward on sides. Mesopleura smooth and shining. Epinotal spines short but pointed. Subpetiolar tooth with a small foliaceous lobe. Both petiolar and postpetiolar nodes strongly compressed anteroposteriorly, resembling scales with rounded peaks. Wings unknown.

Oxyepoecus turgidus sp. n.

(Figs. 1-3)

Worker (holotype). — Total length 2.6 (2.5-2.7) mm; head length 0.57 (0.53-0.59) mm; head width 0.51 (0.46-0.53) mm; scape length 0.41 (0.35-0.42) mm; maximum diameter of eyes 0.13 (0.12-0.15) mm; thorax length 0.77 (0.68-0.81) mm; maximum width of thorax 0.41 (0.38-0.43) mm; petiole width 0.27 (0.22-0.27) mm; postpetiole width 0.32 (0.27-0.32) mm; hind femur length 0.51 (0.43-0.51) mm. Chestnut brown; gaster black; mandibles, scapes and legs yellowish brown; occiput infuscated. Integument smooth and shining. Hairs abundant, erect on body, oblique on mandibles, antennae and legs; fine pubescence present only on antennal club, coxae and tarsites.

Head as shown in Fig. 1. Mandibles sublinear, strikingly elongate, basal border much longer than chewing border, basal tooth separated from remaining 3 teeth by a broad diastema. Median apron of clypeus projecting foreward between two strong carinae, forming anteriorly a pointed tooth, flanked laterally and below by another smaller denticle. Frontal area impressed, indistinctly delimited. Frontal carinae short, moderately expanded laterad, terminating at level of anterior orbit of eyes, bearing dorsally a few fine costulae which curve laterally above eyes; maximum width between outer edges of frontal carinae at least onde third of maximum head width. Cheeks longitudinally striate in front and above eyes. The latter comparatively large, moderately convex, with about 10 facets across the greatest diameter, the total number of ommatidia being about 50. Antennal scape not quite reaching occipital corner when laid back over the head. Funicular segment I longer than VIII and XI, as long as II-V combined; segments II-VII decidedly transverse, X longer than VIII and IX combined, the latter two subequal in length.



Oxyepoecus turgidus sp. n., worker: Fig. 1. Head. Fig. 2. Thorax and pedicel in sideview. Fig. 3. Pedicel in dorsal view. — *Procryptocerus lenkoi* sp. n., worker: Fig. 4. Head. Fig. 5. Thorax and pedicel in sideview. Fig. 6. Thorax and pedicel in dorsal view. (Kempf *del.*)

Thorax as shown in Fig. 2, stout and heavy-set. Promesonotum continuously vaulted in both directions, immarginate in front and on the sides; shoulders completely rounded, not angular nor subdentate. Inferior angle of pronotum obtuse and rounded. Mesoepinotal groove scarcely to not at all impressed; no mesoepinotal suture present. Basal face of epinotum transversely costulate, the 10 or more costae fine, fading out on sides of epinotum; the last costa between the comparatively prominent epinotal spines stronger, separating the basal from the declivous face; the latter smooth and shining and laterally marginate. Metasternal lobes rounded. Sides of thorax on postero-inferior corner with a few strong costulae, curved around the bulla of the metasternal gland; mesopleura also with a narrow band of short, faint, horizontal costulae along posterior border.

Petiole (Figs. 2 and 3) strongly pedunculate, node high and rounded, antero-posteriorly compressed, scalelike, nearly as broad as postpetiole; subpetiolar process pointed and toothlike. Postpetiole very broad, scalelike, not as high as petiole, its posterior face with a few faint transverse costulae. Gaster smooth and shining.

Types. — 7 workers, as follows: Brasil, São Paulo State: Agudos, Fazenda Santo Antônio, September 23, 1954, W. W. Kempf leg. 1 worker (holotype) (WWK); same locality and collector, January 25, 1953, 1 worker (paratype) (WW 740). Goiás State: Anápolis, savanna near the Franciscan minor seminary, January 2 and 7, 1966 and March 18, 1964, W. W. Kempf leg. 5 workers (paratypes) (WWK 4215, 4225, 4300, 3852).

Variation. — The Goiás specimens are always darker with the head capsule nearly black. They also have the petiolar scale more compressed and slightly more attenuate at apex in sideview. Transverse costulae on epinotum quite variable in number and strength; when stronger, they continue also for a short distance obliquely downward and foreward on sides of epinotum.

Discussion. — This heavy-set species is striking by its elongate, linear mandibles, which it shares only with *vezenyii*. It differs from the latter in the slightly broader head, the more expanded frontal carinae which cover over one third of head width, the much larger eyes with over 50 ommatidia, the lack of margination in front and on sides of promesonotum, the lack of a marked humeral angle, the lack of costulae on promesonotum, the reduction of the same on sides of thorax, the stronger and pointed epinotal spines, the dentate not lobate subpetiolar process.

Biology. — Several of the Goiás specimens were taken with *Pheidole schwarzmaieri* and *claviscapa,* although the definite association of *turgidus* with these *Pheidole* spp. was not actually observed in nature. They could have been strays accidentally mixed up with the *Pheidole* during capture. Kusnezov's (1952: 718) hypothesis stating that all *Oxyepoecus* species are obligatory inquilines in the nest of other ant species, preferably *Pheidole* spp., although probable, still lacks conclusive evidence.

Carebarella bicolor Emery

Carebarella bicolor Emery, 1905, Bull. Soc. Ent. Ital. 37: 138-9 (Female; Argentina, Misiones: S. Ana). — Borgmeier, 1948, Rev. de Ent. 19: 465-8, figs. 5-15 (Worker, female, male; Argentina, Tucumán: S. Ramón). — Ettershank, 1966, Aust. J. Zool. 14: 113-4, figs. 62, 63 (Worker).
Carebarella bicolor punctatorugosa Emery, 1905, Bull. Soc. Ent. Ital. 37: 139 nota 1, fig. 18 (Female; Brasil, Guanabara: Rio de Janeiro). — Eidmann, 1936, Arb. phys. angew. Ent. Berlin 3: 43-4, fig. 2 a-c (Worker; Brasil, Rio de Janeiro: Mendes; Biol.). — Borgmeier, 1937, Arch. Inst. Biol. Veget. Rio de Janeiro 3: 235-6, Pl. 2, fig. 1 (Female; Brasil, Guanabara: Rio de Janeiro; São Paulo: Peruíbe; Biol.). — NOV. SYN.
Carebarella punctatorugosa: Ettershank, 1966, Aust. J. Zool. 14: 115, fig. 64 Female).

The problem of the validity of *punctatorugosa,* originally described as a subspecies of *bicolor,* has been given opposite solutions by different authors. Whereas Borgmeier, although not taking any formal action in this matter, was inclined to regard it as a synonym, Ettershank, to the contrary, gave it the rank of a full species, without further justification.

The differences in the female caste, as stated by Emery, consist in a slight divergence in the sculpture pattern of head and thorax, being simply striato-rugose in *bicolor* s. str., striato-rugose with interspersed larger punctulae that interrupt some of the costulae or rugae in *punctatorugosa.* According to the material at hand, *punctatorugosa* has also a slightly broader head. No characters are known for separating the workers of both forms. A lone male specimen, collected by H. Sick at Rio de Janeiro, represents the still unknown male of *punctatorugosa.* But, aside from a slightly higher petiolar node, it does not offer any tangible difference from *bicolor* males. Inasmuch as this species is still too poorly collected to permit a safe judgement about the limit of its infraspecific variability, the best solution, on hand of the presently available evidence, consists in considering *punctatorugosa* a synonym of *bicolor.*

New records. — Brasil, Paraná State: Caiobá, April 1965, F. Plaumann leg. 1 worker (WWK 5221); São Paulo State: Ilha dos Búzios, October 18, 1963, K. Lenko leg. several workers (DZSP 2995, WWK); Jacupiranga, November 1963, F. Plaumann leg. 3 workers (WWK 5273a); Guanabara State: Rio de Janeiro,

Santa Teresa, February 7, 1967, H. Sick leg. 1 female, 1 male (WWK 4621). Suriname, Maripaheuvel, September 1959, J. van der Drift leg. 1 worker (WWK). Costa Rica: San José, F. Nevermann leg. 1 worker (WWK).

Biology. — The ornithologist Dr. H. Sick has made a very interesting observation on the nuptial flight of this ant, giving me kindly the permission to publish his notes:

«Rio de Janeiro, GB, 7.II.1967, 7.30 morgens, sonnig, in meinem Garten in Santa Teresa, Rua Almirante Alexandrino, 133, fundos. Schwarm von 8-10 Weibchen fliegen in 3-5 m Hoehe ueberm Boden am Ort umher, nur wenige Zentimeter von der Stelle weichend, in staendigem leichtem Auf und Nieder, Hin und Her, immer in der Gruppe bleibend. Hin und wieder kommt ein Maennchen in schnellem Flug zu der Gruppe, fliegt ein paar mal an der Gruppe vorbei und durch sie hindurch, wobei es einen grossangelegten, raschen Zickzackflug beschreibt. Nach dem dritten oder vierten Ansteuern der Gruppe ergreift es ein Weibchen und beide fliegen im langsamen Flug des Weibchens in die naechste Bresche. Ein solches Paar liegt vor. Bevor mir dieser Fang gelang, beobachtete ich drei solcher «Angriffe» mit anschliessendem Abflug des Paares. Vor dem Fang war ich mir auch nicht sicher, ob der schnelle Zuflieger nicht ein Parasit waere. In 5 m Abstand eine zweite solche Gruppe. Etwa 40 Minuten, nachdem ich etwas von den Vorgaengen bemerkt hatte, verschwanden die Insekten. Es sei noch bemerkt, dass der frei gewordene Platz eines jeden geraubten Weibchens meist alsbald ausgefuellt wurde durch einzeln umherfliegende Weibchen, die sich dem Schwarm neu anschlossen».

Rogeria blanda (Fr. Smith)

Myrmica blanda Fr. Smith, 1858, Cat. Hym. Brit. Mus. 6: 131 (Worker; Brasil, Amazonas: Tefé).
Tetramorium? blandum: Mayr, 1886, Verh. Zool.-bot. Ges. Wien 36: 359.
Rogeria blanda: Emery, 1894, Bull. Soc. Ent. Ital. 26: 189. — Kempf, 1965, Rev. Brasil. Biol. 25: 185 (Guiana: Moraballi Creek, Essequibo River; Syn.).
Irogera foveata Kempf, 1964, Stud. Ent. 7: 64-5, figs. 19-20 (Worker; Brasil, Amazonas: Manaus).

The following record extends appreciably the territory of this poorly known species: Brasil, Mato Grosso State: Utiariti, Rio Papagaio, October 27, 1966, K. Lenko & F. S. Pereira leg. 1 worker (DZSP 4794).

Procryptocerus gibbosus Kempf

Procryptocerus gibbosus Kempf, 1949, Rev. de Ent. 20: 423-4, figs. 1-4 (Worker: Brasil, Espirito Santo: Santa Teresa). — Kempf, 1951, Rev. de Ent. 22: 105, figs. 7, 31, 46, 63 (Worker).

Heretofore known only from the two type specimens, this species was recently discovered in Rio de Janeiro, Sumaré, Guanabara State, Brasil, March 17, 1962, C. A. Campos Seabra leg. a nest with numerous workers (WWK).

Procryptocerus lenkoi sp. n.

(Figs. 4-6)

Worker (holotype). — Total length 4.4 (3.9) mm; head length 1.00 (0.92) mm; head width 1.05 (0.97) mm; maximum diameter of eyes 0.27 (0.24) mm; scape length 0.59 (0.54) mm; thorax length 1.24 (1.13) mm; hind femur length 0.70 (0.65) mm. Black; tip of mandibles, antennae, trochanters, base and tip of femora, tibiae and tarsi light yellowish to reddish brown. Basic sculpture of body consisting of regular, coarse, longitudinal costae which are practically smooth and shining; bottom of furrows between costae with very feeble and minute punctulae. Standing hairs relatively fine, silky, abundant on body and appendages, shorter than maximum diameter of eyes.

Head as shown in Figs. 4 and 5. Mandibles longitudinally costate. Clypeus longitudinally convex, anterior half perpendicular to dorsal face, with about 10 longitudinal costae; anterior border gently notched in the middle, with two transversely arched costae above the notch; posterior border and frontal area obsolete. Frontal carinae very feebly sinuous, diverging caudad, not covering the antennal socket in front, posteriorly curving mesad to join the broadly rounded, edentate occipital corner. Antennal scrobe smooth and shining. Cheeks regularly longitudinally costate. Occiput subtruncate, its upper border immarginate, not impressed in the middle. Upper surface of head, between frontal carinae, with about 24 longitudinal and parallel costae at its greatest width; the median costae continue without interruption on the occiput, where they diverge laterad either joining the occipital foramen or continuing foreward on sides of head and gular face; the lateral costae of vertex terminate at the occipital border. Eyes situated in front of middle of head length, gently and evenly convex. Antennal scape short, curved, somewhat depressed, finely reticulate-rugulose and subopaque.

Thorax as shown in Figs. 5 and 6. Shoulders angulate and subdentate. Lateral border of pronotum marginate, straight, promesonotal suture absent; dorsal portion gently convex in both directions, lateral portion flat. Mesonotum lacking a lateral projecting lobe or tooth. Mesoepinotal suture shown by a weak depression in the longitudinal costae. Basolateral lobe of basal face of epinotum broadly rounded and scarcely projecting; epinotal spines fingerlike, slightly upturned and diverging, much shorter than

length of basal face. Upper surface of thorax continuously longitudinally costate with 14 costae on pronotum, 12 on mesonotum, 10 on basal face of epinotum, 6 of them curving downwards on declivous face between the spines. Sides of pronotum with 10 horizontal costae; remaining part of sides of thorax likewise longitudinally and regularly costate without a deeply impressed horizontal furrow below the epinotal spiracle. Fore coxae transversely striate on lateral face, hind coxae obliquely costate on anterior and posterior face. Fore femora strongly incrassate, their posterior face strongly obliquely costate, with the intervals more distinctly punctate than elsewhere. Middle and hind coxae much thinner, finely and superficially reticulate but quite shining. Extensor face of tibiae not roughened, lacking coarse rugae, but finely reticulate-rugulose.

Petiole slightly longer than wide in dorsal view, its anterior truncate face transversely costulate, its upper face with about 7 longitudinal costae; an equal number seen in side-view. Postpetiole distinctly transverse, longitudinally costate, with about 12 costae seen in dorsal aspect. Tergum and sternum I of gaster longitudinally costate, with approximately 30 costae on tergum in dorsal view. Terga II-IV transversely rugose.

Female (paratypes). — Total length 5.0-5.2 mm; head length 1.00-1.08 mm; head width 1.02-1.08 mm; maximum diameter of eyes 0.30-0.32 mm; scape length 0.59-0.62 mm; thorax length 1.49-1.62 mm; fore wing length 4.3 mm. Quite similar to the worker with the usual caste differences. Ocelli small, lateral ones closer to anterior than to each other. Dorsum of pronotum with transversely arched costae. Scutum and scutellum flat, longitudinally costate, the former with 16, the latter with 10 costae. Epinotal spines minute to vestigial. Costae on posterior face of femora more or less vestigial. Wings subhyaline with a faint brownish tinge; veins light brown, pterostigma dark brown; venation as usual in the smaller species of the genus: the transverse median vein not interstitial but removed basad from basal vein and shorter than second abscissa of median vein.

Types. — 4 workers (holotype and paratypes) and 8 females (paratypes), taken by K. Lenko on February 17, 1962 at Barueri, São Paulo State, Brasil (DZSP 4439, WWK). An additional female (paratype) collected by F. Plaumann at Nova Teutônia, Santa Catarina State, Brasil, at an unknown date (WWK).

Discussion. — This beautiful new species is closest to *sampaioi* Forel from southeastern Brasil, but differs strikingly in the evenly convex eyes; the smooth, shining and regular costae of head and thorax; the bluntly marginate occiput; the regularly costate cheeks; the flat, not excavate, sides of meso- and metathorax; the feeble lateral epinotal lobes; the short epinotal spines; the completely costate declivous face of epinotum; the transversely costulate anterior face of petiole; the costate posterior face of fore femora and both sides of hind coxae; the fine, silky hair.

In my key (Kempf, 1951: 19-22) the worker runs to couplet 20, disagreeing with either lug: as regards *sampaioi* in the aforementioned characters, as regards *ferreri* Forel in the regular, longitudinal costae of head and thorax, the costate cheeks, the sculpture of occiput, the short epinotal spines.

All specimens seen are essentially alike, none of the paratypes showing a discrepant feature. The holotype worker is largest, the measurements for the smallest worker are given in parentheses in the above description.

I take great pleasure in naming this species after its collector, my friend and fellow myrmecologist Karol Lenko.

Paracryptocerus borgmeieri Kempf

Workers and a dealate female, taken by K. Lenko in June 1964 at Fazenda Yamaguti, Córrego da Onça, Município Três Lagôas, Mato Grosso State, Brasil (DZSP 3790, WWK) make a significant record for the distribution of this species, since the new locality is the easternmost extension of its range, and places it in reach of São Paulo State, where it may be expected to occur.

Emery (1890: 73, Pl. 8, fig.), under the name of *pavonii*, has pictured the female of this species, which is still undescribed:

Female. — Total length 9.6 mm; head length 2.13 mm; head width (eyes included) 2.50 mm; scape length 0.70 mm; maximum diameter of eyes 0.51 mm; thorax length 2.81 mm; maximum width of thorax 2.50 mm; petiole width 0.97 mm; postpetiole width 1.08 mm. Very close to *depressus* with the following differences: frontal carinae concolorous with rest of head; occipital corners more distinctly obliquely truncate and bidentate; occiput truncate in the middle, indistinctly marginate above the truncation, bearing on vertex, just behind the ocelli a pair of small to vestigial teeth; scapular spine stronger, more protruding, pointing obliquely laterad and cephalad; laterotergite of pronotum mostly without impressed foveolae and appressed scalelike hairs, except on anterior margin; petiole in dorsal view broader, its sides obliquely diverging caudad, the lateral spines pointing obliquely laterad and caudad; postpetiole with longer and somewhat more delicate spines.

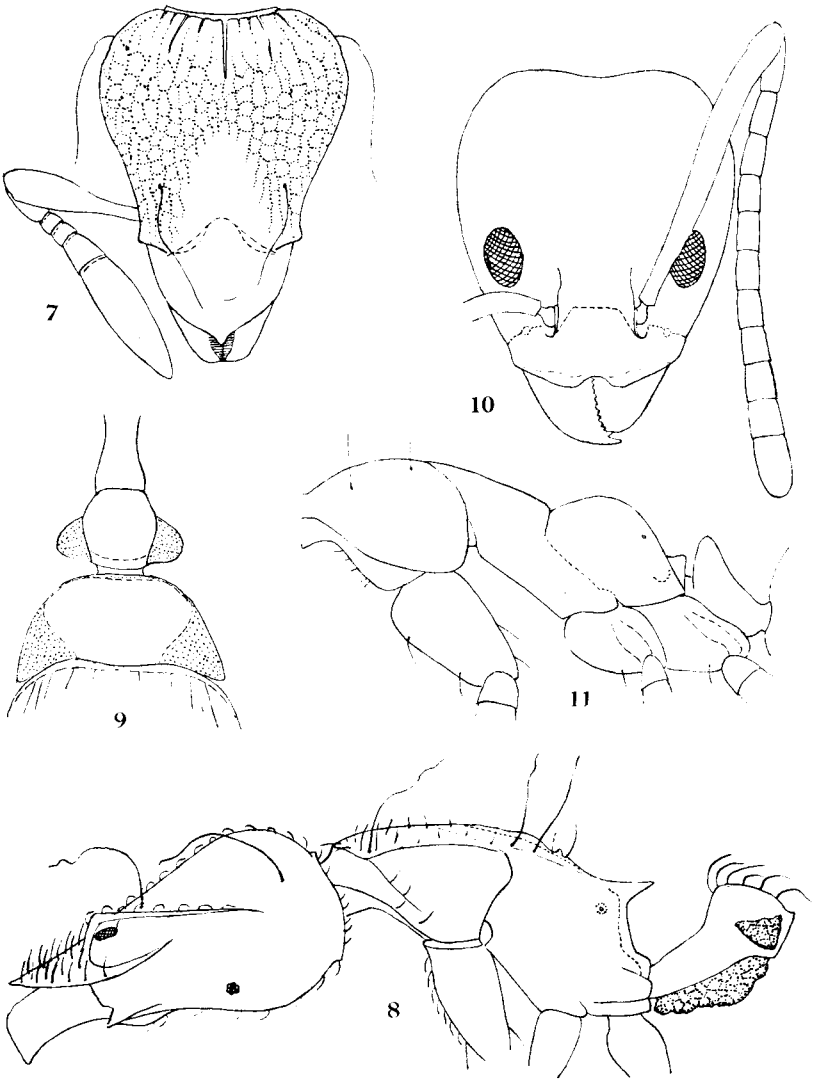
A stray female, dealate, from Fazenda Cachoeirinha, Jataí, Goiás State, Brasil, taken by Lenko on November 29, 1962, likewise belongs to the present species (WWK).

Codiomyrmex reticeps sp. n.

(Figs. 7-9)

Worker (holotype). — Total length 2.8 mm; head length 0.55 mm; head width 0.40 mm (cephalic index 73); scape length 0.27 mm; funiculus length 0.40 mm; maximum diameter of eyes 0.05 mm; Weber's length of thorax 0.53 mm; maximum width of thorax 0.25 mm; hind femur length 0.33 mm; petiole width 0.20 mm; postpetiole width 0.33 mm. Brown; head blackish ferruginous; mandibles, funiculi, legs light brown; spongiform appendages of petiole and postpetiole pale yellowish. Integument smooth and shining, with the following exceptions: head except clypeus and front, scapes, «neck» of thorax, mesonotum and basal face of epinotum in part, inferior border of sides of thorax, coxae and femora, petiole finely reticulate-punctate and subopaque; sculptured portions of head above and below covered with larger meshes of intertwining coarser rugae.

Head as shown in Figs. 7 and 8, not conspicuously depressed, quite convex in both directions on vertex and gular face. Mandibles little protruding beyond tip of clypeus, finely and superficially punctate, longitudinally strongly convex, the apical part of the chewing border perpendicular to the cephalic dorsum; chewing border roughly with the same type of dentition as in the species of *Gymnomyrmex*, i. e. beset with crowded, fine teeth which become shorter and more indistinct toward apex; basal lamella not seen (no dissection was made). Clypeus with oblique, gently convex and anteriorly converging sides, terminating in front in a distinct tooth. Frontal lobes raised above the posterior clypeal border; frontal carinae sharply edged but not membranaceous, fading out before reaching the occipital corner; underlying scrobe deeply excavate, inferiorly immarginate, slightly shorter than antennal scape, fading out gradually caudad. Occipital lobes rounded, immarginate above and below. Occipital border with a low, raised carinule, sending out foreward, lengthwise across vertex, a few stronger ridges that blend into the meshed rugae of cephalic dorsum, the median ridge being longest and strongest. Cheeks inferiorly immarginate, except for a short distance in front, just behind the toothlike inferior corner of head capsule.



Codiomyrmex reticeps sp. n., worker: Fig. 7. Head in dorsal view. Fig. 8. Head, thorax and petiole in sideview. Fig. 9. Pedicel in dorsal view. — *Iridomyrmex aspidocoptus* sp. n., worker: Fig. 10. Head. Fig. 11. Thorax and petiole in sideview. (Kempf *del.*)

Eyes very small, consisting of less than 10 ommatidia. Antennal scape club-shaped, funicular segments in length proportion, from base to apex, as follows: 3 : 1 : 1 : 3 : 8; segment V as long as I-IV combined.

Thorax as shown in Fig. 8. Pronotum marginate in front and on sides, its disc quite flat, traversed by a few faint, widely spaced, longitudinal ridges; shoulders obtusely angulate. Promesonotal suture obsolete. Mesonotum with a raised sagittal carinule, continuing caudad for a short distance on basal face of epinotum, and a pair of lateral, feebler carinules, diverging caudad; free sides of mesonotum and basal face of epinotum with a slightly crenulate, low carinule. Mesoepinotal junction marked by a transverse carinule, forming a small tooth at the intersection with the median mesonotal carinule. Basal face of epinotum slightly longer than its smallest width. Epinotal spines relatively long, very little raised and little diverging apicad. Infradental lamellae distinct, flanking the smooth declivous face along its entire length.

Pedicel as shown in Figs. 8 and 9. Petiole strongly pedunculate, with a distinctly set-off node, the dorsum of which is slightly longer than broad, faintly reticulate-rugose, submarginate on anterior border that forms the peak. Lateral spongiform appendages hemispherical in dorsal view, subpetiolar spongiform crest well developed. Postpetiole proper distinctly broader than long, sides strongly convex, posteriorly very much constricted in dorsal view; anterior spongiform border very low and inconspicuous, postero-lateral appendages subtriangular, pointing obliquely caudad. Inferior spongiform appendages normally developed. Dorsal disc gently and evenly convex in both directions. Tergum I of gaster with the costumary narrow anterior lamellate margin and very short basal costulae, about 5 to each side, distributed as shown in Fig. 9. Pad of spongiform hairs on base of sternum I moderately developed.

Ground pilosity of recurved or oblique, fine hairs abundant on head; variable in length, often erect or suberect on dorsum of thorax; still longer and a bit more flexuous on petiolar node and disc of postpetiole, variable but sparse on gaster. Hairs on scapes and on legs subdecumbent, shorter on the former, longer on the latter. Leading edge of scape with shorter, recurved, fine hairs. Clypeus with dense, erect stiffer hairs, slightly slanted caudad. Long flagellate hairs on top of frontal carinae and laterally on occipital lobes of head; three pairs on thorax, one on

shoulders, two on mesonotum (Pilosity partly shown in Figs. 7 and 8).

Type. — Brasil, São Paulo State: Salesópolis, Boracéia Biological Experiment Station, March 5, 1962, K. Lenko leg. 1 worker (holotype) (WWK).

Discussion. — Although this species bears some resemblance with the group of *Gymnomyrmex,* its sculptured head and abundant hairs place it into genus *Codiomyrmex,* as defined by Brown (1953: 20-1). It differs from the only other Neotropical species in the genus, *thaxteri* Wheeler, from Trinidad, in the following characters:

Mandibles very little protruding beyond tip of clypeus. Head decidedly longer and narrower, its sides distinctly converging anteriorly. Clypeus apically pointed or dentate, not concave, but smooth and shining. Epinotal spines much shorter. Petiolar node with the lateral spongiform appendages well-developed. Long, flagellate hairs present on head and thorax.

Subfamily Dolichoderinae

Dolichoderus Lund

Taken in the restricted sense, according to Brown's (1950: 249) suggestion, the genus *Dolichoderus* becomes a homogeneous yet very small group of relatively large-sized ants, confined to South America. Presently, the genus includes 7 species and 3 named infraspecific variants. Its taxonomic status, however, is far from satisfactory; the group is ripe for a full-fledged revision. As a preliminary step toward this end, I deal in the following with the distribution of the better known forms, introduce a few taxonomic changes, and point out several cases of presumptive synonymy. A provisional key to the securely valid species in the genus is given at the end.

Dolichoderus attelaboides (Fabricius)

Dolichoderus attelaboides var. *pulla* Santschi, 1923, Rev. Suisse Zool. 30: 269 (Worker; Brasil, Minas Gerais: "Piracicabo"). — NOV. SYN.

This is the best known species of the genus, with numerous references in the existing literature. The territory of *attelaboides* covers Trinidad and the Guianas, the Amazon basin (Brasil, Peru, Bolivia) and a narrow strip along the coast of eastern Brasil between Pernambuco and Santa Catarina States, with an inward extension that includes the northern half of Minas Gerais. According to the evidence at hand, there is a gap between the Guiana-Amazonia and the eastern Brasil areas. However, it is

quite possible that *attelaboides* does occur in the hitherto poorly collected states of Maranhão, northeastern Brasil and northern Goiás, thus bridging the existing hiatus between the two areas.

The variety *pulla* Santschi, from «Piracicabo» (= Pirapora?), Minas Gerais State, Brasil, a mere insignificant color variant, is certainly a synonym of the typical form. I have examined a syntype of *pulla* in my collection (WWK).

Furthermore, two species that share with *atellaboides* the unique feature of having the occiput drawn out into a narrow, tubular «neck», *viz. rosenbergi* Forel from Ecuador and *imbecillus* Mann (with var. *heterogaster* Santschi) from Amazonas State, Brasil, distinguished from *attelaboides* mainly by the more or less extensive smoothness of gastric terga and sterna, may possibly end up as synonyms of the latter.

Dolichoderus decollatus Fr. Smith

A close relative of the preceding, but lacking the drawn-out tubular occiput, *decollatus* shares with *attelaboides* the same territory with the following exception: in eastern Brasil it has not as yet been found south of Bahia State. Since references in the literature are relatively scarce, I give here the localities of the pertinent material in my collection (WWK):

Material examined. — Peru, Valle Chanchamayo, Jan. 1955, W. Weyrauch leg. — Brasil, Amapá Territory: Serra do Navio, Aug. 1959, R. Bicelli leg.; Pará State: Belém, May 1966, I. B. de Almeida leg., Alto do Paru and Cachoeira do Bréu, Oct. Nov. 1928, A. J. de Sampaio leg., Ananindeua, Sept. 1949, J. C. Oliveira leg., Serra do Cachimbo, Sept. 1953, H. Sick leg.; Amazonas State: Lower Rio Negro, July 1924, coll. unknown; Manaus, Sept. 1962, K. Lenko leg.; Acre Territory: Cruzeiro do Sul, Dec. 1963, L. Herbst leg.; Mato Grosso State: between Aripuanã and Juruena rivers, Oct. 1967, C. Amann leg.; Utiariti, Aug. 1961, K. Lenko leg.; Goiás State: Ilha do Bananal, Sept. 1927, E. Snethlage leg.; Pernambuco State: Tapera, B. Pickel leg.; Bahia State: Uruçuca, May 1943, P. Silva leg.

Note. — *Dolichoderus capitatus* Santschi, based on a lone worker from French Guiana, according to the description is a very close relative of *decollatus*. Its status depends from a thorough investigation of the striking variability of *decollatus*.

Dolichoderus neglectus Menozzi, n. stat.

Dolichoderus decollatus neglectus Menozzi, 1935, Redia 21: 197-9, fig. 3 B (Worker, female; Guiana: Canal Demerara River, Baboo Camp, Haimara Camp; Peru: Pachitea; Bolivia: Songo, Coroico).

This form, distinguished from *decollatus* by the erect epinotal spines, forming a very obtuse angle of 150-180 with the declivous face, and by the petiolar scale which is twice as high as the thickness of the pedicel in front, deserves specific standing, since it occurs side by side with the typical *decollatus,* without showing intergradation.

Material examined. — Peru, Valle Chanchamayo, 1949 and Jan. 1955, W. Weyrauch leg. 2 workers. Brasil, Acre Territory: Cruzeiro do Sul, Dec. 1963, L. Herbst leg. 1 worker, Porto Valter, Oct. 1961, L. Herbst leg. 2 workers; Vila Taumaturgo, Febr. 1962, L. Herbst leg. 3 workers (WWK).

It is interesting to note that so far this form has been collected in two widely separated areas, the Guianas and on the other extreme the region including western Peru, the brasilian Acre Territory and north-western Bolivia.

Dolichoderus imitator Emery

The smallest species of the group was heretofore known only from Pará and Rondônia, Brasil and Coroico in Bolivia. Material accumulated in my collection over the years show that is much more common and widespread.

Material examined. — Brasil, Pará State: Belém, Aug. 1962, K. Lenko leg. (DZSP 2227), Canindé, Rio Gurupi, Febr. 1966, B. Malkin leg. (WWK), Cachoeira do Bréu, Oct. 1928, A. J. de Sampaio leg. (WWK); Amazonas State: Manaus, Nov. 1953 and Aug.-Sept. 1962, C. R. Gonçalves and K. Lenko leg. (WWK, DZSP 2267, 2638), Benjamim Constant, Sept. 1962, W. L. Brown, Jr. leg. (BC-79); Rondônia Territory: Rio Jamarí, São Pedro, July 1960, O. P. Forattini leg. (WWK 3537); Mato Grosso State: Utiariti, July 1961 and Nov. 1966, K. Lenko leg. (DZSP 1559, 4821); Goiás State: Jataí, Fazenda Cachoeirinha, Oct. 1962, K. Lenko leg. (DZSP 2727, 4887).

Dolichoderus rugosus (Fr. Smith)

An imposing and easily recognized species, *rugosus* has been found in the Guianas, middle and upper Amazon river valley, and strangely enough near Quito in Ecuador. In my collection, it is represented by the following material:

Brasil, Acre Territory, Feijó, Dec. 1956, W. Bokermann leg.; Amazonas State: Uaupés (S. Gabriel), Aug. 1927. J. F. Zikán leg.; Manaus, Nov. 1953, C. R. Gonçalves leg.; Ponta Negra, Sept. 1962, W. L. Brown, Jr. leg., Tefé, 1921, P. Tastevin leg.; Pará State: Jacarèacanga, Oct. 1959, M. Alvarenga leg. — Peru, Rio Putumayo: Umbria, coll. unknown (WWK).

Key to the species of Dolichoderus for workers

1. Occiput drawn out into a long tubular neck 2
— Occiput without a tubular neck, at most with a very low collar encircling the occipital foramen 4
2. Integument of gaster opaque, densely and finely reticulate-punctate... *attelaboides* (Fabricius)
— Integument of gaster smooth and shining, at least in part 3
3. Gaster completely smooth and shining ..... *rosenbergi* Forel
— Gaster finely and superficially punctate but shining, especially on sides ..... *imbecillus* Mann and var. *heterogaster* Santschi
4. Funicular segments IX and X of antennae combined subequal in length to segment I; antennal scapes shorter, surpassing the occipital border by less than half of their total length 5
— Funicular segments IX and X of antennae combined distinctly longer than segment I; antennal scapes longer, surpassing the occipital border by at least half of their total length 6
5. Epinotal spines, in sideview, distinctly inclined caudad, forming nearly a right angle with the declivous face; scale of petiole low, its height above the peduncle equal to the depth of the latter ..... *decollatus* Smith (? *capitatus* Santschi)
— Epinotal spines, in sideview, suberect, little inclined caudad, their posterior face subcontinuous with the declivous face of epinotum, forming either a straight line or a shallow arc; scale of petiole proper about twice as high as the depth of the preceding peduncle... *neglectus* Menozzi
6. Epinotal spines very short, dentiform; peak of petiolar scale bidentate; anterior border of mesopleura with a low and rudimentary tooth .... *imitator* Emery
— Epinotal spines very long; peak of petiolar scale without teeth; anterior border of mesopleura with a long and thin spine ..... *rugosus* (Smith)

Monacis lobicornis Kempf

Monacis lobicornis Kempf, 1959, Stud. Ent. N. S. 2: 267, Pl. 1, fig. 10, Pl. 2, fig. 13 (Worker; Brasil, Santa Catarina: Blumenau; Goiás: Anápolis).

We have now three more records for this interesting species, which show that it is not too infrequent and rather widespread: Brasil, Guanabara State: Floresta da Tijuca (Rio de Janeiro), Febr. 1960, C. A. C. Seabra leg. 1 female (WWK); São Paulo State: Boa Esperança do Sul, Fazenda Itaquerê, Aug. 1965, K. Lenko leg. several workers (DZSP 4346); Mato Grosso State: Utiariti, Rio Papagaio, Oct. 1966, K. Lenko & F. S. Pereira leg. 1 female (DZSP 4487).

Hypoclinea ghilianii (Emery)

Dolichoderus (Hypoclinea) ghilianii Emery, 1894, Bull. Soc. Ent. Ital. 26: 238-9, pl. 1, fig. 15 (Worker; Brasil, Pará: Mato Grosso). — Mann, 1916, Bull. Mus. Comp. Zool. Harvard 60: 465-6, pl. 3, fig. 19 (Worker; Brasil, Amazonas: Itacoatiara).

New records: Peru: Callanga (Staudinger) (WWK). Brasil, Mato Grosso State: Barra do Tapirapé, Dec. 1960, B. Malkin leg. (DZSP 1319, 1358, 1365, 1391; WWK), Corumbá, Serra do Urucum, Nov. 1960, K. Lenko leg. (DZSP 1241; WWK), Três Lagoas, Fazenda Beija-Flôr, May 1964, K. Lenko leg. (DZSP 3318; WWK); São Paulo State: Tabatinga, Fazenda Itaquerê, June 1965, K. Lenko leg. (DZSP 4335).

All specimens taken by Lenko were strays captured from trees and shrubs by means of umbrella-collecting.

Hypoclinea luederwaldti (Santschi)

Dolichoderus (Hypoclinea) luederwaldti Santschi, 1921, Bull. Soc. Vaud. Sc. Nat. 54: 100-1 (Worker; Brasil, São Paulo: Salto Grande).

This species, described upon a lone worker from the interior of São Paulo State, has long defied redescovery, in spite of diligent search. Only recently, on February 14, 1969, while on an entomological excursion at Fazenda Barreiro Rico, Mun. Anhembi, São Paulo State, Brasil, about 200 km east of the type locality, I managed to collect 9 workers on a freshly felled three in the primary forest (WWK 5615).

Iridomyrmex leucomelas Emery

Iridomyrmex leucomelas Emery *in:* H. v. Jhering, 1894, Berl. Ent. Zeitschr. 39: 378-9, nota 1 (Worker, female; Brasil: Rio Grande do Sul; Santa Catarina, Rio de Janeiro). — Forel, 1908, Verh. zool.-bot. Ges. Wien 58: 394 (Brasil: São Paulo). — Luederwaldt, 1918, Rev. Mus. Paulista 10: 47 (Brasil, São Paulo: Alto da Serra, Salto Grande). — Luederwaldt, 1926, Rev. Mus. Paulista 14: 287 (Biol.).

This is an easily recognizable species among the Neotropical forms in genus *Iridomyrmex,* on account of its striking yellowish white color with brownish black head, mesopleura and sides and bottom of gaster, much as in *Tapinoma atriceps.* The fore coxae are either light yellow or infuscated, a variable condition. Material in my collection, listed below, shows that this species is widespread in southeastern Brasil, occurring from Rio Grande do Sul to Minas Gerais and Rio de Janeiro States.

Specimens examined. — Brasil, Rio Grande do Sul State: Erechim, Campinas, Dec. 1954, G. Mazurana leg. 1 worker (WWK); Santa Catarina State: Ibirama (ex-Hamônia), H. Luederwaldt leg. 1 worker (WWK, ex DZSP, old collection n. 15.501), Lança, Jan. 1956, R. Mueller leg. 1 worker (WWK). — Paraná State: Rio Azul, Oct. 1959, F. Plaumann leg. 2 workers (WWK 3187). São Paulo State: Agudos, Aug. and Sept. 1958, R. Mueller leg. 21 workers (WWK 2583, 2614, 2681), Barueri, Febr. 1959, K. Lenko leg. 8 workers (DZSP 848), Guaratinguetá, Nov. 1958, W. W. Kempf leg. 5 workers (WWK 2804); Ilha dos Búzios, Oct. 1963 and April 1964, K. Lenko leg. 12 workers, 1 female (DZSP 2966, 2984, 4120; WWK), Salesópolis: Est. Biol. Boracéia, March 1962, K. Lenko leg. 3 workers (DZSP 4192; WWK), São Paulo: Serra Cantareira, July 1958, K. Lenko leg. 8 workers, 1 female (DZSP 632; WWK), São Sebastião: Barra de Una, July 1961, K. Lenko leg. 4 workers (DZSP 1507; WWK); Minas Gerais State: Serra Caraça, Engenho, Nov. 1961, K. Lenko leg. 13 workers (DZSP 3108, 3913; WWK).

According to Luederwaldt (1926: 287) and field observations by Lenko and myself, this species preferably nests in trees, having been found under bark, also in cavities of bamboo, gourd trees, and arboreal ferns.

In the original diagnosis, Emery mentions that the specimens examined from Rio de Janeiro were slightly larger and had the thorax completely yellow, without any infuscation. They appear to belong to a closely related yet seemingly distinct form of which the original description is given below.

Iridomyrmex aspidocoptus sp. n.

(Figs. 10, 11)

Iridomyrmex leucomelas Menozzi, 1926 (*nec* Emery, 1894), Zool. Anz. 69: 68 (Brasil, São Paulo State: Moji das Cruzes).

Worker (holotype). — Total length 3.2 mm; head length 0.73 (0.70) mm; head width 0.68 (0.62) mm; scape length 0.72 (0.70) mm; maximum diameter of eyes 0.15 (0.14) mm; thorax length 1.00 (0.95) mm; hind femur length 0.81 (0.76) mm. Pale yellowish brown; head, sides of gastric terga and the entire gastric sterna fuscous brown; mandibles, anterior portion of clypeus and base of frontal carinae light brown; chewing border of mandibles with teeth chestnut brown; no fuscous markings on sides of thorax. Integument densely punctulate, subopaque; dorsum of head reticulate-punctate, opaque; mandibles and clypeus with the punctulae less conspicuous and quite shining. Erect hairs extremely scarce: one pair on clypeus, one pair on front, two pairs on pronotum (the posterior pair shorter than the anterior); several long hairs on fore coxae, one hair on mid and hind coxae; scattered but shorter hairs on posterior border of tergum I of gaster and on the remaining terga. Pubescence quite conspicuous, rather long, especially on dorsum of head and terga of gaster.

Head as shown in Fig. 10. Chewing border of mandibles with a strong apical and a somewhat smaller preapical tooth, the rest finely and rather narrowly notched in the middle. Scape nearly as long as head capsule, surpassing the occipital border by a distance which distinctly exceeds the length of the first funicular segment. Eyes rather flat with about 10 ommatidia across the greatest diameter.

Thorax as shown in Fig. 11; less strongly compressed from side to side than in *leucomelas;* pronotum distinctly broader than its sagittal length, neck excluded; mesonotum without a saddle-shaped impression. Metanotal groove impressed. Scale of petiole dorsally bluntly pointed, its lateral borders obtuse, slightly inclined foreward.

Types. — 4 workers, as follows: Brasil, São Paulo State: Moji das Cruzes, 1926, K. Escherich leg. 1 worker (holotype; WWK, more specimens presumably in the Menozzi and Eidmann collections), Mun. Iporanga, Nov. 1, 1961, K. Lenko & H. Reichardt leg. 3 workers (paratypes; WWK, more specimens in DZSP 2463).

Discussion. — For a long time I had separated this form in my collection, but hesitated to describe it on account of its close similarity with *leucomelas*. Although the material is very scant, there seems to be a consistent difference between both species. The major diagnostic features for *aspidocoptus* are the deeply excised or notched clypeus, and the lack of infuscation on the thoracic mesopleura, the thorax being concolorous. In addition, as compared with *leucomelas, aspidocoptus* is stouter, a bit larger in size, lacking standing hairs on vertex, having instead two pairs of erect setae on the pronotum. The pubescence is likewise stronger, although this is hard to express for diagnostic purpose.

To this species seem to belong the specimens from Rio de Janeiro, mentioned by Emery (1894) in the original diagnosis of *leucomelas*, and already referred to above.

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