

REPORT ON NEOTROPICAL DACETINE ANT STUDIES (Hymenoptera: Formicidae)¹

WALTER W. KEMPF, O. F. M.
Convento S. Francisco, São Paulo

(With 12 text-figures)

Since W. L. Brown, Jr. started in the middle of the forties the taxonomic revision of the World fauna of the ant tribe Dacetini, this agglomerate of numerous genera and species became again a manageable unit within the subfamily Myrmicinae, and the roster of new forms was noticeably increased. For the Neotropical region alone nearly 50 new species have since been described. The discovery of such new species is a result not only of a more thorough analysis of the pertinent material accumulated in the collections — an automatic consequence of nearly any revision —, but also of a more systematic search for these insects by using specialized collecting techniques such as the Berlese funnel.

The present study follows the wake of this endeavor by offering the description of four species new to science, the first diagnosis of a still unknown caste of two already known species, and significant new locality records for several other species.

I am greatly indebted to my friend and colleague Professor W. L. Brown, Jr. of Cornell University, Ithaca, New York, for

letting me describe and name the new forms and supplying part of the specimens for which a new locality record is given. The remaining material was received as a gift from the following collectors: Col. M. Alvarenga, Rio de Janeiro, Brazil; Mr. Karol Lenko, Instituto Biológico de São Paulo, Brazil; Mr. Fritz Plaumann, Nova Teutônia, S. C., Brazil; Dr. C. W. Rettenmeyer, University of Connecticut, Storrs, Conn., U. S. A.; Mr. J. A. Winder, CSIRO Biological Control Station, Curitiba, Paraná, Brazil, to all of whom I am very grateful. The work was performed under a fellowship of the "Conselho Nacional de Pesquisas" of Brazil (Proc. 6836/68) with equipment donated by the "Fundação de Amparo à Pesquisa do Estado São Paulo" (Proc. 71/543).

In citing measurements and proportions the definitions used in Brown's work on dacetine ants (cf. Brown, 1962: 254) and already standard in the taxonomy of the tribe have been followed.

Most of the specimens dealt with here are in my private collection (WWK), others belong to the collections of the Museum of Comparative Zoology at Harvard University (MCZ), and of the "Museu de Zoologia da Universidade de São Paulo" (MZUSP).

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Acanthognathus lentus Mann

Acanthognathus lentus Mann, 1922: 34-35, fig. 16 (worker, female; Honduras: Progreso). Brown & Kempf, 1969: 95, 108.

New locality record: BRAZIL, *Ama-zonas State*: Reserva Ducke, Mun. Manaus, June 9, 1972, W. L. & Doris E. Brown legg. workers (MCZ, WWK).

These are the first specimens referable to this form since the types were collected. They conform to the key characters established in Brown & Kempf's revision (1969: 95, 108), and are even more different from *ocellatus* by having the entire cephalic dorsum sculptured almost as in *rudis*, lacking the smooth strip bordering each eye mesially. The critical measurements and indices of the only specimen seen are as follows: Head length 0.85 mm; head width 0.59 mm; cephalic index 69; mandible length 0.73 mm; mandibular index (mandible length/head length x 100) 86; scape length 0.73 mm; scpa index (scape length/head width x 100) 125; scape-mandibular index (scape length/mandible length) 100. As it happens in the case of the types of *lentus*, also the measurements of the present specimen fall within the range of those of *ocellatus*, whereas the sculpture brings it very close to *rudis*. Only more material from a number of localities will help to solve the doubts besieging the present species.

Acanthognathus ocellatus Mayr

Acanthognathus ocellatus Mayr, 1887: 579 (worker; Brazil, Santa Catarina State, loc. unknown). Mann, 1916: 452, pl. 5, fig. 38 (female; Brazil, Pará: Belém). M. R. Smith, 1944: 150 (key). Brown & Kempf, 1969: 95-100 (worker, female; Costa Rica, Heredia: Puerto Viejo de Sarapiquí; Panama: Cerro Campana; Panama Canal Zone: Barro Colorado Island; Trinidad, Arima valley: Simla; Brazil, Pará: Belém).

In our joint revision (Brown & Kempf, 1969), Brown and I succeeded in elucidating

the identity of this species. But strangely enough, we did not have any pertinent material from southeastern Brazil, where the original types came from. In 1971, during a short visit to São Paulo, Brown finally managed to collect two specimens of *ocellatus*, from a hollow twig, in the State forest reserve near Caraguatatuba, on the São Paulo coast. Since then, I found in my collection three stray females from Nova Teutônia, Santa Catarina State, and received additional specimens from diverse localities which to some extent round out the distribution of the species.

New locality records: BRAZIL, *Santa Catarina State*: Nova Teutônia (27 11' S, 52 23' W), June and July 1957, F. Plaumann leg. 3 females (WWK); *São Paulo State*: Caraguatatuba, Reserva Florestal, 50 m, rain forest May, 18, 1971, W. L. Brown leg. 2 workers (MCZ, WWK); *Guanabara State*: Represa Rio Grande, April 1972, M. Alvarenga leg. 1 female (WWK n.º 7478); *Bahia State*: Itabuna, from epiphytic bromeliad on old cocoa tree, April 27, 1971, J. A. Winder leg. 1 female (WWK n.º 9456). PERU, *Loreto*: Ramón Castillo, 5 km NW of Leticia (Colombia), February 23, 1972, S. & J. Peck legg. from berlesate of forest litter, 1 worker (n. 251, WWK). (All queens are dealate.)

Note. The three females from Nova Teutônia, SC, Brazil, are distinctive by conspicuously larger absolute measurements (head length 0.96-0.100 mm; head width 0.71-0.76 mm; mandible length 0.78-0.81 mm; scape length 0.79-0.83 mm) but still qualify for inclusion under *ocellatus* because of their diagnostic characters (indices: Cephalic I. 73-76, Mandibular I. 80-81, Scape I. 107-113, Scape-Mandibular I. 100-103).

Acanthognathus teledectus Brown & Kempf

Acanthognathus teledectus Brown & Kempf, 1969: 105-107, fig. 11 (worker; Colombia, Valle: Bajo Calima, Mun. Buenaventura).

New locality record: COSTA RICA, *Prov. Heredia*: Finca la Selva, January 16, 1973, W. L. Brown leg. workers, in rotten stick, lowland rain forest (MCZ, WWK).

Hitherto known only from the lone holotype of southwestern Colombia. The Costarican specimens (only one seen) have a little broader head (head width 0.63 mm; cephalic index 64) and a bit shorter mandibles (mandible length 1.12 mm, mandibular index 115) and scapes (scape length 0.72, scape index 115, scape mandibular index 62). On the left mandible, the second preapical spinelike tooth is reduced to a very short denticle.

Strumigenys cosmostela sp. n.

(Figs. 1 e 2)

Worker (holotype). Total length 2.5 (2.4) mm; head length 0.57 (0.55) mm; head width 0.49 (0.45) mm (cephalic index 86, 83); mandible length 0.33 (0.32) mm (mandibulo-cephalic index 58, 59); scape length 0.31 (0.29) mm; funicular length 0.48 (0.47) mm; Weber's length of thorax 0.60 (0.59) mm. General color ferruginous; antennae and legs yellowish brown; gaster somewhat infuscated. Antennae and legs superficially and finely punctulate, almost smooth and a bit shining; mandibles, mesopleura, part of metapleura, lower half of declivous face of propodeum, disc of postpetiolar dorsum, and gaster smooth and shining, the latter with short, widely spaced basidorsal costulae, about 13 visible in dorsal view, each not longer than half the length of postpetiolar node; a few incomplete to vestigial longitudinal costulae also on disc of postpetiole; head, thorax (except the shining areas already mentioned) and petiole sharply reticulate-punctate, opaque; promesonotum, in addition, longitudinally costate-rugose, with about 14 costae across the pronotal dorsum, the sagittal costa strongest and most regular, cutting through the middle of the mesonotum and the subse-

quent metanotal groove which is deeply impressed and contains at each side another longitudinal and elevated costa; dorsum of petiolar node reticulate-rugose.

Ground pilosity consisting of fairly abundant, delicate, arched hairs, which are shortest on head where they are inclined mesad on front and vertex, forward on occiput, sides and gular face; slightly longer, irregularly inclined on dorsum of promesonotum; still longer, mostly inclined backward on dorsum of petiolar and postpetiolar nodes and on ventral surface of gaster; longest, already flexuous and subflagellate on dorsum of gaster; flagellate long hairs present: one on each side of head behind (above) antennal scrobe, two pairs, one hair on each corner, of pronotal dorsum; a pair of shorter hairs with recurved apex on dorsum of head. Just in front of occipital excision; antennal scapes and legs with normal oblique to reclinate hairs; anterior surface of front coxae with a dense cover of short, recurved and thin setulae. No specialized hairs on anterior border of clypeus nor on margin of frontal carinae. Fringing hairs are shown in Figs. 1 and 2.

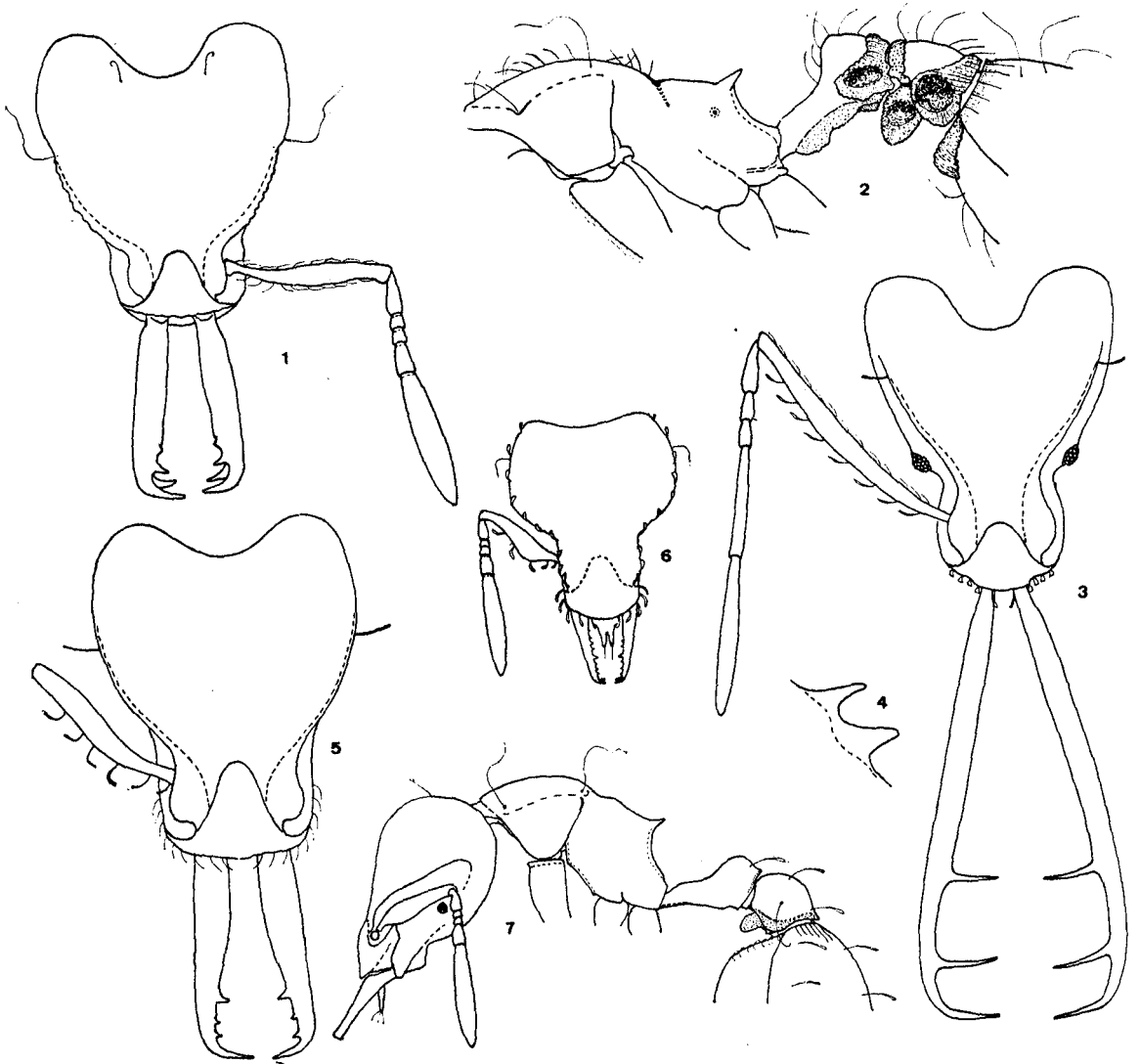
Mandibles (Fig. 1) relatively short, with straight, strong shaft. Apical fork with two minute intercalary denticles between the upper and the lower apical tooth, the latter nearly as long as the former. First preapical tooth about half as long as the apical ones, the second preapical tooth very short, almost rudimentary yet still distinct, removed from the first preapical tooth by the same distance that separates the latter from the apical tooth.

Head as shown in Fig. 1, cordiform, dorsally and ventrally very gently convex in both directions, nearly twice as broad behind at level of occipital lobes as in front, at level of antennal origin. Clypeal sutures indistinct. Frontal carinae subparallel in front, then suddenly curved obliquely laterad behind the antennal socket. Preocular carinae fading out at some distance

in front of the very small eyes which measure 0.04 mm across their greatest diameter and do not have more than 15 ommatidia. Antennal scapes attenuate at base and slightly constricted in front of apex. Funicular segments I-V having the following proportional lengths: 7 - 2 - 2 - 5 - 20.

Thorax as shown in Fig. 2. Anterior border of pronotum strongly convex and marginate by a low carinule; shoulders

marked and dentate, sides submarginate. Mesonotum laterally immarginate. In profile, the pronotum and the mesonotum form a continuous gently convex curvature. Metanotal groove deeply impressed, although not apparent as such in lateral view on account of the longitudinal, raised costae that traverse it. Basal face of propodeum slightly broader than long, the lateral borders submarginate, the propodeal spines (one on each side) about half as



Strumigenys cosmostela sp. n. — Fig. 1: worker, head; fig. 2: worker, thorax and pedicel, *Strumigenys* ? *dolichognatha* Weber — Fig. 3: worker from Igarapé Merianil, head; fig. 4: propodeal armature in sideview. *Strumigenys gemella* sp. n. — Fig. 5: worker, head. *Neostruma metopia* Brown — Fig. 6: worker, head; fig. 7: worker, sideview (legs and apical half of gaster omitted).

long as the basal face, obliquely raised but scarcely diverging caudad. Infradental lamellae low but well expressed. Inferior propodeal plates subangulate above and below.

Petiole and postpetiole as shown in Fig. 2. The former strongly pedunculate in front, with a differentiated node which, in profile, presents the anterior, ascending surface at right angle to the somewhat sloping dorsal face. Spongiform appendages voluminous: the postero-lateral part on node greatly expanded with a deep, oval cavity within that opens toward the side; the ventral longitudinal spongiform crest broadened and bifurcate behind. Postpetiole with likewise voluminous postero-lateral and ventral spongiform appendages, which also present the circular or oval holes as shown in Fig. 2. Tergum I of gaster with a narrow spongiform anterior border. Sternum I with a thick pad of spongiform hairs.

The paratype is exactly alike the holotype, the meristic variation is already indicated above in parentheses.

TYPES. BRAZIL, *Pará State*: Iriboca nr. Belém, Pirelli plantation, August 15, 1962, W. L. Brown leg. 1 worker (BF-18, holotype: WWK); idem, Utinga, tract near Belém, August 12, 1962, W. L. Brown leg. 1 worker (BF-11, paratype: MCZ). Both from berlesates of forest floor cover.

DISCUSSION

The mandibles of *cosmostela* present two intercalary teeth in the apical fork and two distinct preapical teeth, characters which bring it to couplet 42 of Brown's key (1962: 257-264) of the Neotropical species of *Strumigenys*, where it must be differentiated from *xenognatha*, *tococae* and *fairchildi*.

The differences from *xenognatha* (probably a parasitic species, still known only in the female caste) are as follows: second (proximal) preapical tooth of mandibles

smaller than first (distal) and much closer to the latter; head less elongate with shorter mandibles (cf. indices), the frontal carinae more abruptly turned laterad behind the antennal origin; spongiform appendages much more voluminous and extensive, with the already described oval or circular cavities, and encircling completely the postpetiolar node; basidorsal costulae present on gaster; all hairs thin, arched or flexuous; stiff, claviform or remiform hairs completely absent.

Both *tococae* and *fairchildi* are significantly larger in size (head and thorax length well over 0.75 mm), have a narrower, more elongate head (cephalic index under 80), much larger eyes with many facets, well-developed inferior propodeal teeth, less voluminous and less distinctly excavate spongiform appendages on petiole and postpetiole; the tergum I of gaster is either entirely longitudinally striolate (*fairchildi*) or having the basidorsal costulae extended farther backwards over at least one third of tergum length (*tococae*).

In spite of a certain resemblance with the *connectens*-group, the present species seems to belong to the *tococae*-group on account of the mandibular dentition and the well-developed spongiform appendages.

The species is named after its elaborate petiolar and postpetiolar appendages.

Strumigenys deltisquama Brown

Strumigenys deltisquama Brown, 1955:
99-101, fig. 1a-b (worker; Panama
Canal Zone: Barro Colorado Island).

New locality record: MEXICO, *Jalisco*: La Manzanilla, 12 mi. northwest of Barra de Navidad, palm forest on beach, November 23, 1973, A. Newton leg., workers (berlesate collection; MCZ, WWK).

This handsome species, strikingly marked by its dense cover of large, deltoid hairs, was known from types only. The present record shows that its territory

extends at least from Panama through Central America to tropical Mexico.

***Strumigenys dolichognatha* Weber**

(Figs. 3, 4)

Strumigenys (s. str.) *cordovens* *dolichognatha* Weber, 1934: 40-41 (worker, male: Guiana: Kartabo).

Strumigenys dolichognatha: Brown, 1958: 223-224, fig. 1, A, worker (new status).
Brown, 1962: 241, 256, 261, figs. 25, 26, 27 (synopsis and key).

New locality record: BRAZIL, Amazonas State: Iguarapé Marianil at Rio Branco road, km 5, 24 km NE of Manaus, August 22, 1962, W. L. Brown leg. 1 worker (WWK, the MCZ collection probably has more specimens).

This individual was received as a gift from my friend Prof. Brown, who identified it as *S. cordovens* Mayr. Not content with this specific allocation, especially because of the unusually long mandibles (Fig. 3) of this worker, I took its critical measurements which are as follows: Total length 4.4 mm; head length 0.91 mm; head width 0.71 mm (cephalic index 78); mandible length 1.19 mm (mandibulo-cephalic index 131); scape length 0.75 mm; funicular length 1.00 mm; Weber's length of thorax 0.85 mm.

The extremely elongate mandibles (Fig. 3), both absolutely and proportionally (even longer than in the *dolichognathus* types, where they measure from 1.04 to 1.08 mm), the proportionally longer funicular segment IV (penultimate), measuring 28% of the total funicular length (against 25% or less in *cordovens*), speak in favor of the placement of this specimen under *dolichognatha*, even though the distal preapical tooth of mandibles is much closer to the dorsal apical tooth (0.10 mm) than to the proximal preapical tooth (0.17 mm), i. e. closer even than in *cordovens* and different from the *dolichognathus* types where the opposite is true.

Consequently, either the proportional distance between the mandibular teeth breaks down as a diagnostic character, or the present worker represents still another new form in the closely-knit *cordovens* species-complex. To leave it with *cordovens* appears to me arbitrary; hence I place it with some reservation under *dolichognathus*. A definite solution of the problem raised by this specimen depends from much more material which actually is not available.

I must add that this worker has the propodeal armature (Fig. 4) extremely well developed, both inferior and superior teeth are very long, spine-like, nearly twice as long as the teeth shown in Fig. 26 of Brown's synopsis (1962: 250), and the postpetiolar disc is densely longitudinally costulate. The more pronounced cephalic constriction in front of the eyes, tilting the visual axis of the latter more forward than laterad, shown in the figure of the *dolichognathus* type (Brown, 1958, Fig. 1, A), is likewise present in this Amazonian worker, but this character also occurs in other specimens which definitely belong to the typical *cordovens*.

***Strumigenys gemella* sp. n.**

(Fig. 5)

Worker (holotype). Total length 2.7 (2.6-2.8) mm; head length 0.63 (0.62-0.64) mm; head width 0.48 (0.47-0.49) mm (cephalic index 77; 76-78); mandible length 0.37 (0.37-0.39) mm (mandibulo-cephalic index 60; 59-61); scape length 0.37 (0.35-0.37); mm; Weber's length of thorax 0.69 (0.67-0.73) mm. Extremely close to *laevipectura* (cf. Kempf, 1958: 64-65, figs. 5, 6, 7), matching all its diagnostic characters except for the following apparently small but very significant differences:

1. Mandibles slightly longer and distinctly less linear, the inner border based of third preapical (proximal) tooth more

sinuous, the shaft a bit broader; preapical dentition different: proximal preapical tooth by far the longest and strongest, the two distal ones minute and subequal (Fig. 5).

2. Tergum I of gaster with an anterior narrow spongiform border and distinct, though very short, basidorsal costulae. Sternum I bearing anteriorly a weak but distinct pad of spongiform hairs.

TYPES. COLOMBIA, Valle: Pichindé valley, SW of Cali, 1570 m, in rain forest, March 22, 1967, R. B. Root & W. L. Brown legg. 9 workers (MCZ: holotype and 5 paratypes; WWK: 3 paratypes).

DISCUSSION

The extreme resemblance between *laevipleura* and the present species dispenses with a detailed description. The mandibular differences as pointed out above are so significant as to warrant the proposition of a new species based on these characters alone. The small divergences on the base of gaster, and also the overall shape of head and mandibles imitate the condition found in *connectens*, but this has the preapical dentition of mandibles as in *laevipleura*, and the standing hairs broadly spatulate.

S. gemella, as is evident, belongs to the *connectens*-group of Brown (1962: 247-248).

Neostruma metopia Brown

(Figs. 6, 7)

Neostruma metopia Brown, 1959: 11-12, fig. 2 (female; Panama Canal Zone: Barro Colorado Island).

Worker (undescribed). Total length 1.58-1.60 mm; head length 0.41 mm; head width 0.29-0.31 mm (cephalic index 72-75); mandibular length 0.125 mm (mandibular index 31); head depth 0.23-0.24 mm (index of cephalic depression 56-59); Weber's

length of thorax 0.39-0.40 mm. Color yellowish brown; gaster darker; antennal funiculi and tarsomeres of legs pale testaceous. Integument sharply reticulate-punctate, opaque, with the following exceptions: mandibles sparsely and finely superficially punctate, quite shining; sides of thorax, on mesopleura and metapleura, with an extensive smooth, highly polished area; gaster smooth and shining; except the base of tergum I which bears over 12 fine longitudinal costulae (the intervals finely punctate) which are much shorter than length of postpetiole. Dorsum of head, including clypeus, with sparsely set, decumbent to subdecumbent, spoon-shaped hairs; fringing hairs on clypeus and frontal carinae likewise spoon-shaped and decumbent on sides of head, porrect but curved on clypeus; promesonotum with four long, flagelliform hairs, one on each corner. Petiolar node with two, postpetiolar node with four longer, suberect but curved hairs which are apically thickened but not quite remiform; an additional long hair, apically strongly curved and not thickened, on each side of postpetiolar dorsum; tergum I of gaster with sparsely-set longer, curved, apically incrassate hairs, leading edge of scape with five spoon-shaped, curved hairs, the first, second and fifth, starting from the base, curved apicad, the third and fourth curved mesad; mandibles, scapes and legs, especially extensor face of femora and tibiae with strongly curved but not appressed, apically thickened, small hairs.

Mandibles relatively short, their length about one third of head length, apical fork small with intercalary denticles. Inner side of shaft with three minute preapical denticuli, a stronger submedian tooth, and basad of the latter with two additional medial denticuli; basal lamella not seen since no dissection was made.

Head as shown in Fig. 6; note the laterally greatly expanded and posteriorly shallowly excised occiput. Clypeus flat, with

its posterior border rather distinct. Frontal carinae relatively greatly expanded, covering the preocular carinae in full-face view, only gently convex above antennal socket. Occiput strongly convex in both directions, consequently the head depth is above the average in the genus. Eyes very small, with less than 10 facets each. Antennal scape attenuate at base, then suddenly incrassate and attaining its greatest width at basal third, then gradually tapering apicad, its general shape closer to that of *crassicornis* than to the other species of the group. Funicular length 0.33 mm; the proportional length of the succeeding segments, starting from base is as follows: 5 - 1 - 1 - 3 - 15; segments II and III rather broader than long.

Thorax as shown in Fig. 7. Pronotum anteriorly marginate, shoulders marked and angulate, sides of pronotal dorsum submarginate; sides of mesonotum, at the base of the posterior flagelliform hairs tuberculate; metanotal groove shallowly impressed, the suture indistinct. Basal face of propodeum, in dorsal view, much longer than the propodeal spines, nearly as broad as long, its lateral borders submarginate. Infradental lamellae, below the pointed propodeal teeth and margining the declivous face, very low but distinctly carinate.

Petiole (Fig. 7) strongly pedunculate, the node differentiated from peduncle, its dorsum broader than long, both posterior border and sides without spongiform appendages: ventral strip obsolete, practically absent. Postpetiole broader than long, its dorsum convex in both directions, posterolaterally with small, ill-developed spongiform appendages; the ventro-lateral appendages very small but quite distinct. Instead of the customary pad of spongiform hairs, the sternum I of gaster bears a row of strongly curved, simple hairs.

Material examined: BRAZIL, *Mato Grosso State*: Utiariti, Rio Papagaio, October 26, November 4 and 7, 1966, K. Lenko & F. S. Pereira legg. 3 workers (MZUSP

n.º 4487, 4488, 4490; WWK), all strays from berlesate collections.

DISCUSSION

Notwithstanding the excessively terse description of the holotype female of *metopia*, the adscription of the hitherto unknown workers to the same species seems entirely warranted because both share the characteristic head shape, the short mandibles with practically the same type of dentition (the workers have only two distinct medial denticuli, whereas the female has three or four, but the medial denticuli number seems to be subject to a good deal of variation in the genus), and the same somewhat lobate antennal scape, at basal third. Unfortunately, the original description of *metopia* makes no mention of spoon-shaped hairs on cephalic dorsum (which is found only in *crassicornis*, absent in all other known species), and the long, flagelliform hairs on promesonotum (which appear unique in the group).

Smithistruma alberti (Forel)

Strumigenys alberti Forel, 1893: 380-381 (worker, female; West Indies: Island St. Vincent).

Smithistruma (*Smithistruma*) *alberti*: Brown, 1953: 93-96 (worker, female, male; Mexico: Vera Cruz, Oaxaca; Honduras; Costa Rica; Panama Canal Zone; Antilles: St. Vincent, Dominica; Guiana; Brazil: Goiás; Bolivia).

Smithistruma alberti: Brown, 1964: 190 (Panama: Chiriqui; Brazil: Pará, Amazonas).

New locality records: BRAZIL, *Mato Grosso State*: Vila Vera (Lat. 26° 46' S, Long. 55° 30' W), October 1973, M. Alvarenga leg. 1 female (WWK n.º 10084). ECUADOR, *Napo*: Limoncocha (Lat. 00° 24' S, Long. 76° 36' W), August 4, 1973, Lois Morales leg. 1 worker (Coll. Rettenmeyer n.º 219 F-541; WWK).

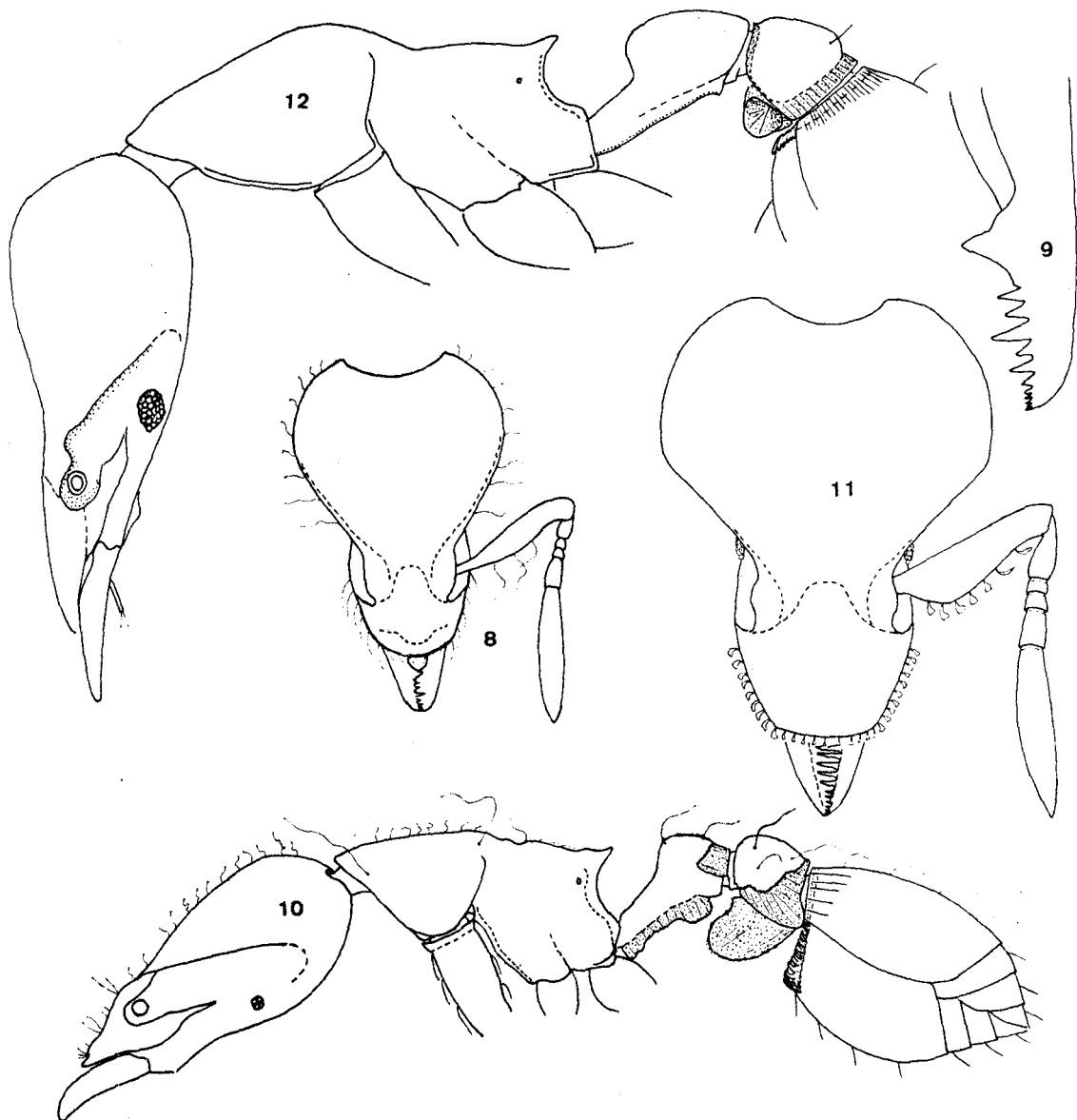
Smithistruma cincinnata sp. n.

(Figs. 8, 9, 10)

Worker (holotype). Total length 1.8 (1.7) mm; head length 0.48 (0.47) mm; head width 0.32 (0.31) mm; mandible length 0.08 (0.7) mm; scape length 0.21 (0.20) mm, Weber's length of thorax 0.47 (0.44) mm; hind femur length 0.29

(0.27) mm; cephalic index 67 (66-68); mandibular index 17 (16-18). Color light ferruginous yellow, gaster somewhat darker; antennal funiculi and legs pale testaceous.

Mandibles nearly smooth and quite shining, with piliferous punctures which bear minute, appressed hairs; when closed the blades leave a free interspace between



Smithistruma cincinnata sp. n. — Fig. 8: worker, head; fig. 9: worker, mandible (greatly enlarged); fig. 10: worker, sideview. *Smithistruma microthrix* sp. n. — Fig. 11: worker, head; fig. 12: worker, sideview (antennae, legs and greater part of gaster omitted).

the large, triangular basal tooth and the clypeal border; dentition shown in Fig. 9.

Head as shown in Fig. 8; note the elongate, narrow shape in full-face view, with the occipital lobes not conspicuously bulging laterad. Clypeus with the customary antero-medial tumulus just behind the gently rounded anterior margin. Preocular carinae in full-face view somewhat convex. Frontal carinae scarcely convex above antennal socket, not constricted behind the latter, before turning obliquely caudad to continue as a narrowly crested carina on sides of head. The latter is only gently convex across the occipital lobes, the index of cephalic depression being 47. Eyes very small, consisting of no more than 6-7 facets. The entire head capsule, including the clypeus, is heavily reticulate-rugose, both the rugae and the intervals being finely punctate, rendering the integument opaque; only the antennal scrobe is somewhat shining on account of the more superficial sculpture.

Ground pilosity on dorsum of head consisting of rather numerous fine, curved, short hairs, interspersed with slightly longer ones which are wavy or even spiralled, especially posteriorly and posterolaterally on occipital lobes. Clypeus with a few longer hairs, mostly inclined mesad, on disc. Fringing hairs on clypeus fine, scarcely broadened at apex, curved, longer on sides than in front; hairs on frontal carinae long and wavy to subflagelliform as shown in Fig. 8 (absent, perhaps lost, in most but not all paratype specimens).

Antennae with the scape attenuate at base, only gently curved but conspicuously incrassate before anterior third, with the leading edge sharpened and bearing three long, flagelliform setae. Funiculus measuring 0.34 mm in length, the proportion between the succeeding segments I to V being as follows: 5 - 1 - 1 - 4 - 15.

Thorax as shown in Fig. 10. Dorsum of pronotum marginate in front, immarginate

on sides, shoulders scarcely marked; mesonotum slightly depressed in front of the distinct metanotal suture; basal face of propodeum, as seen in dorsal view, as long as the propodeal spines, the latter well developed, triangular and pointed in profile, connected through the elevated infradental lamellae with the inferior propodeal plates. The entire thorax bears reticulate-rugose and/or reticulate-punctate sculpture, with the exception of the disc of mesopleura and the adjoining areas of metapleura and sides of epinotum, which are smooth and shining, but are surrounded by an opaque, reticulate-punctate margin; anterior part of thoracic dorsum predominantly longitudinally rugulose, but with cross-connections between rugae. Legs rather sharply reticulate-punctate, opaque. Ground pilosity similar to that of head, consisting of short, fine, wavy or curved hairs on promesonotum, but lacking on sides of thorax and practically also on propodeum. Legs with short, simple, decumbent hairs. Anterior and posterior corners of pronotal dorsum each with a long, flagelliform hairs (which is often lost in dry specimens).

Petiole and postpetiole, as shown in Fig. 10. Petiole with a long anterior peduncle followed by a differentiated but not quite abrupt node, which in dorsal view is as long as broad (spongiform appendages not included) and about half as broad as the free postpetiolar disc; ventral and postero-dorsal spongiform appendages well-developed, shown in Fig. 10, but less voluminous than in *fridericimuelleri* and *nigrescens*; posterodorsal ones nearly separate, only narrowly joined in the middle on posterior border of node; the entire petiole reticulate-punctate and opaque. Postpetiole lacking spongiform margin on anterior dorsal border; its disc heavily reticulate-punctate, opaque. Longer, flagelliform or wavy hairs on both segments, 4 on petiolar node, 6 on postpetiolar dorsal disc. Gaster with a narrow spongi-

form border anteriorly on tergum I, which also bears 12-14 basidorsal costulae which are distinctly shorter than length of postpetiole. Sternum I anteriorly with a moderately developed pad of spongiform hairs. Both terga and sterna smooth and shining. Terga with sparsely set, longer, flagelliform hairs; tip of gaster and sterna with likewise sparse fine, simple and oblique hairs.

TYPES. BRAZIL, *Amazonas State*: Manaus to Itacoatiara road, km 49, August 24, 1968, W. L. Brown leg. 1 worker (holotype; WWK); 20-50 km north and north-east of Manaus, berlesate composite, August-September 1962, W. L. Brown leg. 5 workers (paratypes: MCZ, MZUSP); Ponte Negra, north of Manaus, September 1, 1962, W. L. Brown leg. 4 workers (paratypes; MCZ and WWK).

DISCUSSION

Although three more new forms, *tany-mastax*, *probatrix* and *kyidrififormis* (Brown, 1964: 183-200), have been added to the roster of the Neotropical species of the genus *Smithistruma* since Brown's revision (1953), the keys (pp. 112-114) contained in the latter are still good for placing the present species, which runs to couplet 6 where *fridericimuelleri* and *nigrescens* key out. *S. cincinnata* disagrees with either lug and the respective species. The following characters separate it both from *fridericimuelleri* and *nigrescens*, its closest relatives: Integument slightly to considerably rougher, especially the smooth area on sides of thorax is confined to mesopleura and following parts, never comprising the lateral tergite of pronotum; eyes very small, with about 5-6 facets, never more than 8; frontal carinae not convex over antennal socket nor constricted immediately behind before turning obliquely sideward; basal face of propodeum in dorsal view not longer than propodeal spines; promesonotum lacking a

differentiated sagittal carina; petiolar node proper (without spongiform appendages) as long as broad; spongiform appendages less voluminous, especially the anterior border of postpetiole is lacking a spongiform margin; the measurements indicate relatively narrower head (cephalic index) and shorter mandibles (mandibular index); antennal scape with only three, apically not conspicuously thickened, hairs on leading edge: the sides of head lack the single, long and projecting hairs and the ground pilosity is never spatulate, nor remiform nor clubbed; hairs on gaster shorter and more numerous.

In mandibular dentition *cincinnata* resembles that of *epinotalis* (Brown, 1953, pl. 2, fig. 23), but the latter has the sides of thorax completely sculptured, without smooth area; much larger eyes; a clubbed to spoon-shaped ground pilosity; very short propodeal spines, i. e. their tip scarcely projecting beyond the very high infradental lamellae in which they are contained; the petiolar node strongly transverse.

Smithistruma epinotalis (Weber)

Strumigenys (*Cephaloxys*) *studiosi epinotalis* Weber, 1934: 46 (worker, female; Costa Rica, Estrella Valley: Talia Farm).

Smithistruma (*Smithistruma*) *epinotalis*: Brown, 1953: 101-103, pl. 2, fig. 23 (worker, female; Costa Rica, Estrella Valley: Talia Farm); Mexico, Vera Cruz: Tlacocinctla, Mirador, El Palmar; syn.). Brown, 1964: (Mexico, Vera Cruz: Vera Cruz; Chiapas: Laguna Ocotol, Ocosingo Valley).

Strumigenys (*Cephaloxys*) *skawarrae* Wheeler, 1934: 177-178 (♀; Mexico, Vera Cruz: Mirador, Tlacocinctla).

New locality record: BRAZIL, *Minas Gerais State*: Pedra Azul, 800 m, November 1972, C. A. C. Seabra & M. Alvarenga legg. 1 female (WWK n.º 8827).

Heretofore known solely from southern Mexico and Central America, this species is

recorded for the first time from Brazil. The critical measurements of the lone, alate female from Pedra Azul are the following: Total length 2.55 mm; head length 0.62 mm; head width 0.48 mm; scape length 0.27 mm; Weber's length of thorax 0.71 mm; cephalic index 78, mandibular index 22. The specimen agrees very well with workers from El Palmar, 10 km W of Tetzonapa, Vera Cruz, Mexico, identified by, and received several years ago from Brown, and also matches the description of this caste given by Brown (1953: 102), but is of somewhat larger size. The indices are practically identical.

Smithistruma microthrix sp. n.

(Figs. 11, 12)

Worker (holotype). Total length 2.6 mm; head length 0.72 mm; head width 0.55 mm; maximum diameter of eyes 0.07 mm; scape length 0.25 mm; Weber's length of thorax 0.72 mm; hind femur length 0.47 mm; cephalic index 76; mandibular index 22; index of cephalic depression 39. Light ferruginous; mandibles, except the much darker dentition, antennae and legs a bit lighter; gaster somewhat darker. The entire insect, with exception of mandibles, antennal funiculi and gaster, finely and densely reticulate-rugulose; the more or less shining network of rugulae enclosing densely set foveolae, the bottom of which is minutely and indistinctly punctulate; gaster smooth and shining above and below, tergum I with numerous, very fine and dense basidorsal costulae which are less than half as long as length of postpetiolar node. Long, erect hairs practically absent but for a pair of short bristles on dorsum of postpetiole, and sparsely set, thinner hairs on gaster; fringing hairs on clypeus short, broadly spatulate, their arrangement shown in Fig. 11; leading edge of antennal scape with five broadly spatulate and prominent hairs,

followed apicad by two additional, spoon-shaped, hairs, curved towards apex of scape; ground pilosity consisting of minute, scarcely visible but numerous setulae arising from the pits between the densely intertwined rugulae; somewhat longer and more distinct hairs, curved to decumbent on mandibles, gular surface of head, antennae and legs; very fine and sparsely set appressed hairs on gastric dorsum.

Head as shown in Fig. 11; conspicuously depressed, the occipital lobes broadly expanded laterad. Clypeus flat, the anterior and lateral borders marginate; antero-median tumulus absent; posterior border distinct. Frontal carinae gently convex and platelike above the antennal socket, prolonged posteriorly on sides of head as the upper marginate, not platelike, border of the somewhat excavate antennal scrobe. Pre-ocular carinae visible in dorsal view, slightly converging caudad. Compound eyes relatively large, with about 6 facets across the greatest diameter, the total number of ommatidia being about 20.

Mandibles not dissected but studied *in situ*; the dorsally exposed shaft serially dentate, the apical teeth, about 6-8, very short and small, followed basad by at least 6 much longer teeth, gradually increased in length toward base.

Antennal scape conspicuously broadened and thickened at basal third, as shown in Fig. 11; funicular segments length proportion, from base to apex, as follows: 6 - 2 - 2 - 5 - 19.

Thorax as shown in Fig. 12. Pronotum flat above, its anterior border strongly convex and marginate, its lateral borders, seen from above, submarginate; shoulders rounded. Promesonotal suture absent. Mesonotum longitudinally convex. Metanotal suture and groove absent. Basal face of propodeum one and a half times as long as broad, its sides submarginate and parallel; in dorsal view at least three times as long as the short, pointed, scarcely raised

and parallel propodeal teeth. Lateral borders of declivous face of propodeum carinate, without prominent infradental lamellae; concave when seen in profile.

Petiole (Fig. 12) strongly pendunculate in front, but the peduncle is shorter than the following, trunk-shaped, sharply differentiated node; the latter has the anterior surface perpendicular to the transversely convex and longitudinally nearly straight dorsal surface; the latter, seen from above, distinctly longer than broad; postero-lateral spongiform appendages absent; ventral surface of petiole with a low, sagittal carina, lacking a prominent spongiform crest. Post-petiole dorsally with an extremely narrow anterior and a somewhat broader posterior spongiform border, the lateral borders bare, without spongiform frames; ventro-lateral spongiform appendages moderately developed, deeply excavate on sides (Fig. 12). Gaster with a narrow subspongiform anterior border on tergum I; sternum I bearing anteriorly a moderately developed transverse pad of spongiform hairs.

TYPE. COSTA RICA: Rio Toro Amarillo vic. Guapiles, 26 Feb.-9 Mar. 1966, W. L. Brown leg. 1 worker (MCZ; holotype).

DISCUSSION

On account of the completely sculptured and opaque sides of thorax and post-petiole disc, the (probable) absence of a toothless diastema on chewing border of mandibles, the absence of spongiform appendages on petiole and the reduction of the same on postpetiole, *microthrix* has its closest relatives among the *schulzi*-group in the Neotropical *Smithistruma* fauna. It differs, however, rather conspicuously from all species of the aforesaid group by the following combination of characters: Nearly total absence of long, erect, simple or elaborate hairs, the ones present on gaster have their apex not thickened nor flattened; the reduction of the ground pilosity to

minute hairs, visible only at very high magnification; the larger size and greater head length; the head shape, above all the more suddenly expanded occiput and the rather depressed head; the longer mandibles.

Among the members of the *schulzi*-group, *microthrix* is closest to *margaritae* with which it shares the absence of infradental lamellae on sides of declivous face of pronotum, which are only carinate, but from which it differs in the following characters: ground pilosity of head, thorax and gaster minute, inconspicuous; erect hairs present on gaster; fringing hairs of clypeus and leading edge of scape broadly spatulate; absence of a metanotal groove and suture; shorter propodeal spines; longer petiolar node; entirely smooth and shining tergum I of gaster.

The peculiar shape of the head, which is also more strongly depressed than in the other species, and the elongate petiolar node reminds one of the aberrant *depressiceps*, from which *microthrix* differs rather strikingly by the absence of bristling, long, standing hairs on head, thorax, pedicel and legs, by the less rounded anterior border of clypeus which forms an angle with the lateral borders, by the spatulate fringing hairs of clypeus and leading edge of scape, and by the less extremely depressed head.

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