

PAPÉIS AVULSOS DE ZOOLOGIA

VOLUME 22

DEPARTAMENTO DE ZOOLOGIA DA SECRETARIA DA AGRICULTURA
AVENIDA NAZARÉ, 481 — CAIXA POSTAL 7172
SÃO PAULO — BRASIL
1968-1969

DEPARTAMENTO DE ZOOLOGIA DA SECRETARIA DA AGRICULTURA

É o museu oficial de zoologia do Estado de São Paulo. Compreende coleções seriadas da fauna brasileira, uma exposição pública, biblioteca especializada e a Estação Biológica de Boracéia.

Histórico:

1890. O Conselheiro F. de Mayrink doa ao Governo do Estado o acervo do Museu Sertório, que adquirira de seu organizador, o Coronel J. Sertório. (Diretor: A. Löfgren). Donation to the State Government of the J. Sertório private collection: director A. Löfgren.
1893. O referido acervo é incorporado à Comissão Geográfica e Geológica, constituindo sua Secção de Zoologia (Chefe: H. von Ihering). Collections transferred to the State Geographical and Geological Commission, Zoological Section, head H. von Ihering.
1894. As Secções de Zoologia e Botânica destacam-se da Comissão Geográfica e Geológica, dando origem ao Museu Paulista (Diretor: H. von Ihering). Sections of Zoology and Botany detached from the State Geographical and Geological Commission to form the Museu Paulista, director H. von Ihering.
1939. A Secção de Zoologia do Museu Paulista separa-se e transforma-se no atual Departamento de Zoologia (Diretores: S. de T. Piza Junior, 1.II — 18.IV.1939; O. M. de O. Pinto, 20.IX.1939 — 9.II.1956; Clemente Pereira, 5.III.1956 — 30.X.1958; Lindolpho Rocha Guimarães, 1.XI.1958 — 29.X.1962). Section of Zoology detached from Museu Paulista to form the Departamento de Zoologia (Directors, S. de T. Piza Junior, 1.II — 18.IV.1939; O. M. de O. Pinto, 20.IX.1939 — 9.II.1956; Clemente Pereira, 5.III.1956 — 30.X.1958; Lindolpho Rocha Guimarães, 1.XI.1958 — 29.X.1962).

Publicações científicas

O Departamento de Zoologia publica duas revistas, ARQUIVOS DE ZOOLOGIA (publicação iniciada em 1940, até o volume 14 com a denominação de ARQUIVOS DE ZOOLOGIA DO ESTADO DE SÃO PAULO) e PAPÉIS AVULSOS DE ZOOLOGIA (publicação iniciada em 1941, até o volume 19 com a denominação de PAPÉIS AVULSOS DO DEPARTAMENTO DE ZOOLOGIA DA SECRETARIA DA AGRICULTURA DE SÃO PAULO). Os artigos são publicados individualmente e trazem indicada a data de distribuição aos autores e centros bibliográficos, sendo enfileirados em volumes sem periodicidade certa.

Anteriormente, os artigos zoológicos do Museu Paulista eram publicados na Revista do Museu Paulista. Com a fundação do Departamento de Zoologia, os volumes 1 e 2 dos Arquivos de Zoologia traziam indicações, respectivamente, de volumes 24 e 25 da Revista do Museu Paulista. Esta prática foi abandonada, visto continuar esta revista sua publicação como Nova Série, dedicada a assuntos estranhos à Zoologia.

Scientific publications

The Departamento de Zoologia publishes two periodicals, ARQUIVOS DE ZOOLOGIA (publication started 1940, volumes 1-14 under the name ARQUIVOS DE ZOÓLOGIA DO ESTADO DE SÃO PAULO) and PAPÉIS AVULSOS DE ZOOLOGIA (publication started 1941, volumes 1-19 under the name PAPÉIS AVULSOS DO DEPARTAMENTO DE ZOOLOGIA DA SECRETARIA DA AGRICULTURA DE SÃO PAULO). Papers are individually published and show the date of distribution to authors and bibliographical centers, being eventually assembled into volumes.

Prior to 1940, the zoological papers of the Museu Paulista were published in the Revista do Museu Paulista. When the Departamento de Zoologia was founded, volumes 1 and 2 of Arquivos de Zoologia had the indication "volumes 24 and 25" of the Revista do Museu Paulista. Such practice was subsequently abandoned, as that periodical continued publication as a "New Series" (Nova Série).

Conselho de Redação

Crodowaldo Pavan
Hélio Ferraz de Almeida Camargo
Lindolpho Rocha Guimarães
Olivério Mário de Oliveira Pinto
Paulo Emílio Vanzolini

Redatores

Hans Reichardt
Lícia Maria Curvello Penna
Paulo Emílio Vanzolini

DEPARTAMENTO DE ZOOLOGIA

Diretor, Paulo Emílio Vanzolini

Serviço de Vertebrados, Hélio Ferraz de Almeida Camargo (Substituto)

Serviço de Invertebrados, Hans Reichardt (Substituto)

Estação Biológica de Boracéia, Gertrud Rita Kloss (Substituto)

Aves

Hélio Ferraz de Almeida Camargo

Olivério Mário de Oliveira Pinto

Herpetologia

Paulo Emílio Vanzolini

Regina Rebouças-Spieker

Ana Maria Malva Ramos (Estagiária)

Peixes

Heraldo Antonio Britski

Naércio Aquino Menezes

José Lima de Figueiredo (Estagiário)

Júlio Cesar Garavello (Estagiário)

Insetos

Cleide Costa

Hans Reichardt

José Henrique Guimarães

Lindolpho Rocha Guimarães

Nelson Papavero

Renato Lion Araujo

Ubirajara Ribeiro Martins (Chefe, Substituto)

Francisca Carolina do Val (Estagiária)

Nelson Bernardi (Estagiário)

Crustáceos

Gustavo Augusto Schmidt de Mello

Moluscos

José Luiz Moreira Leme

Lícia Maria Curvello Penna

Alexandre Valente Boffi (Estagiário)

Helmintos

Gertrud Rita Kloss

SUMÁRIO

		Pág.
1.	HANS JOHN	
	Fünf neue Spezies von <i>Discoloma</i> Erichson (Coleoptera, Discolomidae)	1
2.	NÉLIDA MARGARITA LIZASO	
	Descrição do macho e da protoninfa de <i>Lepronyssoides pereirai</i> (Acarina, Macronyssidae)	9
3.	UBIRAJARA R. MARTINS	
	Notas sobre Cerambycinae II (Col., Cerambycidae)	13
4.	A. BRINDLE	
	A new Brazilian species of the genus <i>Brachylabis</i> Dohrn (Dermaptera, Carcinophoridae)	31
5.	HANS REICHARDT	
	Catalogue of New World Dermaptera (Insecta) Part II: Labioidea, Carcinophoridae	35
6.	NICHOLAS A. KORMILEV	
	Notes on Neotropical Aradidae XVIII (Hemiptera, Heteroptera)	47
7.	ROLF GRANTSATJ	
	Uma nova espécie de <i>Phaethornis</i> (Aves, Trochiliidae)	57
8.	CLEIDE COSTA	
	Gênero <i>Pyrophorus</i> . 1. Espécies com antenas curtas e vesículas luminescentes laterais (Col., Elateridae)	61
9.	H. SAUAIA & M. A. R. ALVES	
	Description of a new species of <i>Bradysia</i> (Diptera, Sciaridae)	85

10.	WALTER W. KEMPF, O. F. M. & WILLIAM L. BROWN, JR. Report on some Neotropical ant studies	89
11.	HOWARD E. EVANS The genus <i>Scleroderma</i> in South America (Hymenoptera, Bethy- lidae)	103
12.	REGINALD H. PAINTER & ELIZABETH M. PAINTER A review of the genus <i>Hyperalonia</i> Rondani (Bombyliidae, Diptera) from South America	107
13.	P. E. VANZOLINI & REGINA REBOUÇAS-SPIEKER On a large and surprising sample of <i>Calliscincopus agilis</i> from Brasil, with the invalidation of the genus (Sauria, Teiidae)	123
14.	CARMINDA DA CRUZ-LANDIM & MARIA ALICE DA CRUZ HÖFLING Electron microscope observations on honeybee seminal vesicles (<i>Apis mellifera adansonii</i> , Hymenoptera, Apidae)	145
15.	O. MAREK Die Nitiduliden Fauna von Brasilien (Coleoptera, Nitidulidae), Erster Teil	153
16.	M. A. VULCANO, A. MARTINEZ & F. S. PEREIRA, CMF Notes on African Bolboceratini (Coleoptera, Geotrupidae)	159
17.	ARISTIDES A. ROCHA Sôbre o gênero <i>Epimetopus</i> (Col., Hydrophilidae)	175
18.	ALBINO MORIMASA SAKAKIBARA <i>Proxolonia</i> , novo gênero de Membracídeos do Brasil (Homop- tera, Membracidae)	191
19.	HERALDO A. BRITSKI Lista dos tipos de peixes das coleções do Departamento de Zoologia da Secretaria da Agricultura de São Paulo	197
20.	NAÉRCIO A. MENEZES The food of <i>Brycon</i> and three closely related genera of the tribe Acestrorhynchini	217

21.	JOSÉ LUIZ MOREIRA LEME & LÍCIA PENNA	
	Ocorrência de <i>Mikadotrochus</i> no Brasil, com descrição de uma nova espécie (Gastropoda, Pleurotomariidae)	225
22.	CHARLES P. ALEXANDER	
	Records and descriptions of Tipulidae from South America (Diptera). III.	231
23.	ROLF GRANTSAU	
	Uma nova espécie de <i>Threnetes</i> (Aves, Trochilidae)	245
24.	CLEIDE COSTA	
	Gênero <i>Pyrophorus</i> . 2. Redescricao de algumas espécies (Col., Elateridae)	249
25.	RICHARD L. HOFFMAN	
	Chelodesmid studies. IV. A summary of the tribe Batodesmini, with the description of a new species of <i>Biporodesmus</i> from northwestern Brasil	263



COMPOSTO E IMPRESSO NO ANO DE 1969, NAS OFICINAS DA
EMPRESA GRÁFICA DA REVISTA DOS TRIBUNAIS S. A.,
RUA CONDE DE SARZEDAS, 38, SÃO PAULO, BRASIL.

FÜNF NEUE SPEZIES VON *DISCOLOMA* ERICHSON (COLEOPTERA, DISCOLOMIDAE)

HANS JOHN

ABSTRACT

Five new species of *Discoloma* are described: *argentinum*, sp. n. (type-locality, Misiones, Argentina), *novaeteutoniae* (type-locality, Nova Teutônia, Santa Catarina, Brazil), *tepoxtlanum*, sp. n. (type-locality, Tepoxtlán, Morelos, México), *pereirai*, sp. n. (type-locality, Pouso Alegre, Minas Gerais, Brazil) and *diringsi*, sp. n. (type-locality, Nova Teutônia, Santa Catarina, Brazil). *Coccidophilus citricola* Brèthes, a genus and species of uncertain position, is commented and illustrations of important features given.

Erichson (1845: 292) hatte im Anschluss an eine Uebersicht der Cerylini die Gattung *Discoloma* mit wenigen Worten in einer Fussnote beschrieben. *Discoloma* ist aber 3-tarsig und hat 3 gleichartige kugelige Hueften. Pascoe (1869: 115; 1863: 98) fuegte eine zusaetzliche Beschreibung hinzu. In 1944 habe ich eine Revision der Gattung publiziert, habe die weiterhin erfolgten Beschreibungen angegeben und einige Irrtuemer eingehend besprochen. Inzwischen hatte G. Horn *Discoloma* einer neuen Familie zugewiesen, die er Discolomidae nannte (Horn, 1878: 556). Sharp (1895: 497, pl. 15, fig. 24) wies die Discolomidae als letzte Subfamilie den Colydiidae zu. In 1944 habe ich eine ausfuehrliche Gattungsdiagnose gegeben und die Gattung der von Grouvelle Notiophygidae genannten Familie zugerechnet, die nach den neuen Bestimmungen wieder Discolomidae heissen muss. Die Spezies dieser Gattung und der afrikanischen *Cassidoloma* Kolbe sind sehr flach gebaut, sind einander sehr aehnlich, auch in der Form des Penis; Unterschiede finden sich fast nur distal bei der Einlage des Peniskoerpers.

In einer Sendung der Discolomidae aus der Sammlung des Departamento de Zoologia, Secretaria da Agricultura, São Paulo, die mir von H. Reichardt zum Studium uebermittelt wurde, fanden sich 5 neue Spezies von *Discoloma*, die hier beschrieben werden.

Discoloma argentinum, sp. n.

(Figs. 1a-f)

Aehnlich verschiedenen Spezies mit breiter Fuehlerkeule. Verglichen mit *D. mollepunctatum* John (1944, Taf. 7, Fig. 1) ist die Form des Umrisses etwas gedrungener und die Form der Fuehlerkeule ist schief dreieckig. Der Zusammenschluss der Elytren an der

Spitze ist kreisrund mit leichter Einziehung und schmalen Spalt. Die Farbe des Koerpers ist transparent dunkelbraun, glaenzend, der Discus des Ponotums ist fast schwarz. Der Kopfausschnitt ist breiter als bei *mollepunctatum*, seine Basis ist median etwas spitz vorgezogen und seitlich gegen den Discus abgesetzt. Die vorderen Ecken sind abgestumpft. Die Seitenflaechen sind jede $\frac{1}{3}$ so breit wie das Pronotum und der Rand biegt sich beim 2. Tuberkel etwas staerker herum. Die Basis ist median sanft vorgewoelbt und die Basalecken sind fast rechtwinkling. Die Flaeche der Seiten ist durch zwei schwache Erhebungen der Druesen hinter den Tuberkelporen um einen nach vorn etwas staerker aufgekippten Rand gekennzeichnet. Die Punktierung des Discus ist dicht und irregulaer, ein wenig kraeftiger als auf den Seiten. Die zarten Haare sind fast transparent. Die Elytren liegen in gleicher Hoehe mit dem Pronotum, ihr Discus ist seitlich gegen die breite Randpartie herabgebogen und traegt groessere Pseudoporen, die besonders basal dicht stehen. Die Randpartie ist schwach konkav, der Rand ist etwas staerker aufgebogen und traegt aussen auf dem Rand die 6 Tuberkel, deren Kanaele nach innen nur schwach zu sehen sind. Die perlschnurartige Reihe von Punkten, welche den Discus von der Randpartie trennt ist nur schwach verdunkelt. Auf der Unterseite sind die Epipleuren feinst punktiert und dicht behaart, die Epimeren und das Metasternum sind lockerer und groesser punktiert. Groesse: 1,9 x 1,45 mm.

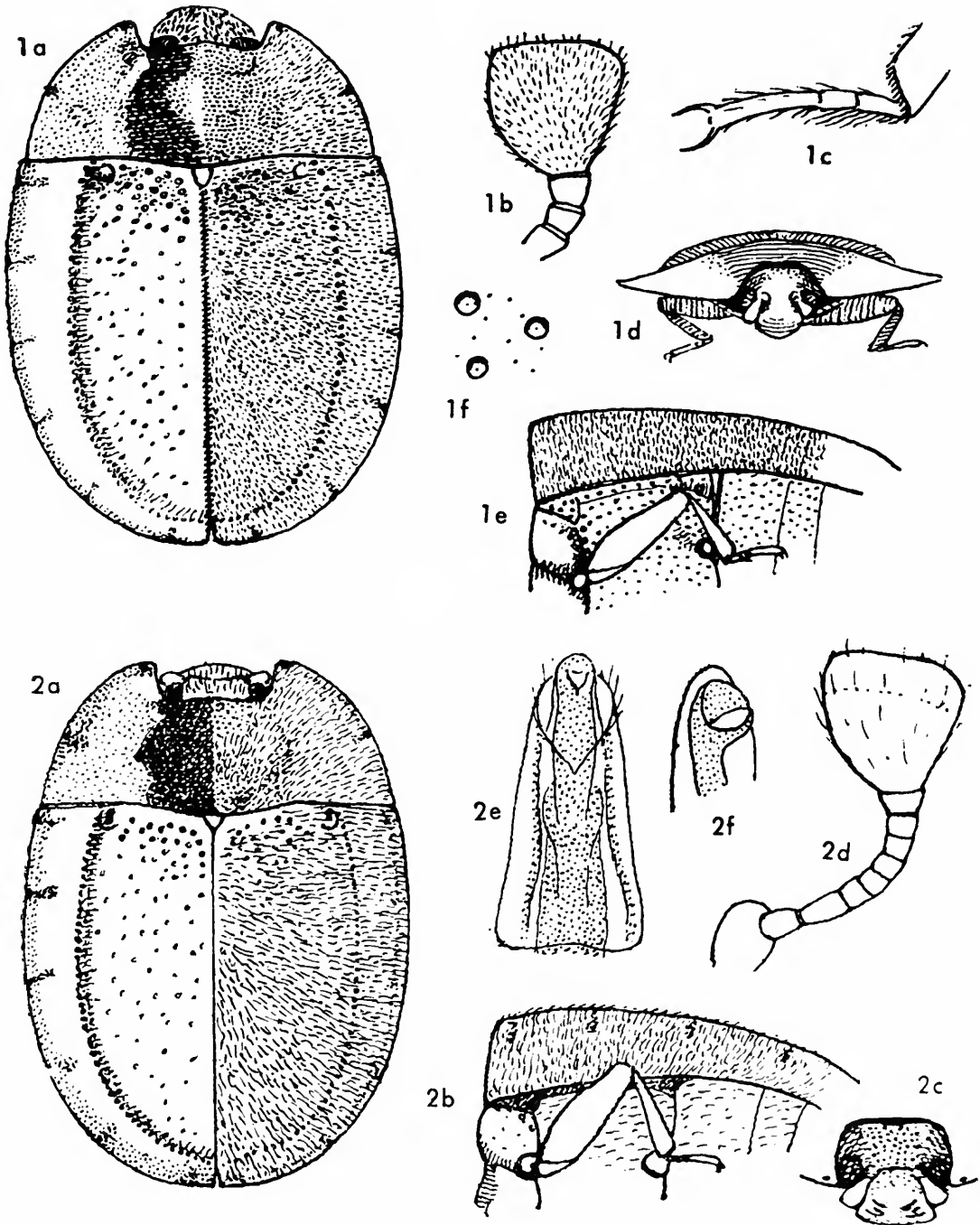
Typen: 3 Exemplare aus Misiones, Argentina, A. Breyer col. Holotype ♀ und 1 Paratype im Departamento de Zoologia, São Paulo; 1 Paratype in meiner Sammlung.

***Discoloma novaeteutoniae*, sp. n.**

(Figs. 2a-f)

Die aus 2 Fundorten stammende Spezies ist fast so gross wie *argentinum*, sp. n., und hat auch eine aehnlich breite Fuehlerkeule, doch ist der Seitenrand des Pronotums steiler hochgezogen und der Einschnitt des Kopfausschnittes ist fast senkrecht mit kaum vorspringender Mitte seiner Basis. Der Seitenrand ist nach vorn hin zunehmend aufgebogen und an der stumpfen vorderen Ecke etwas nach unten abgebogen. Der Discus ist schwarz gefaerbt, die Basis ist leicht nach innen gezogen aber am Discus etwas konvex. Die Punktierung ist dicht und irregulaer. Die Haare schimmern gelblich. Die Elytren sind auf dem Discus mit Pseudoporen besetzt, die basal schwarz sind, und mit feinen Haarpunkten. Die perlschnurartige Trennung des Discus von der schwach konkaven Randpartie ist ebenfalls schwarz. Am aeusseren Rand sind die 6 Tuberkel nach oben geoeffnet und leicht erhoeht. Auf der Unterseite sind die Epipleuren dicht fein behaart, das Metasternum und die Sternite locker duenn behaart. Am Kopf ist der Clipeus in schwarzer Linie abgesetzt und hat vorn 3 schwarze Querstriche. Die Fuehlerkeule ist breit, distal leicht abgeschnuert und mittellang behaart. Groesse: 1,75 x 1,95 mm.

Typen: Holotype ♂ und 1 Paratype aus Nova Teutônia, Santa Catarina, Brasil (im Departamento de Zoologia, São Paulo); 4 Paratypen aus Caraguatatuba (Reserva Florestal, 40 m), São Paulo,



Discoloma argentinum, sp. n.: 1a, Umriss, links die Pseudoporen der Elytren; 1b, Fuehlerkeule; 1c, Tarse; 1d, Ansicht von vorn; 1e, Unterseite; 1f, Punktierung der Elytren. *Discoloma novaetentoniae*, sp. n.: 2a, Umriss, links die Pseudoporen der Elytren; 2b, Unterseite; 2c, Kopf; 2d, Fuehler; 2e, Penis ventral; 2f, Penis-Einlage.

Brasil, 22.V.-1.VI.1962, Expedição do Departamento de Zoologia col. (3 Paratypen im Departamento de Zoologia, São Paulo; 1 Paratype in meiner Sammlung).

***Discoloma tepoxtlanum*, sp. n.**

(Figs. 3a-f)

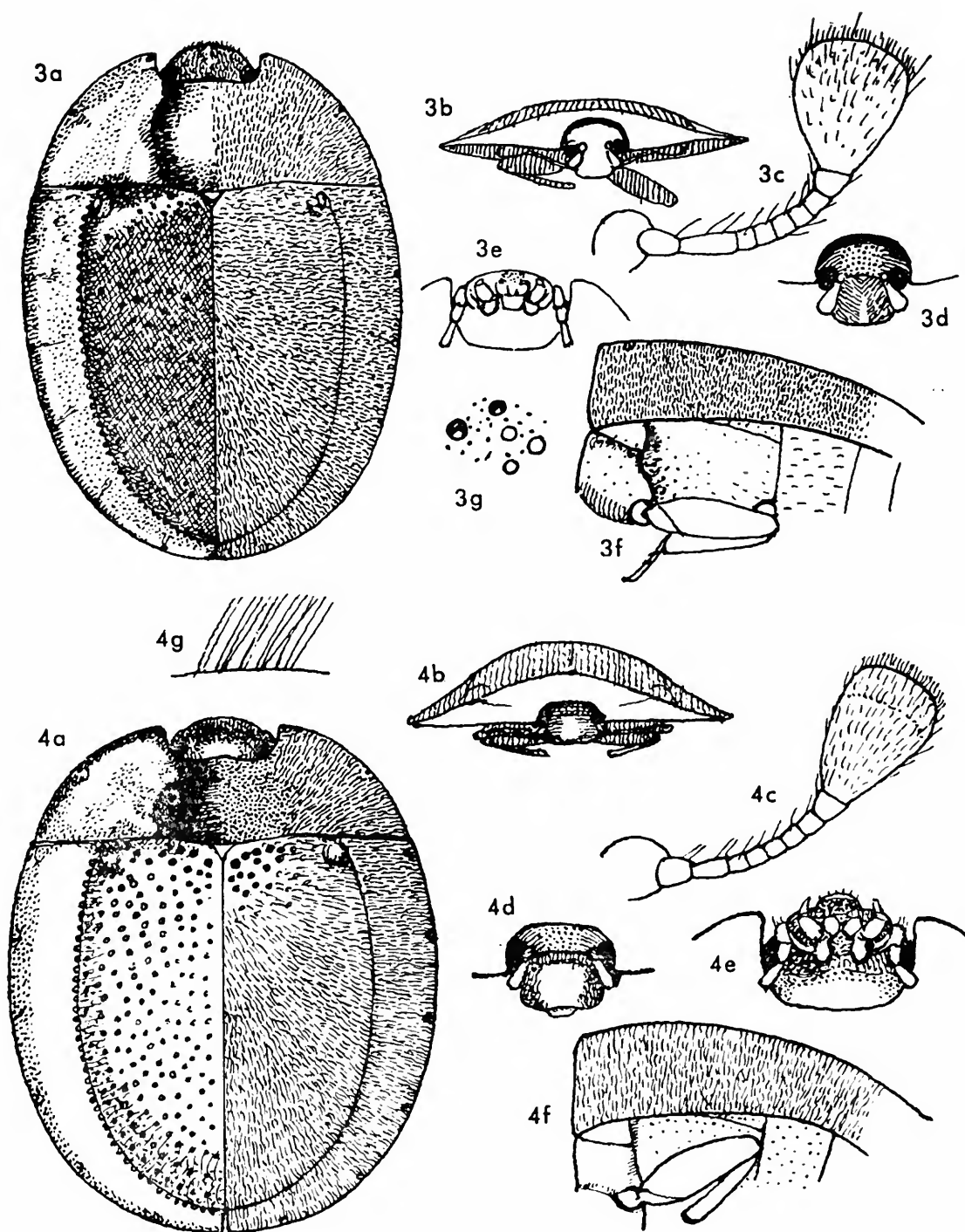
Der Umriss der Spezies ist fast vollkommen oval. Die Farbe ist braun, wenig transparent. Der Kopfausschnitt des Pronotums ist kurz, fast senkrecht eingeschnitten und ausgerundet an den Seiten, median etwas vorgezogen. Die Seitenflaechen sind flach, etwas wellig und am Rand hochgebogen. Die Haarpunkte sind alle etwas erhoehrt. Die Basis ist wagerecht, am Discus etwas konvex. Die Haare sind laenger als bei den vorstehend beschriebenen Spezies. Der Discus der Elytren ist an der Basis einschliesslich des Scutellums schwarz, ebenso eine Anzahl der basalen Pseudoporen, die uebrigen sind hell, auch die perlschnurartige Reihe, welche Discus und Randpartie trennt, is hell. Diese Reihe ist tief eingedrueckt. Im Umkreis um das Scutellum ist die Oberflaeche etwas rauh von einigen Koernchen und auf der Randpartie ist die Basis der Haare punktartig erhoehrt. Die langen Haare ueberdecken den Rand des Discus. Der Schulterbuckel ist laenglich rund. Auf der Unterseite sind die Epipleuren dicht behaart, das Metasternum und 1. Sternit sind spaerlich behaart, nur am Zusammentreffen mit den Epimeren staerker punktiert. Groesse: 2,25 x 1,7 mm.

Typen: Holotype aus Tepoxtlán, Morelos, México, 9.IX.1962, P. Reyes col., im Departamento de Zoologia, São Paulo.

***Discoloma pereirai*, sp. n.**

(Figs. 4a-g)

Diese Spezies gehoert zu den grossen Formen der Gattung. *D. brasiliense* ist viel schmaeler (John, 1944, Taf. 3, Fig. 1), das Pronotum ist an der Basis kuerzer als die Basis der Elytren. Es fehlt die gemeinsame Kruemmung des Randes, denn das Pronotum als auch die Elytren haben jede ihre eigene Kruemmung. Bei *pereirai* ist die Hoehe des Koerpers mehr als das 1 1/2-fache der vorher beschriebenen Spezies. Das Pronotum ist kurz, seitlich stark ausgerundet und median spitz vorgezogen. Die Farbe ist tief dunkelbraun, zu den Seiten etwas braun transparent. Die Seitenflaechen des Pronotums sind flach, von den Druesen etwas gewellt und am Rand hochgebogen. Der Kopfausschnitt ist seitlich mit einer Leiste versehen. Die Tuberkel sind etwas aufgewoelbt. Die Basis ist gerade, nur am Discus etwas vorgezogen. Die Punktierung der Oberflaeche ist dicht und irregulaer. Der Discus des Pronotums und der Elytren ist schwarzbraun. Die Elytren sind basal mit tiefen, anscheinend schwarzen Pseudoporen besetzt, die sich ueber den Discus hinweg etwas verkleinern und auf der Hoehe des Discus klein und flach werden. Die perlschnurartige Trennung des Discus von der Randpartie ist nicht geschwaerzt. Die schwach konkave Randpartie ist am Rand ziemlich breit aufgebogen und die 6 Tuberkel sind etwas erhoehrt. Die Haare stehen schraeg und sind ziemlich lang. Auf der Unterseite sind die Epi-



Discoloma tepoxatlanum, sp. n.: 3a, Umriss, links die farbliche Erscheinung, dazwischen die Pseudoporen; 3b, Ansicht von vorn; 3c, Fuehler; 3d, Kopf; 3e, Kopf von unten; 3f, Unterseite; 3g, Punktierung. *Discoloma pereirai*, sp. n.: 4a, Umriss, links die Pseudoporen; 4b, Ansicht von vorn; 4c, Fuehler; 4d, Kopf; 4e, Kopf von unten; 4f, Unterseite; 4g, Haarstellung.

pleuren dicht behaart, das Metasternum und 1. Sternit sind spärlich und zart punktiert. Am Kopf ist der Clipeus vorn gerundet und leicht ausgeschnitten. Die Oberlippe steht etwas vor. Die Fühler haben eine schlanke Keule mit distaler Abtrennung. Grösse: 2,75 x 2,35 mm.

Typen: Holotype und Paratype aus Pouso Alegre, Minas Gerais, Brasil, 20.VI.1963, F. S. Pereira col., im Departamento de Zoologia, São Paulo (der Paratype fehlt die linke Elytre).

***Discoloma diringsi*, sp. n.**

(Figs. 5a-f)

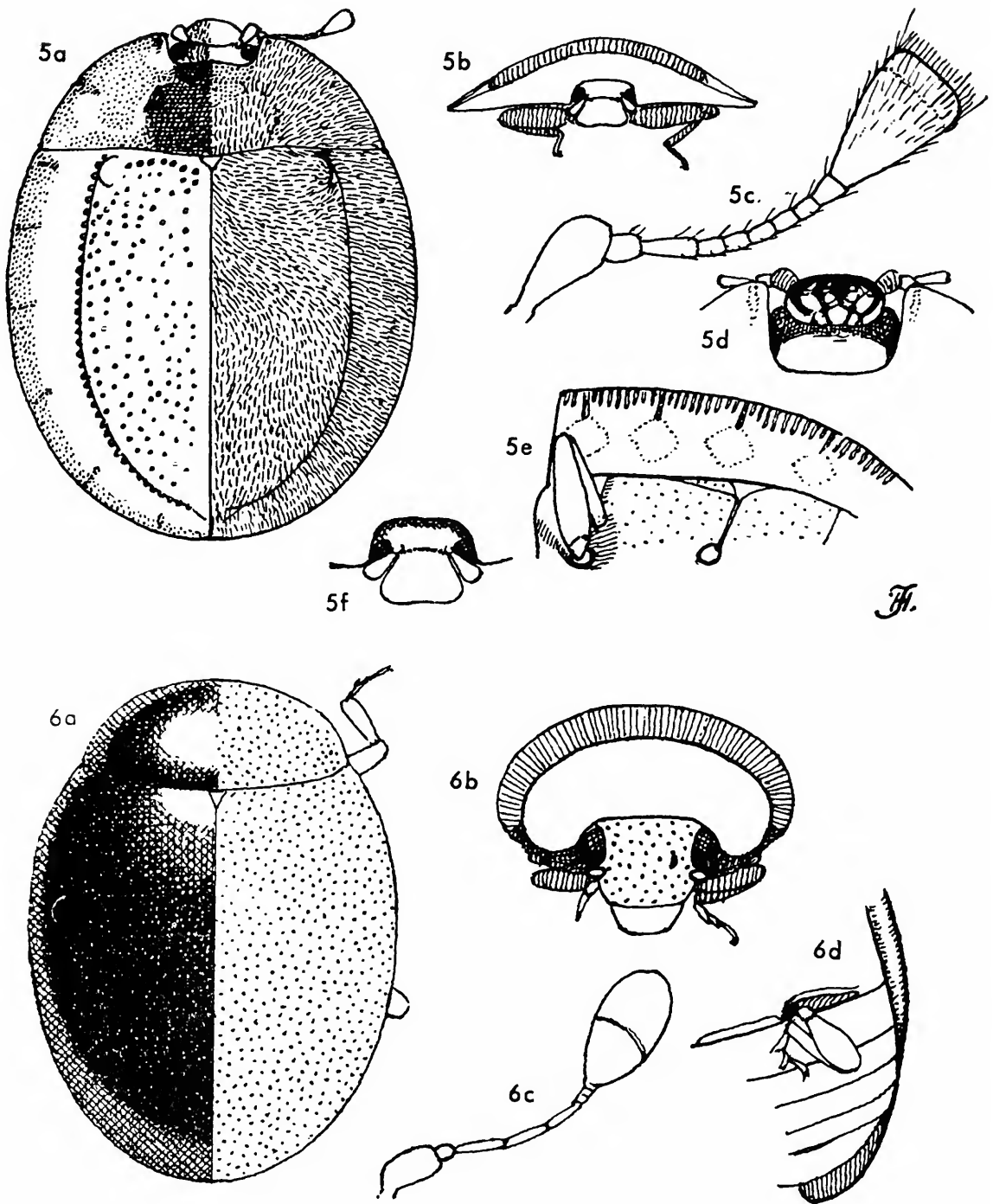
Die Spezies war als *D. fryi* Pascoe determiniert worden und ist dieser sehr ähnlich, unterscheidet sich aber durch die Stromlinien der Haare auf den Elytren und durch ein kürzeres Pronotum. Der Kopfausschnitt ist *fryi* ähnlich doch sind die Vorderecken nicht so stark abgerundet. Die Seitenflächen sind eben, nur wenig durch Drüsen gewellt, nur zum Rand hin aufgebogen. Die Tuberkel sind erhöht und dunkel pigmentiert. Die Punktierung des Discus ist dicht und irregulär. Die Haare sind fast unsichtbar, sie glänzen je nach der Stellung zum Licht. Auf den Elytren sind einige Pseudoporen an der Basis schwarz, auf dem Discus und an der Grenze zur Randpartie aber hell. Diese Partie liegt flach, ist nur zum Rand hin mässig aufgebogen. Aber die 6 Tuberkel sind bis zur Hälfte der Fläche erhöht und dunkel pigmentiert. An der Spitze schliessen die Elytren dicht zusammen und der Discus läuft etwas spitz aus. Die Behaarung ist ähnlich *D. circulare* Sharp (John, 1944, Taf. 4, Fig. 5) in verschiedene Krümmungen gelegt. Diese Haarlage findet sich nur noch bei *perlucidum* John. Auf der Unterseite sind die Epipleuren zwar dicht behaart, doch sind die Haare nur bei geeigneter Drehung zu sehen. Die braune Farbe lässt die Tuberkel dunkel und die dazwischen liegenden kürzeren Tubuli hell erscheinen. Das Metasternum und das 1. Sternit sind sehr zart punktiert. Grösse: 3,2 x 2,6 mm.

Typen: Holotype aus Nova Teutônia, Santa Catarina, Brasil, VIII.1948 (im Departamento de Zoologia, São Paulo); 1 Paratype aus Fazenda Guarda Pinheiro Sêco, 1750 m, Campos do Jordão, São Paulo, Brasil, 18.III.1964, Rabello, Biasi & Travassos Filho col. (im Departamento de Zoologia); 1 Paratype aus Marcelino Ramos, Rio Grande do Sul, Brasil, 21.IX.1939 (im Departamento de Zoologia); 3 Paratypen aus "Brasilien" (2 Paratypen im Departamento de Zoologia, 1 Paratype in meiner Sammlung).

***Coccidophilus citricola* Brèthes**

(Fig. 6a-d)

Brèthes (1905) hatte die Gattung *Coccidophilus* mit der Spezies *citricola* beschrieben. Im *Coleopterorum Catalogus* führt Csiki bei den Discolomidae (Notiophygidae) zwei Gattungen auf, die nicht dazu gehören: *Discogenia* Kolbe (die zu den Propalticidae gehört) und *Coccidophilus* Brèthes. In John (1954) sind im Anhang beide Gattungen als nicht zu den Discolomidae gehörig erwähnt. Herr Reichardt sandte mir 3 Exemplare dieser Art mit



Discoloma diringsi, sp. n.: 5a, Umriss, links die Pseudoporen; 5b, Ansicht von vorn; 5c, Fuehler; 5d, Kopf von unten; 5e, Unterseite; 5f, Kopf. *Coccidophilus citricola* Brèthes: 6a, Umriss; 6b, Ansicht von vorn; 6c, Fuehler; 6d, Unterseite.

den Discolomidae. Da die Zugehoerigkeit zu einer Gattung der Clavicornia meines Wissens noch nicht festgestellt worden ist, gebe ich noch einmal die Abbildung nach diesen Exemplaren, die aus Buenos Aires, Argentinien (15.XII.1906, J. Brèthes col.) stammen. Groesse: 1,2 x 0,75 mm. Die Spezies ist 3-tarsig und hat 9 Fuehlerglieder.

SCHRIFTTUM

BRÈTHES, J.

- 1905: Descripción de un género y de una nueva especie de clavicornio de Buenos Aires (Coleóptera). *Anal. Soc. Cient. Argent.* 59: 76-79.

ERICHSON, W. F.

- 1845: Naturgeschichte der Insecten Deutschlands. Vol. 3, 320 pp.

HORN, G. H.

- 1878: Synopsis of the Colydiidae of the United States. *Proc. Amer. Phil. Soc.* 17: 555-592.

JOHN, H.

- 1944: Revision der Gattung *Discoloma* Er. (Coleoptera: Notiophygidae). *Arb. morph. tax. Ent. Berlin-Dahlem* 11: 81-111, 10 pls.
1954: Familiendiagnose der Notiophygidae (Discolomidae Col.) Ihr Verwandtschaftsverhaeltnis zu den Colydiidae und Bemerkungen zu einigen systematisch noch nicht eingeordneten Gattungen. *Ent. Blaett.* 50: 9-75, 21 pls.

PASCOE, F. P.

- 1860: Notices of new or little-known genera and species of Coleoptera. *Journ. Ent.* 1: 36-64, 98-132, figs.
1863: *Idem. Ibidem* 2: 26-56, figs.

SHARP, D.

- 1895: *Biologia Centrali-Americana, Coleoptera*, 2 (1): 489-496.

Papéis Avulsos de Zoologia

PAPÉIS AVULSOS ZOOL. S. PAULO, VOL. 22, ART. 2: 9-11

10.IX.1968

DESCRIÇÃO DO MACHO E DA PROTONINFA DE *LEPRONYSSOIDES PEREIRAI* (ACARINA, MACRONYSSIDAE)

NÉLIDA MARGARITA LIZASO

ABSTRACT

The hitherto unknown male and protonymph of *Lepronyssoides pereirai* Fonseca, 1935, are described from material collected at Pesqueira, Pernambuco, Brazil, on *Galea spixii*.

Lepronyssoides pereirai Fonseca, 1935

Descrição do ♂

Idiossoma: mede 495 μ de comprimento por 330 μ na maior largura ao nível da coxa IV.

Face ventral (fig. 1): placa holoven-tral reticulada, uniformemente quitinizada, com uma pequena projeção anterior onde se localiza o orifício genital; mede 420 μ de comprimento por 120 μ na maior largura no intervalo das coxas II e III, sendo a largura na região ventral de 75 μ , portanto sem alargamento; o 1.º par de cerdas mede 33 μ ; o 2.º, 36 μ ; o 3.º, 36 μ ; o 4.º par, que são as cerdas metaesternais, mede 36 μ e se implanta fora da placa holoven-tral; o 5.º par mede 39 μ e se implanta ao nível da coxa IV. Na porção ventral, há 8 pares de cerdas e mais 1 cerda ímpar. Cerdas anais pares medindo 18 μ , e a ímpar 21 μ . A região ventral descoberta tem 18 pares de cerdas, sendo que 4 pares marginais apresentam farpa, característica da espécie.

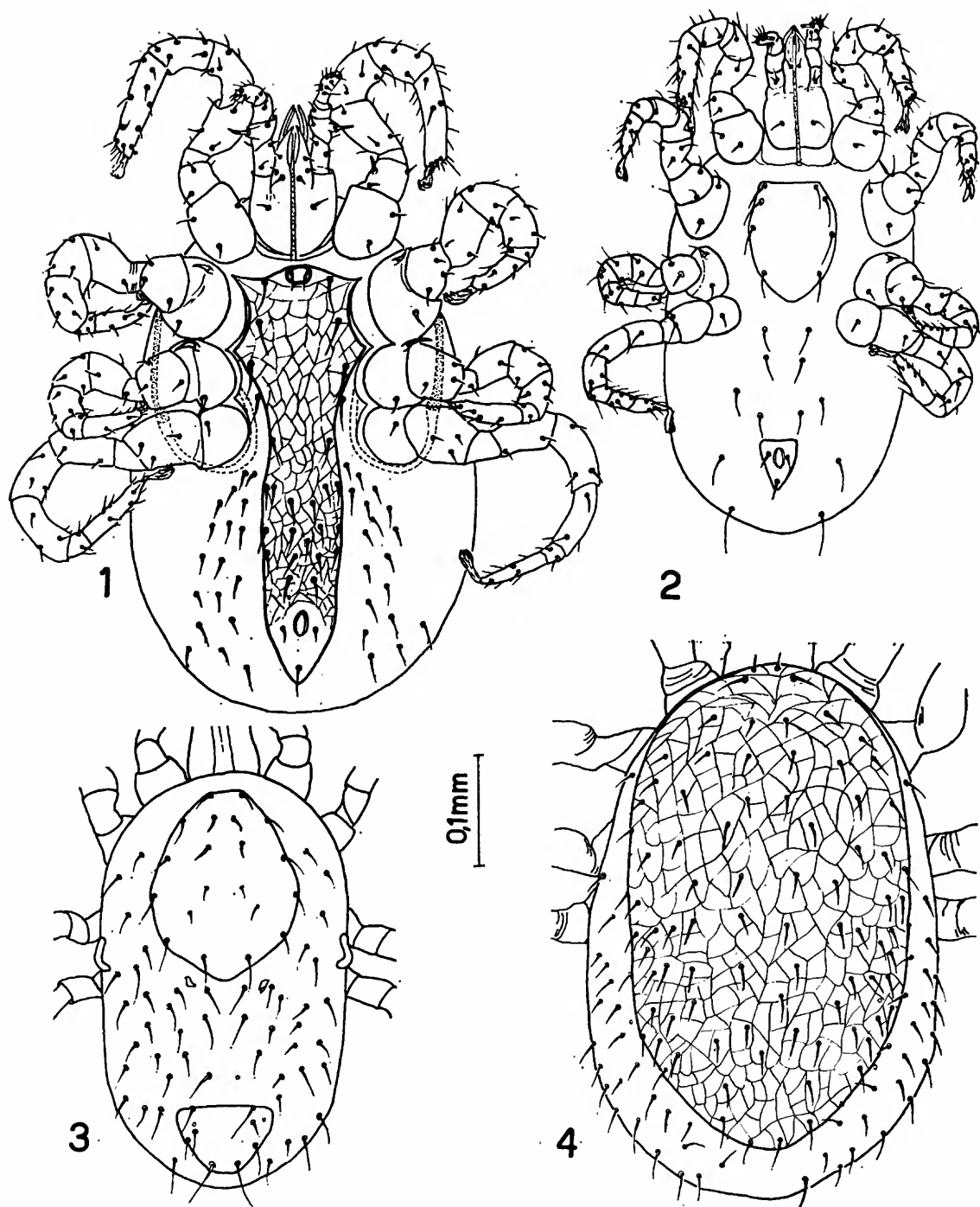
O órgão sensorial, localizado na placa esternal da ♀, não se apresenta no ♂.

Peritrema: visível até a metade da coxa II. Peritrematália prolongada além do peritrema, assemelhando-se à de *Bdellonyssus viscaccia* Fonseca.

Fase dorsal: (fig. 4) o escudo dorsal, recobre 2/3 do idiossoma, de superfície reticulada, sendo bem visível na parte anterior, difundindo-se à medida que se aproxima dos bordos póstero-laterais. Possui 9 pares de cerdas medianas, além de 2 cerdas extranumerarias, na região média posterior do escudo. As cerdas do escudo são lisas; apenas as cerdas marginais da região descoberta do dorso apresentam farpa.

Pernas: semelhantes às da ♀ sem características dignas de menção.

Departamento de Zoologia, Secretaria da Agricultura, São Paulo.
Bolsista da Fundação de Amparo à Pesquisa do Estado de São Paulo.



Lepronyssoides pereirai: 1, ♂, vista ventral; 2, protoninfa, vista ventral;
 3, protoninfa, vista dorsal; 4, ♂, vista dorsal.

Gnatosoma: 2.º artículo dos palpos com um forte tubérculo ventral onde se implanta um espinho curto e forte; 5.º artículo com uma cerda bífida na região ventral interna; os outros caracteres são semelhantes aos da ♀.

Quelíceras: não puderam ser observadas por estarem retraídas.

Exemplares pequenos, pouco quitinizados, foram encontrados em estado normal, isto é, sem estarem engorgitados de sangue; engorgitamento é habitual nas ♀♀ e nas formas jovens.

Protoninfa

Muito pouco quitinizada, com idiossoma que mede 240 μ na maior largura ao nível do 4.º par de patas, por 375 μ de comprimento.

A placa esternal (fig. 2) mede 105 μ de maior largura por 130 μ de comprimento apresentando 4 pares de cerdas.

A placa anal mede 36 μ na maior largura por 54 μ de comprimento com 3 cerdas muito pequenas.

A zona ventral descoberta tem 6 pares de cerdas, sendo 2 marginais, farpadas.

O escudo do podosoma (fig. 3) mede 145 μ de largura por 175 μ de comprimento, onde se implantam 10 pares de cerdas lisas.

O escudo pigidial mede 110 μ de largura por 70 μ de comprimento e tem 4 pares de cerdas lisas.

Apresenta 1 par de plaquetas elípticas próximas do escudo do podosoma. Na região descoberta se implantam 24 pares de cerdas, sendo as externas farpadas iguais às do adulto.

O peritrema, curto e encurvado, se encontra no intervalo da coxa III e IV.

O material que descrevemos forma parte de um lote que consta de 2 ♂ e grande quantidade de ♀♀ e formas jovens capturados em Pesqueira, Pernambuco, em 13.II.1954, parasitando *Galea spixii*. Montamos na mesma lâmina o ♂ e a protoninfa descritos.

Chama a atenção a grande desproporção que existe entre o número de ♀♀ e formas jovens, e ♂. Examinamos 135 lotes de *Lepronyssoides pereirai*, com mais de um milhar de exemplares tendo achado apenas, em um dos lotes 2 ♂♂ e em outro 1 ♂.

REFERÊNCIAS

FONSECA, FLÁVIO DA

- 1935: Notas de Acarologia XIII. Novas espécies sulamericanas de parasitas do gênero *Liponissus* Kolenati, 1858 (Acarina, Liponissidae). *Mem. Inst. Butantan* 9: 69-98, 17 figs.
- 1942: Notas de Acarologia XXXIV. Posição do gênero *Liponissus* Kolenati em face das espécies tropicais; seu desdobramento em novos gêneros (Acarina, Liponissidae). *Ibidem* 16: 149-156, 2 figs.
- 1959: Notas de Acarologia XLIV. Inquérito sobre a fauna acarológica de parasitas no nordeste do Brasil. *Ibidem* 28: 99-186, 54 figs.

NOTAS SOBRE CERAMBYCINAE II (COL., CERAMBYCIDAE)

UBIRAJARA R. MARTINS

ABSTRACT

This paper deals with the removal of some genera from the tribe Ibidionini.

The genus *Sydax* Lacordaire, 1869, is transferred to the tribe Methiini; some notes on the colour pattern of *Sydax stramineus* Lacordaire, 1869, are given.

The genus *Bomarion* Gounelle, 1909, transferred to Achrysonini (near *Ectenessa*) is studied more deeply, based on type specimens in the Thomson and Gounelle Collections (now in the Muséum National d'Histoire Naturelle, Paris). *Bomarion lineatum* Gounelle, 1909, is designated the type of the genus and redescribed. *B. signatipenne* Gounelle, 1909, *B. heteroclitum* (Thomson, 1867), *B. anormale* (Thomson, 1867) and *B. scansor* Gounelle, 1909, are also redescribed. Some observations on systematic position of *B. carenatum* (Martins, 1962) are given. *B. boavidai*, sp.n., from Brazil and *B. aureolatum*, sp.n., from Bolivia are described.

The genus *Aneuthetochorus*, gen.n., is established for *Bomarion bivestitum* Martins, 1962; the position of the new genus in the tribe Callidiopini is discussed.

The genus *Coscinedes* Bates, 1885, is removed to the tribe Callidiopini, close to *Merostenus* White.

Neocorus Thomson, 1864, and *Neocoridolon* Melzer, 1930, are also removed from Ibidionini, but their position (Callidiopini or Elaphidionini?) remains indeterminate. The differences between *Neocorus ibidionoides* (Serville, 1834) and *N. diversipennis* Belon, 1903, are studied.

Cilium Fairmaire, 1898, *Ganosomus* Fairmaire, 1901, and *Trimeroderus* Fairmaire, 1896, all from Madagascar, and *Leptoxenus* Bates, 1877, from Japan, Korea and Taiwan, are removed from the Ibidionini; location in other tribes is at present impossible on account of lack of comparative materials from these areas.

O presente trabalho tem por finalidade transferir da tribo Ibidionini gêneros e espécies que a ela foram incorporados indevidamente, segundo meu critério. Tenho em preparação uma monografia sobre essa tribo e após estudar os gêneros discutidos a seguir, julguei mais conveniente separá-los numa contribuição à parte. Gêneros americanos serão deslocados com justificativas me-

lhores; para os grupos africanos e asiáticos não sugiro posições uma vez que não disponho de material comparativo suficiente.

***Sydx stramineus* Lacordaire, 1869**

Sydx stramineus Lacordaire, 1869: 366, nota 1; Aurivillius, 1912: 108 (Cat.); Blackwelder, 1946: 569 (Cat.); Martins, 1959: 299, figs. 1-9.

Sydx fuscolineatus Melzer, 1935: 176.

Vários caracteres apresentados por esta espécie aconselham sua colocação em outra tribo que não Ibidionini: glossa (Martins, 1959: 298, fig. 1) não bilobada; palpos maxilares (*l.c.*, fig. 3) consideravelmente desenvolvidos em comprimento, com o artículo III mais longo do que os demais; gálea não expandida perto do ápice; lacínea reduzida; coxas anteriores e intermediárias contíguas; extremidade do lobo médio da genitália do macho (*l. c.*, fig. 8) fortemente emarginada; parâmeros da genitália da fêmea (*l.c.*, fig. 7) desenvolvidos e largos, com styli subapicais.

Não foram publicadas ainda peças bucais ou genitália de representantes de Methiini americanos, entretanto, palpos maxilares desenvolvidos e coxas contíguas, são caracteres encontrados nessa tribo. Parece-me correto, provisoriamente, situar *Sydx* entre Methiini, dos quais possui também o mesmo aspecto geral.

Sydx stramineus, única espécie do gênero, tem ampla distribuição na América do Sul, embora não tenha sido ainda assinalada para a Amazônia. O exemplar anteriormente arrolado para Colômbia (Martins, 1959: 300) parece estar mal rotulado (Coleção Tippmann).

Examinei recentemente um exemplar de sexo masculino proveniente de Fonteboa, Amazonas (Muséum National d'Histoire Naturelle), que difere em alguns caracteres dos exemplares conhecidos: segmentos I-IV das antenas acastanhados; élitros amarelados, cada um com uma faixa transversal larga, acastanhada, no meio; escapo (40x) fortemente rugoso, principalmente no lado externo da metade basal. Em *stramineus*, as antenas não são bicolores, os élitros (principalmente nas fêmeas), quando muito, apresentam uma faixa escura longitudinal e a superfície do escapo é apenas áspera. É muito provável que o exemplar amazônico pertença a uma espécie nova a ser descrita quando mais material for conhecido.

***Bomarion* Gounelle, 1909**

Bomarion Gounelle, 1909: 674; Aurivillius, 1912: 111 (Cat.); Blackwelder, 1946: 570 (Cat.).

Este gênero deve ser transferido da tribo Ibidionini para a tribo Achrysonini, nas imediações de *Ectenessa* do qual se aproxima. Cavidades coxais intermediárias abertas lateralmente, fronte oblíqua, pronoto plano e pontuado, escapo com asperosidades, fêmures anteriores com quilha dorsal, processo prosternal pouco recurvo, processo mesosternal largo e fêmures com pontos ásperos, caracteres frequentes em *Bomarion*, não são próprios à tribo Ibidionini.

Os gêneros *Ectenessa* e *Bomarion* necessitam revisão e devem ser estudados em conjunto.

Gounelle estabeleceu *Bomarion* em 1909 para três espécies: *lineatum*, *signatipenne* e *scansor*; em 1962, acrescentei *bivestitum* e *carenatum*; em 1967, após examinar a Coleção Thomson (Muséum National d'Histoire Naturelle), incorporei ao gênero *anormale* Thomson e *heteroclitum* Thomson, descritos originalmente em *Ibidion*.

Designo *Bomarion lineatum* Gounelle, 1909, para espécie-tipo do gênero *Bomarion*. Belon (1902: 13), nas considerações iniciais de seu trabalho sobre *Ectenessa*, sugere que o tipo deste gênero é *E. nitida* Bates, 1885.

Com base apenas nas espécies-tipo, diria que *Bomarion* difere de *Ectenessa*: pela ausência de carenas nos artículos basais das antenas; pelos lobos superiores dos olhos com três fileiras de omatídios; pelo número reduzido de fileiras (duas) longitudinais de pontos pilíferos nos élitros e pelo formato das extremidades elitrais.

Tomadas em consideração as espécies integrantes atualmente dos dois gêneros, verificar-se-á toda uma seqüência de caracteres intermediários e mais, a presença de caracteres estranhos às espécies-tipo.

Examinei *Bomarion* na Coleção Gounelle e constatei algumas omissões; as notas que se seguem pretendem esclarecer algumas espécies, muito embora seja muito escasso o material à minha disposição neste momento.

***Bomarion lineatum* Gounelle, 1909**

(Figs. 1-3)

Bomarion lineatum Gounelle, 1909: 675, fig. 28, 1-3; Aurivillius 1912: 111 (Cat.); Blackwelder, 1946: 570 (Cat.).

O holótipo, por mim examinado no Muséum National d'Histoire Naturelle (in Coleção E. Gounelle), é uma fêmea (genitália exposta), com rótulo "*Bomarion lineolatum*", proveniente de Jataí Goiás. A redescrição feita a seguir baseia-se numa fêmea de Mineiros, Goiás, comparada com o holótipo.

Cabeça vermelho-alaranjada. Fronte (40x) oblíqua, com pontos grandes mas não muito numerosos; sutura clipeo-frontal pouco demarcada; clipeo desenvolvido, pontuado. Vértice pontuado. Tubérculos anteníferos bem afastados entre si, pouco projetados. Olhos pretos; lobos superiores delgados, com três fileiras de omatídios.

Escapo vermelho-alaranjado; demais segmentos amarelados. Escapo (40x) microesculturado e pontuado, com pontos ásperos, cilíndrico, apenas engrossado para a extremidade. Artículo III subigual em comprimento aos seguintes, não carenado, com pêlos curtos e pouco abundantes no lado interno. Artículo IV pouco mais curto do que o VII; VIII mais comprido do que os seguintes.

Protórax avermelhado, cilíndrico, mais constrito na base do que no ápice. Pronoto (40x) densamente pontuado, exceto numa estreita área perto do centro da base; os tubérculos basais são apenas perceptíveis e arredondados no topo. Partes laterais do

protórax pontuadas como o pronoto. Prosterno rugoso transversalmente nos dois terços basais, com duas faixas de pilosidade pouco densa, longitudinais e paralelas, desde a base até o meio; processo prosternal ligeiramente recurvo.

Élitros (figs. 1-3) amarelados; cada um com uma faixa avermelhada, estreita, longitudinal, que vai desde a base até um pouco além do meio e uma área avermelhada, transversal, um pouco prolongada anterior e posteriormente junto à sutura, localizada no quarto apical. As extremidades são amareladas em pequena extensão, muito ligeiramente entalhadas e apenas projetadas nos ângulos externo e sutural. Os élitros são um pouco expandidos lateralmente a partir do meio, abundantemente pontuados em toda a superfície, embora menos densa e profundamente no terço apical. Os pêlos são curtos e distantes e organizam-se em duas fileiras longitudinais dorsais no meio de cada um.

Fêmures amarelo-avermelhados; anteriores com quilha dorsal pouco demarcada, sem depressão no lado externo da base; médios e posteriores pouco engrossados para o ápice, quase sem granulações. Tíbias amarelo-avermelhadas; médias e posteriores (40x) finas mas evidentemente carenadas no lado externo. Tarsos amarelados; o primeiro segmento dos posteriores tão longo quanto os dois seguintes reunidos.

Mesosterno avermelhado, transversalmente deprimido anteriormente com a metade posterior ao mesmo nível do metasterno, sem pubescência, pouco pontuado. Mesepisternos com pontos, microesculturados e algo pubescentes na região posterior. Metasterno avermelhado, pouco pontuado, pubescente lateralmente. Abdômen avermelhado, sem pubescência.

VARIAÇÕES

O desenho elital dos três exemplares examinados é diferente, principalmente no aspecto da faixa posterior (figs. 1-3).

Dimensões, em mm

	♀
Comprimento total	7,17
Comprimento do protórax	1,43
Largura anterior do protórax	0,93
Largura posterior do protórax	0,81
Comprimento do élitro	4,75
Largura umeral	1,43
Largura dos élitros no terço posterior	1,68
Escapo	0,68
Artículo III	1,25

MATERIAL EXAMINADO

BRASIL. *Bahia*: Campinarana, 1 ♀, 1890, C. Pujol col. (MNHN). Condeúba, 1 ♀, XI-XII.1888, E. Gounelle col. (MNHN). *Goiás*: Mineiros, 1 ♀ (DZSP).

Bomarion signatipenne Gounelle, 1909

(Fig. 4)

Bomarion signatipenne Gounelle, 1909: 675, nota 1; Aurivillius, 1912: 111 (Cat.); Blackwelder, 1946: 570 (Cat.).

Não há exemplares rotulados com êsse nome na Coleção Gounelle. A descrição original cita sete exemplares coligidos na Serra de Comunati, Pernambuco. Encontrei apenas quatro indivíduos desta espécie com essa proveniência, provavelmente cótipos. A re-descrição que se segue está fundamentada num desses espécimes, neste momento rotulado como "Cótipo". A eleição desse exemplar para lectótipo, sem o exame dos três exemplares que não localizei, parece-me pouco cautelosa uma vez que um deles poderá estar devidamente rotulado.

Cabeça avermelhada. Fronte (40x) oblíqua, sem pontuação na área central, mais irregular perto dos olhos; sutura clipeo-frontal não aparente; clipeo desenvolvido com a superfície irregular. Vértice pontuado; tubérculos anteníferos bem afastados entre si, pouco projetados. Olhos pretos; lobos superiores com três fileiras de omatídios.

Antenas, escapo inclusive, amareladas. Escapo bem alongado, com mais da metade do comprimento do artículo III, apenas engrossado para a extremidade, pontuado. Artículo III subigual ao IV em comprimento, não carenado. Artículo IV pouco mais curto do que os seguintes.

Protórax avermelhado, cilíndrico, pouco mais constricto na base do que anteriormente. Pronoto (40x) densamente pontuado, excepto numa área longitudinal, mais desenvolvida do que na espécie precedente (localizada na metade posterior mas que não alcança a base) e no topo das elevações basais que são pouco pronunciadas e superiormente arredondadas. Partes laterais do protórax densamente pontuadas. Prosterno com pontos transversais nos dois terços basais. Processo prosternal ligeiramente recurvo.

Élitros (fig. 4) amarelados; cada um com uma faixa acastanhada, estreita, longitudinal, que se inicia ao nível do quarto anterior e que na parte posterior se volta, como um gancho, novamente para a parte anterior, em pequena extensão; no quarto apical existe uma outra mancha avermelhada, recurva, perto da sutura. Os élitros são muito ligeiramente expandidos lateralmente a partir do meio. A pontuação é abundante em toda a superfície, embora menos densa e profunda no quarto apical. Os pêlos longos são pouco numerosos e estão mal conservados neste exemplar. Extremidades larga e obliquamente truncadas.

Fêmures amarelados ou amarelo-avermelhados; os anteriores normais, sem quilha dorsal aparente, não deprimidos no lado externo da base; médios e posteriores lineares. Tíbias amareladas; médias e posteriores não carenadas. Tarsos amarelados; primeiro segmento dos posteriores tão longo quanto os dois seguintes reunidos.

Mesosterno avermelhado, transversalmente deprimido na parte anterior e gradualmente elevado para a parte posterior; mesepister-

nos microesculturados em quase toda a superfície, esparsamente pontuado, principalmente na metade posterior. Metasterno avermelhado, densamente microesculturado lateralmente. Abdômen avermelhado.

Dimensões, em mm

	(♂?)
Comprimento total	8,80
Comprimento do protórax	1,75
Largura anterior do protórax	1,12
Largura posterior do protórax	1,00
Comprimento do élitro	6,19
Largura umeral	1,68
Largura do terço apical dos élitros	1,81
Escapo	1,03
Artículo III	1,56

MATERIAL EXAMINADO

BRASIL. *Pernambuco*: Serra de Comunati, 1 (♂?), I-III.1893, E. Gounelle col. (MNHN, cótipo).

DISCUSSÃO TAXONÔMICA

Alguns caracteres citados a seguir poderão refletir diferenças sexuais. Esta espécie separa-se de *Bomarion lineatum* pelas antenas inteiramente amareladas, inclusive o escapo; pelo escapo mais longo do que a metade do artigo III (vide dimensões); pelo vértice mais densamente pontuado; pelo protórax menos constricto na base; pela área lisa da base do pronoto mais desenvolvida; pelos élitros relativamente mais alongados, com desenho ligeiramente diverso (figs. 1-3 e 4) e extremidades oblíquas e não entalhadas; pelo formato dos fêmures anteriores, sem quilha nesta espécie; pela ausência de carenas nas tíbias médias e posteriores e pelo declive não abrupto e vertical do mesosterno.

***Bomarion boavidai*, sp. n.**

(Fig. 5)

Rotulado na Coleção Gounelle como *Bomarion boavidae*, proveniente da Serra do Caraça, Minas Gerais, onde capturei os exemplares que servem à presente descrição. O nome da espécie poderá parecer estranho aos leitores de língua portuguesa. Homenageia entretanto, o famoso Pe. Luiz Boavida, construtor do órgão da igreja da Senhora Mãe dos Homens, no Colégio do Caraça, fabricado por ele no local, com seus próprios recursos e madeiras da região; foi inaugurado em maio de 1883. Gounelle esteve no Caraça em dezembro de 1885 e deve ter ficado impressionado com a obra de Boavida a ponto de homenageá-lo com esta espécie.

Cabeça avermelhada. Fronte (40x) oblíqua, com um área central mais lisa, mais pontuada látero-superiormente; sutura clipeo-

frontal indistinta; clipeo pontuado. Vértice pontuado. Tubérculos anteníferos bem afastados, algo projetados. Lobos superiores dos olhos com três fileiras de omatídios.

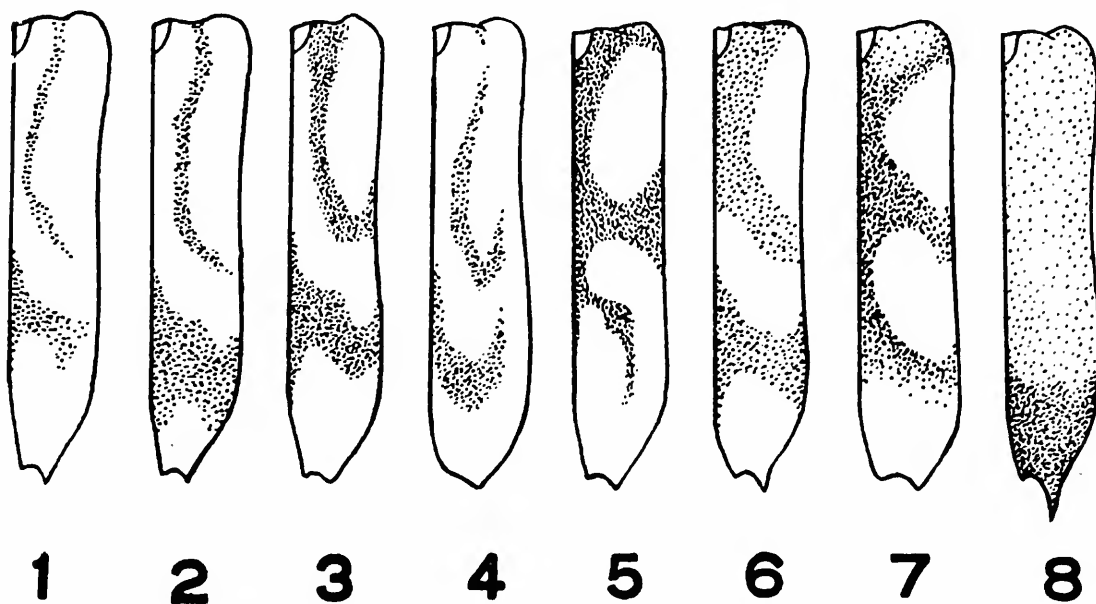
Antenas amarelo-avermelhadas ou amareladas, com a mesma descrição de *lineatum*; escapo pouco e gradualmente engrossado para a extremidade, com cerca da metade do comprimento do III.

Protórax vermelho-acastanhado, também semelhante ao de *lineatum*, mais constricto na base do que na extremidade. Pronoto plano, pontuado, com área basal lisa; as elevações, duas anteriores e duas basais, pouco manifestas. Partes laterais do protórax pontuadas. Prosterno rugoso transversalmente na metade basal, com duas faixas paralelas e pouco evidentes de pilosidade. Processo prosternal ligeiramente recurvo.

Élitros (fig. 5) com desenho castanho-avermelhado como no esquema da figura 5. A metade apical ligeiramente expandida lateralmente no exemplar maior. Pontuação abundante, fina, mais concentrada até o terço apical. Os pêlos, curtos e distantes, organizam-se em três fileiras: duas dorsais e uma lateral. Extremidades ligeiramente entalhadas, um pouco projetadas no ângulo externo e no ângulo sutural.

Fêmures amarelados; anteriores semelhantes aos de *lineatum*, com quilha dorsal pouco desenvolvida. Tíbias amareladas; médias e posteriores fina mas distintamente carenadas. Tarsos amarelados; primeiro artículo dos posteriores tão longo quanto os dois seguintes reunidos.

Mesosterno avermelhado, com forte declive (90°) transversal, quase sem pontuações; metasterno avermelhado, microesculturado e pubescente nos lados. Abdômen amarelado ou avermelhado.



Esquemas de élitros: 1-3, *Bomarion lineatum* Gounelle; 4, *B. signatipenne* Gounelle; 5, *B. boavidai*, sp. n.; 6, *B. heteroclitum* (Thomson); 7, *B. aureolatum*, sp. n.; 8, *B. scansor* Gounelle.

Dimensões, em mm

	Holótipo ♂	Parátipo ♀
Comprimento total	9,67	7,06
Comprimento do protórax	1,68	1,37
Largura anterior do protórax	1,31	0,93
Largura posterior do protórax	1,12	0,81
Comprimento do élitro	6,95	5,00
Largura umeral	1,93	1,43
Largura do terço apical dos élitros	2,06	1,37
Escapo	1,00	0,75
Artículo III	1,62	1,18

MATERIAL EXAMINADO

BRASIL. *Minas Gerais*: Serra do Caraça, 2 ♂, XI.1961, Kloss, Lenko, Martins & Silva col. (DZSP).

Holótipo ♂ e 1 parátipo ♂ no Departamento de Zoologia.

DISCUSSÃO TAXONÔMICA

Estruturalmente muito próximo a *lineatum*, concorda no formato e comprimento relativo do escapo, forma do protórax, dos ápices dos élitros, do mesosterno e dos fêmures anteriores; além disso, possui também tíbias carenadas. Separa-se pelo desenho elitral (figs. 1-3 e 5). Os caracteres comuns com *lineatum*, arrolados acima, distinguem *boavidai* de *signatipenne*.

Bomarion heteroclitum (Thomson, 1867)

(Fig. 6)

Ibidion (Bridaeum) heteroclitum Thomson, 1867: 137.

Ibidion heteroclitum; Thomson, 1878: 8 (Tipo); Aurivillius, 1912: 112 (Cat.); Blackwelder, 1946: 571 (Cat.).

Bomarion heteroclitum; Martins, 1967: 47.

Apesar do primeiro segmento dos tarsos posteriores não ser muito desenvolvido em comprimento, esta espécie se enquadra bem em *Bomarion*. A redescrição que se segue é a do holótipo, depositado na Coleção J. Thomson.

Cabeça avermelhada. Fronte oblíqua, pontuada; sutura clipeo-frontal não aparente; clipeo pontuado. Vértice pontuado. Tubérculos anteníferos largamente separados. Lobos superiores dos olhos com três fileiras de omatídios.

Antenas com o primeiro segmento avermelhado e os seguintes amarelados. Escapo tronco-cônico alongado, microesculturado, pontuado, com pontos ásperos. Artículo III subigual aos seguintes, não carenado, com pêlos não muito alongados no lado interno.

Protórax avermelhado, cilíndrico, mais constrito na base do que no ápice, pontuado, com área basal pouco desenvolvida lisa. Partes laterais do protórax evidentemente pontuadas. Prosterno pontuado nos dois terços basais; a metade posterior com pêlos esparsos, mais concentrados em duas faixas paralelas que vão até um pouco além do meio.

Élitros (fig. 6) avermelhados, expandidos lateralmente depois do meio; cada um com uma mancha amarelada, arredondada para o lado da sutura na metade anterior, uma faixa oblíqua, um pouco recurva, no meio e extremidades ocupadas por mancha amarelada. Os élitros são fortemente expandidos lateralmente atrás do meio. Pêlos moderadamente alongados, organizados em duas fileiras longitudinais dorsais da base até o meio. Extremidades entalhadas com espinhos curtos nos ângulos sutural e externo.

Fêmures amarelados; anteriores com quilha dorsal pouco desenvolvida mas evidente, semelhantes aos de *lineatum*; médios e posteriores mais lineares. Tíbias amareladas; posteriores com carena (40x) fina no lado externo. Tarsos amarelados.

Um segundo exemplar, pertencente ao British Museum, permite descrever o mesosterno que é fortemente abrupto no centro como em *lineatum*.

Dimensões, em mm

	Holótipo
Comprimento total	9,13
Comprimento do protórax	1,84
Largura central do protórax	1,23
Largura basal do protórax	0,96
Comprimento do élitro	5,97
Largura umeral	1,68
Largura do terço ante-apical	2,00

MATERIAL EXAMINADO

BRASIL. 1 ex., Coll. J. Thomson (MNHN, holótipo); 1 ex., Coll. Bowring-Chevrolat (BM). O exemplar do British Museum traz um rótulo verde onde se lê: "*Ibidion depressum* Chv. Brésil. A. Chabril".

DISCUSSÃO TAXONÔMICA

Pertence ao mesmo grupo de *lineatum* e *boavidai* e separa-se imediatamente de ambas pelo desenho elital (figs. 1-3, 5 e 6). O primeiro tarsômero dos tarsos posteriores é relativamente mais curto e os élitros são mais expandidos lateralmente a partir do meio, mas êsses caracteres podem ser sexuais.

Bomarion aureolatum, sp n.

(Fig. 7)

Ainda do grupo *lineatum* esta espécie apresenta élitros sensivelmente expandidos lateralmente a partir do meio. Concorde, em linhas gerais, com a descrição das espécies do grupo, mas difere pelo desenho dos élitros.

Élitros (fig. 7) avermelhados, amarelados em pequena extensão basal; segue-se mancha desenvolvida, amarelada, arredondada para o lado da sutura e bordejada por colorido avermelhado; logo depois do meio encontra-se uma faixa oblíqua em sentido ascen-

dente da margem para a sutura, bordejada anterior e posteriormente por coloração castanho-avermelhada; todo têrço apical é amarelado e pouco densamente pontuado. As extremidades são entalhadas em pequena extensão.

Dimensões, em mm

	Holótipo (♀?)
Comprimento total	7,60
Comprimento do protórax	1,56
Maior largura do protórax	1,12
Largura basal do protórax	0,87
Comprimento do élitro	4,93
Largura umeral	1,56
Largura do têrço ante-apical	1,81
Escapo	0,81
Artículo III	1,06

MATERIAL EXAMINADO

BOLÍVIA. *Santa Cruz*: Província del Sara, 1 (♀?), Acc. nº 5043, J. Steinbach col. (CM).

Holótipo ♀ no Carnegie Museum.

***Bomarion carenatum* Martins, 1962**

Bomarion carenatum Martins, 1962: 150, fig. 29.

Originalmente descrita da Província del Sara, Bolívia. Examinei recentemente mais um casal proveniente de Buenavista (400 m), Província Ichilo, Santa Cruz, Bolívia.

Apresenta caracteres um tanto diversos dos *Bomarion* estudados acima e transicionais com espécies atualmente pertencentes a *Ectenessa*: lobos superiores dos olhos com quatro fileiras de omatídios; antenas finamente carenadas; pronoto dos machos com pontos maiores (poucos mas muito evidentes, 40x) e profundos na parte anterior, ausentes nas fêmeas, caráter também presente em *Ectenessa* (*E.*) *fenestrata* (Thomson); quilha dorsal dos fêmures anteriores acentuadamente desenvolvida e processo prosternal menos arqueado.

Além desses caracteres, *Bomarion carenatum* difere das espécies precedentes pelo desenho dos élitros.

Separa-se de *Ectenessa ornatipennis* Tippmann, também da Bolívia, pela ausência de faixa branca nos ápices dos élitros, pelo maior desenvolvimento da quilha dos fêmures anteriores e a menor densidade de pontuação no pronoto.

***Bomarion anormale* (Thomson, 1867)**

Ibidion (*Tropidion*) *anormale* Thomson, 1867: 145.

Ibidion anormale; Thomson, 1878: 6 (Tipo); Aurivillius, 1912: 112 (Cat.); Blackwelder, 1946: 570 (Cat.).

Ectenessa (?) *anormale*; Bates, 1885: 257.

Bomarion anormale; Martins, 1967: 47.

Uma espécie com características bem diversas dos *Bomarion* típicos, tem as antenas finamente carenadas, lobos superiores dos olhos mais desenvolvidos e extremidades elitrais, fortemente biespinhosas. A redescritção que se segue está fundamentada no holótipo (♂?) que examinei no Muséum National d'Histoire Naturelle (in Coleção J. Thomson).

Cabeça avermelhado-escuro, pontuada. Fronte oblíqua. Escapo avermelhado, apenas levemente engrossado para a extremidade, com pontuação abundante e asperosidades transversais desenvolvidas (40x). Demais segmentos amarelados; III fina mas evidentemente carenado, com pêlos curtos no lado interno.

Protórax avermelhado-escuro, cilíndrico, um pouco mais constrito na base do que anteriormente. Pronoto pontuado, com área basal pouco desenvolvida, destituída de pontuações; látero-anteriormente encontram-se dois tubérculos arredondados no tôpo, indistintos. Partes laterais do protórax menos densa mas quase tão abundantemente pontuadas como o pronoto. Prosterno pouco pontuado; adiante de cada coxa existe uma faixa recurva de pubescência pouco densa que vai até um pouco além do meio. Processo prosternal plano e relativamente largo (cêrca de metade da largura de uma coxa anterior).

Élitros vermelho-escuros; a região umeral mais amarelada. Cada um com uma mancha amarelo-esbranquiçada, desenvolvida, arredondada para o lado da sutura na metade anterior, uma faixa branco-amarelada, oblíqua em sentido ascendente da margem para a sutura logo depois do meio e extremidades ocupadas por mancha branca; o limite anterior dessa mancha apical é transversal à sutura. A pontuação, muito densa na base, vai ficando mais rala para a extremidade. No dorso, ao nível da mancha anterior, os élitros são um pouco mais aprofundados longitudinalmente. Extremidades cortadas em curva profunda, bem projetadas no ângulo interno e espinhosas no ângulo externo.

Fêmures amarelados; anteriores normais, pouco engrossados no meio. Tíbias e tarsos anteriores castanho-amarelados. As pernas médias e posteriores faltam no holótipo.

Mesosterno glabro, avermelhado, sem pontos, um pouco elevado transversalmente ao nível anterior das cavidades cotiloideas intermediárias; processo mesosternal largo (aproximadamente a largura de uma coxa média), entalhado em "v" na extremidade. Mesepisternos quase inteiramente recobertos por pubescência. Metasterno lateralmente pubescente; a parte central brilhante, com alguns pontos isolados de onde partem pêlos longos e finos. Abdômen com os segmentos I e V amarelados e os centrais (II-IV) castanho-avermelhados; superfície brilhante, com apenas alguns pêlos finos muito isolados.

Dimensões, em mm

	Holótipo (♂?)
Comprimento total	8,80
Comprimento do protórax	1,71
Maior largura do protórax	1,33
Largura basal do protórax	1,06
Comprimento do élitro	5,65
Largura umeral	1,63
Escapo	0,81
Artículo III	1,53
Artículo IV	1,50
Artículo V	1,53

MATERIAL EXAMINADO

BRASIL. 1 (♂?), Coll. J. Thomson (MNHN, holótipo).

DISCUSSÃO TAXONÔMICA

Difere das espécies de *Bomarion* pelos fêmures anteriores normais, além do desenho elitral; os élitros têm lados paralelos e extremidades fortemente biesponhosas.

Examinei uma outra espécie de Mato Grosso, que concorda em alguns caracteres com *anormale* mas que tem fêmures anteriores fortemente quilhados, pontos sexuais e asperosidades no pronoto, organização diferente na pubescência do prosterno e mesosterno pubescente.

Destas espécies também parece aproximar-se *Ectenessa ornaticipennis* Tippmann.

***Bomarion scansor* Gounelle, 1909**

Bomarion scansor Gounelle, 1909: 675, fig. 28, 4; Aurivillius, 1912: 111 (Cat.); Blackwelder, 1946: 570 (Cat.).

Encontrei apenas o holótipo (♀?) na Coleção Gounelle, no qual se baseiam as observações que se seguem:

Cabeça e pronoto (exceto a base), prêto-avermelhados. Cabeça pontuada; fronte oblíqua. Tubérculos anteníferos pouco pronunciados, distantes. Vértice pontuado.

Escapo com asperosidades, cilíndrico, muito pouco engrossado para a extremidade. Artigo III muito fina mas evidentemente carenado, com pêlos curtos no lado interno. Demais artigos com comprimentos subiguais.

Protórax pouco mais longo do que largo, apenas mais estreito na base do que no ápice. Pronoto pontuado, exceto numa área centro-basal e no tôpo das elevações posteriores; as elevações são quatro; duas anteriores e duas basais, pouco notáveis. Partes laterais do protórax pontuadas. Prosterno mais ou menos rugoso na metade basal; processo prosternal estreito, plano, finamente pubescente.

Élitros amarelados com algumas áreas mais avermelhadas e pouco menos do quarto apical castanho-avermelhado; pontuados, cada um com cinco fileiras longitudinais de pontos pilíferos. Extremidades oblíquas no lado interno com espinho desenvolvido no lado externo. O esquema da figura 8 está baseado num exemplar do Espírito Santo, com extremidades elitrais ligeiramente diferentes das do holótipo.

Fêmures anteriores avermelhados; médios e posteriores acastanhados na extremidade; anteriores normais, sem quilha no lado superior; pontos pilíferos perto do ápice dos posteriores um pouco ásperos. Tíbias acastanhadas, mais avermelhadas em pequena porção apical; posteriores não carenadas. Primeiro segmento dos tarsos posteriores bem alongado.

Mesosterno vermelho-alaranjado, pontuado, um pouco elevado ao nível das coxas médias; processo mesosternal tão largo quanto uma coxa média. Metasterno vermelho-alaranjado pontuado, com alguma microescultura, pubescente látero-posteriormente, provido de pêlos moderadamente alongados. Abdômen com segmentos I e II vermelho-alaranjados e os seguintes escuros, pouco pontuado, com longos pêlos esparsos.

Dimensões, em mm	Holótipo (♀?)
Comprimento total	10,86
Comprimento do protórax	1,81
Maior largura do protórax	1,56
Largura da constrição anterior	1,43
Largura da constrição basal	1,25
Comprimento do élitro	7,44
Largura umeral	2,17

MATERIAL EXAMINADO

BRASIL. *Goiás*: Jataí, 1 (♀?), Coll. E. Gounelle (MNHN, holótipo).

DISCUSSÃO TAXONÔMICA

Os machos, que presumo pertençam a esta espécie, apresentam pontos sexuais profundos no pronoto. Tal caráter, associado às antenas carenadas e aos lobos superiores dos olhos com quatro fileiras de omatídios, aproxima *scansor* de *Ectenessa*. O colorido elitral (fig. 8) distingue *scansor* das espécies de *Bomarion*.

Aneuthetochorus, gen. n.

Tipo do gênero, *Aneuthetochorus bivestitus* (Martins, 1962), *comb. n.*; espécie descrita originalmente em *Bomarion*.

Se acompanhada rigorosamente a chave de Lacordaire para tribos (1869) este gênero é conduzido à tribo Callidiopini: olhos fortemente granulados; cavidades cotilóideas intermediárias fechadas lateralmente; primeiro segmento abdominal normal; cabeça não prolongada em "focinho"; antenas inermes; tíbias não carenadas; élitros sem calosidades ebúrneas; tubérculos anteníferos deprimidos.

Analiso, rapidamente, a posição atual dos gêneros americanos de Callidiopini segundo o catálogo mais recente (Blackwelder, 1946): *Rhyzium* Pascoe será incorporado à tribo Ibidionini na monografia que venho preparando sobre essa tribo; *Curtomerus* Steph. (= *Cylindera* Newn.) foi situado em Elaphidionini por Linsley (1963:4); *Merostenus* White, único remanescente em Callidiopini.

As duas espécies que conheço de *Merostenus* (*elongatus* Fisher e *attenuatus* Chevrolat) não têm nenhuma relação com os gêneros *Rhyzium* e *Curtomerus*; tão pouco com *Aneuthetochorus*, gen. n.

Onde situar *Aneuthetochorus*? É certo que o novo gênero não deve permanecer em Ibidionini; por outro lado, sua posição em Callidiopini será provisória e talvez errônea, embora me pareça a única plausível no momento.

Os seguintes caracteres levam-me a transferi-lo de Ibidionini: fronte oblíqua com sutura clipeo-frontal não demarcada; palpos maxilares com o dobro do comprimento dos labiais; escapo com asperosidades; lobos superiores dos olhos desenvolvidos, não adelgaçados atrás da inserção das antenas; lobos inferiores relativamente muito próximos no lado inferior da cabeça; pronoto pontuado.

Acrescentaria ao gênero os seguintes caracteres: escapo pouco e gradualmente engrossado para a extremidade, subigual em comprimento ao artículo IV; artículo III mais longo do que o seguinte, não carenado; protórax alongado, cilíndrico, um pouco constrito anterior e posteriormente; cavidades coxais anteriores fechadas pelo contato do processo prosternal com a ponta do proepímero; cavidades coxais intermediárias fechadas lateralmente; fêmures gradualmente engrossados para a extremidade; anteriores sem carena dorsal; tíbias não carenadas; primeiro segmento dos tarsos, principalmente no último par, evidentemente mais longo do que os dois seguintes reunidos.

Coscinedes Bates, 1885

Coscinedes Bates, 1885: 258; Aurivillius, 1912: 104 (Cat.); Blackwelder, 1946: 568 (Cat.); Martins & Chemsak, 1966: 466.

Recentemente incluído em Ibidionini, próximo a *Xalitla* Lane, *Coscinedes* deve ser novamente removido. Sua posição será mais correta nas proximidades de *Merostenus* (tribo Callidiopini), pois apresenta a mesma fórmula antenal e o mesmo tipo de pontuação, além de coincidir com os caracteres dessa tribo citados por Lacordaire (1869).

Anteriormente incluído em Piezocerini, *Coscinedes* não se enquadra em alguns caracteres dessa tribo. As antenas não são multicarenadas, as tíbias não apresentam expansão para o ápice e não são carenadas.

Neocorus Thomson, 1864

Neocorus Thomson, 1864: 114; Lacordaire, 1869: 336; Aurivillius, 1912: 114 (Cat.); Blackwelder, 1946: 571 (Cat.).

Outro gênero a ser removido da tribo Ibidionini por apresentar o artículo III das antenas mais curto do que os seguintes, mais

curto do que o escapo e não carenado; pelo protórax fortemente constricto anterior e posteriormente, globoso no centro; pelos palpos maxilares alongados; pelo primeiro segmento dos tarsos posteriores bem desenvolvido em comprimento.

O problema é o mesmo: em que tribo situá-lo? A seguir-se rigorosamente a chave de Lacordaire, chegaríamos também a Callidiopini. A fórmula antenal de *Merostenus* e de *Coscinedes* é igual à de *Neocorus*, mas o formato do protórax, a pubescência do corpo, o aspecto dos tarsos, etc., são completamente diversos.

No caso de *Neocorus*, a situação parece-me ainda mais complicada pois existe um outro gênero, *Neocoridolon* Melzer, indiscutivelmente próximo a *Neocorus*, que apresenta espinhos nos artículos III e IV das antenas e artículo III mais longo do que o IV. Antenas espinhosas conduzem *Neocoridolon* à tribo Elaphidionini (*sensu* Linsley, = Sphaerionini + Phoracanthini). Até que possa estudar mais profundamente a questão, *Neocorus* e *Neocoridolon* ficam sem localização precisa.

O gênero *Neocorus* está composto atualmente por três espécies: *ibidionoides* (Serville), tipo do gênero; *diversipennis* Belon e *zikani* Melzer.

Neocorus diversipennis Belon, 1903

Neocorus diversipennis Belon, 1903: 50; Aurivillius, 1912:114 (Cat.); Blackwelder, 1946: 571 (Cat.).

Examinei na Coleção Argod (Muséum National d'Histoire Naturelle) os tipos desta espécie: um macho (Holótipo) e uma fêmea ("alótipo"). Belon analisa algumas diferenças entre os dois exemplares o que realmente é verdadeiro: a fêmea não é coespecífica com o macho; é um exemplar de *Neocorus ibidionoides* (Serville).

Neocorus diversipennis é de fato uma espécie próxima mas diferente de *ibidionoides*: o protórax, élitros e fêmures apresentam alguns pêlos longos esparsos; as extremidades dos élitros são mais arredondadas, pouco aguçadas; o protórax é menos globoso; os tubérculos anteníferos são bem agudos, contíguos nas bases; os lobos superiores dos olhos são curtos e distantes. Em *ibidionoides* não existem pêlos longos; as extremidades dos élitros são prolongadas e agudas; o protórax é fortemente globoso; os tubérculos anteníferos são menos projetados e distantes; os lobos superiores dos olhos são mais desenvolvidos e mais próximos. A pubescência elitral também é um pouco diversa nas duas espécies mas este caráter é de difícil descrição.

Dimensões do holótipo de *diversipennis*, em mm

Comprimento total	5,81
Comprimento do protórax	1,50
Maior largura do protórax	0,90
Comprimento do élitro	3,74
Largura umeral	1,06

MATERIAL EXAMINADO

A espécie foi originalmente descrita da Província de Cochabamba, Bolívia. Encontrei na Coleção do Departamento do Zoolo-

gia alguns exemplares que concordam bem com as anotações que fiz em Paris, mas que têm origens completamente diferentes:

BRASIL. *São Paulo*: São Bernardo, 1 ex., 26.V.1963, R. Grant-sau col. São Paulo (Santo Amaro), 1 ex., IX.1920, J. Lane col.; (Saúde), 1 ex., III-VI.1920, J. Melzer col.

* * *

Se as dificuldades que encontrei para situar os gêneros neotropicais em outras tribos são, neste momento, quase intransponíveis, que dizer dos gêneros estranhos à nossa fauna? Uma vez que não disponho de material comparativo, me limitarei apenas a removê-los de Ibidionini.

Cilium Fairmaire, 1898

Cilium Fairmaire, 1898: 421; Aurivillius, 1912: 114 (Cat.)

Examinei no Muséum National d'Histoire Naturelle o holótipo de *Cilium perrieri* Fairmaire, 1898, tipo do gênero, de Madagascar. Nem mesmo o aspecto geral lembra o de um Ibidionini. As cavidades cotilóideas intermediárias, ao contrário do que afirma Fairmaire, são abertas lateralmente, o que conduz o gênero *apud* Lacordaire, a Achrysonini (se a "languette" for córnea) ou a Hesperophanini (se a "languette" for membranosa). Não estão assinalados Achrysonini para Madagascar e Hesperophanini está representada por algumas espécies. Parece-me mais lógico situar *Cilium* em Hesperophanini.

Ganosomus Fairmaire, 1901

Ganosomus Fairmaire, 1901: 207; Aurivillius, 1912: 114 (Cat.).

Os tipos de *Ganosomus elegans* Fairmaire, 1901, também encontram-se depositados no Museu de Paris, onde foram examinados. Evidentemente não pertence a Ibidionini, com os quais tem mais semelhança. A espécie também vive em Madagascar.

Trimeroderus Fairmaire, 1896

Trimeroderus Fairmaire, 1896: 372; Aurivillius, 1912: 114 (Cat.)

A espécie-tipo, *Trimeroderus raffrayi*, cujo tipo também examinei em Paris, tem olhos finamente facetados e divididos, pronoto fina e densamente rugoso no disco, provido de vários tubérculos; os ápices dos élitros não recobrem todo o abdômen. A afirmação da Fairmaire "La place de ce nouveau genre me perâit dans la voisinage des *Ibidion* américains", me parece especulativa. Não encontro um único caráter que possa justificar a proximidade de *Trimeroderus* a Ibidionini.

Leptoxenus Bates, 1877

Leptoxenus Bates, 1877: 37; Aurivillius, 1912: 114 (Cat.); Gressit, 1951: 153.

Bates ao descrever o gênero faz referência à sua afinidade com Eligmodermiini. A espécie-tipo, *Leptoxenus ibidiiformis* do Japão

e Formosa, apresenta caracteres tão estranhos, que não se poderá sequer pensar na sua proximidade a Ibidionini ou Eligmodermini.

Deve ter passado despercebido a Bates, um conhecedor de Ibidionini, o aspecto do quinto segmento tarsal, expandido na extremidade, provido de pubescência ventral semelhante à dos artículos precedentes; as cavidades coxais intermediárias são abertas lateralmente; os artículos III e IV das antenas são mais curtos do que os seguintes e os dois primeiros segmentos dos tarsos são muito alongados.

Ainda não encontrei nenhum gênero americano com tarsos semelhantes aos de *Leptoxenus ibidiiformis*.

REFERÊNCIAS

AURIVILLIUS, C.

1912: *Coleopterorum Catalogus, pars 39*: 1-574. W. Junk edit. Berlin.

BATES, H. W.

1877: Three new species of Longicorn Coleoptera from Japan. *Ent. Mo. Mag.* 14: 37-38.

1879-85: *Biologia Centrali-Americana, Coleoptera 5*: XII + 525 pp., 26 est.

BELON, P.

1903: Matériaux pour l'étude des Longicornes de Bolivie. *Rev. Ent., Caen*, 22: 47-76.

BLACKWELDER, R. E.

1946: Checklist of the Coleopterous insects of México, Central America, the West Indies and South America. *Bull. U. S. Nat., Mus.* 185 (4): 551-763.

FAIRMAIRE, L.

1896: Matériaux pour la faune coléoptérique de la Région Malgache. *Ann. Soc. Ent. Belg.* 40: 336-397.

1898: *Idem* (6^e note), *Ibidem* 42: 390-439.

1901: *Idem* (11^e note), *Rev. Ent., Caen*, 20: 101-248.

GOUNELLE, E.

1909: Listes des Cérambycides de la Région de Jatahy, État de Goyaz, Brésil. *Ann. Soc. Ent. Fr.* 77: 587-688, 30 figs.

GRESSIT, J. L.

1951: Longicorn Beetles of China. *Longicornia* 2: 1-667, 22 est.

LACORDAIRE, J. T.

1869: *Genera des Coléoptères* 8: 1-552. Librairie Encyclopédique de Roret edit. Paris.

MARTINS, U. R.

1959: Ibidionini (Col., Cerambycinae) II. O gênero *Sydax* Lacordaire. *Papéis Avulsos Dep. Zool. S. Paulo* 13: 297-302, 9 figs.

1962: *Idem* XVIII. Um novo gênero e novas espécies. *Ibidem* 15: 127-162, 39 figs.

- 1967: Notas sobre Cerambycinae (Col., Cerambycidae). *Papéis Avulsos Zool. S. Paulo* 21: 43-53, 3 figs.
- MARTINS, U. R. & J. A. CHEMSAK
- 1966: Synopsis of the known mexican Iridionini. *Journ. Kansas Ent. Soc.* 39: 454-467.
- MELZER, J.
- 1935: Longicorneos novos ou pouco conhecidos do Brasil. *Rev. Mus. Paulista* 12: 1-19, 2 est.
- THOMSON, J.
- 1864: Systema Cerambycidarum. *Mém. Soc. Roy. Sci. Liège* 19: 1-540.
- 1867: Iridionitarum species novae. *Physis Rec. Hist. Nat.* 1: 133-163.
- 1878: Typi Cerambycidarum Musei Thomsoniani. *Rev. Mag. Zool.* 6 (3): 1-68.

A NEW BRAZILIAN SPECIES OF THE GENUS *BRACHYLABIS* DOHRN (DERMAPTERA, CARCINOPHORIDAE)

A. BRINDLE

ABSTRACT

Brachylabis lenkoi, sp. n. (type-locality, Brazil, São Paulo, Barueri), collected in the nests of *Camponotus rufipes* (Fabricius, 1775), is described. Comments are made on the remaining Neotropical species of Brachylabiinae.

The genus *Brachylabis*, as listed in Burr (1911: 41) contains few species, but it forms the typical genus of the subfamily Brachylabiinae (Burr, 1911: 40). This subfamily consists of a small number of genera and species and forms a relatively small group of the family Carcinophoridae (= Psalinae, Parisolabiinae, Brachylabiinae and Platylabiinae of Burr, 1911: 24). The Brachylabiinae are a somewhat distinctive subfamily, the species being dark coloured, almost always without elytra or wings, and with relatively long legs. The eyes are sometimes very large, as in *Metisolabis*, or may be very small, as in some species of *Antisolabis*. Within the subfamily are a number of genera, all of which are very imperfectly characterized; for this reason the numerous species described since Burr (1911) have been placed somewhat arbitrarily into any of the genera. The taxonomic position is therefore confused, since all the species in any genus do not agree in characters with the type species. A revision of the Carcinophoridae is in preparation by the present author, but pending the completion of this it has been the practice of the author to describe any new species of the subfamily under *Brachylabis*. This is because it is now impossible to place any new species satisfactorily, and whichever genus a species is now described under, some transference is very likely to be necessary later.

The Neotropical species of the Brachylabiinae, so far known, are as follows:

<i>Brachylabis chilensis</i> Blanchard, 1851	Chile
<i>Brachylabis coriacea</i> Burr, 1910	Brazil
<i>Nannisolabis punctulata</i> Moreira, 1931.	Brazil
<i>Ctenisolabis nigra</i> (Scudder, 1876)	Brazil
<i>Ctenisolabis montana</i> Borelli, 1909	Costa Rica
<i>Ctenisolabis fernandezi</i> Borelli, 1909	Costa Rica
<i>Leptisolabis howardi</i> Burr, 1910	Guatemala
<i>Leptisolabis aliena</i> , Borelli, 1911	Costa Rica

All these species measure 8 mm in body length or more, and until recently no much smaller species of the subfamily were known to exist. Hincks (1952) however described a new species, *Geracodes labioides*, from Sierra Leone, which measured 5-7 mm in total length. This species is unusual in having elytra and sometimes wings. Hincks also transferred a described species, *Geracodes litus* Hebard, from the Labiidae to the Brachylabiinae together with *Geracodes paraguayensis* Borelli. All of these are small, but since the male genitalia of the last two species are not known, it is not yet certain that these are really members of the Brachylabiinae.

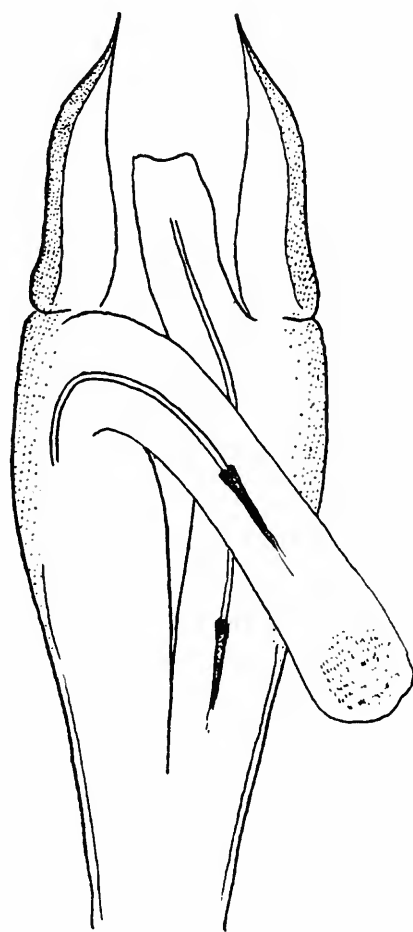
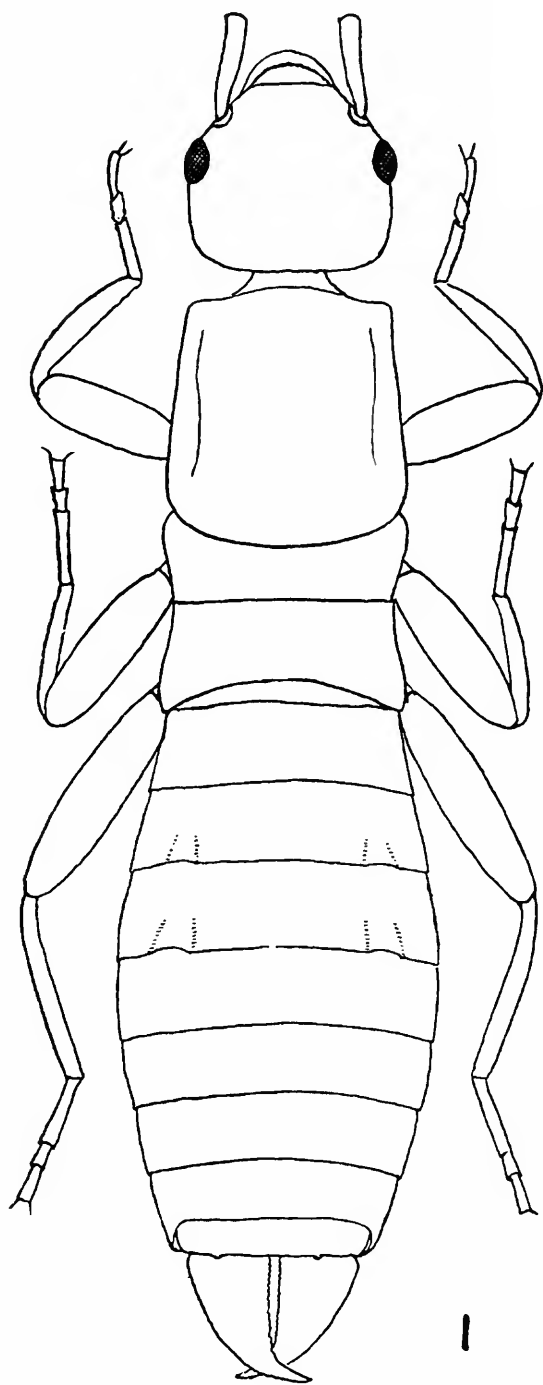
Recently a number of small species of the Brachylabiinae were found amongst material from Africa; these were the first of these small species known from this continent, apart from *Geracodes*, and consisted of several species, all of which were described in Brindle (1966). The amount of this new material seemed to indicate that these very small species were widely distributed and possibly locally in Africa, but that previous collecting methods had not been suitable for their capture. The greater use of the Berlese funnel, and similar apparatus to deal with debris or humus, seems to be bringing these small species to notice.

It was therefore with considerable interest that the author examined a series of a small species of the Brachylabiinae, which had been collected from the nests of ants near Barueri, São Paulo, by Dr. Karol Lenko. This is the first very small species of the subfamily from the Neotropical Region, unless the two *Geracodes* species, from Panama and Paraguay do actually belong to this subfamily, and this discovery suggests that, as in Africa, these small earwigs may be relatively frequent in Brazil, if suitable collecting methods are used.

***Brachylabis lenkoi*, sp. n.**

A very small species; head reddish-brown, rest of body blackish-brown; antennae and legs brown. Head and pronotum deeply punctured, the punctures large and separated by rather more than their own diameter; mesonotum, metanotum, and abdomen more closely punctured; cuticle shining, and with a sparse covering of yellow hairs, more conspicuous laterally.

Male (fig. 1): head large, tumid, as broad as long, lateral margins parallel, posterior margin almost straight; eyes small; antennal segments broad, first segment long, about as long as distance between antennal bases; second segment quadrate, small; third segment nearly one and half times as long as broad; fourth slightly longer than broad; fifth one and three-quarters as long as broad; rest of segments not quite twice as long as broad, divisions well marked. Pronotum large, longer than broad, widened posteriorly, lateral margins rather broad, and upcurved; disc smoothly convex, without division into prozona and metazona; mesonotum transverse with indications of lateral folds at each side; metanotum transverse, shorter than mesonotum, posterior margin concave. Legs relatively long, femora of anterior pair of legs more broadened than those of posterior four legs. Abdomen relatively short, fusiform; lateral tubercles on third and fourth segments indicated by cuticular swellings; last segment largely hidden within the ninth seg-



Brachylabis lenkoi, sp. n.: 1, male; 2, male genitalia.

ment; last tergite with posterior margin emarginate between the bases of the forceps, and with two tubercles above the base of each branch of the forceps; pygidium hidden; penultimate sternite almost quadrate, lateral margins parallel, posterior margin slightly rounded. Forceps short, each branch broad at base, quickly narrowed distally, and with a rather long curved narrow apex. Genitalia (fig. 2) of usual Carcinophorid type, with two basal arms or penes, and two distal lobes, one of which is directed forwards (the shorter) and one directed backwards. The virga is relatively long, and partially sclerotized, and the distal end of the lobe is denticulate. The parameres are long and acuminate, the external margin being sclerotized whilst the inner part is membranous.

Length: body 4 mm, forceps 0.3 mm.

Female: almost identical to male; as usual there are two less tergites visible; forceps rather more flattened basally.

Length: body 4 mm, forceps 0.3 mm.

Holotype ♂, 3 ♂ paratypes, 1 ♀ paratype (allotype), 6 nymphs, from nests of ants, *Camponotus rufipes* (Fabricius, 1775), from Barueri, São Paulo, Brazil, 20.VIII.1967, K. Lenko col. Types in the Departamento de Zoologia, Secretaria da Agricultura, São Paulo, except for one ♂ paratype in the Manchester Museum, and one ♂ paratype in the British Museum (Natural History), London.

I have much pleasure in naming this species after its collector, Dr. Karol Lenko, of the Departamento de Zoologia.

This species is very distinctive from other species of the Brachylabiinae known from the Neotropical Region by its size; it is very similar in external appearance to *Brachylabis rugosa* Brindle, from Africa, but the parameres of the male genitalia have a different shape. This discovery by Dr. Karol Lenko, may lead the way to the finding of more of these small species.

REFERENCES

BRINDLE, A.

1966: Dermaptera from Central and East Africa. *Rev. Zool. Bot. Afr.* 74: 29-49.

BURR, M.

1911: *Genera Insectorum* 122: 1-112. Bruxelles.

HINCKS, W. D.

1952: Some Dermaptera from Sierra Leone. *Proc. R. ent. Soc. London (B)* 21: 19-26.

CATALOGUE OF NEW WORLD DERMAPTERA (INSECTA) PART II: LABIOIDEA, CARCINOPHORIDAE¹

HANS REICHARDT

Superfamily Labioidea

Labioidea; Popham, 1965b: 130, 132.

This superfamily, the largest of the order, is very badly in need of revision, especially of some of the larger genera. Popham & Brindle (1966a, 1966b, 1966c, 1967a and 1967b) have presented a generic revision of the superfamily, synonymizing a relatively large number of genera. Brindle (1967b) has started the publication of a revision of the Carcinophoridae at the species level, beginning with a revision of the large genus *Carcinophora*, however, only following part of the generic synonymy proposed earlier (Popham & Brindle, 1966c).

Family CARCINOPHORIDAE

Carcinophoridae; Popham, 1965b: 132, 122 (with key to subfamilies and list of genera).

The species of Carcinophoridae occur in all zoogeographical Regions. Within the New World a few of the species (7) occur north of Mexico, none, however, being endemic to the United States. Four of the species occur outside the New World, some obviously imported from other parts of the World.

As presently structured, the family is formed by 4 subfamilies, with a total of 9 genera and 58 species.

Subfamily PARISOLABINAE

Parisolabinae Verhoeff, 1904: 120; Burr, 1911e: 38 (with key to genera); Popham, 1965b: 133 (with list of genera); Popham & Brindle, 1966a: 134 (with key to genera).

Idolopsalis Borelli, 1910

Idolopsalis Borelli, 1910a: 156-157 (type-species, *Idolopsalis riveti* Borelli, by monotypy); Burr, 1911e: 38, 39; Popham & Brindle, 1966a: 134 (checklist).

Idololabis Burr, 1911: 335 (lapsus).

Distribution: South America.

andeana Burr, 1914c: 426 (type-locality, Ecuador, Pichincha, Cayambe, 12,000 - 14,000 ft. Types, 1 ♂ and 1 ♀, British Museum); 1915a: 446, pl. IX, fig. 14 (male genitalia).

Distribution: Ecuador (type-locality).

borgmeieri Menozzi, 1932: 154-155, 157, fig. 3 (dorsal view and male genitalia; type-locality, Brazil, Rio de Janeiro, Petrópolis. Types, 1 ♂ and several ♀, Menozzi collection).

Distribution: Brazil (type-locality).

incerta Bormans, 1903a: 234 (? *Anisolabis*; type-locality, Ecuador, Loja, Loja. Holotype ♂, British Museum; ♀ undescribed); Burr, 1910c: 175, 177 (*Anisolabis*; in key; incorrectly indicated as being a melanic form of *Psalis festae* Borelli); 1911e: 29 (*Anisolabis*); 1914a: 580.

Distribution: Ecuador (type-locality).

riveti Borelli, 1910a: 157-158 (type-locality, Ecuador, Carchi, Troya. Holotype ♂, from Troya, and 1 ♀, 1 ♂ juv., 2 larvae from Carchi, El Pelado, Paris Museum); Burr, 1911e: 39, pl. 7, fig. 2 (dorsal view); 1915a: 446, pl. IX, fig. 13 (male genitalia).

Distribution: Ecuador and Peru.

whymperi Burr, 1914c: 426-427 (type-locality, Ecuador, Pichincha, Antisanilla to Pinantura, 11,000 ft. Holotype ♂ and allotype ♀, British Museum; other specimens from Pichincha, La Dormida (1 ♂), Pichincha, Pichincha (2 ♂) and Chimborazo, Valle de Collanes (1 ♀); 1915a: 446, pl. IX, fig. 12 (male genitalia).

Distribution: Ecuador.

Subfamily BRACHYLABINAE

Isolabidae Verhoeff, 1902b: 10-11.

Brachylabinae; Burr, 1908d: 247 (with key to genera); 1909d: 324 (considered a subfamily of Labiduridae); 1910c: 188 ff. (revision with key to genera); 1911e: 40 (with key to genera); Popham & Brfindle, 1966b: 244, 245-246 (with key to genera).

Brachylabis Dohrn, 1864

Brachylabis Dohrn, 1864: 292 (type-species, *Forficula chilensis* Blanchard, designated by Kirby, 1891: 518); Scudder, 1876d: 290-291 (notes); Burr, 1908d: 248-249 (with key to species); 1910c: 190, 191-192; 1911e: 40, 41.

Distribution: South America; Oriental and Australian Regions.

chilensis Blanchard, 1851: 10, pl. 1, fig. 1 (dorsal view of male; *Forficula*; type-locality, "Chile". Holotype ♂, location unknown); Kirby, 1891: 518 (designation as type-species); Burr, 1910c: 192 (redescription).

testaceicornis Blanchard, 1851: 11-12 (*Forficula*; type-locality, "Chile". Holotype ♀, location unknown); Dohrn, 1864: 295 (proposed synonymy with *chilensis* Blanchard).

Distribution: Argentina, Chile and Ecuador.

coriacea Burr, 1910c: 192-193, pl. 47, fig. 31 (head; type-locality, Brazil, "Espírito Santo"; other specimens from "Santa Catarina" and Rio de Janeiro, Nova Friburgo. Types, ♂ and ♀, British Museum and Vienna Museum).

Distribution: Brazil (Espírito Santo, Rio de Janeiro and Santa Catarina).

lenkoi Brindle, 1968c: 32-34, figs. 1-2 (dorsal view of male and male genitalia; type-locality, Brazil, São Paulo, Barueri, from nests of *Camponotus rufipes* (Fabricius, 1775). Holotype ♂, ♂ and ♀ paratypes in Departamento de Zoologia, São Paulo).

Distribution: Brazil (type-locality).

punctulata Moreira, 1931: 261-262, fig. 5 (dorsal view of male; *Nannisolabis*; type-locality, Brazil, Guanabara, Rio de Janeiro (Silvestre). Types, 2♂ and 2 ♀, Instituto Biológico de Defesa Agrícola, Rio de Janeiro); Popham & Brindle, 1966b: 224 (listed under *Brachylabis* and *Nannisolabis*, with indication of possibly belonging to the former).

Distribution: Brazil (type-locality).

var. *rufa* Moreira, 1931: 262-263, fig. 6 (dorsal view of male; *Nannisolabis punctulata* var. *rufa*; type-locality, Brazil, Rio de Janeiro, Itatiaia (Monte Serrat, 800 m). Types 1 ♂ and 1 ♀, Instituto Biológico de Defesa Agrícola, Rio de Janeiro).

Distribution: Brazil (type-locality).

Isolabis Verhoeff, 1902

Isolabis Verhoeff, 1902b: 11 (type-species, *Isolabis braueri* Verhoeff, from Africa, by monotypy); Burr, 1911e: 40, 42; Popham & Brindle, 1966b: 245 (see for non-Neotropical synonymy).

Ctenisolabis Verhoeff, 1902b: 11 (type-species, *Ctenisolabis togoensis* Verhoeff, from Africa, by monotypy); Burr, 1910c: 191, 197 (with key to species); 1911e: 40, 42; Popham & Brindle, 1966b: 245 (proposed synonymy with *Isolabis* Verhoeff).

Leptisolabis Verhoeff, 1912b: 12 (type-species, *Leptisolabis usumbarana* Verhoeff, from Africa, designated by Kirby, 1904: 21); Burr, 1908d: 252 (revision with key to non-American species); 1911e: 40, 43; Popham & Brindle, 1966b: 245 (proposed synonymy with *Isolabis* Verhoeff).

Distribution: Oriental, Ethiopian and Neotropical Regions.

aliena Borelli, 1911: 1-3 (*Leptisolabis*; types, 3 ♂, from Costa Rica, Cartago, Orosi; La Mica; La Estrella; all specimens ex-Bromeliaceae. Turin Museum; ♀ undescribed).

Distribution: Costa Rica.

fernandezi Borelli, 1909b: 4, fig. 2 (dorsal view of male; *Brachylabis*; type-locality, Costa Rica, San José, El General (= General Viejo). Holotype ♂, Turin Museum; ♀ undescribed); Burr, 1910c: 197, 198 (in key; assigned to *Ctenisolabis*); 1915a: 447 (*Ctenisolabis*; indication of possibly being a misidentification of *C. nigra* Scudder, according to Borelli, *i.l.*).

Distribution: Costa Rica (type-locality).

howardi Burr, 1910b: 449-451 (*Leptisolabis*; type-locality, Guatemala, Alta Verapaz, Trece Aguas, Cacao. Holotype ♂, United States National Museum); 1910c: 199-201, pl. 47, figs. 16, 30 (antenna and head; *Leptisolabis*; redescription); Hebard, 1917b: 305 (description of female from Panama).

nigra Scudder (pars); Caudell, 1907b: 172 (*Ctenisolabis*; Guatemalan record).

Distribution: Guatemala and Panama.

montana Borelli, 1909b: 5 (*Brachylabis*; types, ♂ and ♀, from Costa Rica, San José, Santa Maria de Dota and Cartago, Volcan Irazu, Ojo de Agua Chicao, 3,032 m; Turin Museum); Burr, 1910c: 197 (in key; assigned to *Ctenisolabis*); 1911e: 42, pl. 4, fig. 3 (dorsal view; *Ctenisolabis*).

Distribution: Costa Rica.

nigra Scudder, 1876a: 251-252 (*Cylindrogaster*; type-locality, Brazil, "Pará". Holotype ♀, location unknown); Bormans, 1900b: 54, fig. 22 (male; *Brachylabis*); Burr, 1910c: 197 (assigned to *Ctenisolabis*).

Distribution: Brazil (Amazonas, Pará and Mato Grosso), Peru and Paraguay.

Geracodes Hebard, 1917

Geracodes Hebard, 1917b: 322-323 (type-species, *Geracodes litus* Hebard, by original designation; described as Labiinae incertae sedis); Hincks, 1952: 23 (transference to Brachylabinae); Popham & Brindle, 1966b: 245 (checklist).

Distribution: Panama, Paraguay and Ethiopian Region.

litus Hebard, 1917b: 323-324, pl. XXVI, figs. 6-7 (dorsal view of female and proximal antennal segments of female; type-locality, Panama, La Chorrera. Holotype ♀, United States National Museum; ♂ undescribed).

Distribution: Panama (type-locality).

paraguayensis Borelli, 1932: 95-97, figs. (dorsal view of male, antenna; type-locality, Paraguay, Cordillera, San Bernardino. Holotype ♂, Hamburg Museum; ♀ undescribed).

Distribution: Paraguay (type-locality).

Subfamily CARCINOPHORINAE

Anisolabidae Verhoeff, 1902b: 9; Zacher, 1911: 368.

Psalinae; Burr, 1909d: 325 (subfamily of Labiduridae); 1911e: 24, 27-35 (revision with key to genera).

Carcinophorinae; Hincks, 1949: 625; Popham, 1965b: 133 (with list of genera); Popham & Brindle, 1966c: 269, 276-277 (with key to genera); Brindle, 1967b: 190 (notes; with key to genera).

Carcinophora Scudder, 1876

Psalis Serville, 1831: 30, 34-35 (*nec Psalis* Huebner, 1823, Lepidoptera; type-species, *Forficula americana* Palisot de Beauvois, designated by Scudder, 1876d: 297); Kirby, 1891: 516; Burr, 1910c: 168, 181-183 (revision of genus, with proposed synonymy with *Carcinophora*; key to species); 1911e: 27, 31.

Carcinophora Scudder, 1876d: 291 (type-species, *Chelidura robusta* Scudder, by original designation); Kirby, 1891: 530; Burr, 1910c: 181 (proposed synonymy with *Psalis* Serville); Popham & Brindle, 1966c: 272 (see for synonymy); Brindle 1967b: 190-194 (revision with key to species; see for synonymy).

Spandex Burr, 1915b: 536, 537 (type-species, *Psalis pulchra* Rehn, by original designation); Popham & Brindle, 1966c: 272 (proposed synonymy with *Carcinophora* Scudder).

Metalabis Burr, 1915b: 536, 538 (type-species, *Eulabis saramaccensis* Zacher, by original designation); Popham & Brindle, 1966c: 272 (proposed synonymy with *Carcinophora* Scudder); Brindle, 1967b: 190 (in key, as valid genus).

Mandex Burr, 1915b: 533 (type-species, *Euborellia peruviana* Bormans, by original designation); Hebard, 1921a: 108; Menozzi, 1932: 152 (as subgenus of *Anisolabis*); Popham & Brindle, 1966c: 272 (proposed synonymy with *Carcinophora* Scudder); Brindle, 1967b: 190.

Distribution: tropics of Old World and Neotropical Region.

americana Palisot de Beauvois, 1817: 165, pl. 14, fig. 1 (dorsal view of male; *Forficula*; type-locality, Hispaniola, Dominican Republic, Santo Domingo. Holotype ♂, location unknown); Rehn, 1903c: 301-303 (*Psalis*; notes); 1911e: 32 (*Psalis*); 1915b: 533, pl. X, fig. 5 (*Psalis*; male genitalia); Rehn & Hebard, 1917: 637-638 (*Psalis*; notes on variation and synonymy); Brindle, 1966d: 132-133 (discussion on status of synonyms); 1967b: 192, 193, 194 (in key; discussion of synonymy).

procera Burmeister, 1838: 753 (*Forficula*; type-locality, "West Indies". Type, location unknown); Dohrn, 1863: 319 (proposed synonymy with *americana* Palisot de Beauvois).

elegans Stal, 1855: 348 (*Forficesila*; type-locality, Colombia, "Antiochia". Holotype ♀, Stockholm Museum); Dohrn, 1863: 319 (proposed synonymy with *americana* Palisot de Beauvois).

distincta Guérin-Ménéville, 1856: 136, pl. 12, figs. 1a, 1b (last abdominal segment and forceps of male (*sic*), antenna; *Forficula* (*Forficesila*); type-locality, "Cuba". "Types, 2 ♀, location unknown); Dohrn, 1863: 319 (proposed synonymy with *americana* Palisot de Beauvois).

Distribution: Greater and Lesser Antilles, Central America.

apolinari Hebard, 1919: 90-92, pl. XVI, fig. 1 (dorsal view of female; *Psalis*; type-locality, Colombia, Santander, Pamplona. Holotype ♀, Hebard collection; ♂ undescribed); 1921a: 108 (*Man-dex*).

Distribution: Colombia (type-locality).

brasiliensis Moreira, 1931: 260-261, fig. 3 (dorsal view of male; *Psalis*; type-locality, Brazil, Guanabara, Rio de Janeiro (Silvestre). Holotype ♂, Instituto Biológico de Defesa Agrícola, Rio de Janeiro; ♀ undescribed); Brindle, 1967b: 193 (in key).

Distribution: Brazil (type-locality).

burri Borelli, 1905: 2-4, fig. (dorsal view of male; *Psalis*; type-locality, Paraguay, Alto Parana, Puerto Bertoni. Holotype ♂, Turin Museum); Burr, 1910c: 182 (*Psalis*; in key); Brindle, 1967b: 12 (in key).

compacta Hebard, 1919: 92-94, pl. XVI, figs. 2-3 (dorsal view of male, forceps and abdomen of male; *Psalis*; type-locality, Colombia, Cundinamarca, Soacha. Holotype ♂ and allotype ♀, Hebard collection); Brindle, 1967b: 194 (proposed synonymy with *burri* Borelli).

Distribution: Paraguay and Colombia.

croceipes Moreira, 1930: 14-15, fig. 2 (dorsal view of female; *Psalis*; type-locality, Brazil, Rio de Janeiro, Campo Belo. Holotype ♀, Instituto Biológico de Defesa Agrícola, Rio de Janeiro); 1932: 280 (*Psalis*; description of male and distribution); Brindle, 1967b: 194 (suggestion of possibly being a Labiidae).

Distribution: Brazil (Rio de Janeiro, São Paulo and Santa Catarina).

deplanata Rehn, 1933b: 3-5, pl. 1, figs. 1-2 (dorsal and lateral views of abdomen of male; *Metalabis*; type-locality, Brazil, Amazonas, Rio Purus, Huitanaã. Holotype ♂, Stockholm Museum; ♀ undescribed).

Distribution: Brazil (type-locality).

festae Borelli, 1904a: 3-4, figs. a-b (dorsal view of male and forceps of female; *Anisolabis*; types, ♂ and ♀. from Ecuador, Azuay, 2,580 m, and Sigsig, 2,550 m; Turin Museum); Burr, 1910c: 175, 177 (*Anisolabis*; in key, with incorrect indication of *Anisolabis incerta* Bormans being a melanic form of this species); Hebard, 1924: 113 (*Psalis*; notes).

Distribution: Ecuador.

festiva Burr, 1910c: 181, 182-183 (*Psalis*; type-locality, Brazil, "Bahia". Types, 3 ♀, Viena Museum; ♂ undescribed); Hebard, 1917a: 232 (Venezuelan record); Brindle, 1967b: 193 (in key).

Distribution: Brazil (Bahia) and Venezuela.

gagathina Burmeister, 1838: 753 (*Forficula*; type-locality, "Puerto Rico". Type, location unknown) Burr, 1909c: 126-127 (*Psalis*; in key, as good species); 1915b: 533, pl. X, fig. 6 (male genitalia; *Psalis*; as good species, with *robusta* Scudder as synonym);

Brindle, 1967b: 192, 193 (in key, as valid species, with *buscki* Rehn as synonymy).

buscki Rehn, 1903b: 129-130 (*Apterygida*: type-locality, Puerto Rico, Utuado. Holotype ♀, United States National Museum); Caudell, 1907a: 170 (proposed synonymy with *gathina* Burmeister).

Distribution: Puerto Rico.

haenschi Burr, 1912c: 317, fig. 3 (penultimate sternite of male; *Psalis*; type-locality, Ecuador, Napo-Pastaza, Archidona. Holotype ♂, Berlin Museum); 1915b: 537, pl. XI, fig. 6 (male genitalia; *Spandex*); Brindle, 1967b: 193 (in key).

Distribution: Ecuador (type-locality).

minima Moreira, 1931: 261, fig. 4 (dorsal view of male; *Psalis*; type-locality, Brazil, "Rio de Janeiro". Holotype ♂, Instituto Biológico de Defesa Agrícola, Rio de Janeiro; ♀ undescribed); Brindle, 1967b: 193 (in key).

Distribution: Brazil (type-locality).

nigra Caudell, 1907a: 167-168 (*Psalis*; type-locality, Trinidad, Montserrat. Holotype ♀, United States National Museum; ♂ undescribed); Burr, 1910c: 182 (*Psalis*; in key); Brindle, 1967b: 193 (in key).

Distribution: Trinidad (type-locality).

percheron Guérin, 1838: 6, pl. 7 (*Forficula*; type-locality, French Guiana, Guyane, Cayenne. Holotype ♀, location unknown); Burr, 1910c: 181 (*Psalis*; in key); 1911e: 31 (*Psalis*); Hebard, 1917a: 232-233 (*Spandex*; distribution and notes); Brindle, 1967b: 193, 194 (in key; distribution and notes).

flexuosa Burmeister, 1838: 753 (*Forficula*; type-locality, French Guiana, Guyane, Cayenne. Type, location unknown); Scudder, 1876d: 316 (indication of possible synonymy with *percheron* Guérin).

bipunctata Scudder, 1862: 415 (*Spongophora*; type-locality, United States, "Massachusetts". Holotype, location unknown); 1876d: 316 (proposed synonymy with *percheron* Guérin).

pulchra Rehn, 1903c: 303-304 (*Psalis*; type-locality, Costa Rica, San Carlos. Holotype ♂, United States National Museum); Burr, 1910b: 446 (*Psalis*; indication of synonymy with *percheron* Guérin); 1915b: 537, pl. XI, fig. 5 (male genitalia; as good species; designation as type-species of *Spandex*); Brindle, 1967b: 194 (considered a synonym of *percheron* Guérin).

pictipennis Bruner, 1906: 138 (*Labia*; type-locality, "Trinidad". Types, 2 ♂, Bruner collection); Caudell, 1907a: 167 (proposed synonymy with *pulchra* Rehn).

Distribution: United States (Massachusetts), Lesser Antilles, Central America (Costa Rica and Panama) and South America (Guianas and Brazil, Amazonas).

peruviana Bormans, 1880a: 505-506 (*Anisolabis peruvianum*; type-locality, "Pérou Central". Holotype ♂, Warsaw Museum; ♀ undescribed); Burr, 1910c: 180 (*Euborellia*; in key); 1911e: 30, pl. 3, fig. 3 (dorsal view; *Euborellia*); 1915b: 533, pl. X, fig. 4 (male genitalia; *Mandex*).

Distribution: Peru (type-locality).

robusta Scudder, 1869: 344 (*Chelidura*; types, 2 ♂, from Ecuador, Napo and between Quito and Napo; location unknown); 1876d: 297 (designation as type-species of *Carcinophora*); Bormans, 1900b: 40 (proposed synonymy with *colombiana* Bormans); Brindle, 1967b: 192, 194 (in key; notes and synonymy).

colombiana Bormans, 1883: 61-62, pl. 2, figs. 2, 2a-b (dorsal view of male and forceps of male and female; *Psalis*; type-locality, "Colombia". Types, ♂ and ♀, Bruenner collection); 1900b: 40 (proposed synonymy with *robusta* Scudder).

fusca Borelli, 1904a: 1-2 (type-locality, Ecuador, Valle de Santiago. Holotype ♀, Turin Museum; ♂ undescribed); Burr, 1910c: 181 (*Psalis*; in key); Brindle, 1967b: 195 (proposed synonymy with *robusta* Scudder).

Distribution: Ecuador, Colombia, and Costa Rica.

rosenbergi Burr, 1899b: 253-254 (*Psalis*; types, 1 ♂ and several ♀, from Ecuador, Imbabura, Paramba, 3,500 ft.; Chimborazo, Chimbo, 1,000 ft.; Esmeraldas, Cachavi, 500 ft.; British Museum); 1910c: 181 (*Psalis* in key); 1915b: 537 (*Spandex*); Hebard, 1921a: 109-110 (*Spandex*; Colombian record); Brindle, 1967b: 193, 194 (in key; notes and distribution).

Distribution: Colombia and Ecuador.

saramaccensis Zacher, 1911: 378 (*Eulabis*; types, 2 ♂ from Surinam, Saramacca; 1 ♂ and 1 ♀ from Surinam, Paramaribo; Berlin Museum); Burr, 1911e: 34 (*Eulabis*); 1914d: 274 (*Eulabis*; Panamanian record); 1915b: 538, pl. XI, fig. 7 (male genitalia; designation as type-species of *Metalabis*); Hebard, 1917a: 233 (*Metalabis*; distribution and notes).

Distribution: Panama, Trinidad, Surinam, Guyana and Brazil (Roraima).

scudderi Bormans, 1900a: 449-450 (*Psalis*; types, 2 ♀, from Paraguay, Olimpo, Puerto 14 de Mayo; Genova Museum; Brazil, Amazonas, São Paulo de Olivença, Bruenner collection); Burr, 1910c: 182 (*Psalis*; in key); Hebard, 1917a: 233-234 (*Euborellia*; description of male from Peru, Junin, Chanchamayo); Brindle, 1967b: 193 (generic assignment).

Distribution: Paraguay, Brazil (Amazonas) and French Guiana.

spitzi Menozzi, 1932: 151-152, 167, fig. 1 (dorsal view and male genitalia; *Anisolabis* (*Mandex*); types, 3 ♂ and 3 ♀ from Brazil, São Paulo, Paranapiacaba and São Bernardo do Campo; 1 ♀ from Paraná, Castro; 1 ♀ from Santa Catarina, Blumenau; location unknown).

Distribution: Brazil (São Paulo, Paraná and Santa Catarina).

venezuelica Brindle, 1968b: 86, figs. 15, 16 (male genitalia and forceps; holotype ♂, Venezuela, D.F., Caracas; Museu de Biologia, Caracas).

Distribution: Venezuela (type-locality).

waddyi Burr, 1904: 290 (type-locality, "Martinique". Holotype ♀, Paris Museum; ♂ undescribed); 1910c: 182 (*Psalis*; in key); Brindle, 1967b: 194 (in key).

Distribution: Martinique (type-locality).

Gonolabis Burr, 1900

Gonolabis Burr, 1900b: 48-49, 53 (type-species, *Anisolabis javana* Bormans, from Java, by original designation); 1911a: 27, 28.

Distribution: Oriental, Ethiopian, Australian Regions and New World.

azteca Dohrn, 1862: 226-227 (*Forcinella*; type-locality, not given, presumably "Mexico". Holotype ♀, Stettin Museum); Caudell, 1905b: 216 (Floridan record); Burr, 1911e: 28.

antennata Kirby, 1891: 517-518 (*Anisolabis*; type-locality, "Bermuda". Holotype ♀, British Museum); Bormans, 1900b: 49 (proposed synonymy with *azteca* Dohrn); Caudell, 1905a: 85 (erroneously synonymized with *Euborellia annulipes* Lucas); Burr, 1911e: 29 (as synonym of *Anisolabis annulipes* Lucas).

Distribution: Mexico, United States (Florida) and Bermuda.

Euborellia Burr, 1910

Borellia Burr, 1909d: 325 (*nec Borellia* Rehn, 1906; type-species, *Forficula moesta* Serville, from Europe, by original designation).

Euborellia Burr, 1910b: 448 (new name for *Borellia* Burr, *nec* Rehn, 1906); 1910c: 179-181 (revision with key to species); 1911e: 27, 30; Popham & Brindle, 1966c: 272 (synonymy; see for non-Neotropical synonymy; checklist).

Heterolabis Borelli, 1912b: 230-232 (type-species, *Heterolabis brasiliensis* Borelli, by monotypy); Popham & Brindle, 1966c: 272 (proposed synonymy with *Euborellia* Burr).

Distribution: Cosmopolitan.

ambigua Borelli, 1906b: 3-4 (*Anisolabis*; type-locality, Costa Rica, "Rio Jesus Maria". Types, 4 ♀, Turin Museum); Burr, 1910c: 180 (in key, with footnote indication of synonymy with *janeirensis* Dohrn); Hebard, 1917a: 234 (record from Trinidad); 1921: 320, 321, pl. 19, figs. 1-3 (dorsal view and details; description of male and record from Florida); Boeseman, 1954: 43.

Distribution: United States (Florida), Bahamas, Cuba, Jamaica, Dominica, Trinidad and Costa Rica.

annulipes Lucas, 1847: 84-85 (*Forficesila*; type-locality, France, Paris, imported from North America?; holotype, Paris Museum); Burr, 1910c: 177 (in key); 1911e: 29 (see for non-New World synonymy); Morse, 1920: 291-292, pl. 13, fig. 15 (antenna).

annulicornis Blanchard, 1851: 10-11 (*Forficula*; type-locality. "Chile". Holotype ♀, location unknown); Burr, 1911e: 29 (proposed synonymy with *annulipes* Lucas).

bormansi Scudder, 1893: 5-6, pl. 1, fig. 1 (dorsal view of female; *Anisolabis*; type-locality. Galapagos Islands, Chatham Island (= San Cristobal). Holotype ♀, location unknown); Burr, 1910c: 176 (proposed synonymy with *annulipes* Lucas).

Distribution: Cosmopolitan; United States (southern and eastern states), Central America (Mexico and Guatemala), Greater Antilles, South America (French Guiana, Venezuela, Paraguay, Uruguay, Argentina and Chile) and Galapagos Islands.

antoni Dohrn, 1864: 289-290 (*Forcinella*; type-locality, "Venezuela". Holotype ♂, Dohrn collection); Bormans, 1893: 5, pl. 1, fig. 10; Burr, 1911e: 29 (incorrect synonymization with *annulipes* Lucas); Hebard, 1917c: 410-411, pl. XXVIII, fig. 8 (abdomen and forceps of female, lateral view); Rehn, 1933a: 164; Alvarenga, 1962: 22 (record from Fernando de Noronha).

Distribution: Central America (Mexico to Panama) and South America (Venezuela, Trinidad, French Guiana, Brazil and (?) Chile).

armata Borelli, 1906b: 4-6, figs. (dorsal view of male and forceps of female; *Anisolabis*; type-locality, Costa Rica, San José, Altos del Cangrejal de Aserrí, 1,000 m. Types, 1 ♂ and 3 ♀, Turin Museum) Burr, 1910c: 180, pl. XLVI, fig. 9 (in key); 1912a: 76 (Brazilian record).

Distribution: Costa Rica and Brazil (Santa Catarina).

brasiliensis Borelli, 1912b: 232-233, fig. 1 (male genitalia; *Heterolabis*; type-locality, Brazil, "Minas Gerais" 2,100 m). Types, 1 ♂ and 1 ♀, Paris Museum); Burr, 1914a: 581 (*Heterolabis*); Menozzi, 1932: 167 (*Heterolabis*).

Distribution: Brazil.

caraibea Hebard, 1921: 321, 322-323, pl. 19, figs. 4-6 (dorsal view and details; type-locality, Bahamas, New Providence Island, Nassau. Holotype ♂ and allotype ♀, Hebard collection).

ambigua Borelli (pars); Rehn & Hebard, 1917: 638 (Antillean records).

Distribution: Greater and Lesser Antilles.

cincticollis Gerstaecker, 1883: 44 (*Brach. cincticollis*; types, ♂ and ♀, from Boujongo and Victoria, Cameroon, Africa; location unknown); Burr, 1911e: 32, pl. 3, fig. 7 (dorsal view of male; *Psalis*; see for synonymy); Gurney, 1950: 200-202 (Californian record).

Distribution: West Africa and United States (California).

flavipes Moreira, 1931a: 258, fig. 1 (dorsal view of male; type-locality, Brazil, Guanabara, Rio de Janeiro (Silvestre). Holotype ♂, Instituto Biológico de Defesa Agrícola, Rio de Janeiro); Ribeiro, 1931: 290 (record of female).

Distribution: Brazil (Guanabara).

inermis Moreira, 1931a: 259-260, fig. 2 (dorsal view of female; type-locality, Brazil, Guanabara, Rio de Janeiro; Holotype ♀, Instituto Biológico de Defesa Agrícola, Rio de Janeiro; ♂ undescribed).

Distribution: Brazil (type-locality).

janeirensis Dohrn, 1864: 285-286 (*Forcinella*; type-locality, Brazil, Guanabara, Rio de Janeiro, Holotype ♀, Brünner collection); Burr, 1910c: 180 (in key); Rehn, 1916: 218; Hebard, 1921: 323-324; Alvarenga, 1962: 22.

Distribution: Brazil (Santa Catarina, Guanabara, Rio de Janeiro, Mato Grosso, Minas Gerais, Bahia, Alagoas, Pernambuco, Paraíba, Rio Grande do Norte, Ceará and Fernando de Noronha) and Venezuela.

maxima Moreira, 1932: 278-279, figs. 1-2 (abdomen, forceps and thorax; type-locality, Brazil, Paraná, Castro. Holotype ♂, Departamento de Zoologia, São Paulo; ♀ undescribed).

Distribution: Brazil (type-locality).

nitida Moreira, 1932: 279-280, figs. 3-4 (forceps and pronotum; type-locality, Brazil, Santa Catarina, Blumenau. Holotype ♀, Departamento de Zoologia, São Paulo; ♂ undescribed); Ribeiro, 1937: 37 (questionable record from Pernambuco).

Distribution: Brazil (Santa Catarina and (?) Pernambuco).

peregrina Mjoeberg, 1904: 131-132 (*Anisolabis*; description based on holotype ♀, collected in Stockholm, Sweden, imported from Brazil, Mato Grosso, Santa Ana. Holotype in Stockholm Museum; ♂ undescribed); Hebard, 1920a: 339 (record from French Guiana).

Distribution: Brazil (Mato Grosso) and French Guiana.

stali Dohrn, 1864: 286 (*Forcinella*; type-locality, "Java". Holotype ♀, Stockholm Museum); Hebard, 1923b: 206; Townes, 1946: 47 (record from Florida).

minuta Caudell, 1907a: 168 (*Anisolabis*; type-locality, Puerto Rico, Arroyo. Holotype ♂ and allotype ♀, United States National Museum); Burr, 1910b: 447 (suggested synonymy with *stali* Dohrn); 1911e: 31 (Costa Rican record); Caudell, 1922: 20 (*Anisolabis*); Hebard, 1923b: 206 (proposed synonymy with *stali* Dohrn); Menozzi, 1931: 322-323, fig. 2 (male genitalia).

Distribution: Oriental Region, Madagascar, Antilles, Costa Rica and United States (Florida).

tatei Hebard, 1924: 114-115, pl. 5, figs. 1-2 (dorsal and lateral view of distal part of abdomen; type-locality, Ecuador, Chimborazo, Chaguarpata. Holotype ♀ and allotype ♂, Academy of Natural Sciences, Philadelphia).

Distribution: Ecuador (type-locality).

Anisolabis Fieber, 1853

Anisolabis Fieber, 1853: 257 (type-species, *Forficula maritima* Gené, designated by Scudder, 1876d: 289); Kirby, 1891: 516 (proposed synonymy with *Forcinella* Dohrn, pars and *Brachylabis* Dohrn, pars); Burr, 1910c: 176-178 (revision with key to species); 1911e: 27, 28-29; Popham & Brindle, 1966c: 272 (see for non-Neotropical synonymy).

Forcinella Dohrn, 1862: 226 (type-species, *Forficula maritima* Gené, by original designation).

Distribution: Cosmopolitan.

advena Meinert, 1868: 279, pl. 12, figs. 5-8, 15 (*Labidura*; type-locality, Jamaica, "Haunioe". Types, ♂ and ♀, location unknown); Burr, 1911e: 30 (? *Anisolabis*).

Distribution: Jamaica (type-locality).

caeca Borelli, 1902: 2-4, fig. (dorsal view of female; type-locality, Argentina, Santa Fé, Sunchales. Types, 1 ♂ and 1 ♀, Turin Museum); Burr, 1910c: 176 (in key); Hincks, 1949: 629.

Distribution: Argentina (type-locality).

maritima Gené, 1832: 9-10 (*Forficula*; type-locality, "France". Types, ♂ and ♀, location unknown); Scudder, 1876d: 303-304 (notes); Burr, 1910c: 178 (in key); Rehn & Hebard, 1917: 638 (distribution in the West Indies); Morse, 1920: 288-290, pl. 13, figs. 12-14 (male and female forceps and antenna).

Distribution: Cosmopolitan; South America, Central America, West Indies and United States.

surinamensis Boeseman, 1954: 41-42, figs. 11a-e (details of male; type-locality, Surinam, Lucie River. Holotype ♂ and allotype ♀, Amsterdam Museum).

Distribution: Surinam (type-locality).

Subfamily GONOLABINAE

Gonolabinae; Popham & Brindle, 1966c: 277.

Gonolabina Verhoeff, 1902

Gonolabina Verhoeff, 1902b: 8 (type-species, *Gonolabina kuhlgatzi* Verhoeff, by monotypy); Burr, 1904: 294; 1911e: 26 (in *Esphalmeninae*); Popham & Brindle, 1966c: 277.

Distribution: Chile.

spectabilis Philippi, 1863: 218 (*Forficula*; type-locality, Chile, "Santiago". Types, ♂ and ♀, Santiago Museum); Burr, 1911e: 30 (*Anisolabis*); Rehn, 1933a: 162.

kuhlgatzi Verhoeff, 1902b: 8-9 (type-locality, Chile, Concepción, Tumbes. Types, 2 ♂ and 2 ♀, Berlin Museum); Burr, 1911e: 26, pl. 2, figs. 11, 11a (abdomen, forceps and sternum of male); Rehn, 1933a: 162, 163 (proposed synonymy with *spectabilis* Philippi).

Distribution: Chile.

Papéis Avulsos de Zoologia

PAPÉIS AVULSOS ZOOL. S. PAULO, VOL. 22, ART. 6: 47-56

10.IX.1968

NOTES ON NEOTROPICAL ARADIDAE XVIII (HEMIPTERA, HETEROPTERA)

NICHOLAS A. KORMILEV

ABSTRACT

The study of a lot of Aradidae, especially from Brazil and Mexico, is presented. New data on the distribution of several species are presented; *Aneurys carioca*, sp. n. (type-locality, Brazil, Guanabara, Rio de Janeiro), *Mezira pilosa*, sp. n. (type-locality, Mexico, Mexico, Bosenchebe), *Mezira gracilis*, sp. n. (type-locality, Brazil, Amazonas, Manaus), and *Mezira timida*, sp. n. (type-locality, Brazil, Mato Grosso, Utiariti), are described as new species.

By the kind offices of Dr. Henrique M. Canter, of the Departamento de Zoologia, Secretaria da Agricultura, São Paulo, Brazil, I have had the privilege to study a lot of Aradidae from the collections of the above mentioned Departamento, for what I express him my sincere thanks.

The Aradidae in this lot were mostly collected in Brazil, but a small part was collected in Mexico. In total there were about 50 different species belonging to 5 different subfamilies. Four of these species were new and are described below. Most of these species are common for their areas, but some of them merit to be recorded.

All measurements indicated in this paper were taken with a micromillimeter eyepiece, 25 units = 1 mm. In ratios the first figure indicates the length, and the second the width of the measured portion. For convenience, the length of abdomen was taken from the tip of the scutellum to the tip of the hypopygium (♂) or segment IX (♀).

Subfamily Aradinae Amyot & Serville, 1843

Aradus Fabricius, 1803

Aradus penningtoni Drake, 1942

Aradus angustellus Berg (*nec* Blanchard), *in partem*, 1879: 138.

Aradus penningtoni Drake, 1942: 151.

Distributed in Argentina, where it is rather common, then in Paraguay, Uruguay, Bolivia and Southern Brazil. In the latter it is mostly replaced by two other species: *Aradus brasiliensis* Usin-

ger, 1936, and *Aradus mexicanus* Usinger, 1936. Belonging to the "lugubris group" of species, all good flyers, it may be expected very far from its main area of distribution.

3 ♂ and 1 ♀, Brazil, Mato Grosso; Salobra, 24.X.1938, F. Lane col.; 1 ♀, Mato Grosso, Corumbá, Serra do Urucum, 23-30.X.1960. K. Lenko col.

Subfamily Calisiinae Stål, 1873

Calisius Stål, 1890

Calisius placidus Horváth, 1913

Calisius placidus Horváth, 1913: 633, fig. 10.

Distributed in SE Brazil. All species of this genus are rather rare, or even very rare.

1 ♂, Brazil, São Paulo, Ilha dos Alcatrazes, X.1920, H. Luederwaldt & J. P. Fonseca col.

Subfamily Aneurinae Douglas & Scott, 1865

Aneurus Curtis, 1825

Aneurus sahlbergi Bergroth, 1886

Aneurus sahlbergi Bergroth, 1886: 58.

Originally recorded from Petrópolis, Rio de Janeiro, Brazil, this species has no later records.

1 ♂ and 1 ♀, Brazil, Minas Gerais, Serra do Caraça, 1380 m, XI.1961, Kloss, Lenko, Martins & Silva col.; 2 ♂ and 1 ♀, São Paulo, Salesópolis, Estação Biológica de Boracéia, 1.VI.1961, H. Reichardt col.

Aneurus carioca, sp. n.

(Figs. 1-2)

Female. Closely related to *A. leptocerus* Hussey, 1957 (= *A. tenuicornis* Champion, nec Signoret), but much smaller; antennal segment I shorter and wider, ratio length to width as 1.6:1 (in *A. leptocerus* 2:1); II as long as III, 6:6 (in *leptocerus* 8.5:9.5). Antero-lateral angles of pronotum, and particularly lateral borders of hind lobe, are finely, but distinctly denticulate. Abdomen shorter and wider, ratio length:width as 1.24:1 (in *leptocerus* 1.43:1). Hind wings are abbreviated, reaching to middle of tergum III. Lateral borders of abdomen very finely crenulate (in *leptocerus* they are smooth).

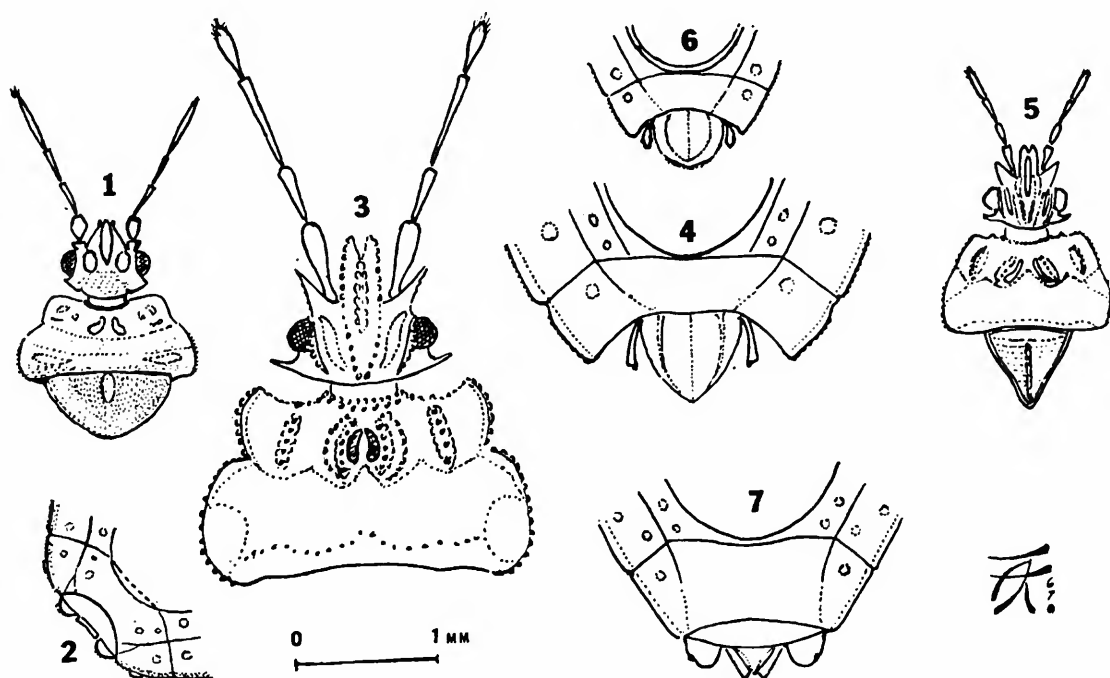
Anterior process of the head reaching to 4/5 of antenal segment I, jugae slightly visible laterad of clypeus; postocular tubercles produced as far as eyes; antero-lateral angles of pronotum rounded, neither produced forward, nor sideways; scutellum short and wide, disc with parallel borders, running from basal border to middle of scutellum; disc longitudinally striate laterad of elevation, concentrically striate along borders. Paratergites large,

rounded, produced far beyond small, truncate segment IX, which is about 1/3 as wide as head (5:14). Spiracles: II and VII lateral, III to VI ventral, VIII terminal.

Measurements: head, 14:14; relative length of antennal segments I to IV are 4:6:6:12.5; pronotum 12.5:30; scutellum 12:21; abdomen 69:49.

Color: ferrugineous, partially infusate; round callous spots on abdomen yellow.

Holotype ♀ from Brazil, Guanabara, Rio de Janeiro, VIII.1962, Ary Vulcano col.; deposited in the Departamento de Zoologia, Secretaria da Agricultura, São Paulo, Brazil.



Aneurys carioca, sp. n., ♀: 1, head, pronotum and scutellum; 2, tip of abdomen from above; *Mezira pilosa*, sp. n., ♂: 3, head and pronotum; 4, tip of abdomen from above; *Mezira gracilis*, sp. n., ♂: 5, head, pronotum and scutellum; 6, tip of abdomen from above; *Mezira timida*, sp. n., ♀: 7, tip of abdomen from above.

In my key for *Aneurys* species from Brazil (in press) *Aneurys carioca*, sp. n. runs to *A. plaumanni* Kormilev, 1965, but differs from it by paratergites (♀) produced far beyond segment IX.

Subfamily Carventinae Usinger, 1950

Proxius Stål, 1873

Proxius gypsatus Bergroth, 1898

Proxius gypsatus Bergroth, 1898a: 100.

This species has an enormous area of distribution, from Florida to SE Brazil and Bolivia, but is never found in large series.

1 ♀ Brazil, São Paulo, Barueri, 29.V.1966, K. Lenko col.

Subfamily Mezirinae Oshanin, 1908

Neuroctenus Fieber, 1861

This large and heterogeneous genus has a curious distribution: Nearctic, Neotropical, Oriental, Australian and Ethiopian Regions, and Manchurian Subregion of the Palaearctic Region, but it is absent in the rest of the Palaearctic Region and on most of the South Pacific islands.

Neuroctenus amazonicus Kormilev, 1960

Neuroctenus amazonicus Kormilev, 1960: 91.

1 ♂ and 5 ♀, Brazil, Mato Grosso, Pôrto Velho (Rio Tapirapé), R. T. Lima col.

Neuroctenus longulus Bergroth, 1898

Neuroctenus longulus Bergroth, 1898b: 151.

2 ♀, Brazil, Mato Grosso, Utiariti (325 m), Rio Papagaio, VII-VIII.1961, K. Lenko col.

Neuroctenus uhleri Bergroth, 1895

Neuroctenus uhleri Bergroth, 1895: 169.

1 ♂ and 2 ♀, Mexico, Mexico, Tenancingo, 23.V.1961, F. S. Pereira col.

Notoplocoris Usinger, 1941**Notoplocoris robustus** Kormilev, 1963

Notoplocoris robustus Kormilev, 1963: 453.

This species was described on the base of a single specimen from Espírito Santo, Brazil. No additional records are available.

1 ♀, Brazil, Espírito Santo, Santa Teresa, I.1964, N. Papaveiro col.

Placogenis Usinger & Matsuda, 1959**Placogenis brachyptera** (Kormilev, 1956)

Diphyllonotus brachypterus Kormilev, 1956: 151, figs. 4-5.

Placogenis brachyptera; Kormilev, 1966: 17.

1 ♀, Brazil, Minas Gerais, Serra do Caraça, 1380 m, XI.1961, Kloss, Lenko, Martins & Silva col.

Placogenis cockerelli Usinger & Matsuda, 1959

Placogenis cockerelli Usinger & Matsuda, 1959: 353, figs. 57, 100.

1 ♀, Brazil, Rondônia, Vila Rondônia (378 km S of Pôrto Velho), 25.I.-9.II.1961, F. S. Pereira & A. Machado col.

Placogenis explanata (Kormilev, 1959)

Diphyllonotus explanatus Kormilev, 1959: 62, figs. 1-2.

Placogenis explanata; Kormilev, 1966: 17.

1 ♀, Brazil, Território do Amapá, Serra do Navio, X.1965, Bicelli col.; 1 ♀, Pará, Alto Paru d'Oeste, Tiriós, I-II.1963, A. Machado & F. S. Pereira col.

Artagerus Stål, 1860

This curious genus is distributed from Central America to SE Brazil and Bolivia.

Artagerus martinezi Kormilev, 1959

Artagerus martinezi Kormilev, 1959: 68, fig. 6.

This species firstly was described from Bolivia and Peru, and was later also recorded from SE Brazil.

1 ♀, Brazil, Território do Amapá, Rio Amapari, 8-10.VII.1957, J. Lane col.; Amazonas, Benjamin Constant, 12-28.IX.1962, K. Lenko col.

Artagerus plaumanni Kormilev, 1959

Artagerus plaumanni Kormilev, 1959: 69.

Firstly recorded from Santa Catarina, Brazil.

1 ♀, Brazil, São Paulo, Piassaguera (= Raiz da Serra), 2.X.1906, H. Luederwaldt col.

Mezira Amyot & Serville, 1843

Mezira Amyot & Serville is a large, almost cosmopolitan genus, which has about eighty species in the Americas.

Mezira handlirschi (Bergroth, 1898)

Brachyrhynchus handlirschi Bergroth, 1898b: 150.

Mezira handlirschi; Drake & Harris, 1944: 42.

This is a Central American species, which was sporadically recorded also from Brazil and Bolivia.

1 ♂, Brazil, Amazonas, Manaus, VIII.1962, K. Lenko col.

Mezira pilosa, sp. n.

(Figs. 3-4)

Male. Elongate ovate, slightly widening backwards; the whole upper surface, with exception of the membrane, covered with long, erect, or slightly curled, dispersed, yellow hairs; ventral surface with shorter, curled hairs.

Head as long as width across eyes (27:27). Anterior process long, roughly granulate, with straight lateral borders, and deeply incised anteriorly, reaching to $3/4$ of antennal segment I. Antenniferous tubercles long, spiniform, divergent, reaching to middle of antennal segment I. Eyes moderately large, strongly protruding. Postocular tubercles spiniform, produced far beyond outer border of eyes. Infraocular carinae denticulate. Vertex with "V"-form row of granules. Infraocular callosity long and narrow; clypeus high, roughly granulate. Antennae long and thin, twice as long as head (54.5:27); antennal segment I clavate, II slightly tapering toward base; III cylindrical; IV elongate fusiform; relative length of antennal segments I to IV are 15:10.5:17.5:11.5. Labium reaching to hind border of head; labial groove open posteriorly.

Pronotum half as long as its maximum width (30:61). Collar roughly granulate; antero-lateral angles obliquely expanded, rounded and crenulate, produced forward as far as collar. Lateral notch deep, angular; lateral borders of hind lobe convex, converging anteriorly, and roughly granulate, or even denticulate. Hind border almost straight. Fore disc with two (1 + 1) high, granulate ridges, and laterad of them with two (1 + 1) lower and narrower ridges. Hind disc roughly and densely granulate posteriorly, less densely anteriorly.

Scutellum shorter than its basal width (29:33). Lateral borders straight, carinate; apex rounded; disc with a high median ridge, tapering backward lateral of it roughly granulate.

Hemelytra reaching to fore border of tergum VII. Apical border of corium straight; apical angle narrowly rounded.

Abdomen elongate ovate, longer than its maximum width (86:72); connexivum scabrous, its exterior and interior borders granulate: exterior with a double row, and interior with a single row of granules. PE-angles protruding, but blunt. Paratergites cylindrical, reaching to $3/4$ of an almost triangular hypopygium; lateral borders of the latter carinate, disc slightly convex. Spiracles II to VII ventral, placed far from border; VIII postero-lateral.

Color reddish brown; callosities between ridges of pronotum black; membrane covered with whitish incrustation.

Total length 7.04 mm; width of pronotum 2.44 mm; width of abdomen 2.88 mm.

Holotype ♂, Mexico, Mexico, Bosenchebe, 1.III.1964, P. Reyes C. col. deposited in the Departamento de Zoologia, Secretaria da Agricultura, São Paulo. 1 ♂ paratype, same data as holotype, in the Kormilev collection.

Mezira pilosa, sp. n., runs in my key for the American species of *Mezira* (1962: 260) to *M. hyperlobata* Kormilev, 1962, from Brazil, but may be separated at once by the longer, forked anterior process of the head, by rough, rounded, setigerous granulation, and by long, erect, or curled hairs on upper surface.

***Mezira gracilis*, sp. n.**

(Figs. 5-6)

Male. In my key for the American *Mezira* species (1962:260) *Mezira gracilis* runs to *M. vianai* Kormilev, 1953, from N Argen-

tina, but is smaller; antennae more slender, with segment IV subcylindrical, rounded apically, and longer than III; postocular tubercles claw-like, acute, reaching as far as outer border of eyes. Lateral borders of pronotum barely sinuate, and very finely denticulate. Apical border of corium less convex; apical angle acute. PE-angles of connexiva slightly, but distinctly protruding. Spiracles II to VI ventral, placed far from border; VII ventral, but placed nearer to border; VIII dorso-lateral. Granulation with very short, erect setae.

Anterior process of head with parallel sides, reaching to tip of antennal segment I; antenniferous tubercles acute and divergent; vertex with "V"-form granulation; infraocular callosities long and very narrow, streak-like; infraocular carinae finely crenulate. Antennae relatively thick; antennal segment I clavate, II elongate ovate, III tapering toward base, as wide apically as IV, IV cylindrical rounded apically.

Antero-lateral angles of pronotum slightly expanded, rounded and crenulate; fore disc with four ($2 + 2$) moderately high ridges; hind disc densely granulate.

Scutellum with all sides carinate; disc with "T"-form median carina, high and thin; laterad of it transversely rugose.

Hemelytra reaching to $3/4$ of tergum VI; apical angle of corium blunt, but not rounded; apical border slightly convex.

Abdomen elongate ovate; lateral borders very finely crenulate; PE-angles slightly protruding, forming a sharp, right angle; PE-VI and PE-VII forming a slightly acute angle. Paratergites clavate, reaching to $3/4$ of hypopygium; the latter moderately large, somewhat flattened, and crenulate posteriorly; median ridge ovate, with thin median suture.

Measurements: head 15:16; relative length of antennal segments, I to IV are 7:5:5:6.5; pronotum 15:30; scutellum 15:16; abdomen 55:35.5; hypopygium 10:12.5.

Color testaceous, hind lobe of pronotum, scutellum and corium infusate; membrane piceous.

Total length 4.08 mm; width of pronotum 1.20 mm; width of abdomen 1.42 mm.

Holotype ♂ and 2 ♂ paratypes, Brazil, Amazonas, Manaus, VIII.1962, K. Lenko col.; holotype and 1 paratype deposited in the Departamento de Zoologia, Secretaria da Agricultura, São Paulo, Brazil; 1 paratype in the Kormilev collection.

***Mezira timida*, sp. n.**

(Fig. 7)

Female. Elongate ovate, with a fine setigerous granulation, setae extremely short and curled.

Anterior process of the head wide, rounded and incised anteriorly, reaching to tip of antennal segment I. Antenniferous tubercles short, divergent. Eyes small, strongly protruding. Postocular tubercles acute, produced beyond outer border of eyes. Infraocular carinae moderately high, crenulate. Vertex with four ($2 + 2$) subparallel rows of setigerous granules. Antennae thin, relative length of antennal segments I to IV are 8:5.5:9.5:6.5. La-

bium reaching to hind border of labial groove, which is open posteriorly.

Pronotum with thin, granulate collar: antero-lateral angles slightly expanded and rounded, produced forward as far as collar; lateral borders parallel at humeri, convergent anteriorly, crenulate; lateral notch absent. Fore disc with four (2 + 2) moderately high, granulate ridges; hind disc densely granulate.

Scutellum with all borders thinly carinate; lateral borders slightly sinuate before apex; the latter rounded. Median carina thin, cross-shaped; disc scabrous.

Hemelytra reaching to hind border of tergum VI; apical border of corium slightly convex; apical angle angularly rounded.

Abdomen ovate. Connexivum wide, scabrous; PE-angles barely protruding; outer borders of connexiva finely crenulate. Paratergites (♀) large, rounded, reaching to middle of segment IX; the latter trapezoidal, slightly incised apically. Spiracles: II to VII ventral, placed far from border; VIII lateral.

Measurements: head 20:22.5; pronotum 20:45; scutellum 18:24; abdomen 70:52.

Color: dark brown; corium piceous; membrane infusate, whitish at apical angle of corium.

Total length 5.20 mm; width of pronotum 1.80 mm; width of abdomen 2.08 mm.

Holotype ♀ and 2 ♀ paratypes, Brazil, Mato Grosso, Utiariti, Rio Papagaio, XI.1966, K. Lenko & F. S. Pereira col.; 1 ♀ paratype, same locality, 23-30.XI.1960, K. Lenko col.; holotype and 2 paratypes deposited in the Departamento de Zoologia, Secretaria da Agricultura, São Paulo, Brazil; 1 paratype in the Kormilev collection.

Mezira timida, sp. n., runs in my key for the American *Mezira* species (1962:260) to *M. peruviana* Kormilev, 1960, from Peru, but the anterior process of the head is dilated anteriorly, reaching to tip of antennal segment I; postocular tubercles are distinctly produced beyond outer border of eyes, and relative length of antennal segments is different.

***Mezira laeviventris* (Champion, 1898)**

Brachyrhynchus laeviventris Champion, 1898:98, pl. VI, figs. 24-25.
Mezira laeviventris; Usinger & Matsuda, 1959: 380.

It is a rather rare species; firstly it was recorded from Panama, but later it was found in Brazil, Bolivia and Peru.

1 ♂, Brazil, São Paulo (Santo Amaro), XI.1951, J. Lane col.

***Dysodius* Lepeletier & Serville, 1825**

***Dysodius lunatus* (Fabricius, 1794)**

Acanthia lunata Fabricius, 1794: 72.

Aradus lunatus; Fabricius, 1803: 117.

Dysodius lunatus; Burmeister, 1835: 255.

Dysodius lunatus (Fabricius) is one of the oldest recorded Aradids from the Neotropical Region, but only recently Bloete found out (1965: 31) that there are two different forms: *lunatus* (Fabricius) s. str., which is larger, and *lunatus vandoesburgi* Bloete, which is smaller and lives on different plants. It is a pity that characters which he gives, besides size, for separation of these two forms, are too vague to be used by persons who do not specialize in Aradidae.

Examining the specimens of *D. lunatus* (Fabricius) in this lot and from my private collection, we could see that the real *lunatus* (Fabricius) is restricted principally to the Amazonas basin, penetrating somewhat into Colombia, Venezuela and Guianas (cf. Bloete). The other form is distributed across most of the Neotropical Region, from Mexico to SE Brazil, Bolivia, and even N Argentina. Among this "other form" we could distinguish two varieties, but as their areas of distribution are practically identical, and there are intermediate specimens, we should leave the question of their separation open until we know more about their biology.

The main differences between *D. lunatus* (Fabricius) s. str. and *lunatus vandoesburgi* Bloete, are the following:

1. Much larger, length 16 to 18 mm. Anterior process of the head deeply and widely cleft, with strong lateral teeth; postocular lobes large, distinctly produced beyond the outer border of eyes; paratergites in both sexes are longer than the hypopygium, or segment IX respectively; lateral lobes of abdomen and antero-lateral lobes of pronotum are longer
..... *lunatus lunatus* (Fabricius)

Smaller, length 12 to 14, rarely 15 mm. Anterior process mostly with contiguous jugae, rarely with narrow split between them; postocular lobes not so wide, mostly not produced beyond the outer border of the eyes, rarely slightly produced; paratergites produced as far as hypopygium, or segment IX, or even less; lateral lobes of abdomen and antero-lateral lobes of pronotum are shorter and narrower
..... *lunatus vandoesburgi* Bloete

***Dysodius lunatus lunatus* (Fabricius, 1794)**

1 ♂, Brazil, Amazonas, Manaus, VIII.1964, F. S. Pereira col.; 1 ♀, Amazonas, Tapuruquara, VIII.1964, F. S. Pereira & A. Machado col.; 2 ♂ and 1 ♀, km 86 road Belém-Brasília, Pará, V.1960, E. Dente col.; 1 ♂, Alto Paru d'Oeste, Tiriós, Pará, I-II.1963, A. Machado & F. S. Pereira col.; 1 ♀, Amazonas, Benjamin Constant, XI.1962, A. Silva col.

***Dysodius lunatus vandoesburgi* Bloete, 1965**

Various specimens from Bolivia (Chapare, Cochabamba), Brazil (Alto Paru d'Oeste, Amazonas) and Costa Rica.

REFERENCES

- BERG, C.
1879: *Hemiptera Argentina* ... Vol. 8: 9-316. Bonariae.
- BERGROTH, E.
1886: Zur Kenntniss der Aradiden. *Verh. Zool. Bot. Ges. Wien* 36: 53-60, 1 pl.
1895: Aradidae Novae. *Wien. Ent. Zeit.* 14: 169.
1898a: Diagnoses of some new Aradidae. *Ent. Mag.* 34: 100-101.
1898b: Aradides nouveaux. *Bull. Mus. Nat. Hist. Nat. Paris* 3: 149-151.
- BLOETE, H. C.
1965: Catalogue of the Aradidae in the Rijksmuseum van Natuurlijke Historie. *Zool. Verh.* 75: 1-41, 37 figs.
- BURMEISTER, H. C. C.
1835: Schnabelkerfe (Rhyngota). in *Handbuch der Entomologie*, 2 (1), XI + 400 pp. Berlin.
- CHAMPION, G. C.
1898: Aradidae, in *Biologia Centrali-Americana*, Rhynchota, 2, XVI + 416 pp., figs..
- DRAKE, C. J.
1942: Two new American species of the genus *Aradus* Fabr. (Hem.). *Rev. Ent., Rio de Janeiro* 13: 151-154.
- DRAKE, C. J. & H. M. HARRIS
1944: South American Aradidae in the Carnegie Museum. *Ann. Carnegie Mus.* 30: 39-43.
- FABRICIUS, J. C.
1794: *Entomologia Systematica* 4: 72. Hafniae.
1803: *Systema Rhyngotorum*. X + 314 pp. Brunsvigae.
- HORVÁTH, G.
1913: Species mundi antiqui generis *Calisius*. *Ann. Mus. Nat. Hung.* 11: 623-634.
- KORMILEV, N. A.
1956: Notas sobre Aradidae Neotropicales VI. *An. Soc. Cient. Argent.* 162: 148-159, 1 pl..
1959: Notes on Neotropical Aradidae II. (Hemiptera). *Proc. Ent. Soc. Washington* 61 (2): 61-71, 5 figs.
1960: Notas sobre Aradidae neotropicales VIII (Hemiptera). *An. Soc. Cient. Argent.* 169: 83-94, 5 figs.
1962: Notes on Aradidae in the Naturhistoriska Riksmuseum, Stockholm. *Ark. Zool.* (2) 15 (14): 255-273, 15 figs.
1963: *Idem. Ibidem* (2) 15: 443-455, 4 figs.
1966: Notes on Aradidae in the U.S. National Museum. IV. (Hem.-Heter.). *Proc. U. S. Nat. Mus.* 119 (3548): 1-25, 23 figs.
- USINGER, R. L. & R. MATSUDA
1959: *Classification of the Aradidae (Hemiptera — Heteroptera)*. British Museum, London, VII + 410 pp., 102 figs..

Papéis Avulsos de Zoologia

PAPÉIS AVULSOS ZOOL. S. PAULO, VOL. 22, ART. 7: 57-59

10.IX.1968

UMA NOVA ESPÉCIE DE *PHAETHORNIS* (AVES, TROCHILIIDAE)

ROLF GRANTSAU

ABSTRACT

A new species of *Phaethornis*, *maranhaoensis*, sp. n., is described based on a series of males collected at Imperatriz, Maranhão, Brazil. The new species is compared to *nattereri* and *idaliae*, its closest relatives.

Entre o material ornitológico coletado em uma expedição que realizei ao longo da Rodovia Belém-Brasília em dezembro de 1966, encontra-se uma série de machos de uma espécie nova de *Phaethornis*, que descrevo abaixo. Estes exemplares foram coletados cerca de 8 km ao sul de Imperatriz, em região arbustiva, com inúmeras ilhas de mata muito densa.

Phaethornis maranhaoensis, sp. n.

Holótipo, ♂ adulto, de Imperatriz, Maranhão, Brasil, 15.XII. 1966 (Grantsau n. 5307; no Departamento de Zoologia, São Paulo).

DESCRIÇÃO

Dorso da cabeça castanho escuro, costas e asas brilhantes, brônzeo-esverdeado; coberteiras superiores da cauda brônzeo-esverdeadas, com barras castanho-vermelhado claro. Rêmiges castanho-negro, com brilho purpúreo; ventre castanho-avermelhado, garganta e lados desta mais escuros que o ventre; superfície e faixa da garganta, assim como as coberteiras inferiores da cauda, ocre claro. Região do ouvido negro-castanha. Penas caudais brônzeo-esverdeado na metade basal, as médias brônzeo-esverdeado, exceto o ápice que é branco; as laterais com faixa negra larga, subterminal e ápices castanho claros; o par junto às médias também com ápices brancos. Parte superior do bico negra, parte inferior amarela com ápice escuro; pernas castanho-negras. Pêso, 2 g. Comprimento total, 109 mm; comprimento da asa, 44 mm; comprimento da cauda, 39 mm; comprimento do bico, 24 mm.

Fêmea desconhecida.

Rua Vicente de Carvalho 864, São Bernardo do Campo, São Paulo. Trabalho elaborado com auxílio da Fundação de Amparo à Pesquisa do Estado de São Paulo.

Parátipos: 6 ♂♂ (n. 5308-5313) coletados junto com o holótipo (em minha coleção); 2 ♂♂ (Museu Nacional, Rio de Janeiro, n. 17987-17988), de São Bento, Maranhão, 10.IV e 13.IV.1923, E. Sneath col.

Medidas (mínima, máxima e média, esta entre parênteses, em mm)

comprimento da asa	43 - 46	(44,1)
comprimento da cauda	39 - 43	(41,4)
comprimento do bico	23 - 26	(24,0)

Canto: "zag zag tib zib übo üb, zag zag zib zib zag zag zib zib übo üb ..."; o "übo üb" não é regularmente emitido, sendo frequentemente eliminado do canto. O canto da espécie foi gravado.



Fig. 1, *Phaethornis maranhaoensis*, sp. n., holótipo.

DISCUSSÃO TAXONÔMICA

A forma da cauda desta espécie nova é muito semelhante àquela da fêmea de *Phaethornis idaliae*, mas, como as penas caudais desta última são tôdas verde-escuro com ápices brancos, não é possível confundir as duas espécies. *P. maranhaoensis* também é muito parecida com *nattereri*, entretanto, como sua cauda difere tanto na forma como na cor, também entre estas duas espécies não pode haver confusão. *P. maranhaoensis*, além do mais, tem garganta mais escura e lados da garganta mais avermelhados. Um caráter certo para distinguir as duas espécies, são as coberteiras superiores da cauda brônzeo-esverdeadas com barra castanho-avermelhada em *maranhaoensis*, e uniformemente castanho-avermelha-

do em *nattereri*. A distância entre a ponta da pena caudal média e a próxima é de 13-17 mm em *nattereri*, e somente 9-10 mm na espécie nova (figs. 2 e 3).

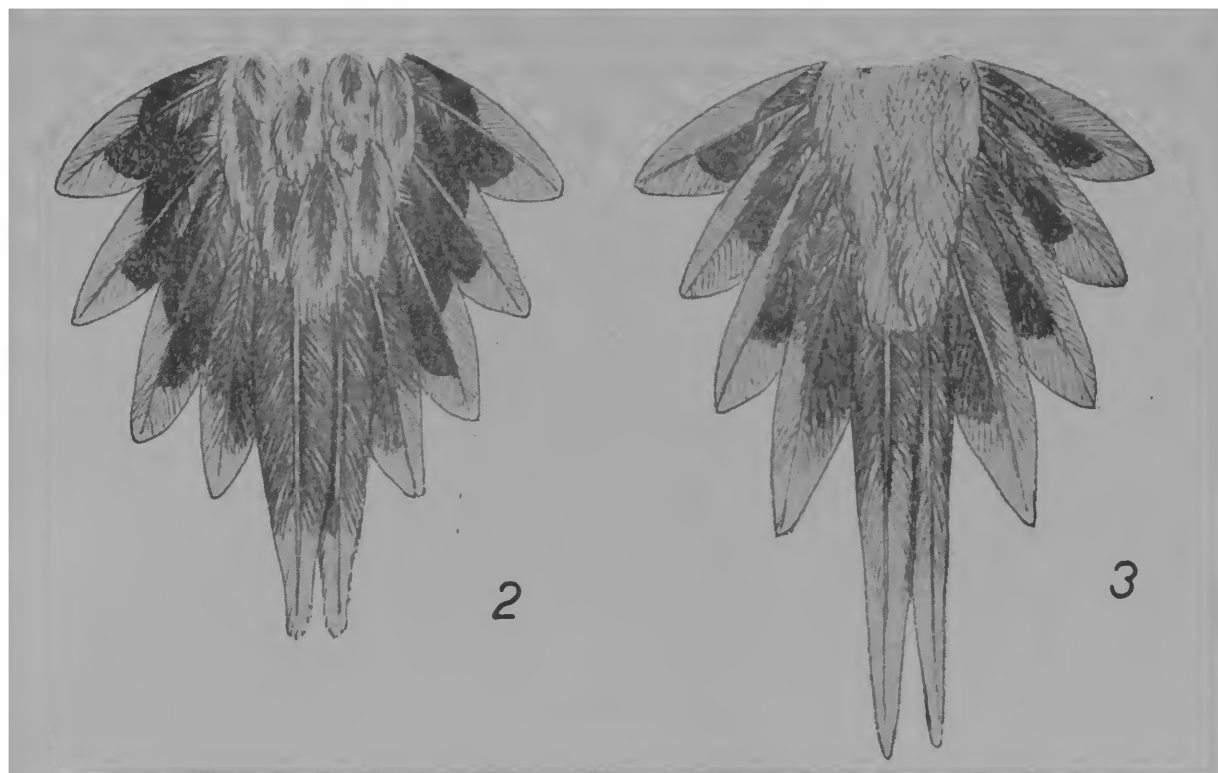


Fig. 2, cauda do holótipo de *P. maranhaoensis*, sp. n.; fig. 3. cauda do macho adulto de *P. nattereri* (Santo Antonio, Cuiabá, Mato Grosso).

AGRADECIMENTOS

Pela permissão de estudo de material para comparação agradeço aos Drs. P. E. Vanzolini e H. F. de A. Camargo, do Departamento de Zoologia, São Paulo, e ao Dr. H. Sick, do Museu Nacional, Rio de Janeiro. Agradeço ainda ao Dr. H. Reichardt pela tradução e pelo preparo do manuscrito. Aos Sr. e Sra. Sarzier, que contribuíram para os bons resultados da excursão.

Papéis Avulsos de Zoologia

PAPÉIS AVULSOS ZOOL. S. PAULO, VOL. 22, ART. 8: 61-83, EST. 1

4.XII.1968

GÊNERO *PYROPHORUS*. 1. ESPÉCIES COM ANTENAS CURTAS E VESÍCULAS LUMINESCENTES LATERAIS (COL., ELATERIDAE)

CLEIDE COSTA

ABSTRACT

In this first contribution to the systematics of the complex genus *Pyrophorus*, an analysis of geographic variation of several characters of one species, *P. noctilucus* Linné, was made. The following characters were studied: male genitalia, basal tubercle of pronotum, mesosternal cavity and discal punctuation of pronotum. The careful analysis of the data led to the conclusion that *P. noctilucus* really is formed by two distinct species, *noctilucus* Linné and *angustus* Blanchard, the latter with 3 subspecies, *angustus angustus* Blanchard, *angustus luscus* Candèze and *angustus hayekae*, subsp. n..

INTRODUÇÃO

O presente trabalho constitui o primeiro de uma série sobre sistemática do gênero *Pyrophorus*, que tem muitas espécies de difícil diferenciação. As espécies aqui estudadas correspondem à Secção I de Candèze (1863), que se distingue das demais pelos seguintes caracteres: antenas curtas, não atingindo a parte posterior do protórax; vesículas luminescentes laterais, visíveis também na face inferior do protórax, em forma de mancha irregular. Candèze reúne, neste grupo, três espécies: *P. clarus* Germar, *P. pellucens* Eschs. e *P. indistinctus* Germar.

Ao examinar material pertencente a este grupo, verifiquei entre os exemplares correspondentes na chave de Candèze a *pellucens* Esch. e assim correntemente identificados, que havia variabilidade nos seguintes caracteres: genitália do macho, tubérculo da base do pronoto, ângulo formado pelos bordos da cavidade mesosternal e pontuação da região discal do pronoto.

Foi feito um estudo visando averiguar se essa variação era ocasional dentro de uma mesma espécie ou se, ao contrário, tratar-se-ia de mais de uma forma.

Ao concluir a análise dos dados disponíveis, verifiquei a existência de duas espécies, uma delas com três subespécies. Ao atribuir nomes, levei em consideração aqueles que se encontravam na sinonímia de *P. pellucens*. De acordo com a literatura, apenas *P. luscus* Candèze se encontrava como sinônimo de *P. pellucens*. Por gentileza

do Dr. Roger Damoiseaux, do Institut Royal des Sciences Naturelles, Belgique, pude examinar não só os tipos de *P. luscus* Candèze, como também todo o material determinado por Candèze como *pellucens* Eschscholtz. Desta maneira verifiquei que *P. luscus* Candèze era uma espécie válida e pude determinar uma das formas como *P. pellucens*. As duas outras formas que possuía, seriam novas.

Quando este trabalho se encontrava no prelo, recebi do Dr. L. Hedström da University of Uppsala, Sweden, um exemplar tipo de *P. noctilucus* Linné e de Mme. A. Bons, do Muséum National d'Histoire Naturelle, Paris, um exemplar tipo de *P. angustus* Blanchard. Este material havia sido pedido para solucionar a atribuição de nomes ao restante das espécies que integram a Secção I de Candèze.

Examinado o tipo de *noctilucus*, verifiquei ser a espécie correspondente a *pellucens* no conceito de Candèze e quanto ao *angustus*, constatei tratar-se de uma forma válida, correspondente a uma das formas aqui estudadas.

Agradeço à Dra. C. M. von Hayek, não só por ter-me enviado material, como também pelas informações a respeito da localização dos "tipos"; ao Dr. Roger Damoiseaux por ter-me dado a oportunidade de examinar os tipos de Candèze; ao Dr. L. Hedström por ter-me enviado o tipo de Linné; a Mme. A. Bons por enviar-me os tipos de Blanchard; ao Dr. Paulo E. Vanzolini, pela orientação, que permitiu a realização deste trabalho; e, às demais Instituições que enviaram-me material para estudo.

CARACTERES ESTUDADOS

A. Genitália do macho. O estudo da genitália do macho foi feito após montagem em bálsamo. A peça apresenta-se constituída por uma região basal (fig. 2b), dois lobos laterais (fig. 2c) e um lobo médio; este é formado por dois escleritos, um dorsal (fig. 2d) bem largo e um ventral (fig. 2e) mais estreito. Estas peças variam na forma; o esclerito dorsal do lobo médio pode estreitar-se gradualmente desde a base até o ápice ou afinar-se bruscamente perto deste; o esclerito ventral pode ter os lados quase paralelos ou ser mais estreito no ápice do que na base, ou ainda ter uma constrição próxima do ápice; apresenta ainda variação quanto à presença ou não de formações cuticulares semelhantes a escamas e ainda o ápice pode ser arredondado ou reto. Os lobos laterais podem ter os seus ápices bastante prolongados ou não.

É possível reconhecer três modalidades de genitália masculina:

I. (fig. 2) possui lobos laterais com ápices alongados, esclerito dorsal do lobo médio estreitando-se bruscamente perto do ápice; esclerito ventral com constrição próxima ao ápice e sempre com formações cuticulares.

II. (fig. 4) apresenta lobos laterais alongados, esclerito dorsal como o anterior e esclerito ventral estreitando-se gradualmente desde a base até o ápice, sempre com formações cuticulares.

III. (figs. 3 e 5) esclerito dorsal estreitando-se gradualmente desde a base, esclerito ventral de lados quase paralelos, com ou sem formações cuticulares e com o ápice quase reto; lobos laterais não alongados.

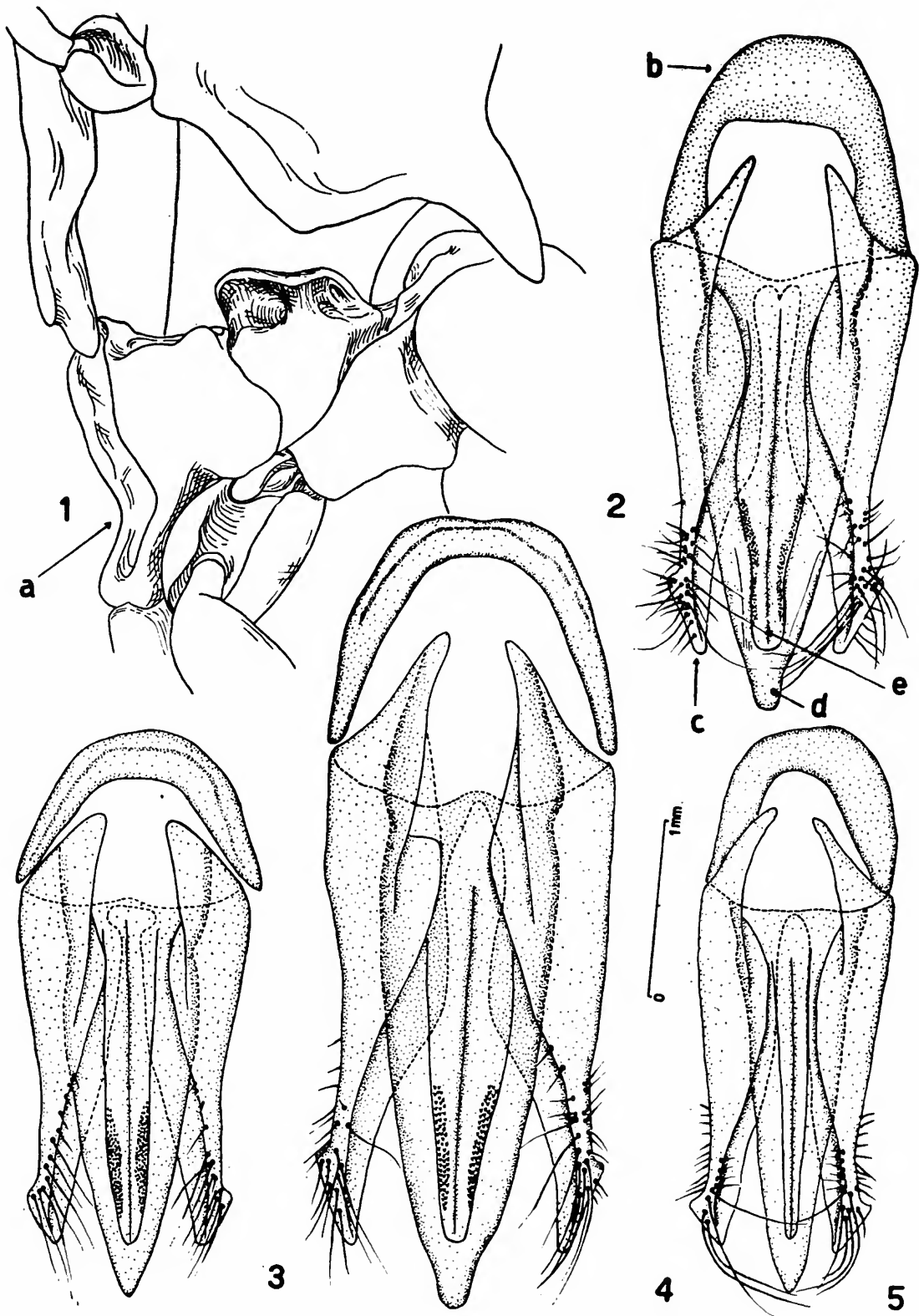


Fig. 1, *P. noctilucus*, processo prosternal e cavidade mesosternal. Genitália do macho (vista ventral) de: fig. 2, *P. angustus luscus*; fig. 3, *P. angustus hayekae*; fig. 4, *P. noctilucus*; fig. 5, *P. angustus angustus*.

B. Tubérculo da base do pronoto. Pode ser:

- I. pouco distinto, quase aplanado.
- II. bem distinto, quase acuminado.

C. Cavidade mesosternal. Os bordos da cavidade mesosternal, onde se encaixa o processo prosternal quando do salto, formam um ângulo (fig. 1a) que varia. Este caráter não é de avaliação fácil. As peças foram desenhadas em câmara clara e o ângulo medido sobre o desenho. Considerei quatro modalidades:

- I. bordos formando ângulo em torno de 130°.
- II. bordos formando ângulo em torno de 135°.
- III. bordos formando ângulo em torno de 140°.
- IV. bordos formando ângulo em torno de 145°.

D. Pontuação da região discal do pronoto. O tamanho dos pontos varia. Geralmente os exemplares de pontuação média e fina são mais brilhantes. Distingo três modalidades:

- I. grossa (figs. 6 e 7).
- II. média (fig. 9).
- III. fina (fig. 8).

COMENTÁRIO

Estes caracteres são de determinação bastante subjetiva, contudo, sua aferição merece confiança. De fato, lidei com 964 exemplares; examinei muitos deles mais de uma vez, decorrido bastante tempo e sem referência ao resultado anterior. Todas as determinações conferiram. Por outro lado, pedi a colegas que, instruídos apenas com os dados deste trabalho, classificassem os exemplares: os dados deles coincidiram sempre com os meus.

MATERIAL EXAMINADO

Iniciei o trabalho com 182 exemplares, que permitiram chegar às conclusões finais; posteriormente recebi outros 782, que confirmaram amplamente os resultados.

Examinei material pertencente às seguintes instituições: American Museum of Natural History, New York (AMNH); British Museum of Natural History, London (BM); Carnegie Museum of Natural History, Pittsburgh (CH); California Academy of Sciences, San Francisco (CAS); California Insect Survey, Berkeley (CIS); Chicago Natural History Museum (CNHM); Coleção Campos Seabra (CCS); Departamento de Zoologia da Secretaria da Agricultura, São Paulo (DZSP); Escola Nacional de Agronomia do Rio de Janeiro (ENA); Facultad de Humanidades y Ciencia (FHC); Instituto Biológico, São Paulo (IBSP); Instituto de Ecologia e Experimentação Agrícolas, Rio de Janeiro (IEEA); Instituto Oswaldo Cruz, Rio de Janeiro (IOC); Institut Royal des Sciences Naturelles, Belgique (IRSN); Museum of Comparative Zoology (MCZ); Museu Paraense "Emílio Goeldi", Pará (MPEG); Museu Nacional do Rio de Janeiro (MNRJ); Museum of the University Helsinki (MZH).

Alguns dos exemplares do British Museum são da Biologia Centrali-Americana (BCA).

MÉTODOS

Estudei inicialmente a associação entre as modalidades dos caracteres anteriormente apresentados dentro de algumas amostras geograficamente homogêneas (Tab. 1).

Tabela 1

<i>Amostra</i>	<i>Localidades</i>	<i>Exemplares</i>	
Amapá N	Rio Cassiporé	3	
	Serra Lombarda	1	4
Amapá S	Rio Amapari	4	
	Serra do Navio	6	
	Pôrto Santana	1	11
	"próximo Loreto"	1	
Alto Rio Negro	Tapará	2	
	Taracua	1	
	Serra da Neblina	1	
	Uaupés	4	
	Jauaretê	1	10
Junin	Chanchamayo	9	
	Satipo	4	13
Borba	—	29	
Maués	—	6	
Manaus	—	15	

Encontrei associações rígidas de caracteres (tab. 2). Em seis delas, apenas uma combinação foi achada; em uma amostra achei duas combinações. Nesta tabela estão expostas as associações encontradas e os nomes de código que a elas foram dados.

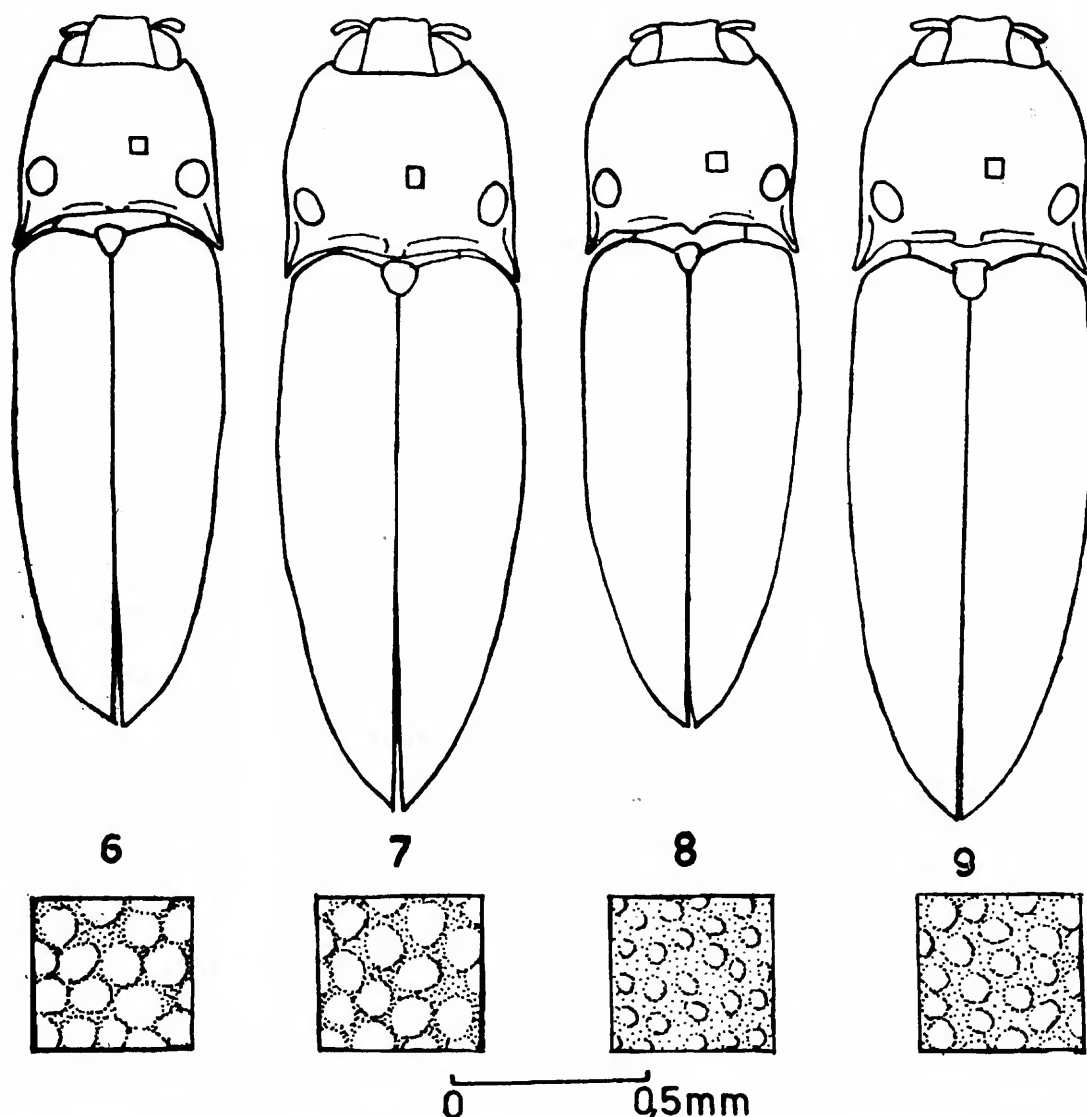
Tabela 2

<i>Amostra</i>	<i>Exemplares</i>	<i>Caráter</i>				<i>Padrão</i>
		<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	
Amapá N	4	III	II	IV	III	W
Amapá S	11	II	I	II	I,II	Y
Borba	29	III	II	IV	III	W
		II	I	II	I,II	Y
Maués	6	II	I	I,II	I	Y
Manaus	15	II	I	II	I,II	Y
Alto Rio Negro	10	II	I	II	I,II	Y
Junin	13	III	I	III	II	Z

Verifiquei assim a presença de padrões de associação:

<i>Padrão</i>	<i>Amostra</i>			
W	(AIII BII CIV DIII)	Amapá N	Borba	
		Amapá S	Borba	
Y	(AII BI CII DI,II)	Manaus	Maués	
		Alto Rio Negro		
Z	(AIII BI CIII DII)	Junin		

Estudei a distribuição geográfica destes três padrões em todo material disponível (tabela 3), afim de verificar se ocorriam nas outras amostras. Além de confirmar isto, este estudo serviu para evidenciar mais uma associação de caracteres: AI BI C(I-IV) DI,II (padrão X) nas amostras de Nicaragua, Costa Rica e Panamá. Nas amostras de Bolívia N, Junin e Huanuco encontrei um padrão (AII BI CHII DI) que difere do padrão Y apenas pela cavidade mesosternal, e por isso não foi considerado separadamente, dentro do âmbito do presente estudo.



Vista dorsal e pontuação do pronoto: fig. 6, *P. angustus angustus*; fig. 7, *P. noctilucus*; fig. 8, *P. angustus hayekae*; fig. 9, *P. angustus luscus*.

DISTRIBUIÇÃO GEOGRÁFICA (figs. 10 e 11)

Verifica-se que um padrão (Y) (fig. 10) distribui-se do México à floresta amazônica e, disjuntamente, à floresta atlântica.

Os outros três padrões (fig. 11) são alopátricos entre si e simpátricos com o padrão Y. O padrão X vem do México ao Equador;

TABELA 3

CARACTERES

AMOSTRAS	AI	II	III	BI	II	CI	II	III	IV	DI	II	III
CALIFÓRNIA		1		1		1				1		
MÉXICO		1		3			2	1		3		
GUATEMALA		1		4		2		1	1	2	2	
NICARÁGUA	2			2			1	1		2		
COSTA RICA	1			1		1				1		
PANAMÁ	8			11		8	1	2		4	7	
COLÔMBIA		1		1			1				1	
VENEZUELA		1		2			2				2	
TRINIDAD		2		6			6				6	
GUYANA		4	1	5	1		5		1		5	1
SURINAME				2				2		2		
AMAPÁ		4	2	12	3		12		3	2	10	3
GUAYAQUIL		1		1				1		1		
AREQUIPA			2	2				2		2		
EQUADOR E.		1		1				1		1		
ALTO NEGRO		2		11			11			10	1	
SOLIMÕES		4		6			6			6		
BORBA		21	2	27	2		27		2	27		2
MANICORÉS		1		8	1	2	7			9		
MAUÉS		1		6		3	3			6		
MANAUS		5		15			15			12	3	
PARÁ O.		6	1	6	1		6		1	6		1
SANTARÉM					2				2			2
REGIÃO DE BELÉM		2		4			4			4		
JURUÁ		1		1			1			1		
ACRE				1			1			1		
GI-PARANÁ				1			1			1		
BOLÍVIA N.		3		3				3		3		
JUNIN		5	8	13				13		13		
HUÁNUCO		1		3				3		3		
EL PALMAR			1	1				1		1		
JEQUIÉ		2		3			3			3		
ITA		5		6			6			6		
ANGRA		2		2			2			2		
PETRÓPOLIS		1		1			1			1		

o padrão W encontra-se na Amazônia oriental e o padrão Z no Equador ocidental e Peru.

Penso que se possa dizer que o padrão Y caracteriza uma espécie de distribuição florestal; sendo simpátrico com todos os outros; não pode ser relacionado com nenhum deles no plano de espécie.

Quanto aos três padrões (X, W, Z) que são alopátricos, poderiam teoricamente, ser tanto considerados como espécies individualizadas, quanto como subespécies de uma mesma espécie.

A fim de conseguir mais elementos para julgar esta questão mapeei cada caráter individualmente sem considerar o padrão Y.

Para o caráter A (fig. 12) há homogeneidade na América do Sul e discordância na América Central; para B (fig. 13) há concordância entre América Central até norte da Bolívia e discordância na Amazônia oriental; para C (fig. 14) há grande variação na América Central, sendo que na América do Sul aparecem duas destas variações; e, para D (fig. 15) há variação na América Central sendo que uma delas vai até o norte da Bolívia, enquanto na Amazônia oriental apresenta-se discordante. Penso que essa distribuição seja compatível com a hipótese de raças geográficas da mesma espécie.

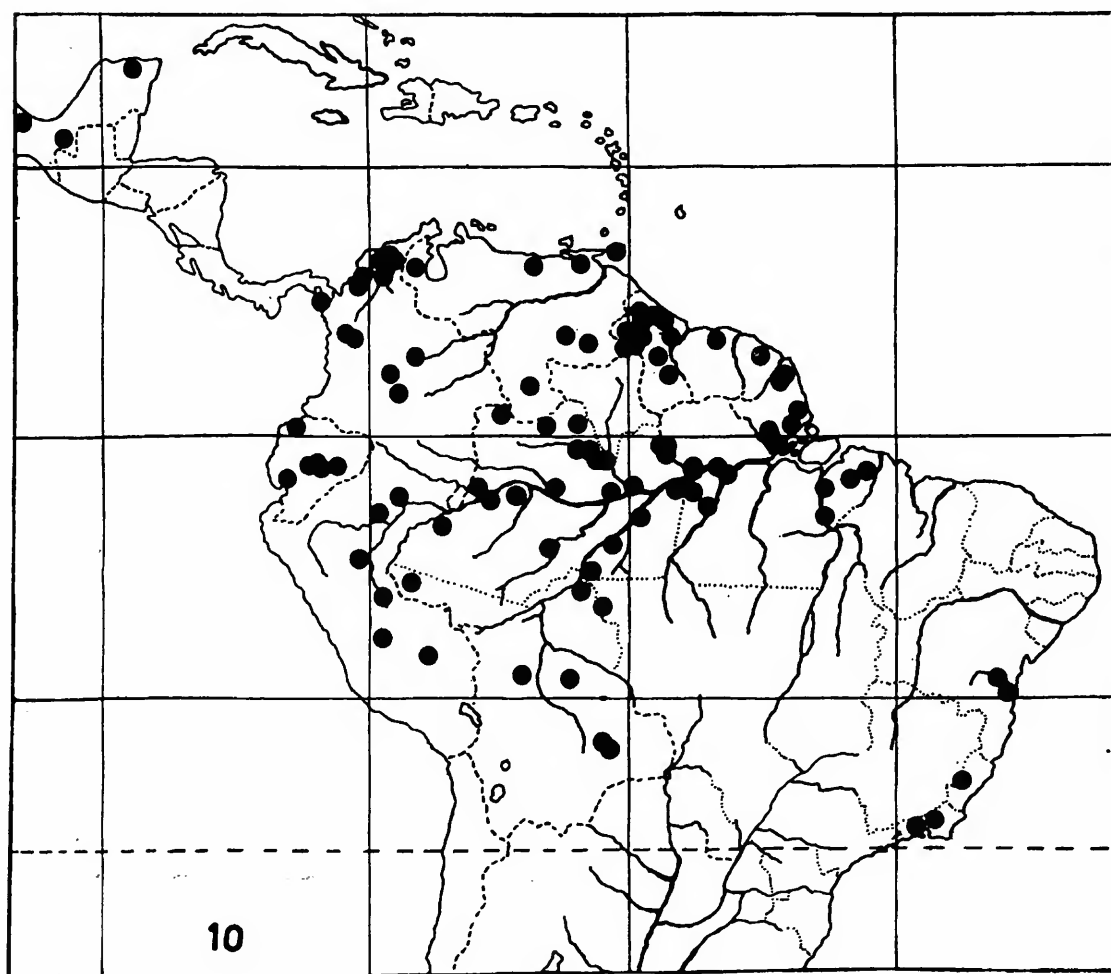


Fig. 10, Distribuição geográfica de *P. noctilucus*.

É interessante que a variação apresentada pelo padrão X na pontuação do pronoto e na abertura do ângulo formado pelos bordos da cavidade mesosternal é a mesma encontrada no padrão Y (tabela 2), muito embora este último seja mais homogêneo pois no caso da cavidade mesosternal, em apenas uma amostra (Maués) é que há variação. Estes dois padrões são bastante correlatos e mesmo quanto aos outros caracteres (genitália do macho e tubérculo da base do protórax) estão muito mais próximos entre si do que em relação aos padrões W e Z.

ATRIBUIÇÃO DE NOMES

Linné (1758) caracterizou *P. noctilucus* sem citar número de exemplares e designou "América" por localidade-tipo; cita porém dois autores (Browne e Sloane) que se referiram a vagalumes da Jamaica. Apesar desta citação, é muito pouco provável que Linné tenha visto material da Jamaica; por outro lado, penso ser muito difícil a ocorrência desta espécie nas Grandes Antilhas, uma vez que tenho examinado muito material dessas ilhas sem encontrar

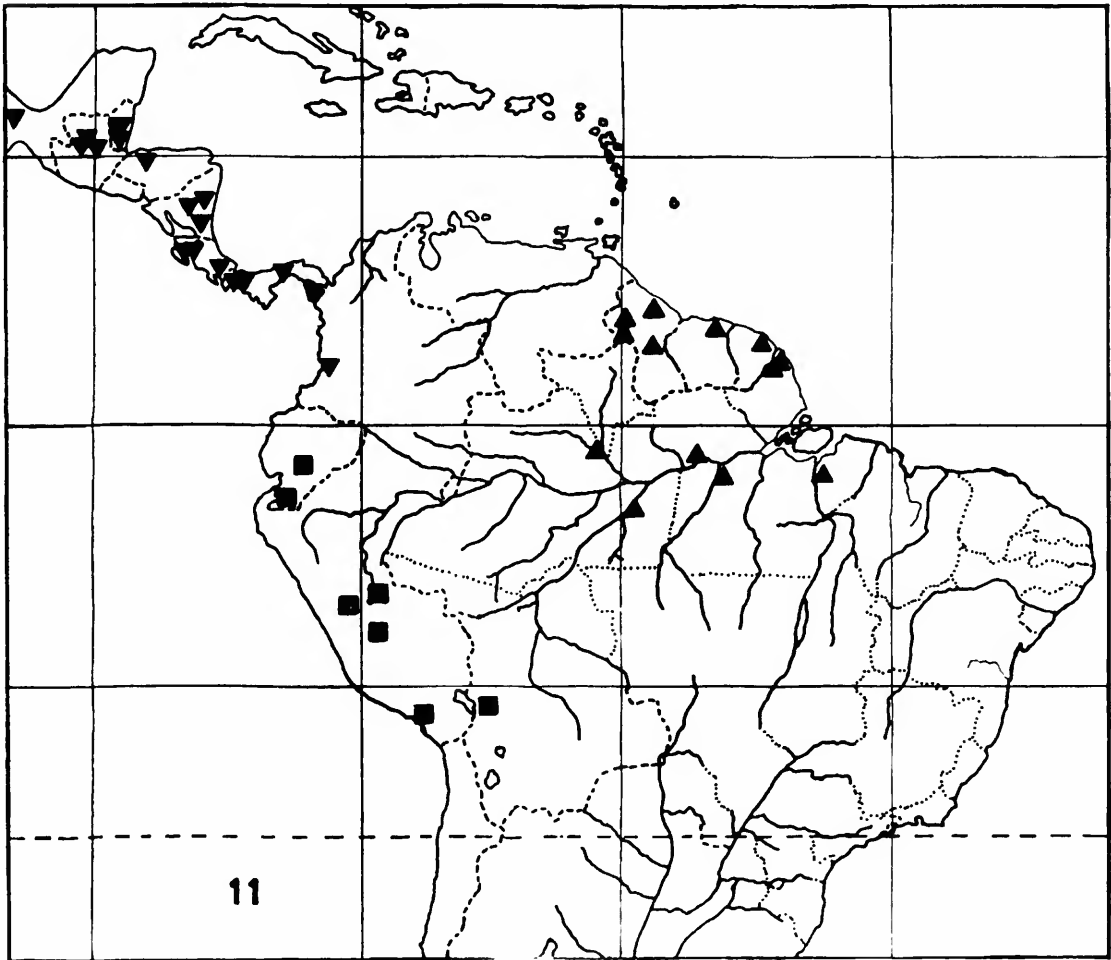


Fig. 11, Distribuição geográfica: triângulo invertido, *P. angustus luscus*; triângulo normal, *P. angustus hayekae*; quadrado, *P. angustus angustus*.

exemplares da espécie. O material tipo, depositado na época no Museu Ludovica Ulrica "M.L.U.", passou posteriormente para a "University of Uppsala". Recebi um exemplar dessa instituição e segundo informação pessoal do Dr. L. Hedström o rótulo manuscrito que acompanha esse exemplar é de C. Aurivillius, enquanto que o rótulo de caixa é de C. P. Thunberg e tem os seguintes dizeres: "*noctilucus* Mus. Gust. Ad.". Como o padrão Y corresponde a esta espécie passo a denominá-la *P. noctilucus* Linné.

Eschscholtz (1829) caracterizou *P. pellucens*, correspondente a uma variedade de "*E. noctuluci*" no conceito de Illiger; fez uma descrição sumária sem citar número de exemplares e deu como localidade-tipo "Bahia". A coleção Eschscholtz encontra-se repartida, alguns exemplares no Museu de Helsinki, Finlândia, e outros no Museu de Moscou. Tive oportunidade de ver dois exemplares do Museu de Helsinki, um do Peru e outro de Cayenne (Guiana Francesa); nenhum desses exemplares pertence à série sintípica, e correspondem ambos a *P. noctilucus* Linné. Quanto ao material do Museu de Moscou, que encerra provavelmente o tipo de *pellucens*, aguardo informações precisas para poder me decidir sobre sua validade ou sinonímia com *noctilucus*.

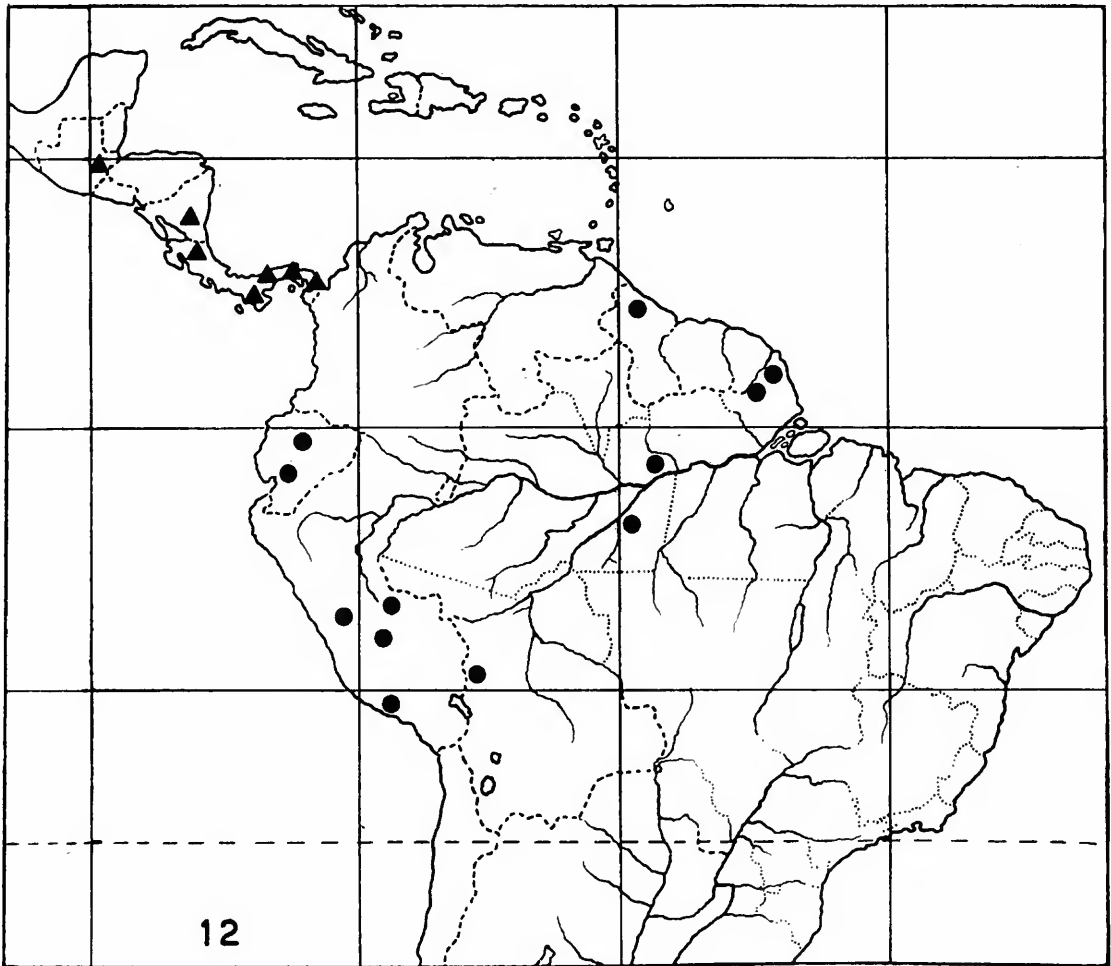


Fig. 12, Distribuição geográfica de caracteres, genitália do macho: triângulo, AI; círculo, AIII.

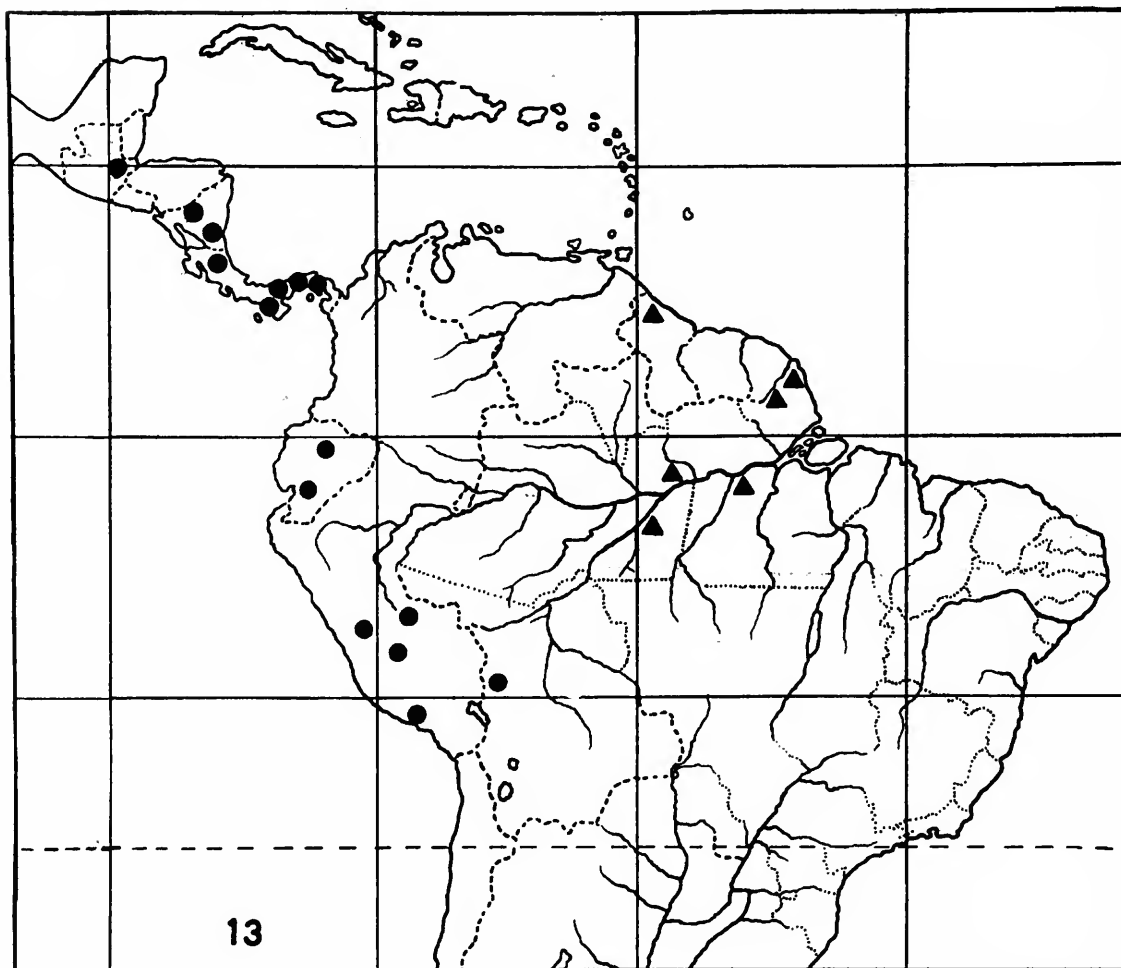


Fig. 13, Distribuição geográfica de caracteres, tubérculo da base do protórax: círculo, BI; triângulo, BII.

Candèze, em 1889, descreveu *P. luscus*, sem citar número de exemplares e dando como localidade-tipo "Guatemala". Em 1895, Champion colocou-a na sinonímia de *P. pellucens*. Examinei 11 exemplares do Museu de Bruxelas, rotulados como "tipos", mas dos quais apenas 7 são da Guatemala; os 4 restantes são provenientes de Honduras (3 espécimens) e do Panamá (1 espécimen). Como a forma X, concorda com êste nome, considero-a como sendo o *P. luscus* Candèze.

Em 1843, Blanchard descreveu sumariamente *P. angustus*, não especificando número de exemplares e designando localidade-tipo "Santa Cruz de la Sierra". Candèze (1863) coloca-a em sinonímia de *P. clarus* Germar. Examinei um exemplar tipo da Coleção do Muséum National D'Histoire Naturelle e constatei tratar-se de uma forma válida, correspondente à forma Z, que passo a considerar como tal.

***Pyrophorus noctilucus* (Linné, 1758)**

(Figs. 1, 4, 7, 10, 17)

Elater noctilucus Linné, 1758: 404 (localidade-tipo "America").

Coloração geral castanho-escuro; escapo antenal e protórax geralmente mais escuros do que as outras partes. Examinado à lupa e com luz amarela, o pronoto apresenta um brilho metálico levemente esverdeado.

Fronte com pontuação forte e umbilicada. Pronoto regularmente convexo, densa e fortemente pontuado (fig. 7); vesículas luminescentes muito pouco convexas (fig. 17); bordo posterior com um tubérculo mediano pouco saliente.

Prosterno com três tipos de pontuação: no processo prosternal os pontos são apenas perceptíveis e escassos, na mentoneira são delicados mas bem distintos e na parte mediana são bem grandes e fortes.

Bordos da cavidade mesosternal formando um ângulo em torno de 140° . Élitros pontuado-estriados, porém os pontos são mais visíveis na metade anterior; a nona estria, quase se funde com a sutura epipleural e aí os pontos são bem grandes e fundos, esta estria torna-se quase imperceptível do meio até o ápice.

Genitália do macho (fig. 4).

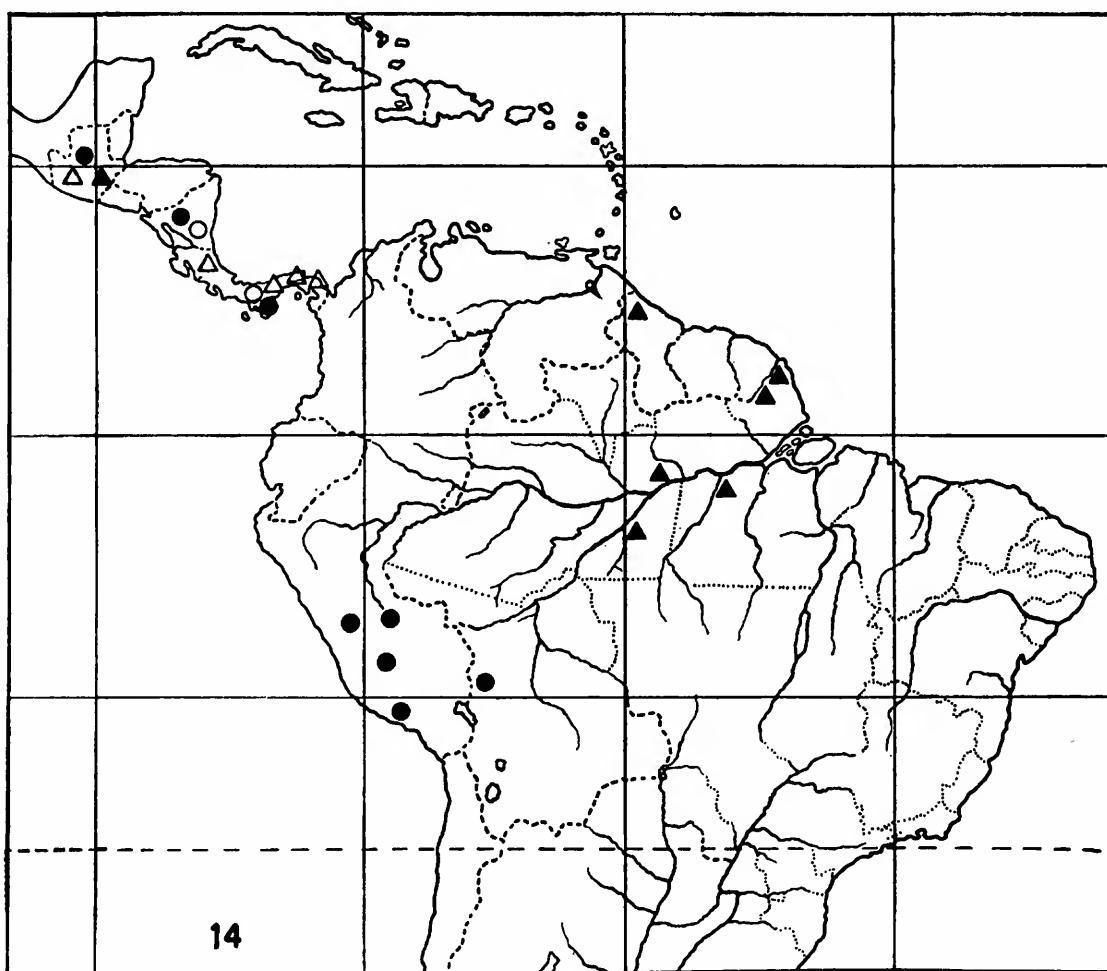


Fig. 14, Distribuição geográfica de caracteres, cavidade mesosternal: triângulo branco, CI; círculo branco, CII; círculo preto, CIII; triângulo preto, CIV.

Dimensões em mm

	♂	♀
Comprimento total	19,0 — 32,5	39,5 — 25,0
Comprimento do pronoto	4,5 — 7,5	9,0 — 7,0
Comprimento do élitro	12,5 — 22,5	27,5 — 17,5
Largura do pronoto	5,0 — 10,0	11,0 — 7,5
Largura humeral	5,0 — 10,0	12,0 — 7,5

MATERIAL EXAMINADO

ESTADOS UNIDOS. *California*: 1 ex., Coll. Janson (1903-130 BM) (Proveniência a ser comprovada).

MÉXICO. 1 ex., Peab. Acad. (MCZ); 1 ex., Coll. Janson, ex Dejean (BM); 2 exs. (BM); 1 ex., P. H., Goldsmith col., 1905 (MCZ). *Chiapas*: 1 ex., Sallé col. (BCA) (BM). *Yucatan*: 5 exs. (MCZ).

PANAMÁ. El Real de Santa Maria, 2 exs., Coll. F. C. Bowditch (MCZ).

COLÔMBIA. 2 exs., Coll. Janson (BM); 1 ex., R. Bunch & E. Y. Western col., 1870 (1924-176 BM); 1 ex., Coll. F. C. Bowditch (MCZ); 1 ex., E. R. Leach col. (CAS); 1 ex., E. E. Olcott col. (AMNH); 3 exs., F. Ovalle col. (Acc. 33501) (AMNH); 2 exs., Coll.

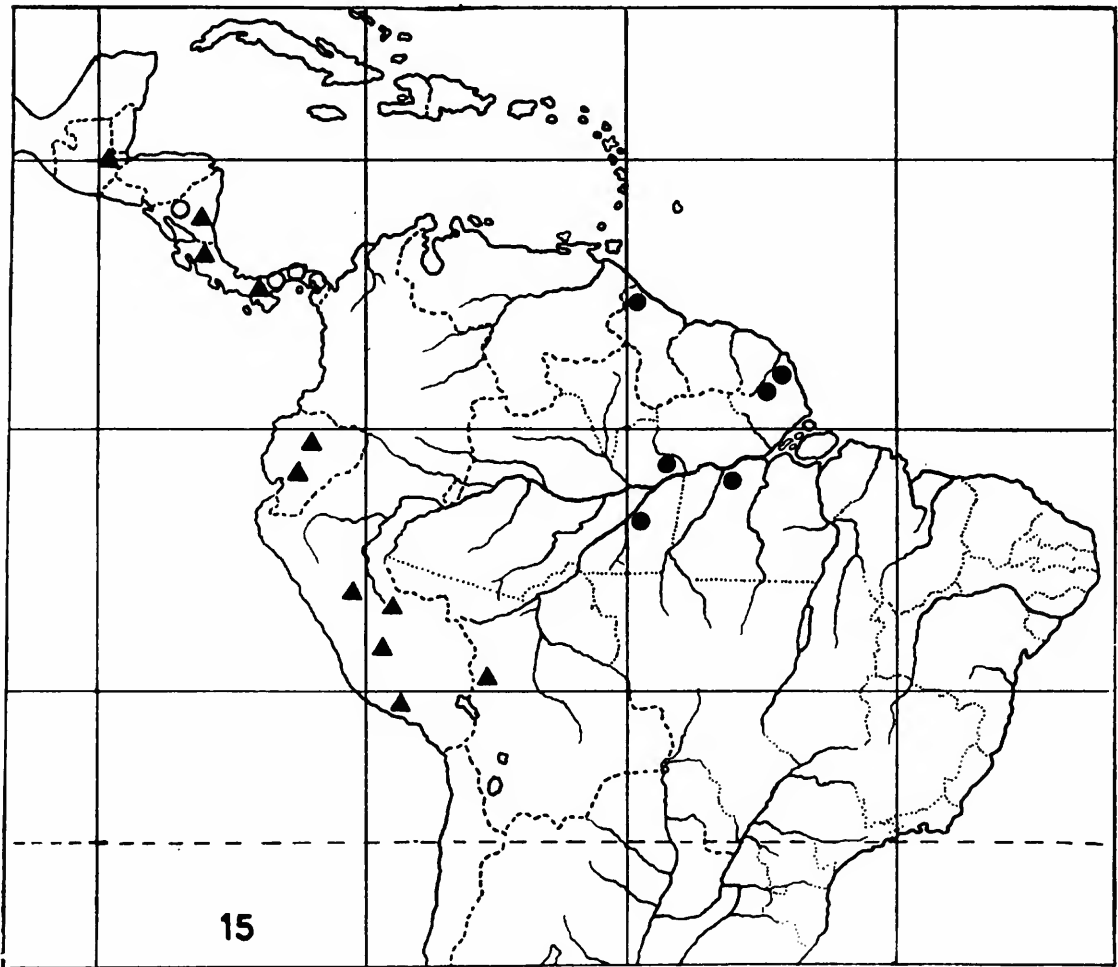


Fig. 15, Distribuição geográfica de caracteres. Pontuação do pronoto: triângulo preto, DI; círculo branco, DII; círculo preto, DIII.

F. A. Eddy (MCZ); 2 exs., Coll. Janson (BM); 4 exs., Klages col. (Acc. 2275 CM); 1 ex., H. T. Birch col. (CNHM). Rio Aquatal, 1 ex., Coll. H. C. Fall, 15.VII.1908 (MCZ). Baía de Amaya Cispata, 1 ex., B. Martin col. 18.IV.1916 (CAS). Canoas, 1 ex., Coll. D. Sharp (1932-116 BM). Santa Inez, 5 ex., Coll. C. E. Tottenham (1963-414 BM), *Magdalena*: Cacagualito, 21 exs., V. (Acc. 1999 CM); Don Amo (2000 pés), 4 exs., VII (Acc. 1999 CM). Don Diego (100 pés), 1 ex., III (Acc. 1999 CM); Minca, 3 exs., V.VI (Acc. 1999 CM); Rio Frio (2000 pés), 10 exs., Darlington col., III (MCZ). *Antioquia*: Tamesis (2200 pés), 1 ex., G. L. Artamanoff col., 23.III.1939 (CNHM); Veneza (= Venecia), 2 exs. (55-89 BM). *Cundinamarca*: Bogotá, 3 exs., Coll. D. Sharp (1932-116 BM). *Boyacá*: Muzo, 1 ex., Coll. H. C. Fall (MCZ). *Meta*: Rio Opon (900 m), 2 exs., L. Richter col., VI.16.18 (AMNH).

VENEZUELA. 8 exs., S. M. Klages col. (Acc. 2275 CM); 1 ex. (3158 BM); 2 exs. (AMNH). *Zulia*: Orope, 1 ex., N. Dearborn col., 10.III.1908 (Mus. Exped. CNHM). *Sucre*: Guanoco, 2 exs., D. G. Kelley col. (CAS). *Aragua*: Rancho Grande (nr. Maracay), 1 ex., N. Y. Zoo. Soc., Dept. Trop. Research W. Beebe, 1.IV.1946 (AMNH). *Bolívar*: 1 ex., W. R. Bawden col., 1916 (1917-7 BM). Rio Caura, 6 exs., S. Martin col., 25.IV.1957 (FHC); 2 exs., 3-5.V.1957 (FHC); 19 exs., I.1957 (FHC); 6 exs., 14-17.IV.1957 (FHC). *Amazonas*: Cunucumá sup., 2 exs., "Venezuela Exp. Terr. Amazonas", J. Maldonado col., 20.IV.1950 (AMNH).

TRINIDAD Y TOBAGO. 3 exs., M. E. Fountaine col., 8.IV.1937 (1937-434 BM); 2 exs., H. S. Parish col., II.23.28 (CAS); 4 exs., II-V.28.29 (CAS); 1 ex., Coll. Parman (MCZ); 9 exs., C. E. Bryant col., 1903 (1919-147 BM); 1 ex., E. C. Humphries col., V.1941 (BM); 1 ex., F. Birch col., Coll. Sharp (1904) (1903-513 BM); 1 ex., Coll. K. Brancsik ex-Knirsh (CNHM); 35 exs., L. R. Reynold col., 23-25.III.1922 (CNHM); 1 ex., F. Wonder col., 15.III.1947 (CNHM). *Aripita Vall*, 5 exs., Coll. C. E. Tottenham (1963-414 BM). *Arima Valley*, 2 exs., 5-15.IV.1953 (AMNH); 2 exs., 4-9.IV.1951 (AMNH); 1 ex., 1950 (AMNH). *Arena forest*, 2 exs., T. H. Aitken col., 2.V.1955 (AMNH). *Nariva SW*, 2 exs., N. A. Weber col., IV.1921 (MCZ); *St. Augustine*, 2 exs., Darlington col., IV.1929 (MCZ); 2 exs., 3.V.1929 (MCZ). *West Indies Islands*, 6 exs., Coll. Janson (BM).

GUIANA. Rio Aramatan, 1 ex., G. A. Hudson col., 1-8.XII.1935 (1936-360 BM). Guiana & Trinidad, 5 exs., L. Fitzgerald col., 1937 (1938-53 BM), 2 exs., T. Pain col., (1947-124 BM), 6 exs., Coll. Bartlett (1943-60 BM). 2 exs., B. E. Dahlgren col., (CNHM). *Essequibo*: Bartica, 1 ex., E. A. Duffy col., IV.1957 (BM); (Kalacoon), 2 exs., Coll. Van Dyke, 1916 (CAS); (Kartabo), 3 exs., 12.VIII.1920 (CAS); 1 ex., 7.IV.1926 (AMNH); Rio Essequibo, 2 exs., Coll. W. G. Hassler, XII.23.27 (Acc. 36159) (AMNH); (Moraballi), 1 ex., Oxf. Univ. Exp., 26.IX.1929 (1929-485 BM). Rio Kuyuwini, 1 ex., W. G. Hassler col., XII-I.1937 (Acc. 36159 AMNH). Rio Mazaruni, 7 exs., A. S. Pinkus col., IX.X.1938 (AMNH); 2 exs., C. Henrotin col. (CM). Roraima, 1 ex., C. G. Tottenham col. (1936-414 BM); (3500 pés), 1 ex., J. J. Quelch col. (89-68 BM). Rio Rupununi, 1 ex., Coll. Thurston, IX.1913 (AMNH). Rio Shudihar, 6 exs., Coll. W. G. Hassler, 1.I-VI.1938 (Acc. 36159 AMNH). Demerara: 15 exs., Coll. D. Sharp (1962-116 BM); 1 ex. (BM); 2 exs., (AMNH); 1 ex., W. Bank col., 5.I.1923 (AMNH); 1 ex., B. E. Dahlgreen col. (CNMH); George-

town, 1 ex., 25.I.1923 (CAS); 1 ex., 25.I.1933 (AMNH); 1 ex., 15.II.1923 (AMNH); 3 exs., Coll. D. Sharp (1932-116 BM); 5 exs., W. Harper col., aut., 1877 (BM). *Berbice*: Rio Courantyne, 2 exs., G. A. Hudson col., IX.1935 (1936-360 BM).

SURINAME. 1 ex. (MCZ) *Marowijne*: Anapaike (Rio Lawa), 2 exs., XI.1963, B. Malkin col. (DZSP).

GUIANA FRANCÊSA. Cayenne, 1 ex., Coll. Janson (BM); 2 exs., Coll. F. C. Bowditch (MCZ); 1 ex., Bowring col. (63.47-186 BM); 1 ex., Coll. Dejean (15571 MZH); St. Laurent, 1 ex., Coll. H. C. Fall (MCZ).

BRASIL. *Amapá*: Porto Santana, 1 ex., A. C. Moraes col., VII.1959 (MPEG). Rio Amapari, 4 exs., E. Dente col., XI.1964 (DZSP). Rio Cassiporé, 1 ex., J. & B. Bechyné col. 8.IX.1961 (MPEG). Serra do Navio, 5 exs., A. Bicelli col., XI.1960 (DZSP); 1 ex., K. Lenko col., IX.1957 (DZSP); 2 exs., J. Lane col., X.1957 (IBSP). *Amazonas*: Borba (Iago Acará), 27 exs., A. Parko col., IX-X.1943 (MNRJ); 3 exs., A. Parko, VIII-IX.1943 (CCS); (Guajará), 6 exs., A. Parko col., VI-VII.1943 (CCS); 2 exs., Coll. J. Guérin, VII.1943 (IBSP). Benjamin Constant, 2 exs., A. Parko col., III-IV.1942 (MNRJ); (rio Javari), 2 exs., A. Parko col. III.1942 (CCS); (Rio Itacoai), 1 ex., A. Parko col., VI.1942 (CCS). Tefé, 2 exs., Bates col. (BM). Fonte Boa, 2 exs., Coll. J. Guérin, 8.1937 (IBSP). Jauaretê, 1 ex., Camargo col., XII.1936 (DZSP). Manaus, 9 exs., A. Parko col., 12.1941 (MNRJ); 6 exs., Elias & Roppa col., 28.XI.1957 (MNRJ); 5 exs., W. Praetorius col., X.1945 (AMNH); (Uyiranga, Rio Negro), 3 exs., A. Rabaut col., 15.XI-3.XII.1941 (AMNH). Manacapuru, 41 ex., S. M. Klages col., III-IV.1926 (Acc. 10593 CM); 23 exs., IX.1923 (Acc. 7326 CM). Manicoré, 1 ex., Coll. J. Guérin, II.1937 (IBSP); 1 ex., Coll. J. Guérin, IX.1937 (IBSP); 2 exs., H. C. Boy col., IX.1927 (IEEA); 2 exs., Coll. J. F. Zikan, VIII.1921 (IOC); 2 exs., A. Parko col., 9.1945 (MNRJ). Maués, 1 ex., Coll. J. Guérin, 9.1937 (IBSP); 3 exs., XII.1936 (IBSP); 1 ex., Boy col., XII.1922 (IOC); 1 ex., 1.1937 (DZSP). Rio Coary-Uaupés, 1 ex., H. Schmidt col., VIII-X.1906 (AMNH); 1 ex., Ducke col., 30.X.1912 (MPEG). Rio Juruá, 1 ex., 1902 (DZSP). Rio Negro ("até Loreto"), 1 ex., C. Boy col., II.1935 (MNRJ). Rio Purus (Arima), 2 exs., S. M. Klages col., XI.1922 (Acc. 7088 CM). Santo Antonio do Içá, 2 exs., C. S. Carbonel col., 2.IX.1948 (FHC). São Gabriel, 4 exs., Camargo col., XI.1936 (DZSP). São Paulo de Olivença, 1 ex., Coll. Zikan, III (IOC); 1 ex., S. Klages col., I.1923 (Acc. 7324 CM); 2 exs., IV-V.1923 (Acc. 7324 CM); 1 ex., 10.VII.1935 (CCS). Serra da Neblina (230 m, Rio Tucano), 1 ex., E. Dente col., 4.XII.1965 (DZSP). Taracuá, 1 ex., A. Giacomo col., 1937 (DZSP). Tapará, 2 exs., C. Boy col., I.1923 (IOC); 1 ex., II.1922 (IEEA). Tapuruquara, 1 ex., J. Bechyné col. 30.IX.1962 (DZSP). Uaupés, 1 ex., A. Parko col., IX-X.1942 (CCS). "500 m acima Rio Madeira e 50 m Este (V. Cressymarks)", 1 ex. (1931-594 BM). Amazonas, 1 ex., Coll. K. Brancsik ex-E. Knirsch, 1955 (CNHM). *Pará*: Amazonas inferior, 1 ex., Coll. J. F. Zikan, I.1918 (IEEA). Cachoeira da Paciência (Rio Cuminá), 1 ex., Almeida col., 28.X.1936 (IEEA). Cuminá-mirim (Trombetas), 3 exs., Ducke col., 12.X.1913 (MPEG). Cuminá, 1 ex. (27/484 MNRJ). Br. 14, Km 92, 1 ex., E. Lobato col., XII.1960 (IOC). Km 93 (Belém-Brasília), 2 exs., E. Lobato col., X.1959 (IOC). Rio Tocantins, 11 exs., S. M. Klages col., VII-VIII.1923 (Acc. 7325 CM). Itaituba, 1 ex., Coll. A. Maller, ex-L. Lacey, IX.1939 (AMNH):

5 exs., VIII.1938 (AMNH). Mangabeira (Mocajuba), 7 exs., O. Rego col., X-XII.1953 (CCS); 6 exs., X-XII.1952 (CCS). Óbidos, 1 ex., Boy col., Coll. J. F. Zikan, 11.23 (IOC); 1 ex., XI.1921 (IEEA); 2 exs., H. Rolle col., Coll. F. A. Eddy (MCZ); (colônia Rio Branco), 2 exs., P. A. Teles col., X-XII.1952 (CCS). Rio Ariramba (Trombetas), 2 ex., Ducke col., 7.X.1913 (MPEG). Santarém, 26 exs., S. M. Klages col., VI-VIII.1919 (Acc. 6324; 2966; 6543 CM). São Miguel do Guamá, 1 ex. (MPEG). Pará, 11 exs., Miles Moss col. (1947-453 BM); 1 ex., Bates col., (BM); 1 ex., Pascoe col. (93-60 BM); 2 exs., VIII-IX.1927, E. May col. (27/469 MNRJ). Acre: Rio Juruá (Seringal Oriente, Próximo Vila Taumaturgo), 1 ex., 28.VII.1956 (MPEG). Rondônia: Pôrto Velho, 2 exs., A. Parko col., VIII.1944 (CCS). Gi-Paraná (Urupá), 1 ex., Vellard col., 1-20.IX.1938 (IOC). Bahia: Ilhéus (São João Água Preta), 1 ex., E. May col., VIII-IX.1928 MNRJ). Jequié, 2 exs., Camargo col., XII.1932 (DZSP); 1 ex., Camargo col. (IBSP). Rio Aliança (Una), 1 ex., P. Silva col. 19.XII.1946 (IBSP). Espírito Santo: Córrego Itá, 5 ex., W. Grossmann col., II.1955 (IEEA); 1 ex., W. Zikan, col., I.1955 (CCS). Rio de Janeiro: Petrópolis, 1 ex., P. Moletta col. (5142 ENA). Angra dos Reis (Japuhya), 1 ex., Coll. A. Lutz, II.1916 (IOC); (Jussaral), 1 ex., Travassos & Oiticica Fo. col., (2-935 IOC). Estado (?), Entre Rios, 1 ex. (Acc. 2966 CM).

EQUADOR. 1 ex., W. Von Hagen col. (Acc. 33930 AMNH); 1 ex., Coll. R. Hoppins (CAS). Chiguinda, 1 ex., Buckley col. (BM). Zatzayacu Oriente, 13 exs., Coll. W. Macynthyre ex-L. Lacey, 18.IX-17.XII.1934 (AMNH). "2°14' S, 78° W (600-950 m), 1 ex., W. Von Hagen col., X-XII.1934 (AMNH). Esmeraldas: Cachabé to Paramba (= Cachavi), 2 exs., Rosenberg col., II.97 (1905-100 BM). Napo-Pastaza: Santa Inez, 1 ex., Coll. Janson (1903-130 BM); Puyo (100 m), 1 ex., Coll. Macynthyre ex-L. Lacey, 23.XI.1936 (AMNH). Chimborazo: Chimborazo, 2 exs. (Acc. 4989 AMNH). Guayas: Guayaquil, 1 ex., F. W. Goding col. (CAS).

PERU. 1 ex., Schaufuss col. (15570 MZH). Loreto: 3 exs., W. F. Walsh Jr. col., VII.1939 (MCZ); Cadena (last Orejon, Vila Ampiyacu — 100 Km NW of Pebas), 1 ex., B. Malkin col., 14.XI.1961 (CNHM); Iquitos, 1 ex., Coll. H. Bassler (Acc. 33591 AMNH); Rio Calleria (15 Km de Ucayali), 3 ex., B. Malkin col. IX-X.1961 (CNHM). Huanuco: Tingo Maria, 1 ex., N. A. Wells col., 10.IX.1952 (CAS); (2200 pés), 3 exs., J. C. Pallister col., 13-22.XI.1942 (AMNH); (Monson Valley), 1 ex., E. I. Schlinger & E. S. Ross col., 9.X.1954 (CAS). Junin: Chanchamayo, 2 exs., E. G. Smith col. (CAS); 1 ex., Coll. H. Bassler (Acc. 33591 AMNH). Satipo, 2 exs., P. Paprzycki col., 9.IX.1937 (IOC); 1 ex., P. Paprzycki col., VI.1948 (CAS); (Jauja), 1 ex., P. Paprzycki col., XII.1914 (AMNH). Fronteira Brasil-Peru, 1 ex., Coll. H. Bassler (Acc. 34591 AMNH).

BOLÍVIA. Beni, 2 ex., A. P. Reed col., 3.VI.1947 (CAS). La Paz: Tumupasa, 1 ex., W. C. Harrington col. (CAS). Santa Cruz Buena Vista, P. del Sara, 1 ex., Steinbach col., XI.1913 (CM), Rio Japacani, 1 ex., J. Steinbach col. (Acc. 5572 CM).

Sem localidades precisas: 27 exemplares.

Exemplares da coleção Candèze (IRSN): América Tropical, 13 exs., Colômbia, 2 exs., Equador, 3 exs., E. de Ville col., Peru, 5 exs. (4346). Suriname, 2 exs., Bray col. Bahia, 1 ex., de Lacerda col. e 3 exs., sem localidade alguma.

TIPOS

Lectótipo (designação presente): um exemplar (provavelmente fêmea) no Department of Entomology, University of Uppsala.

DISTRIBUIÇÃO GEOGRÁFICA (fig. 10)

Observa-se que sua distribuição é bem vasta, desde o México até Rio de Janeiro, com uma provável disjunção na zona de cerrados brasileiros; é simpátrica com tôdas as outras formas estudadas aqui.

DISCUSSÃO TAXONÔMICA

Esta espécie é muito correlata com *P. angustus luscus*. Ambas são formas bastante robustas, embora variem de tamanho. *P. noctilucus*, porém, é sempre mais convexa, com pontuação mais densa: e apesar de as diferenças entre elas não serem muito bruscas é possível separá-las, desde que se considere o conjunto de caracteres.

Difere de *P. angustus hayekae*, subsp. n., pela pontuação geral e de *angustus angustus* pela forma do protórax e pela genitália do ♂.

***Pyrophorus angustus angustus* Blanchard, 1843**

(Figs. 5, 6, 11, 19)

Pyrophorus angustus Blanchard, 1843: 139 (localidade-tipo, Santa Cruz de la Sierra).

Coloração escura quase preta, nos exemplares em que a cor é preta, além das vesículas luminescentes que são amarelas, as antenas e pernas são um pouco avermelhadas. Pilosidade amarela, não tão densa quanto nas outras formas e também um pouco mais fina.

Fronte com pontuação forte, densa e umbilicada. Protórax quase quadrado, levemente emarginado dos lados, convexo, vesículas luminescentes pouco salientes e tubérculo da base pouco distinto; pontuação forte, densa e umbilicada, formando uma linha lisa mediana longitudinal (figs. 6 e 19). Em baixo, a pontuação é menos densa porém ainda é bastante forte e umbilicada.

Cavidade mesosternal com bordos formando ângulo em torno de 140°. Metasterno com pontos grosseiros somente na parte anterior. Abdômen com pontuação muito fina e densa. Élitros finamente pontuado-estriados, interestrias um pouco costiformes pelo menos na região anterior.

Genitália do macho (fig. 5).

Dimensões em mm

	♂	♀
Comprimento total	25,0 — 22,0	36,0
Comprimento do pronoto	6,0 — 5,0	6,5
Comprimento do élitro	19,0 — 15,0	19,0
Largurado do pronoto	7,0 — 6,0	7,5
Largura humeral	7,5 — 6,0	7,5

MATERIAL EXAMINADO

PERU. 2 exs., Milles Moss col. (1947-453 BM). *Huanuco*: Tingo Maria, 1 ex., N. A. Wells col., 20.IX.1952 (CAS); (2200 pés); 1 ex., J. C. Pallister col., 22.X.1946 (AMNH) (DZSP). *Junin*: Satipo, 1 ex., P. Paprzycki col., 9.IX.1937 (IOC). Chanchamayo (100 m), 4 exs., J. M. Schunke col., 16-18.IX.1948 (CAS); 2 exs. (DZSP); 2 exs. (Thanm), Coll. Janson (BM); (800 m), 1 ex., Weyrauch col., Coll. J. F. Zikán, 1.X.1939 (IOC). *Cuzco*: Rio Marcapata, 5 exs., J. Kalinowski col. (BM); 2 exs. (DZSP). *Arequipa*: Mollendo, 1 ex., Y. Mexia col., XI.1935 (CAS); 1 ex. (DZSP).

BOLÍVIA. *La Paz*: El Palmar (Yungas), 1 ex., "Exp. Peña Dominguez Soc. Cient. Chilena Claudio Gay", IX-X.1948 (CAS).

EQUADOR. 2 exs., V. von Hagen col. (Acc. 33930 (AMNH). *Loja*: Zamora (900 m), 1 ex., C. Carrion col. (1928-69 BM); 1 ex. (DZSP). Mt. Chimborazo, 1 ex. (Acc. 4949 AMNH); 1 ex. (DZSP); Zatzayacu Oriente, 1 ex., W. Macintyre col. ex-L. Lacey, 1.XII.1934 (AMNH).

Sem procedência: 1 ex., Coll. F. A. Eddy (MCZ); 1 ex., Coll. K. Brancsik ex-Knirsch (CNHM).

TIPOS

Lectótipo (designação presente): um exemplar (sem determinação de sexo) no Muséum National d'Histoire Naturelle, Paris.

DISTRIBUIÇÃO GEOGRÁFICA (fig. 11)

Distribui-se pelo Peru, Bolívia e Equador, onde ocorre simpatricamente com *P. noctilucus*.

Recebi do British Museum uma série de 18 exemplares coletados por Milles Moss, dos quais 11 exemplares correspondem ao *P. noctilucus* e estão rotulados como sendo do Pará; dos outros sete, dois estão rotulados como Peru e cinco como Pará, mas, correspondem a esta subespécie. Tive oportunidade de examinar material relativamente numeroso do Pará e em nenhum outro caso esta subespécie foi assinalada, razão pelo qual ponho em dúvida esta ocorrência, acreditando num possível erro de rotulagem, uma vez que o colecionador morou, em épocas diferentes, nos dois lugares.

DISCUSSÃO TAXONÔMICA

Pelo conjunto geral separa-se facilmente das outras formas. Pelo tipo de pontuação do corpo aproxima-se mais de *P. noctilucus* e de *P. angustus luscus*. Pelo tipo de genitália do macho aproxima-se mais de *angustus hayekae*.

***Pyrophorus angustus luscus* Candèze, 1889**

(Figs. 2, 9, 11, 16, 20)

Pyrophorus luscus Candèze, 1889: 4 (localidade-tipo: Guatemala).

Coloração geral castanho-escuro brilhante, antenas avermelhadas.

Cabeça com olhos um pouco salientes. Protórax pouco convexo, ligeiramente emarginado dos lados, com pontuação variando entre média e grande (fig. 9), vesículas luminescentes um pouco oblíquas, (fig. 16). Bordos da cavidade mesosternal formando ângulo entre 130° - 140° .

Élitros finamente pontuado-estriados em toda sua extensão, apenas a nona estria apresenta-se mais fortemente pontuado na parte anterior.

Genitália do macho (fig. 2).

Dimensões em mm

	♂	♀
Comprimento total	35,0 — 24,0	37,0 — 29,0
Comprimento do pronoto	8,0 — 5,0	9,0 — 7,0
Comprimento do élitro	25,0 — 17,0	26,0 — 20,0
Largura do pronoto	10,0 — 6,5	10,0 — 7,5
Largura humeral	10,0 — 6,5	11,0 — 8,0

MATERIAL EXAMINADO

MÉXICO. 1 ex. (28144 AMNH); 1 ex., Coll. F. C. Bowditch (MCZ). *Oaxaca*: Donaji, 1 ex., R. C. Bechtel & E. L. Schlinger col., 17.IV.1953 (CIS); Palomares (Finca San Carlos), 6 exs., G. & V. Halfter col., 26.V.1959 (IBSP); Sarabia, 1 ex., 5.III.1908 (3544 CM); 20 Km E Sarabia, 1 ex., J. Lindahl col. (3544 CM). *Veracruz*: Playa Vicente, 1 ex., Sallé col. (BCA) (BM). *Chiapas*: (Ruins at Palenque), 1 ex., P. & C. Vaurie col., 26-30.VI.1959 (AMNH).

GUATEMALA. 2 exs., Coll. F. C. Bowditch (MCZ); 2 exs. (MCZ); 4 exs. (73-24 BM); 1 ex. (AMNH). *Alta Verapaz*: Chacoj, 1 ex., Champion col. (BCA) (IRSN); Coban, 1 ex., Champion col. (BCA) (BM); 1 ex., P. C. Standley col. (CNHM). *Baja Verapaz*: Pancina (= Panimá), 2 exs., Champion col. (BCA) (BM); Purulá (= Purulhá), 1 ex., Champion col. (BCA) (BM). *Izabal*: St. Thomas, 2 exs., L. Mandel col., F. M. Guat. Exp. F. I. W., Schmidt, 16.IV.1934 (CNHM); 1 ex., Champion col. (BCA) (IRSN).

HONDURAS BRITÂNICA. *Belise*: Mana-Tee River, 3 exs., 4.19.1906 (MCZ). *Cayo*: Benque Viejo, 4 exs., Coll. F. Stanton (MCZ). *Blancaneaux*, 1 ex., Coll. R. Sarstoon (BCA) (BM). *Toledo*: Punta Gorda, 14 exs., Coll. J. J. White, ex-L. Lacey, III-IV.1934 (AMNH); 1 ex., (1934-60 BM). Rio Temas (= Temash), 2 exs., Coll. J. J. White, IV.1937 (1937-423 BM).

HONDURAS. 1 ex., Coll. Candèze (IRSN); 2 exs., Coll. Nonfried (IRSN). *Cortés*: San Pedro Sula, 1 ex., Coll. ex-Fruhstorfer (CNMH). *Camayaguá*: Siguatepeque, 1 ex., J. B. Edwards col., III.1932 (MCZ).

NICARAGUA. Camp. Menocal, 1 ex., Coll. D. Sharp (1932-116 BM). *Zelaya*: Cukra, Colina, 1 ex., L. E. Long col., 8.IV.1949 (CNHM). *Matagalpa*: Matagalpa, 3 exs., W. B. Richardson col. (MCZ). *Chontales*: 2 exs., Coll. Janson (BCA) (BM); 3 exs., Coll. D. Sharp (1932-116 BM).

COSTA RICA. 2 exs., C. W. Dodge col. (MCZ); 3 exs. (AMNH); 1 ex., Coll. Pittier (95-155) (BM); 2 exs., Coll. Pittier (97-183) (BM);

4 exs. (91-65 BM); 5 exs. (93-69 BM); 3 exs. (MCZ); 2 exs., Klages col. (Acc. 2275 CM). *Guanacaste*: Miravalles, 2 exs., Coll. C. E. Tottenham (1963-414 BM). *Alajuela*: San Carlos, 1 ex., P. Biolley col. (1902-79 BM); 2 exs., S. Burgdorf col. (MCZ). *San Mateo* (Pacific), 3 exs., Biolley col. (Acc. 2446 CM). *Cartago*: Turrialba, 1 ex., F. Ruckes col., 31.V.1962 (AMNH).

PANAMÁ. 2 exs., C. F. Davis col. (MCZ); 1 ex., Coll. Candèze (IRSN); 1 ex. (MCZ); 1 ex., Champion col. (BM). *Nueva Limon*, 1 ex., K. E. Frick col., IV.1944 (CAS). *Bocas del Toro*: Changuinola, 1 ex., C. B. Williams col., 3.V.1917 (BM); Lino, 2 exs., Coll. H. C. Fall (43-MCZ); Potrerillos, 1 ex., R. F. Starnitzky col., 3.V.1934 (CAS); 2 exs., 18.VI.1934 (CAS); 2 exs., D. V. Brown col., I.1934 (CAS). *Chiriquí*: Bugaba (800-1500 pés), 2 exs., Champion col. (BCA) (BM); 1 ex., Champion col. (IRSN); Chiriquí (Vulcão), 1 ex., Coll. T. Aitken, 6.III.1943 (CAS); 1 ex., Coll. H. C. Fall (MCZ); (2-300 pés), 1 ex., Champion col. (BCA) (BM); 1 ex., Coll. L. Burgeon (IRSN). *Canal Zone*: Barro Colorado, 5 exs., Darlington col., 15.V.1929 (MCZ); 2 exs. (Acc. 10081 CM); Obispo, 1 ex., (MCZ); Rio Gatun (Port Limon), 1 ex., K. E. Frick col., 21.IV.1944 (CAS).

COLÔMBIA. 1 ex., Klages col. (Acc. 2275 CM). *Fazenda García* (Cauca Valley), 3 exs., J. O. Cordoba col., 29.I.1935 (AMNH). *La Lechera* (900 m), 2 ex., Coll. L. Richter, 25.III.1947 (AMNH).

VENEZUELA. 1 ex. (47-52 BM).

EQUADOR. "Cinta de aislar", 1 ex., Y. Mexia col., II.1930 (CAS) (procedência a ser confirmada).

América Central. 7 exs., (AMNH); 1 ex., Coll. F. Blanchard (MCZ); 1 ex., Coll. Janson (BM).

TIPOS

Lectótipo: ♂ (designação presente) Guatemala, Coll. E. Candèze (IRSN).

Paralectótipos: Guatemala, 1 ex., Coll. Candèze, 24.VI.1894 (IRSN); 5 exs., Coll. E. Candèze (IRSN).

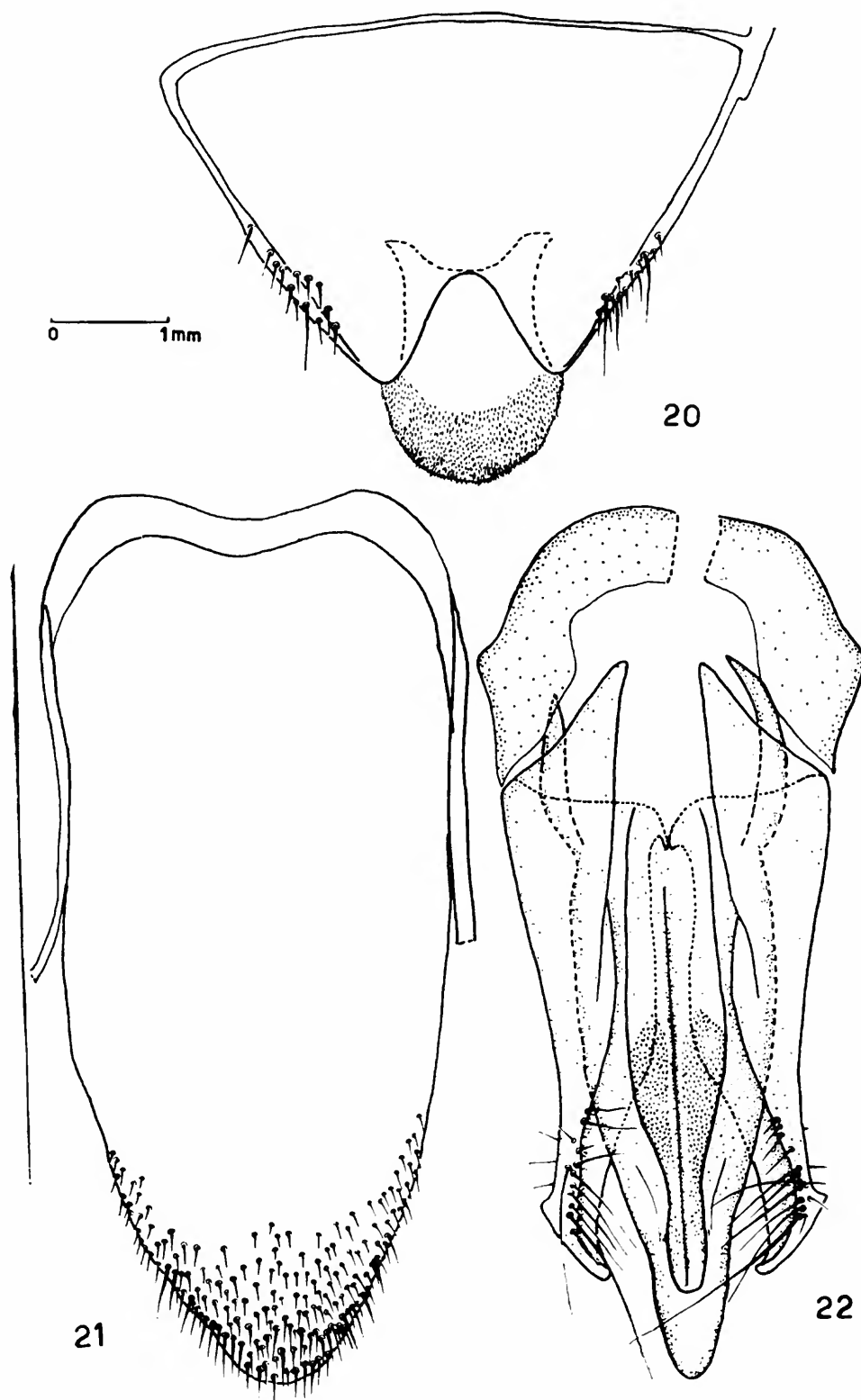
Lectótipo. Dimensões: Comprimento total, 30,0 mm; Comprimento do pronoto, 7,0 mm; Comprimento do élitro, 22,0 mm; Largurado pronoto, 7,5 mm; Largura humeral, 8,0 mm. Genitália do macho e últimos segmentos abdominais (figs. 20, 21, 22).

DISTRIBUIÇÃO GEOGRÁFICA (fig. 11)

Distribui-se por toda América Central e México, onde ocorre simpatricamente com *P. noctilucus*; na América do Sul, precisamente, vai até Colômbia, pois os exemplares da Venezuela e Equador têm localização muito geral.

DISCUSSÃO TAXONÔMICA

Muito próxima de *P. noctilucus*, da qual se separa pelo conjunto de caracteres. Difere de *angustus hayekae* e de *angustus angustus* pela forma e pontuação do protórax e pela forma da genitália do ♂.



Lectótipo de *P. angustus luscus*: fig. 20, último segmento abdominal (dorsal); fig. 21, último segmento abdominal (ventral); fig. 22, genitália do macho (vista ventral).

***Pyrophorus angustus hayekae*, subsp. n.**

(Figs. 3, 8, 11, 18)

Coloração geral castanho-escuro, na maioria dos exemplares os élitros são mais avermelhados. Cabeça com olhos um pouco salientes; fronte com pontuação umbilicada, mais fortes do que a do pronoto.

Protórax regularmente convexo, emarginado lateralmente, vesículas luminescentes salientes (fig. 18) e tubérculo da base do pronoto bem nítido; pontuação fina e pelo menos na região discal do pronoto não é umbilicada (fig. 8). Bordos da cavidade mesosternal formando ângulo em torno de 145°. Élitros distintamente pontuado-estriados, nona estria imperceptível apenas no terço apical.

Genitália do macho (fig. 3).

Dimensões em mm

	♂	♀
Comprimento total	28,0 — 20,0	32,5 — 28,0
Comprimento do pronoto	7,0 — 5,0	8,0 — 7,5
Comprimento do élitro	20,0 — 14,0	24,0 — 18,0
Largura do pronoto	8,0 — 6,0	9,0 — 8,0
Largura humeral	8,0 — 6,0	10,0 — 8,0

TIPOS

Holótipo ♂, Guiana, Rio Essequibo (Moraballi Creek), Oxf. Univ. Exped. 6-7.IX.1929 (1929-485 BM).

Parátipos:

GUIANA. Bartica, 1 ex., Trop. Research Station N. Y. Soc. (W. Beebe dir.), Coll. Van Dyke (CAS). Kaieteur, 5 exs., 8-27.VIII.1911 (AMNH); 1 ex. (DZSP). Rio Essequibo (Moraballi Creek), 1 ex., Oxf. Univ. Exp., 27-28.IX.1929 (BM); 1 ex., 28-29.IX.1929 (DZSP); 1 ex., 4.IX.1929 (BM). Rio Mazaruni, 3 exs., A. S. Pinkus col., IX-X.1938 (AMNH); 1 ex. (DZSP).

SURINAME. Kayseberg (= Kayser Gebergte) (Zuid. R. Surinam), 3 exs., H. Beatty col., Zool. Exped. 1960-62 (CNHM); 2 exs. (DZSP).

GUIANA FRANCÊSA. St. Laurent, 1 ex., Coll. H. C. Fall (MCZ). Cayenne, 1 ex., Coll. Janson ex-Deyrolle (BM); 1 ex. (45-46 BM); 1 ex., Coll. Candèze (IRSN); 1 ex., Coll. Janson ex-Dejean (1903-130 BM).

BRASIL. *Amapá*: Rio Cassiporé, 1 ex., J. & B. Bechyné col., VIII-IX.1961 (MPEG); 1 ex. (DZSP). Serra Lombarda (Limão), 1 ex., J. & B. Bechyné col., 30.VIII.1961 (MPEG). *Amazonas*: Borba (Lago Acará), 1 ex., A. Parko col., IX-X.1943 (MNRJ); 1 ex. (DZSP); Manaus, 1 ex., W. Praetorius col., X.1945 (AMNH). *Pará*: Mangabeira (Mocajuba), 2 exs., O. Rego col. (CCS); 1 ex. (DZSP). Óbidos, 1 ex., Ducke col., 7.VIII.1912 (MPEG). Santarém, 1 ex., C. Boy col., II.1921 (IEEA); 1 ex. (DZSP); 1 ex., S. M. Klages col., VII.1919 (Acc. 6324 CM); 1 ex. (Acc. 2966 CM); 1 ex. (DZSP).

América Tropical. 3 exs., Coll. E. Candèze (IRSN); 1 ex. (4316) Coll. Candèze (IRSN).

DISTRIBUIÇÃO GEOGRÁFICA (fig. 10)

Ocorre simpàtricamente com *P. noctilucus* na Região Amazônica e é alopátrica com as outras subespécies.

DISCUSSÃO TAXONÔMICA

Distingue-se facilmente de tôdas as demais pela forma do protórax e pela pontuação geral do corpo que é tôda muito delicada. Pelo conjunto de caracteres é próxima de *P. indistinctus* Germar porém se diferencia, entre outros caracteres, pela genitália do macho.

REFERÊNCIAS

BLANCHARD, E. & A. BRULLÉ

1837-1843: *Voyage dans l'Amérique Meridionale*. Insectes Coléoptères. 222 pp., 32 pls., Paris.

BROWNE, P.

1756: *The civil and Natural History of Jamaica*. 503 pp., 49 pls., London.

CANDÈZE, E.

1863: Monographie des Élatérides. *Mém. Soc. Sci. Liège* 17: 534 pp. 6 pls.

1889: Élatérides Nouveaux. *Ann. Soc. ent. Belgique* 33 (4): 57 pp.

CHAMPION, G. C.

1895: *Biologia Centrali-Americana. Coleoptera* 3: 258-690, 18 pls.

ESCHSCHOLTZ, J. F.

1829: Eintheilung der Elateriden in Gattungen. Thon.

GERMAR, E. F.

1841: Beiträge zu einer Monographie der Gattung *Pyrophorus*. *Z. Ent.* 3: 76 pp.

LINNÉ, C.

1758: *Systema Naturae Regnum Animale*. Coleoptera pp. 345-433. 10 ed., Lipsiae.

SLOANE, H.

1725: *A voyage to the Islands Madera, Barbados, Nieves, St. Cristophers and Jamaica etc.*, 2. 517 pp., 7 pls., London.

STURM, J.

1843: *Catalog der Kaefer-Sammlung*. XII + 386 pp., 6 pls. Nürnberg.



Estampa 1: fig. 16, *P. angustus luscus*; fig. 17, *P. noctilucus*; fig. 18, *P. angustus hayekae*; fig. 19, *P. angustus angustus*.

Papéis Avulsos de Zoologia

PAPÉIS AVULSOS ZOOL. S. PAULO, VOL. 22, ART. 9: 85-88, PLS. 1-2 4.XII.1968

DESCRIPTION OF A NEW SPECIES OF *BRADYSIA* (DIPTERA, SCIARIDAE) ¹

H. SAUAIA ²

M. A. R. ALVES ³

ABSTRACT

A new species of *Bradysia* is described from Brazil, São Paulo, Ribeirão Prêto. Relationships of the new species, which is closest to *Neosciara surinamensis*, are discussed.

Two females of a new species of this genus were collected in the campus of the Medical School of Ribeirão Prêto (Fazenda Monte Alegre) and a laboratory culture was started from the eggs laid by them. Individuals of this species are often found on grass in the field. In this paper we present a description of the adult; measurements and nomenclature are according to Steffan (1966)

This species belongs into *Bradysia* because of the following characteristics: maxillary palpi three-segmented (fig. 2); protibiae with preapical, unilateral comb of setae separated from the rest of tibial vestiture by triangular bare area (fig. 7); metatibiae with two subequal spurs (fig. 8); posterior veins of wing bare (fig. 3).

All figures, except 11, 12 and 13, are from material cleared in NaOH solution and mounted in balsam; a Zeiss Photomicroscope was used to take the microphotographs. Figures 11, 12, and 13 are from material preserved in alcohol; a Wild stereomicroscope, equipped with an automatic exposure setting was used to make the negatives.

The name *hygida* was chosen because of the high viability of this species throughout the life cycle under laboratory conditions.

Bradysia hygida, sp. n.

MALE

Body black, 5 to 6 mm long.

Head (fig. 1): height 1.4 its own length, 0.5 its width, 2.5 the length of proboscis. Anterior vertex 1/5 the height of head. few setae. Prefrons with several median and many lateral setae:

1. Work supported by a grant from Fundação de Amparo à Pesquisa do Estado de São Paulo (C.B. 67/552).

2. Departamento de Morfologia, Faculdade de Medicina de Ribeirão Prêto, Universidade de São Paulo.

3. Bolsista da Fundação de Amparo à Pesquisa do Estado de São Paulo (C.B. 67/119).

clypeus with several setae; labrum $1/5$ the height of head; labellar lobes well developed, the total width of the labellum being slightly larger than the length of the proboscis. Ocellar triangle with several setae, occiput and post-genae with many setae. *Eyes*: distinctly haired; eye bridge three facets wide, bare. *Antennae*: scape globose, almost twice as wide as the fourth flagellar segment, with diagonal row of setae, the length of which is double that of the flagellar setae; pedicel narrower than scape and as long as the fourth segment's width, with a double row of setae, whose length is intermediate between that of the scape's setae and that of the flagellar setae; flagellar setae as long as half the width of the fourth segment, excepting some longer setae at the apical segment, which is slightly longer than the other flagellar segments; flagellar segments progressively narrower, the width of the apical and preapical segments being nearly $1/2$ the width of the fourth segment; length of flagellar segments constant; length of stems $1/6$ the length of segments; width of the stem of the fourth segment 2.7 the width of the preapical stem.

Maxillary palpi (fig. 2): three-segmented; length of first segment slightly over 1.5 its own width; several dorsal setae, as long or longer than half the width of segment; the first palpal segment presents dorsomedially a special ornamentation composed of closely appressed setae, which are quite modified, interspread with other setae which are not modified to the same extent; the special setae are seen, in mounted preparations, to lay on the surface of the segment and have a blunt apex and a uniform diameter throughout their length; there is no sensorial pit; second palpal segment larger in the apical half, slightly shorter than the first segment and twice as long as wide; several setae on the apical half, basal half bare; third palpal segment slightly longer than the first and almost four times as long as wide; several setae on the apical half, basal half bare.

Thorax: acrosticals along the anterior half of the scutum. Dorsocentrals numerous and of different sizes, in complete rows along the scutum. Scutellum with more than 10 long setae at the posterior margin and several smaller ones ahead of the larger ones. Height of catepisternum 2.4 the distance between the anepisternal suture and a line, parallel to it, passing by the posterior tip of the pleural suture (the height of the catepisternum is taken as the distance between the anepisternal suture and a line, parallel to it, tangent to the ventral border of the catepisternum). Border of the catepisternum at the pleural suture 2.8 the length of the suture between the mesoepimeron and the metaepisternum; the latter suture is three times longer than the suture between the mesoepimeron and the mesomeron (fig. 5). Midhalteres nearly as long as the knob; the setae of the halteres are restricted to the knob but are not disposed in one row only (fig. 4).

Wings (fig. 3): 2.6 mm long, 1 mm wide. Costa, R1 and R5 with macrotrichia, posterior veins bare. Costa ending one half the way between the tips of R5 and M1. R-m with 2 to 7 macrotrichia; R-s with one macrotrichia or bare. Humeral vein present. Bifurcation of M markedly distad to the tip of R1. M1 parallel to R5 in the distal three fourths of its length. Stem of cubital smaller than base of media, which is equal in length to R-m. Second anal vein present.

Legs: profemur 0.8 mm; protibia 1.0 mm; probasitarsus 0.5 mm; mesofemur 1.1 mm; mesotibia 1.0 mm; mesobasitarsus 0.5 mm; metafemur 1.4 mm; metatibia 1.5 mm; metabasitarsus 0.6 mm. Tibial spurs 1,2,2; metatibial spurs subequal (fig. 8), 1.8 times longer than width of metatibial apex. Protibia with unilateral comb of subequal setae separated by triangular bare area from the rest of the tibial vestiture (fig. 7); four apical bristles, the rest of vestiture uniform; mesotibia with 10 preapical bristles, the rest of vestiture uniform; metatibia with many preapical bristles and many bristles on the rest of the surface. Tarsal claws with four distinct teeth (fig. 9).

Abdomen: anterior tergite I concave at the anterior margin, three transversal rows of setae; posterior tergite I as long as 1/3 of the anterior tergite I, bare. Tergites II to V rectangular, covered with setae on more than 3/4 of their length; setae at the lateral margins 1.5 times longer than dorsals of metafemora; setae at the posterior margin slightly shorter than the lateral ones, the other setae being much shorter. Tergite VI with setae over 3/4 of its length; tergite VII with setae over 1/2 of its length; tergite VIII with one row of setae at the posterior margin and half as long as tergite VII. Anterior and posterior sternites I bare. Sternite II with posterior setae over less than half of its length; sternites IV-VII with setae over the posterior half; sternite VIII with one row of posterior setae; sternites VII and VIII with two anterolateral projections. Sternite VIII half as long as sternite VII.

Genitalia (figs. 6, 11, 12, 13): tergite IX trapezoidal, length 3/5 of width. Hypandrium very short. Length of dorsal apodemes 4/5 the median length of basistyle. Basistyle with many strong setae all over the surface, excepting a small part of the dorsomesal surface; near to the distal margin setae decreasing in length and more numerous. At the distal margin, mesally, one more pronounced seta on each basistyle. Lobes of the X tergite prominent between the basistyles and covered with small setae. Tegmen with two dark symmetrical transversal thickening and numerous setae; genital rod bifurcates distally to its middle point; small basal thickening. Dististyle 2.5 times longer than wide; length of dististyle nearly equal to median length of basistyle; numerous strong setae distributed all over the surface; apex with a dense bunch of setae with diameter larger than those of the other setae; no spines.

FEMALE

Wing 3.2 mm long, 1.2 mm wide. R-s 1.5 times longer than in the male and with 1 to 3 macrotrichia; ratio of lengths of the stem of the cubital and the base of media smaller than in the male. R-m with 5 to 10 macrotrichia. Leg ratios: anterior 90:106:50; median 100:110:50; posterior 140:160:66. Cerci four times as long as hypogynal valves and almost devoid of ventral projections at the anterior margins of their first segments (fig. 10).

TYPES

Holotype ♂ and 49 paratypes (28 ♂ and 21 ♀), in the collection of the Departamento de Zoologia da Secretaria da Agricultura do Estado de São Paulo. The holotype is mounted in balsam, together with 3 male paratypes; another male paratype and a female

are also mounted in slides; remaining paratypes preserved in fixative.

TAXONOMIC DISCUSSION

Among the species reviewed by Lane (1959), *Neosciara surinamensis* is the one which most resembles our material. It differs markedly from *N. surinamensis* in the following characteristics: R1 does not end near to the fork of M; R-m is not bare as in *N. surinamensis*; metabasitarsus is shorter than half of the metatibia; the anterior margin of the basistyle at the base of the dorsal apodemes does not present a deep notch as in *N. surinamensis*; the ratio of the lengths of the posterior margin of the basistyle and the length of the anterior margin of the dististyle is much smaller.

ACKNOWLEDGMENTS

We want to express our gratitude to Nelson Papavero, for his useful suggestions and for reading the manuscript; to W. A. Steffan for sending us a reprint of his excellent review on Sciaridae; to Georges Merinfeld, J. M. F. de Camargo and W. E. Kerr, who have helped us in this work in many ways.

REFERENCES

LANE, J.

- 1959: On Neotropical *Neosciara* (Diptera, Sciaridae). *Stud. Ent.* 2: 69-104.

STEFFAN, W. A.

- 1966: A generic revision of the family Sciaridae (Diptera) of America North of Mexico. *University of Berkeley Publications in Entomology*, vol. 44: 1-77, 22 figs.

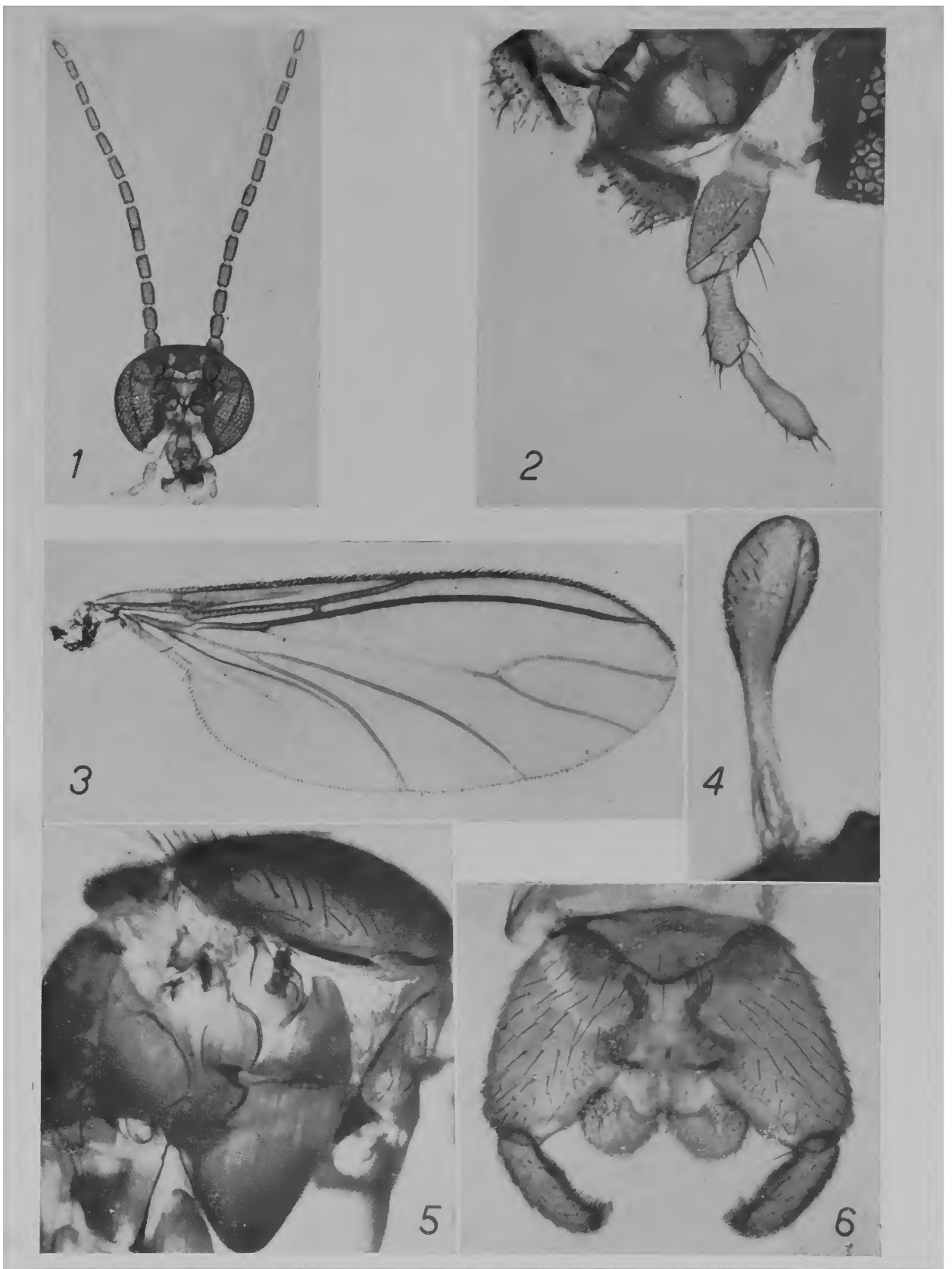


Plate 1, *Bradysia hygida*, sp. n.: 1, head of male, frontal view (30x); 2, maxillary palpus of female (120x); 3, wing of male (30x); 4, dorsal view of halteres, to show the disposition of setae (113x); 5, lateral view of thorax of male (60x); 6, ventral view of male terminalia, slightly compressed (100x).

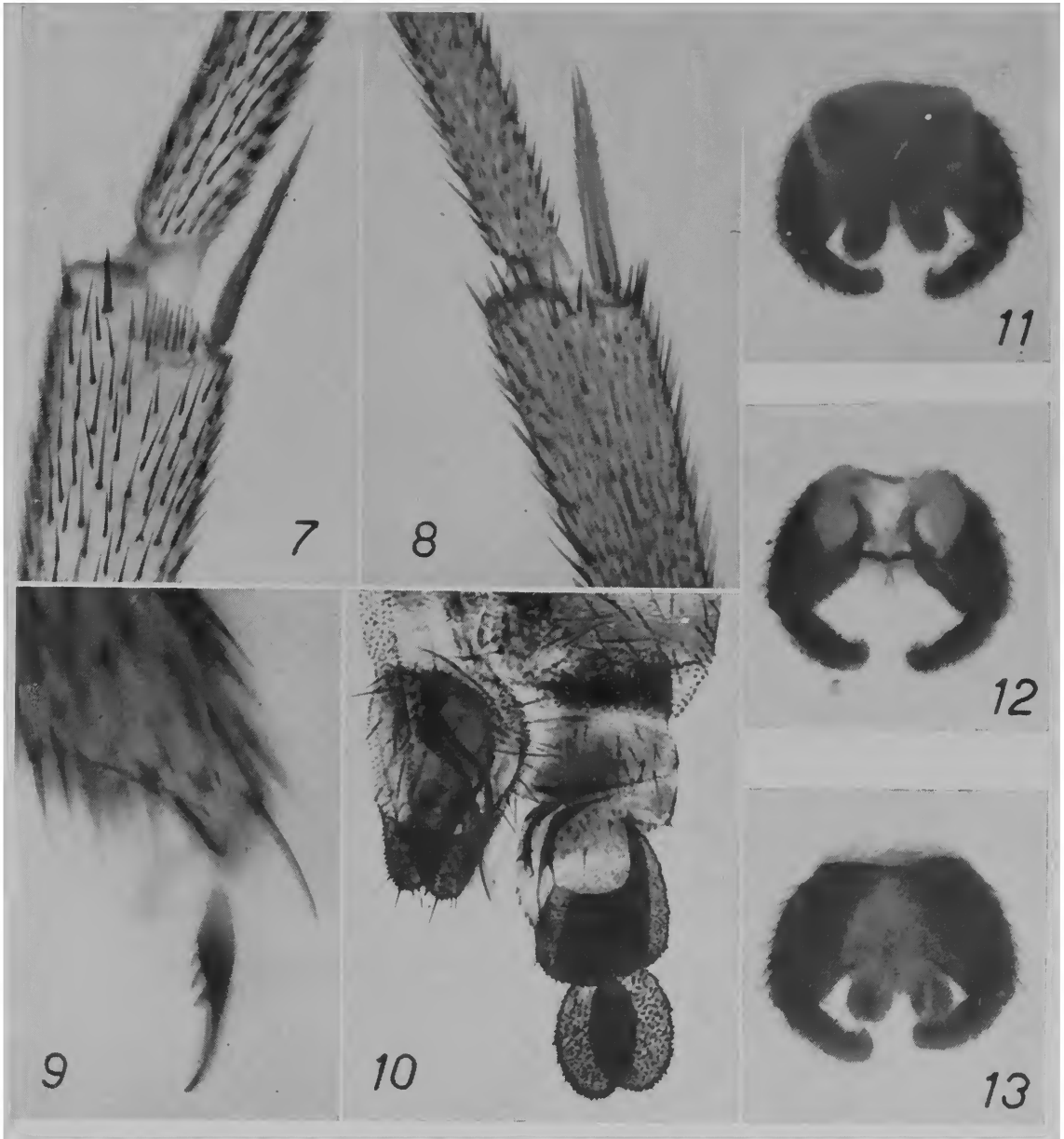


Plate 2, *Bradysia hygida*, sp. n.: 7, apex of protibia (185x); 8, apex of metatibia (130x); 9, tarsal claw with four distinct teeth (480x); 10, lateral view of female terminalia (92x); 11, dorsal view of male terminalia (55x); 12, dorsal view of male terminalia, with segments IX and X removed to show the dorsal apodemes of basistyle and tegmen (55x); 13, ventral view of male terminalia (55x).

Papéis Avulsos de Zoologia

PAPÉIS AVULSOS ZOOL. S. PAULO, VOL. 22, ART. 10: 89-102

4.XII.1968

REPORT ON SOME NEOTROPICAL ANT STUDIES

WALTER W. KEMPF, O.F.M.¹

WILLIAM L. BROWN, JR.²

ABSTRACT

The description of several new species of ants (*Gnamptogenys soror*, type-locality, Iriboca, near Belém, Pará, Brazil; *G. bisulca*, type-locality, near Represa Calima, Departamento del Valle, Colombia; *G. turmalis*, type-locality, Barro Colorado Island, Canal Zone, Panama; *Proceratium goliath*, type-locality, Rio Toro Amarillo, near Guapiles, Limon Province, Costa Rica), as well as new synonymical notes and redescriptions of old species, are presented as a result of studies made on collections of ants collected mainly by the junior author in Panama, Costa Rica, Argentina, Brazil, Peru and Colombia.

These miscellaneous studies on neotropical ants are mainly a secondary result of collecting trips by Brown to Panama in 1960, to Costa Rica in 1966, and to Argentina, Brazil, Peru and Colombia in 1967; and by K. Lenko, P. F. Darlington and Brown to Amazonian Brazil in 1962. Abbreviations used for collections are as follows: CTB = Collection of Thomas Borgmeier, now incorporated with collection of W. W. Kempf = WWK. DZSP = Departamento de Zoologia, Secretaria da Agricultura, São Paulo. MCZ = Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts, USA. USNM = U. S. National Museum, Washington, D. C., CU = Cornell University, Department of Entomology and Limnology Collection, Ithaca, New York. Abbreviations for measurements and indices are keyed in the description of *Gnamptogenys soror* (below).

Acanthoponera minor

Ectatomma (*Acanthoponera*) *mucronatum* var. *minor* Forel, 1899: 9 (Worker. Type loc.: Teapa, Tabasco, Mexico. Type in British Museum (Natural History).

Acanthoponera minor; Brown, 1958: 194.

1. Provincialado dos Franciscanos, Caixa Postal 5.650, São Paulo, Brazil; research supported by the Conselho Nacional de Pesquisas do Brasil.

2. Department of Entomology and Limnology, Cornell University, Ithaca, New York, 14850, USA; research supported by the U. S. National Science Foundation (G-23680, GB-5574X).

Acanthoponera crassa Brown, 1958: 255, fig. 10 (Worker. Type loc.: 6 miles west of Santo Domingo de los Colorados, Pichincha, Ecuador. Types in California Academy of Sciences and MCZ). *Syn. n.*

Large numbers of workers of this species were found by Brown at the Rio Toro Amarillo, near Guapiles, Limon Prov., Costa Rica. Most of the specimens were taken during mid-morning resting motionless, or moving very slowly, on the trunk and around the base of a single tall, mossy tree about 15 cm in diameter in rain forest. The nest could not be found, though the tree was felled and searched, and the ground was searched carefully several meters around. Other workers were swept from rain forest foliage on sunny mornings.

The new material bridges the supposed gap between *minor* and *crassa* in size, nodal form and other characters.

A few workers of this species were also swept from rain forest foliage by Brown and E. S. McCluskey on Barro Colorado Island, Panama Canal Zone, but they could be taken this way only at night.

***Gnamptogenys soror*, sp. n.**

Holotype and a paratype worker (corresponding measures for *G. caelata*, Kempf, 1967: 121 ff., are given in parentheses): total length 2.3-2.4 (TL 2.9), head length 0.48-0.51 (HL 0.61), head width 0.43-0.45 (HW 0.50), cephalic index 89-90 (CI 83), greatest diameter of eye 0.08 mm (GDE 0.13), scape length 0.32-0.35, alitrunk length 0.67-0.72 (WL 0.83), pronotal width 0.32-0.35 (0.39), length of postpetiole 0.40-0.43 (0.56), width of postpetiole 0.45-0.51 (0.56) mm.

Very closely related to *G. caelata*, but differing from it in smaller size, relatively broader head and smaller eyes: *G. soror* has less than 20 facets (*G. caelata* more than 30) and in having postpetiole distinctly broader than long (see measurements above). Also, *G. soror* has the costae on front and postpetiole more regular, not vermiculate, and the petiole is longitudinally costate above.

Holotype (DZSP) and paratype worker (MCZ) taken at Pirelli Rubber Plantation, Iriboca, near Belém, Pará, Brazil, 23.VIII.1962. P. F. Darlington leg. (Brown Catalog n.º B-317).

Although the differences from *caelata* are not very striking, the separation between localities increases the probability that they are distinct.

The closely related species *G. striolata*, *G. caelata* and *G. soror* all have a deep cleft that separates the anteroventral process of the gaster into 2 distinct lobes.

Gnamptogenys strigata

Polyrhachis strigata Norton, 1868: 4 (Worker).

Ectatomma (*Holcoponera*) *simplex* Emery, 1896: 46, fig. 7 (Worker, female. Type loc.: Alajuela, Costa Rica). *Syn. n.*

Holcoponera strigata + *H. simplex* and subspecies; Santschi, 1929: 458-462 (Descriptions of all castes, discussion and synonymies).

Holcoponera simplex; Brown, 1956: 489, 490 (Discussion, subspecies synonymized).

Gnamptogenys strigata + *G. simplex*; Brown, 1958: 229, 232 (In species list and key).

These two species have always been separated on the basis of the sternal postpetiolar costulation, which is partly or completely transverse in *simplex*, and which has been thought to be longitudinal (or "oblique") in *strigata*. In fact, it appears that no one has looked carefully at the sterna of *strigata* to check this character, because every specimen we have been able to examine from among series in the MCZ, previously determined as *strigata* by Wheeler, Brown and others, turns out to have the costulation partly to wholly transverse in the same region as *simplex* has it, although our Mexican series tend to have the transverse elements more restricted to an anterior band. Our attempts to distinguish Costa Rican *strigata* and *simplex* led to this discovery. Workers from Mexican samples average smaller than those of some Costa Rican samples, but now that longer series are at hand, body size is seen to vary considerably between, and to a lesser extent within, series from Costa Rica and elsewhere in Central America. Workers from lowland Costa Rica often have the alitrunk over 1.3 mm long, while in Mexico and upland Panama, as well as some other Central American localities, corresponding lengths of 1.1 to 1.2 mm are usual.

Other characters that vary somewhat from nest to nest are sculptural gauge, and the form, especially anteroposterior thickness, of the petiolar node. The posterodorsal angle of the node always seems to overhang the posterior face a bit, giving the node a slightly back-tilted appearance. In spite of this variation, we seem to be dealing with a single species that ranges from Colombia to Veracruz, Mexico, so far as known. In the mountains of Colombia, at least in the southwest near Cali, *G. strigata* is replaced by *G. bisulca*, a closely related species described below.

The localities next cited are from material in the MCZ, much of it duplicated in WWK.

MEXICO. *Veracruz*: Jalapa (F. Silvestri leg.). Las Hamacas, 17 km. N Santiago Tuxtla, and La Perla, about 8 km N Orizaba, 1800 m both localities VIII.1953 (E. O. Wilson leg.). Park of power plant of Cerveceria Moctezuma in canyon near Orizaba (off Highway 150 about 3 km W Fortin de las Flores, and 3 km S Huatusco off Fortin road, both in VIII.1965 (Cornell University Mexico Field Party leg.). *Chiapas*: Union Juarez, pine grove at 1500 m, 11.VIII.1950 (C. and M. Goodnight leg.).

HONDURAS. Lombardia (W. M. Mann leg.).

COSTA RICA. *Limon*: Hamburg Farm (F. Nevermann leg.). La Carpentera, IV.1924 (W. M. Mann leg.). Rio Toro Amarillo, near Guapiles (W. L. Brown, Jr. leg.).

PANAMA. Cerro Campana, 800-950 m, I.1960 (G. B. Fairchild & W. L. Brown, Jr. leg.), and IX.1962 (Brown leg.).

COLOMBIA. *Valle*: above the dam at Represa Calima, a single worker from wet mountain leaf litter, 21.III.1967 (R. B. Root & W. L. Brown, Jr. leg.); this last record shows that *G. strigata* is not completely replaced by *G. bisulca* in southwestern Colombia,

for this locality is only a few kilometers from the *G. bisulca* type locality, and no doubt the two species are sympatric in this region.

***Gnamptogenys bisulca*, sp. n.**

Holotype worker: TL 3.8, HL 0.83, HW (without eyes) 0.75 (CI 90), WL 1.22, scape L 0.74 (SI 99), greatest diameter of eye 0.16 mm.

Diagnosis: with the characters of *G. strigata*, but having metanotal groove present as a distinct, gently curved, impressed suture, though not strongly interrupting the costulate sculpture. Mesonotum thus distinctly outlined, semilunar, about 4x as broad as long. Color black, appendages dark brown, the legs more yellowish distally.

Paratype workers: 38 specimens from the type nest series and two additional series, all from Valle Department, Colombia. The type nest series (Loboguerrero to Represa Calima) and the Pichindé series are smaller in body size, have shorter scapes (surpassing occipital posterior by about 1 1/2 times their apical thickness), larger eyes (about 1 1/2 times as long as the penultimate antennal segment), and somewhat finer sculpture (15-16 costulae on the mesopleuron). The sculpture is also peculiar in having the costulae in large part finely pitted and therefore only weakly shining over much of the body. On the postpetiolar disc, the costulae are thin, straight and converge anteriorly to form a sharp, distinct, inverted V. The smallest specimen from the type nest series measured: TL 3.7 HL 0.80, HW 0.70 (CI 88), scape L 0.70 (SI 100), GDE 0.16 mm.

Except for body size, these auxiliary characters will serve to distinguish *G. bisulca* from most samples of *G. strigata*; the latter tends to have longer scapes, smaller eyes, and coarse, smooth, shining costulation. The postpetiolar disc of *strigata* has thicker, often curved costulae which, though they may sometimes converge anteriorly, usually do not form a distinct V. *G. strigata* is usually reddish-brown under magnification, though Mexican samples are often darker and may be piceous when fully colored out.

The remaining paratype series of *G. bisulca* (from Salidito) is somewhat intergradient toward *G. strigata* in the minor characters, but has the metanotal groove distinct. The largest worker measures: TL 4.5, HL 0.95, HW 0.84 (CI 88), WL 1.42, SL 0.85 (SI 101), GDE 0.17. Costulae thicker than in type nest series, and more shining, but still minutely pitted; those of postpetiolar disc not forming a very sharp V. Scapes overreaching posterior border of head by about twice their apical thickness (largest SI seen was 105).

The petiole as seen from the side is fairly strongly "backtilted", with a rather narrowly rounded, noticeably overhanging posterodorsal angle; however, the nodal form is very variable in *G. strigata*, and sometimes approaches the *G. bisulca* form in the workers. In the queens available, this character is much more marked, but the sample is very small.

Queen (one dealate and one winged specimens from type nest series) a little larger than her own workers (HL 0.86-0.91 mm). The metanotal groove character is of course not available in this caste, but the secondary characters of color, sculpture and especially

nodal form (see above) differentiate this sample from the available queens of *G. strigata*.

All three collections from wet montane forest in Departamento del Valle in southwestern Colombia during III.1967, by R. B. Root & W. L. Brown, Jr. Type nest series from near Represa Calima on the road to Loboguerrero, about 1600 m above sea level, 14.III.1967 (Brown n.º H-281), probably from leaf litter. Paratype series from road to television tower on mountain above Salidito, near Cali, about 1900 m, 23.III.1967 (n.º H-164), from bromeliad growing on small tree; also Pichindé Valley, SW of Cali, 1570 m, 22.III.1967 (n.º H-161), this series from rotten wood included a few adult males, whose description is postponed because their characters are unremarkable and because material of related species is not sufficient for a useful comparison.

Holotype and paratypes deposited in MCZ; paratypes, WWK, DZSP, CU.

This species is a rather typical member of the group formerly called *Holcoponera*, and it will run to *G. simplex* in Brown's key (1958: 232, couplet 11). As we have just seen, *G. simplex* and *G. strigata* are synonyms, and *strigata* lacks the second alitruncal suture of *G. bisulca*. In fact, the second sulcus is not found in workers of any other members of this group with fully costulate alitrunk, although we may expect that rare bisulcate ergatoid females of some species will turn up to confuse the situation. It should also be pointed out that the bisulcate condition of the new species is further support for the incorporation of the *Holcoponera* group into *Gnamptogenys*.

Gnamptogenys turmalis, sp. n.

Holotype worker: TL 4.4, HL 0.86, HW 0.81 (CI 94), WL 1.27, greatest diameter of compound eye 0.22, scape L 0.62, petiolar node L 0.41, W 0.57 mm.

Close to *G. nigrifrons* from Peru, but a little larger and more robust, with finer sculpture, and head ferruginous, concolorous with rest of body.

Paratype workers (8 specimens from two nest series from the type locality): TL 4.2-4.6, HL 0.85-0.91, HW 0.80-0.88 (CI 94-97), WL 1.24-1.40, GDE 0.21-0.23 mm; 27-31 costulae between the frontal carinae (about 24 or 25 in *G. nigrifrons*). The single available syntype worker of *G. nigrifrons* measured: TL 3.9, HL 0.80, HW 0.73 (CI 91), WL 1.21, GDE 0.21 mm.

Compared with *G. nigrifrons*, the new species is larger and relatively broader (see measurements and indices cited). In *G. nigrifrons*, the petiolar node is about 0.36 mm long by 0.48 mm wide, for a nodal index of 133. In *G. turmalis*, the node may be as much as 0.40 mm long and 0.59 mm wide, and the nodal index ranges from 138 to 148.

The antennal scape of *G. turmalis* just reaches the posterior margin of the head when held back as straight as possible in full-face view, but may or may not surpass it by a very small amount in different specimens, thus bridging couplet 22 of Brown's key to the species of *Gnamptogenys* (1958: 234). Actually, if forced to the first lug of couplet 22, *G. turmalis* keys out fairly easily to

G. hartmani, from which it differs in its larger size (*hartmani* HW without eyes < 0.80 mm) and finer sculpture (23-25 costulae between frontal carinae in *hartmani*). The petiolar node is narrower in *hartmani* (maximum W about 0.51 mm), but its nodal index (132-140) overlaps that of *turmalis*. The color of both *hartmani* and *turmalis* is concolorous ferruginous.

The three species, *hartmani*, *turmalis* and *nigrifrons* are very closely related, and it would not greatly surprise us if further collecting were to show that they are conspecific variants. Of the three, *hartmani* and *nigrifrons* are about the same size and have sculpture of similar gauge, but the costulae of *hartmani* are smooth and shining, and those of *nigrifrons* tend to be finely pitted and more opaque; *turmalis* is intermediate in this respect. Although *hartmani* and *nigrifrons* key out to different places in Brown's 1958 key, the difference in scape length (couplet 22) that splits them to separated couplets is actually a very slight one; this character state is ambiguous in *turmalis*. J. C. Moser (*in litt.*) has found several colonies of *G. hartmani* "always in nests of *Trachymyrmex*" in Louisiana, and as mentioned below, *G. turmalis* probably also raids *Trachymyrmex* nests. We may expect that *G. nigrifrons* will be found to have similar habits, and possibly also *G. bruchi*. The last-named species lacks any trace of a metanotal groove, whereas *turmalis*, *nigrifrons* and *hartmani* all have the alitruncal dorsum shallowly and broadly but rather distinctly impressed in the metanotal region. This impression is the obsolescent metanotal groove.

Holotype (MCZ) and paratypes (MCZ, WWK, DZSP, CU, Coll. P. B. Kannyowski) all collected on Barro Colorado Island, Panama Canal Zone. The type colony was found on the night of 8.I.1960 (E. S. McCluskey & W. L. Brown, Jr. leg.) on Snyder-Molino Trail only a few yards beyond the Laboratory Clearing. It is believed that the ants were raiding a nest of the attine genus *Trachymyrmex*. The other series came from Wheeler Trail near the fourth marker, and were collected by R. D. Akre and students on the night of 22.III.1967, apparently from a file that was moving to a new nest. The details of observations on these ants will be given in another paper dealing with the feeding habits of *Gnamptogenys* species of the New World.

***Proceratium goliath*, sp. n.**

(Figs. 1, 2)

Holotype worker: TL 6.6, HL (including clypeal lobe) 1.60, HW (without eyes) 1.50, WL 2.00, scape L 1.16, eye diameter 0.10 mm, CI 94.

Head with mandibles almost circular; sides gently convex and rounding evenly into strongly convex occipital outline, the latter with a tendency to become flattened over a narrow median area. Eyes situated a little in front of the midlength of the head, consisting each of a single convex, clear facet. Occipital carina on each side extending forward to the vicinity of the hypostomal suture and bounding an impressed "gular" area, just as in *P. stictum*. Frontal line distinct and cariniform on anterior half of cranium behind deeply impressed frontal area; frontal carinae sharply but

obliquely raised, broader and more convex than in *P. stictum*. Anterior median clypeal lobe broad, rounded, with a median emargination, its surface feebly convex, longitudinally costulate, with interspersed punctures. Antennal scapes thick, gently curved, with incrassate tips, just surpassing posterior margin of head in full face view when they are held as nearly straight back as they will go. Mandibles each with 4 strong teeth set in an oblique masticatory margin; basal margin convex; dorsal surface coarsely striate, with small interspersed punctures. Maxillary palpi 4-segmented, labial palpi 3-segmented; maxillary segment II has the "hammerhead" shape characteristic for the genus.

Alitrunk compact, convex above, sutures obsolete with only the faintest trace of a promesonotal suture, visible in certain lights. Propodeal angles slightly projecting, bluntly rounded (with some small points that are part of the sculpture); propodeal declivity concave in both directions, bounded on each side by a distinct carina; inferior propodeal plates poorly developed, low and rounded. Upper boundary of declivity concave; declivity transversely rugulose. Propodeal spiracle small, round.

Petiole low, loaf-shaped, sessile, about 0.75 as high as long and about 0.88 as broad as long, broadest near posterior third. Anterior cornuae prominent, connected by a strong, slightly concave shelf or ridge. Anterior subpetiolar process low, obtusely triangular, ordinarily hidden from lateral view by coxa; another insignificant convexity midway along the subpetiolar carina may be homologous with the tridentate process of the *P. stictum* holotype.

Gaster broad and strongly recurved, the second segment very strongly rounded and more extended to the rear than in *P. stictum*; as seen from above, both the postpetiole and the second segment are a little longer than broad, and the second segment is distinctly longer, and very slightly wider, than the postpetiole. Sting stout.

Legs long (hind femur L 1.61, hind tibia L 1.30 mm), stout, but relatively longer and less thick than in *P. stictum* (thickness of hind femur at its midlength is about 0.14 L in *P. goliath* holotype, but about 0.18 of L in *P. stictum*). Spurs 1 on each tibial apex, pectinate, as in other *Proceratium*. Tarsal claws simple, long and slender.

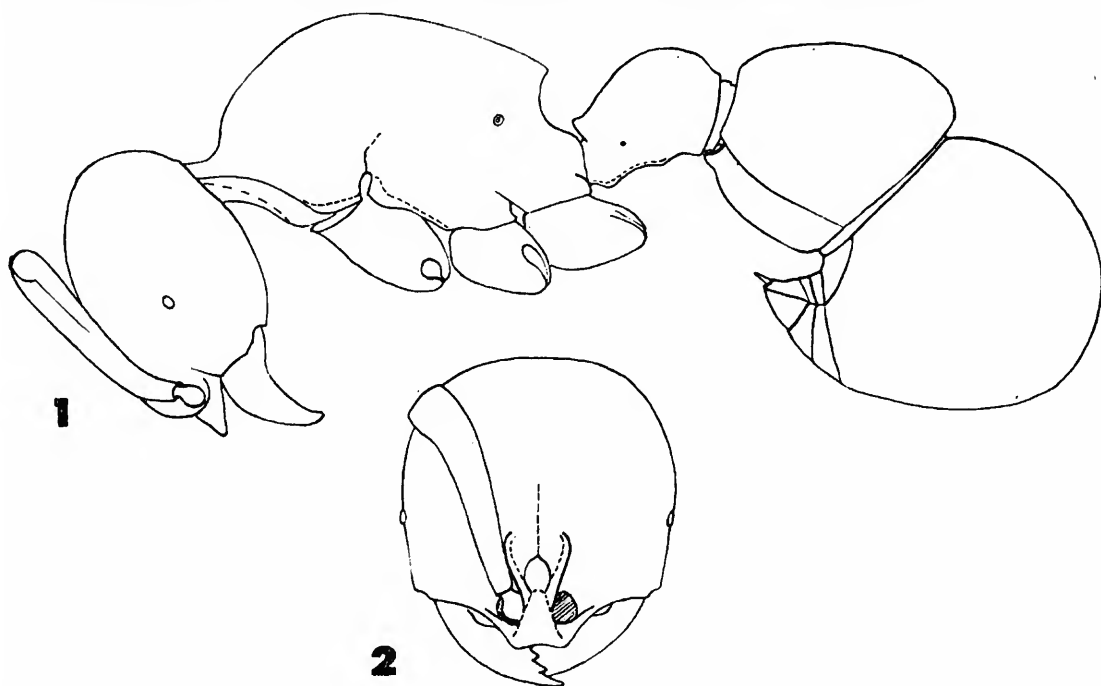
Head, alitrunk, petiole and postpetiole densely rugulose, with crowded, deep-set piligerous punctures having tuberculate, often shining bottoms. Second and succeeding gastric segments smooth and shining, with abundant exceedingly fine piligerous punctures (much smaller and less distinct than in *P. stictum*); antennae and legs finely and densely punctulate, weakly shining.

Body covered with dense, brassy, appressed to suberect, pubescence, plus abundant longer hairs, golden brown, mostly 0.2-0.3 mm long, erect to decumbent, on all parts of the body and appendages, but especially on the dorsal surfaces and on the entire free surface of the second gastric segment, where the pilosity is very long and dense, and all directed posteriad, even on the underside.

Color deep brownish-red, legs a little lighter, more reddish; frontal lobes, clypeus, mandibles and petiolar cornuae with blackish margins.

Holotype, together with 5 paratypes and another worker that was dissected in the field, collected in disturbed wet lowland rain

forest about 2 km beyond (NW of) the steel bridge over the Rio Toro Amarillo, near Guapiles, Limon Province, Costa Rica (W. L. Brown, Jr., leg.) on 3 and 4.III.1966. The ants were in and under a fragment of rotten log about 75 cm long and 35 cm thick that was found lying in the middle of a wide, recently cleared trail. The same piece of wood held pockets containing 20-30 or more workers of *Basiceros manni*, but although the log was reduced to small fragments over two days, the queen and brood of neither species could be found. The *Proceratium*, being so unusually large, and also more active than one finds other members of the genus, was originally taken for *Gnamptogenys* (= *Alfaria*) *simulans*. The count of Malpighian tubules (6, counted in a single worker) is also typical for *Gnamptogenys*, instead of 5, counted in *Proceratium silaceum* (n = 2). Obviously, further counts are needed in order to establish the number of tubules in *Proceratium* adults.



Proceratium goliath, sp. n.: 1, worker, side-view; 2, worker, head in full-face view (Kempf del.).

Paratypes: of the 5 workers in the series, the holotype was largest, and the rest of the specimens were about as large or slightly smaller. The smallest measured TL 6.2, HL 1.50, HW 1.36, WL 1.85, scape L 1.13, eye diameter 0.10. CI 91. Variation among the paratypes is very slight. In a couple of the workers, the propodeal angles are a bit larger and more acute, while the inferior propodeal plates are somewhat more obviously developed, though still very low and rounded. The median subpetiolar process is sharply triangular in one specimen.

Holotype and paratypes deposited in MCZ; paratypes in WWK, DZSP and CU.

Queen, male and larva unknown.

P. goliath is closely related to *P. stictum* (Brown, 1958: 336, figs. 27, 45, 46, worker) from tropical northeastern Australia, but

differs in its much larger size, longer legs and antennae, its undeveloped propodeal teeth and inferior propodeal plates, its much more finely punctulate second gastric segment, and other minor characters. It is not close to any other species, being larger than any of them and having a longer, lower petiolar node, among other characters. Only *P. relictum* (Fiji) approaches *goliath* in size, and this has a thin scale-like node and much finer sculpture. *P. goliath* is a very primitive *Proceratum*, and we need to know its larva and something of the food habits.

Pheidole cramptoni

Pheidole cramptoni Wheeler, 1916: 4-5 (Soldier, worker. Type loc.: Kaieteur, [British] Guyana. Type in MCZ).

Pheidole cramptoni subsp. *petiolicola* Wheeler, 1921: 147 (Soldier, worker. Type loc.: Kartabo, [British] Guyana. Types in MCZ).
Syn. n.

The type soldiers of *petiolicola* are slightly smaller than those of *cramptoni*, but this and other differences mentioned by Wheeler are both variable and very minor. These are no more than slight nest variants of a single species. *P. cramptoni* could be a synonym of some older species name, but if so, our rather casual search has failed to find it.

Lenko & Brown found this species twice near Manaus, in the heart of Amazoniam Brazil, during 1962. The first collection (M-101) was a large colony or group of colonies found under the bark of a large, punky "white-rotten" log in rain forest at km 40 on the road from Manaus to Itacoatiara, NE of Manaus (27.VIII.1962). The second colony with winged queens was taken in the base of a rotten branch of a tree about 2 m above the ground, in secondgrowth forest bordering a plantation of "Brazil" nut, or "castanha do Pará", at Aleixo, 14 km SE Manaus, on 11.IX.1962. In Guyana, as indicated by Wheeler, this species has been found nesting in hollow petioles of *Tachigalia*.

Megalomyrmex silvestrii

Megalomyrmex silvestrii Wheeler, 1909: 235 (Worker. Type-loc.: Cordoba, Veracruz, Mexico. Syntype in MCZ, examined); Mann, 1922: 29 (Ceiba and San Juan Pueblo, Honduras).

Megalomyrmex (*Wheelerimyrmex*) *sjöstedti* Wheeler, 1925: 30 (Worker (dealate) female. Type loc.: Llinquipata, Peru. Part of syntype series in MCZ, examined). *Syn. n.*

Megalomyrmex (*Wheelerimyrmex*) *sjöstedti* var. *langi* Wheeler, 1925: 31 (Worker, male. Type loc.: Kamakusa, [British] Guyana. Syntypes in MCZ, examined). *Syn. n.*

Megalomyrmex brasiliensis Borgmeier, 1930: 34-35, pl. 5, figs. 33, 35 (Worker. Type loc.: Gaspar, Santa Catarina, Brazil. Type in CTB (WWK), examined). *Syn. n.*

Megalomyrmex brasiliensis var. *missionensis* Santschi, 1936: 405 (Worker. Type loc.: Loreto, Misiones, Argentina. Types in

Coll. Santschi, Basel; syn- or nidotype in WWK, examined).
Syn. n.

Megalomyrmex [!] (*Cepobroticus*) *wheeleri* Weber, 1940: 425, figs. 15, 16 (Worker, queen. Type loc.: Barro Colorado Island, Panama Canal Zone. Syntype worker in MCZ, examined); 1941: 106-107 (Biology). *Syn. n.*

This species apparently is fairly common in forest from southern Mexico to northern Argentina. The extensive synonymy is due in large part to Wheeler's inexplicable inaccuracies of description. In his *M. sjöstedti* and var. *langi*, the differences he mentions in the form of the propodeal (= metasternal) plates simply cannot be seen in direct comparison with *silvestrii*, and the reported differences in antennal proportions are at best insignificant. Color differences exist among the series available, some being dark brown, others prevailingly light reddish- or yellowish-brown, but the alitrunk is usually lighter than head and gaster.

Most of the samples (from the localities listed below) are larger in body size (length of worker alitrunk including cervix 1.33 to 1.44 mm) than those from Barro Colorado Island, in the Panama Canal Zone (1.15-1.22 mm), but the Amazonas series ranges from 1.10 to 1.26, the type series of var. *langi* from Guyana is intermediate (1.29-1.33 mm), and workers from Cerro Campana, Panama, and from Honduras overlap the large and intermediate sizes (1.30-1.42 mm). At least part of Weber's type series of *wheeleri* appears to have come from an incipient nest. South Brazilian workers tend to have proportionately large eyes.

The variation noted seems to represent erratic local trends in a single species. The similarities among these series are much more impressive than the differences. Among the synonyms, it may be noted that *wheeleri* was not compared by Weber with *silvestrii*, but only with *M. symmetochus*, a quite different species.

The queen of *M. silvestrii* is only slightly larger than the workers, and has a rather reduced alitrunk for a myrmicine of this caste. Perhaps such reduction is in keeping with Weber's finding of 3 nests and a single dealate queen of this species in Barro Colorado Island nests of *Cyphomyrmex costatus*. Two colonies Brown found at the same locality, however, as well as those from Cerro Campana, Panama, and Santa Teresa, Brazil, were nesting independently of other ants so far as he could tell.

The colony (Brown Cat. n.º M-72) from Igarapé Marianil, near Manaus, was found in a small rotten log in rain forest on 26.VIII. 1962, in a small chamber with a small species of *Trachymyrmex*. The ants of both species were found throughout the fungus garden of the chamber, but off to one side in a smaller chamber was found a group of the *Trachymyrmex* clustered with a small piece of fungus garden unoccupied by *Megalomyrmex*. This second group appeared to be under attack by some blackish *Solenopsis*, possibly *S. picea* or near. To Brown at the time, the situation suggested that the *M. silvestrii* colony had successfully attacked and moved into the attine nest, and was in the process of plundering it. Perhaps *M. silvestrii* is not so much a parasite as it is a mass-foraging predator that specializes in raiding, and sometimes occupying, the nests of small Attini. It would be interesting to know the habits better, especially the details of nest founding. As Weber

has already noted, the colonies of *M. wheeleri* are usually small (less than 100, and usually only 25-60 workers, plus 1-4 dealate queens, in the colonies seen by Brown).

Ettershank (1966: 73-171) has put subgenera *Wheelerimyrmex* and *Cepobroticus* into straight synonymy of *Megalomyrmex*, an action with which we concur.

In addition to certain type material listed in the synonymy above, we have examined the following samples:

BRAZIL. *Rio de Janeiro*. Angra dos Reis (Jussaral), L. Travassos & H. Souza Lopes leg., CTB 5748 (WWK). *Guanabara*. Rio de Janeiro, Corcovado, H. Souza Lopes leg., CTB 5775 (WWK). *Espirito Santo*. Santa Teresa, about 800 m, nest in large rotten log, wet mountain forest. W. L. Brown, Jr. leg., MCZ. *Amazonas*. Igarapé Marianil, about 24 km NE of Manaus. W. L. Brown, Jr. leg., MCZ.

PERU. Valle de Chanchamayo, W. Weyrauch leg., WWK.

SURINAM. Dirkshoop, J. van der Drift leg., WWK.

PANAMA. Canal Zone, Barro Colorado Island, W. L. Brown, Jr. & E. S. McCluskey leg., two nests in the forest, B-31 inside a small clod of soil in the leaf litter, and B-111 in a small piece of rotten wood, 10 mm deep and 15 mm wide, also contained many termites, MCZ, WWK.

HONDURAS. La Lima (C. Evers leg., WWK); San Juan Pueblo, W. M. Mann leg., WWK, MCZ.

Solenopsis bondari

Myrmica virulens Fred. Smith, 1858: 132 (Worker. Type loc.: Ega (= Tefé), Amazonas, Brazil). *Nomen oblitum*.

Solenopsis bondari Santschi, 1925: 236 (Worker. Type loc.: Bahia, Brazil). *Syn. n.*

Solenopsis (Solenopsis) bondari; Creighton, 1930: 46 (Worker. [British] Guyana record; syntypes redescribed).

Smith published the name *Myrmica virulens* over a six-line description that is useless for purposes of determination. However, the description is followed by this note:

"This species is allied to *M. saevissima*. Mr. Bates says, "It is found only in the forest; its formicarium is in the earth, under vegetable debris. Its sting is more painful than that of *M. saevissima*." "

These words correspond perfectly to a species of *Solenopsis* that Lenko & Brown found widespread in Brazilian Amazonia during 1962 (areas around Belém, Pará, Manaus and Benjamin Constant, Amazonas), and Brown found common at Tingo Maria, Peru, in 1967. This *Solenopsis* is bright yellow in color, monomorphic, and about the size of small majors of *S. saevissima* or *S. geminata*, but the postpetiole is subglobose and very large. It is found in populous colonies living in the soil beneath the forest leaf litter, and it stings so painfully that the Amazonians know it well under the name "tachi de terra". The word "tachi" (pronounced tah-SHEE in English) applies to the painfully-stinging *Pseudomyrmex triplarina* as well as to the sympatric plant (*Triplaris*) in which it lives symbiotically. Therefore, tachi de terra means "tachi of the

ground". It is one of the very few ants of this region for which the local people have special names.

Although the name *virulens* was considered synonymous with *S. saevissima* by Mayr as early as 1862, it finally ended in synonymic lists under *S. geminata* and remained buried there until it was included in a checklist of *Solenopsis* species by Ettershank (1966) after we had "rediscovered" it in 1962.

Study trips to the European museums in 1963 and 1964 turned up the types, placed with the *S. geminata* lots in the British Museum. The types are two workers on one card, accompanied by a blue label "979" above the light blue round label with "58" over "6", and a white label, "*M. virulans*/ type Sm." The left hand specimen is hereby designated as lectotype; it measures as follows: total outstretched length including mandibles 4.6, head length 0.96, head width without eyes 0.85, diagonal length of alitrunk 1.25, postpetiole width 0.41 mm.

The second thing we found out in Europe was that our digms of *virulens* compared closely in London with the types of that species, also matched the types of *S. bondari* in the Naturhistorisches Museum in Basel. There exists some slight geographical variation in depth of color, width of postpetiole, and size of clypeal teeth, but we judge this to be of no significance at species level. The names *virulens* and *bondari* are considered synonyms for the same species.

The problem of which name to use is automatically settled by Article 23b of the International Rules. The name *virulens*, having remained in synonymy more than 50 years, is a *nomen oblitum* by any reasonable interpretation of this ambiguously worded article (which urgently requires revision more in line with the needs of non-ornithological animal taxonomy), and *bondari* takes its place. Although the loss of such a descriptive name as *virulens* is regrettable, the name *bondari* has been used in the most recent comprehensive revision of *Solenopsis* s. str. (Creighton, 1930) and is therefore "current". The surprising thing is that the ant has received so little attention in the literature under any name.

S. bondari is known from Guyana (see Creighton, *op. cit.*), and so is probably widespread in hylean South America, though in fact it remains unreported from the Orinoco drainage. From the Amazon and its main tributaries at low and moderate elevations, the range runs southward in Brazil to the type locality (Bahia), and beyond to São Paulo, but its limits are not well known. Samples have been taken in: São Paulo, município de Iporanga, 1.XI.1961, K. Lenko & H. Reichardt leg., 20 w DZSP n.º 2457 (more specimens in DZSP); Piassaguera (= Raiz da Serra), 2.XII.1906, H. Luederwaldt leg. (Museu Paulista n.º 6781), "*S. geminata diabolus* Wheeler, Forel det.", "*saevissima?* Luederwaldt det." 1 w.; Ilha de São Sebastião (off the São Paulo coast), 1906 Gunther leg. 9 workers, Museu Paulista n.º 2491, CTB 2124, ("*geminata incrassata* Type, Forel det.!!); Caraguatatuba, 2.IV.1962, K. Lenko leg., 9 workers, DZSP 1941, 2124 (more specimens in DZSP). Guanabara, Rio de Janeiro, 30.XI.1927, O. Conde leg., 3 workers, CTB 3260 WWK). Espirito Santo, Corrego Itá, I.1960, W. Grossmann leg., ex coll Seabra WWK/s/n) 10 workers. Mato Grosso, Utariti, Rio Pa-

pagaio, VIII.1961, K. Lenko leg., DZSP n.º 1566, 4 workers (more specimens in DZSP). Acre, Porto Valter, X.1961, L. Herbst leg., 3 workers (WWK). Amazonas and Pará; Peru (see above).

REFERENCES

BORGMEIER, T.

- 1930: Duas rainhas de *Eciton* e algumas outras formigas brasileiras. *Arch. Inst. Biol., S. Paulo*, 3: 21-40, 6 pls.

BROWN, W. L., JR.

- 1956: Notes on the ant genus *Holcaponera* Mayr, with descriptions of two new species. *Ins. Sociaux* 3: 489-497, 2 figs.
1958: Contributions toward a reclassification of the Formicidae. II. Tribe Ectatommini (Hymenoptera). *Bull. Mus. Comp. Zool. Harvard* 118: 173-362.

CREIGHTON, W. S.

- 1930: The New World species of the genus *Solenopsis* (Hymenoptera, Formicidae). *Proc. Amer. Acad. Arts Sci.* 66: 39-151, 8 pls.

EMERY, C.

- 1896: Studi sulle Formiche della fauna neotropica. *Bull. Soc. Ent. Ital.* 28: 33-107, pl. I.

ETTERSHANK, G.

- 1966: A generic revision of the world Myrmicinae related to *Solenopsis* and *Pheidologeton* (Hymenoptera: Formicidae). *Australian Journ. Zool.* 14: 73-171.

FOREL, A.

- 1899: Formicidae in *Biol. Centr.-Amer., Hymenoptera* 3: 1-169, 4 pls.

KEMPF, W. W.

- 1967: New ants from Southeastern and Central Brazil (Hymenoptera, Formicidae). *Studia Ent.* 9: 121-128, 9 figs.

MANN, W. M.

- 1922: Ants from Honduras and Guatemala. *Proc. U. S. Nat. Mus.* 61 (13): 1-54, 22 figs.

NORTON, E.

- 1868: Description of Mexican Ants noticed in the "American Naturalist", April 1868. *Proc. Essex Inst., Communications*.

SANTSCHI, F.

- 1925: Nouveaux Formicides brésiliens et autres. *Bull. Soc. Ent. Belg.* 65: 221-247.
1929: Révision du genre *Holcaponera* Mayr. *Zool. Anz.* 82: 437-477, 47 figs.
1936: Contribution à l'étude des fourmis de l'Amérique du Sud. *Rev. Ent. Rio de Janeiro* 6: 196-218, 11 figs.

SMITH, F.

- 1858: Formicidae in *Cat. Hym. Brit. Mus.* 6: 1-216, 14 pls.

WEBER, N. A.

- 1940: The biology of the fungus-growing ants. Part VI. Key to *Cyphomyrmex*, new Attini and a new guest ant. *Rev. Ent. Rio de Janeiro* 11: 406-427, 16 figs.
- 1941: *Idem*. Part VII. The Barro Colorado Island, Canal Zone, species. *Ibidem* 12: 93-130, 14 pls.

WHEELER, W. M.

- 1909: Ants collected by Prof. F. Silvestri in Mexico. *Boll. Lab. Zool. Portici* 3: 228-238.
- 1916: Ants collected in British Guiana by the expedition of the American Museum of natural history during 1911. *Bull. Amer. Mus. Nat. Hist.* 35: 1-14.
- 1921: The Tachigalia ants. *Zoologica* 3 (4): 137-168, 16 figs.
- 1925: Neotropical ants in the Collections of the Royal Museum at Stockholm. Part I. *Ark. Zool.* 17A (8): 1-55.

THE GENUS *SCLERODERMA* IN SOUTH AMERICA (HYMENOPTERA, BETHYLIDAE)

HOWARD E. EVANS

ABSTRACT

Scleroderma spilonotum, sp. n. (type-locality, Brazil, São Paulo, São Paulo), is described as new; notes on other South American species of the genus, as well as a key to these species, are presented.

The genus *Scleroderma* is of nearly world-wide distribution, but has only rarely been reported from South America. Only three species have been described from that continent, but material recently sent to me by Dr. Karol Lenko of the Departamento de Zoologia, Secretaria da Agricultura, São Paulo, includes two species neither of which belongs to any of the described South American species. One appears to represent a species described from the southeastern United States, while the other is new. This report includes a description of this new species, notes on the other species, and a key to the five species reported from South America.

Males of this genus are very rare in collections, and no males of any species have yet been reported from South America. Winged females (which also have well developed ocelli) are also uncommon, and at present winged females are known only in the case of *macrogaster*. The other four species are known only from completely apterous females which lack ocelli. I reviewed some aspects of the structure, biology and distribution of this genus in 1964.

KEY TO SOUTH AMERICAN *SCLERODERMA* (FEMALES)

1. Length 1.5-2.2 mm; head and thorax light yellow except head sometimes infuscated in front; abdomen fusco-castaneous (first segment may be paler) *formicarius* Kieffer
Length 2.3-4.0 mm; head and thorax not entirely light yellow 2
2. Head and thorax light to dark castaneous, except pronotum with a large, light yellow spot anteriorly; mesoscutum short, about 1.4x as wide as long *spilonotum*, sp. n.
Head and thorax not uniformly castaneous and with a contrasting light yellow spot on the pronotum; mesoscutum

Museum of Comparative Zoology, Harvard University, Cambridge, Mass., U.S.A. This paper is part of a series on the systematics of the American Bethylidae, supported by the National Science Foundation, grant GB-1544.

- arcuately lengthened behind, slightly if at all wider than long 3
3. Mesoscutum and mesopleura considerably darker than the light yellow pronotum and propodeum; sides of propodeum subangular at crest of declivity, as seen from above *macrogaster* (Ashmead)
- Mesoscutum and mesopleura not contrastingly darker than adjacent areas; sides of propodeum gently rounded, seen from above 4
4. Body fusco-castaneous except abdomen blackish; length 3.4 mm. *iridomyrmecicola* Bruch
- Body rather uniformly light castaneous, including abdomen; length 2.5-3.00 mm *galapagense* Brues

***Scleroderma spilonotum*, sp. n.**

Holotype ♀, São Paulo, S.P., Brazil, 1-15.XI.1967, K. Lenko col. (n.º KL 191); Departamento de Zoologia, Secretaria da Agricultura, São Paulo.

DESCRIPTION OF TYPE FEMALE

Length 3.0 mm; length of head .47 mm, of thorax + propodeum .80 mm, of abdomen 1.73 mm. Wings, tegulae, and ocelli absent. Head and prothorax rufo-castaneous except pronotum light yellow on anterior half; mesothorax and propodeum dark castaneous; abdomen fusco-castaneous; antennae testaceous basally, apical half infuscated; legs dark castaneous except paler at joints, tarsi testaceous. Mandibles broad basally, tapering to a bidentate apex; clypeus short, emarginate. Antennae short, segments 3-12 wider than long. Maximum width of head .84x median length of head; minimum distance between eyes 1.6x height of an eye; distance from eye tops to vertex crest slightly over twice the eye height. Head shining, very weakly alutaceous, obscurely punctate. Dorsum of thorax and propodeum very slightly more evidently alutaceous than head; mesoscutum short, 1.4x as wide as its median length, posterior margin rounded; propodeum about 1.4x as long as its maximum width, very slightly expanded from front to rear, sides gently rounded at crest of declivity. Legs smooth, except upper surface of middle tibia densely covered with bristling setae; front femora twice as long as their maximum width. Abdomen slender, tapering, its maximum width 1.3x that of head.

Paratypes: 9 ♀, same data as holotype (Departamento de Zoologia, Secretaria da Agricultura, São Paulo; 1 deposited in the United States National Museum, Washington, D.C., U.S.A.; 1 deposited in the Museum of Comparative Zoology, Cambridge, Mass., U.S.A.).

VARIATION

The smallest paratype is 2.3 mm long, the largest 3.2 mm. In one specimen, possibly teneral, the entire head, thorax, and propodeum are rufo-testaceous, and the yellow spot on the pronotum, although present, contrasts little with the background. In several

specimens the head and pronotum are nearly as dark as the posterior part of the body. There is no other variation worthy of note.

***Scleroderma macrogaster* (Ashmead. 1887)**

This species occurs throughout the southeastern United States. I have also seen specimens from Hispaniola and Jamaica in the West Indies, as well as from three widely separated localities in Brazil. It is probable that it is widely distributed in tropical America, although one cannot be certain that it was not introduced into Brazil from North America or into North America from Brazil. Two of the five Brazilian specimens I have are wingless females, the other three fully winged.

The Brazilian specimens are from the following localities: 2 ♀, Manaus, Amazonas, 8.IX.1962, K. Lenko col. (n.º KL 192); 1 ♀, Vitória, Espírito Santo, 18.IX.1960, O. Seifert col.; 2♀, Nova Teutônia, Santa Catarina, III, IX, 1940-41, F. Plaumann col.

***Scleroderma formicarius* Kieffer, 1921**

Kieffer provided only a very brief description of this minute species, which was taken from a nest of *Solenopsis* ants in the Province of Buenos Aires, Argentina.

Five wingless females taken by F. Vier at Petrópolis, Rio de Janeiro, Brazil, in IX.1967, I tentatively regard as belonging to this species. Although Kieffer's specimen was only 1.5 mm long, these specimens vary from 1.8 to 2.2 mm long. The head and thorax are clear, light yellow, as described by Kieffer, except that in four of the specimens the front of the head is somewhat infuscated. The antennae are infuscated apically in all five specimens, and the legs vary from testaceous to more or less fuscous. The abdomen is fusco-castaneous except that the first segment is somewhat paler than the remainder.

***Scleroderma iridomyrmecicola* Bruch, 1917**

Bruch provided a long description and a series of figures of this species, which was taken from a nest of *Iridomyrmex* ants on Isla Martin Garcia, near Buenos Aires, Argentina. The type is said to be in the Museo de La Plata in that country.

***Scleroderma galapagense* Brues, 1919**

This species was based on six specimens taken from a nest of the ant *Prenolepsis fulva* on James Island (Isla San Salvador), Galapagos, Ecuador. The type and one paratype are in the California Academy of Sciences, San Francisco, California, the other four paratypes at the Museum of Comparative Zoology, Cambridge, Mass., U.S.A. Despite this record and the preceding two, there is no evidence that members of this genus are myrmecophiles

REFERENCES

ASHMEAD, W. H.

- 1887: Studies in the North American Proctotrypidae. *Ent. Amer.* 3: 73-76, 97-100.

BRUCH, C.

- 1917: Insectos mirmecófilos. *Physis, Soc. Argent. Cienc. Nat.*, 3: 141-146, 9 figs.

BRUES, C. T.

- 1919: A new species of the hymenopterous genus *Scleroderma* from the Galapagos Islands. *Proc. Calif. Acad. Sci.* (4) 2: 309-310.

EVANS, H. E.

- 1964: A synopsis of the American Bethylidae. *Bull. Mus. Comp. Zool. Harvard* 132: 1-222, 144 figs.

KIEFFER, J. J.

- 1921: Proctotrypides hôtes des fourmis en Argentine. *An. Soc. Cient. Argent.* 91: 36-41.

Papéis Avulsos de Zoologia

PAPÉIS AVULSOS ZOOL. S. PAULO, VOL. 22, ART. 12: 107-121, PL. 1 4.XII.1968

A REVIEW OF THE GENUS *HYPERALONIA* RONDANI (BOMBYLIIDAE, DIPTERA) FROM SOUTH AMERICA¹

REGINALD H. PAINTER^{2, 3}

ELIZABETH M. PAINTER

ABSTRACT

A key and redescription of known species, often from types, is included for four species and one subspecies. *Hyperalonia ater* R. H. Painter, sp. n., is described as new from San Carlos, Salta, Argentina. Illustrations and distribution of species are included.

Conspicuous features of most collections of Bombyliidae from South America are the large bluish black specimens with reddish yellow heads that belong to the genus *Hyperalonia* which includes one of the first beefly species described from that continent. Types carrying four of the six names assigned to this genus have been studied.

The authors are indebted to the following for permission to study types in their care and assistance in various ways: Prof. S. L. Tuxen, Prof. Sven Gisle Larrson, and Prof. Leif Lyneborg, Universitets Zoologiske Museum, Copenhagen, Denmark; Dr. H. Oldroyd and others at the British Museum (Natural History), London, England, and Prof. Dr. Mario Salfi and Dr. Fernando Nicolò, Museo dell'Istituto di Zoologia dell'Università di Napoli, Naples, Italy.

Specimens studied are from the collections of the senior author; American Museum of Natural History; California Academy of Sciences; Canadian National Collection; Cornell University; Departamento de Zoologia, Secretaria da Agricultura, São Paulo, Brazil; Jack Hall; Instituto Miguel Lillo, Universidad Nacional de Tucumán, Tucumán, Argentina; Instituto Oswaldo Cruz, Rio de Janeiro, Brazil; Michigan State University; Museo de la Universidad Nacional de La Plata, La Plata, Argentina; Naturhistoriska Riksmuseet, Stockholm, Sweden; Ohio State University; State Plant Board of Florida; U. S. National Museum; Universitets Zoologiske Museum, Copenhagen, Denmark; Naturhistorisches Museum, Vienna, Austria; University of California at Berkeley; University of California at Riverside; Snow Museum, University of Kansas; and Zoological Institute, University of Uppsala, Uppsala, Sweden.

1. Contribution n° 937, Department of Entomology, Kansas Agricultural Experiment Station, Manhattan. Supported in part by National Science Foundation grants G10664 and G21291 to the senior author.

2. Professor of Entomology.

3. Kansas State University, Manhattan, Kansas, U.S.A.

The authors gratefully acknowledge the assistance of Prof. Kenneth Hayward, Dr. Norman L. Marston, Mr. Nelson Papavero, Mr. Luis Peña and Prof. Julia A. Vidal Sarmiento for assistance in locating places where specimens, particularly the older ones, were collected.

The map was made on copyrighted Goode Base Map series n.º 203, published by the University of Chicago.

***Hyperalonia* Rondani, 1864**

Dallas, 1866: 649; Williston, 1901: 273; Kertész, 1909: 1-5; Coquillett, 1910: 554; Painter, 1930: 274-275; Stuardo Ortiz, 1946: 96.

DIAGNOSIS

This genus is distinguished from other Exoprosopinae by the presence of four submarginal cells, a long conical third antennal segment without a style and most of the vestiture of body and head of sparse hairs.

Head. Somewhat broader than thorax. Occiput deeply bilobate above, somewhat inflated and extending behind eyes for a distance approximately equal to length of third antennal segment, sparsely clothed with recumbent hair, erect at margin. Hind margin of eye deeply indented, the bisecting line extending only a short distance into the compound eye. Front with a shallow depression between ocelli and antennae, densely occupied by short erect hairs; front broad; antennae wide apart at base. Eyes separated at apex in male by three times width of ocellus, in female by three and a half times width of ocellus. Face vertical, proboscis protruding about the length of antenna beyond mouth opening. Apex of face with small tuft of stiff hairs, clothed otherwise with sparse hairs except above base of antennae. Gena protruding for a distance equal to length of first antennal segment, containing a very deep furrow. Palpi slender, sparsely hairy, apparently one-segmented, about equal in length to labella. Third antennal segment two and a fourth times length of first, second segment somewhat shorter than its width, sparsely clothed with hair. First antennal segment more than twice as long as second, densely clothed with hair.

Thorax. Quadrate, somewhat narrower than head with prominent humeral calli, clothed with hair that is short on dorsum, longer as a ruff about neck and before and behind the wings. Two to four spines on post alar callus, several rows of weak spines or hairs around posterior margin of scutellum. Lower part of ptero- and hypopleura bare.

Legs. Rather short, femora clothed with narrow appressed scales, remainder of legs with short hairs, all femora and tibiae with short spines. First tarsi feeble, segments distinct, first segment nearly as long as remaining segments together, claws of first legs about half as long as those on other pairs. Claws without basal tooth, pulvilli present, very small, with a small lobe between each pair.

Abdomen. Broad, shining, sparsely clothed with short hair longer on sides and beneath. Seven visible segments. Male genitalia retracted, asymmetrical. Female ovipositor with a terminal circlet of eight somewhat curved spines. The male genitalia is of

Spot at base of wing usually smaller, central hyaline band small, often of two spots, partly closed in wing margin, no clear spot in fourth posterior cell
 *morio erythrocephala* (Fabricius)

***Hyperalonia ater* R. H. Painter, sp. n.**

(Figs. 2-4, 15)

Largely black and entirely black haired, head mostly reddish brown, wings with more extensive hyaline markings than in remainder of species. Length, 19 mm.

Male. Ground color of body and legs black, head, including first antennal segments, reddish brown. Lower part of occiput and about mouth opening posteriorly, black. Ocellar tubercle and a large area at top of head between eyes black. The black spot on front is somewhat larger than usual and there is a black crescent about antennae above.

Head and first two segments of antenna with black hairs, occipital fringe whitish, a dense patch of hairs on black spot in front of antennae. Second antennal segment about as long as broad, first segment about three times as long as second, third somewhat longer than first but broken at tip. Proboscis exceeding mouth opening by about length of opening. Palpi blackish brown with black hairs.

Thorax entirely black haired, shorter on dorsum, spines of thorax black.

Abdomen entirely black haired, hairs along sides somewhat longer than elsewhere.

Legs with black hairs and spines, spines on front tibiae somewhat longer than usual, claws black.

Wing black with hyaline tip, margin almost straight with a slight notch in black area of second submarginal cell. Extreme apex of third submarginal and first posterior cells in hyaline area, a small spot at apex of first sumarginal cell and smaller area above it in marginal cell, hyaline. A broad hyaline band extending from vein R₅ across discal cell to wing margin including most of third posterior cell and part of fourth, connected with a wedge-shaped hyaline area in second posterior cell by a narrow margin at wing edge. A large hyaline round spot in apex of second basal cell. Base of costa with black hairs, alular fringe of black scales. Haltere including knob black.

Holotype male. San Carlos, Salta, Republic of Argentina, 21, 22.I.1950, Willink-Monrós col., in the museum of the Instituto Miguél Lillo, Universidad de Tucumán, Tucumán, Argentina.

***Hyperalonia chilensis* Rondani, 1864**

(Figs. 1, 12, 14, 15)

Kertész, 1909: 2; Ruiz, 1929: 57-60; 1930: 155-158; Edwards, 1930: 178; Paramonov, 1931: 65; Stuardo Ortiz, 1946: 96.

One male specimen in the Istituto di Zoologia, Università di Napoli Museum. bearing the labels "M^o Zool^o N.^o 1118", "*Hypera-*

lonia chilensis Rond. Chile", is in good condition except for a small amount of fungus. The following description is drawn from a male compared with the type and numerous other specimens from Chile.

Body and legs brownish black with black hair, a ruff of orange red hair across front of thorax and down sides, black hair immediately above front coxae. Tufts of orange red hair in front of and behind wing and a tuft of white hair between haltere and wing base. Head mostly orange yellow with black hair. Wing black tip hyaline with a shallow notch in second submarginal cell in the curving edge of the black, central hyaline band reaching posterior border of wing broadly. Length 15 to 20 mm.

Male. Ground color bluish or brownish black on all of body and legs, head reddish yellow with ocellar tubercle and round spot in front black. Occiput, especially below, smoky. First two antennal segments reddish brown.

Head clothed with sparse short black hair, black spot in front of antennae and another area in front of that, about base of antennae and tip of mouth opening with denser hair. Occipital fringe yellow, proboscis exceeding mouth opening by length of labella. Second antennal segment about as wide as long, third antennal segment long, conical, five times as long as second, first segment about twice as long as second, first and second segments clothed with black hair. Palpi brown, clothed with brown hair.

Thorax clothed with black hairs, shorter on dorsum, orange red ruff extending across front of thorax and down sides except for above front coxae where hairs are black. Between humeral callus and wing base and behind wing base, clothed with orange red hairs, a tuft of white hairs between base of wing and haltere. Spines of post alar callus and scutellum black.

Abdomen clothed with black hair somewhat longer on sides. Genitalia with black hair.

Legs clothed with black hair and spines, spines on front tibiae rather abundant but small, claws black.

Wing black, tip hyaline including a shallow notch extending into black of second submarginal cell. Central hyaline band extending from R_5 across discal cell to wing margin and usually joined to a V-shaped hyaline area in second posterior cell. A hyaline spot in front of that band extending from subcostal to vein R . A large spot in apex of second basal cell and in fourth posterior cell hyaline. First posterior cell narrowed in margin to half length of r-m crossvein. Contact of fourth posterior cell and discal cells about equal to base of fourth posterior cell. Wing base clothed with black hairs, alular fringe of black scales. Haltere brown, paler at tip.

Female. Essentially like male. Ovipositor surrounded by a circlet of about eight unhooked brown spines.

The notch in the black at the tip of the wing is variable in depth but usually is present. Sometimes there is a narrow hyaline margin connecting the tip of the wing with the hyaline cross-band. The extent of the hyaline area is variable but always reaches the hind margin of the wing. The vein at the posterior side of the discal cell sometimes is bordered narrowly with black. The

hyaline spot in the second basal cell usually is smaller but occasionally is as large as in *morio morio*. The hyaline area in the second posterior cell sometimes is absent or nearly so.

Specimens have been studied from the following (fig. 15):

CHILE. *Aconcagua*: Piscicultura, Rio Blanco, 3.XII.1958, L. E. Peña col. (2 ♂); *Arauco*: Arauco, beach and dunes, 3.I.1952, P. C. Hutchison col. (19 ♂, 1 ♀); Cañate, 11.I.1955, I. Videla col. (1 ♂); *Cautin*: Nuevo Imperial, 30.I.1955, J. Moltingue col. (1 ♀); 20 km E Temuco, 8.I.1951, Ross & Michelbacher col. (1 ♂, 1 ♀); *Coquimbo*: 15 mi. W La Junta, 7.XII.1950, Ross & Michelbacher col. (1 ♂); Llano de la Higuera, 14.X.1957, L. E. Peña col. (1 ♂); *Concepción*: Concep[cion], P. Herbst col. (1 ♂); *Curico*: El Coigo, 20.XII.1959, L. E. Peña col.; Rio Colorado, 9-13.II.1961, L. E. Peña col. (1 ♀); Rio Tono, 10.II.1965, L. E. Peña col. (1 ♀); *Malleco*: Angol, 10.XII.1924, 15.XII.1928, A. M. Bullock col. (9 ♂, 2 ♀); 3, 8.XII.1956, O. Fetiss, T. Garcia, C. Krueger, L. Ramiriz & Sac'z col.; Cerros de Nahuelbuta, 2.XII.1956, D. S. Bullock col. (2 ♂); *Maule*: Tregualemu, 7, 12.XII.1953, L. E. Peña col. (12 ♂, 2 ♀); *Nuble*: Monte Zorro, 18.XII.1953, L. E. Peña col. (3 ♂, 1 ♀); Nogueche, 15-17.XII.1953, L. E. Peña col. (11 ♂, 4 ♀); Recinto, I.1955, L. E. Peña col. (1 ♂); 40-50 km E San Carlos, 23, 26.XII.1950, Ross & Michelbacher col. (6 ♂, 3 ♀); *Santiago*: Barrancas, XII.1954, L. E. Peña col. (1 ♀); Caleu, XII.1951, L. E. Peña col. (3 ♂); El Canelo, XI.1952, L. E. Peña col. (4 ♀); Las Mercedes, II.1937, P. Flamino Ruiz col. (2 ♀); Maipu, F. V. Ibarro col. (1 ♂); *Valparaíso*: Reñaca, XI.1932, Dr. Reed col. (3 ♂); I.1955, A. Hettick col.; Queronque, 29.XII.1929, 7.XII.1939, E. P. Reed col. (2 ♂, 2 ♀); Valparaíso, A. Faz col. (2 ♂, 1 ♀).

PERU. *Lima*: Lima (1 ♂).

Edwards (1930) considered this taxon to be a separate species and recorded it from four localities in Chile: Concepcion, Los Andes, Valparaíso and Alhue. Paramonov (1931) recorded it as a form of *morio*. Ruiz (1929, 1930) gave brief notes on "*Exoprosopa erythrocephala*" which, to judge from the picture of the adult, is almost certainly this species, *chilensis*.

The male specimen, Lima [Peru?], E. P. Reed Collection, in the California Academy of Sciences collection, is a typical *chilensis* except that it lacks the hyaline spot in the second posterior cell. It could represent a hybrid with *surinamensis*.

In the University of California at Berkeley collection there are six males and one female that carry the labels "Itaquaquecetuba, nr. São Paulo, Brazil, Coll. Townsend", that are typical *chilensis*. In view of the distance from all other known habitats of this species, this record requires confirmation.

***Hyperalonia morio morio* (Fabricius, 1775)**

(Figs. 8-10, 15)

Fabricius, 1775: 797; Kertész, 1909: 3; Edwards, 1930: 179; Paramonov, 1931: 64-65; Copello, 1932: 117-120; Stuardo Ortiz, 1946: 96.

Hyperalonia morio is the first taxon of this genus to be described and was reported either as *morio* or *erythrocephala* in many

early papers, all listed by Kertész (1909). Often it is difficult to determine to which of the taxa recognized in this paper the references refer, and in addition, locality records are often meaningless. Hence no attempt was made to trace the specimens concerned. Specimens that carry only the labels "South America" or the name of a country also have not been recorded when more exact localities from the country in question were available. Edwards (1930) evidently recognized *morio* as distinct from *erythrocephala* and *chilensis*, but Paramonov (1931) did not, but gave a key to five "forms" under *morio*. *H. morio morio* is form "A" or the "typical form" of Paramonov.

The division of the crossband into three distinct spots, the black along the vein separating the discal and third posterior cells, and the large round spot in the second basal cell are usually characteristic of this species.

A female carrying the labels "Chile, Dr. Reed, 34 19-." and "*Exoprosopa erythrocephala*, Coll. Dr. Reed, Valparaíso", is a typical *H. m. morio*. The label may refer to the collection of Dr. Reed, not to the locality. Edwards (1930) records one specimen of *H. morio* labelled "Araucania, Feb. 88" from Chile but evidently questions the record. Two recent male specimens from the collection of Jack Hall, however, definitely record this species as west of the Andes but apparently it is rare.

According to Fabricius original description the specimens he had came from Brazil and the types were in the Banks collection. In 1863 the Banks collection came to the British Museum (Natural History) by way of the Linnean Society of London. According to the accession records, the specimens were labeled 63-47 and 63-49. There are no specimens of *Hyperalonia* in the Banks collection, which is kept separate, nor were there any specimens of the *morio* group carrying these accession numbers in the British Museum collection. No evidence of specimens that would fit Fabricius' description are in the Copenhagen nor Kiel collections. The type is therefore considered to be lost.

The short description of Fabricius agrees best with the specimens common in the southern part of Brazil that are characterized by a median band of three hyaline spots in the wing as indicated in the original description. The following description is drawn from a pair that fit Fabricius' description. This pair came from Nova Teutônia, near Seara, Santa Catarina, Brazil.

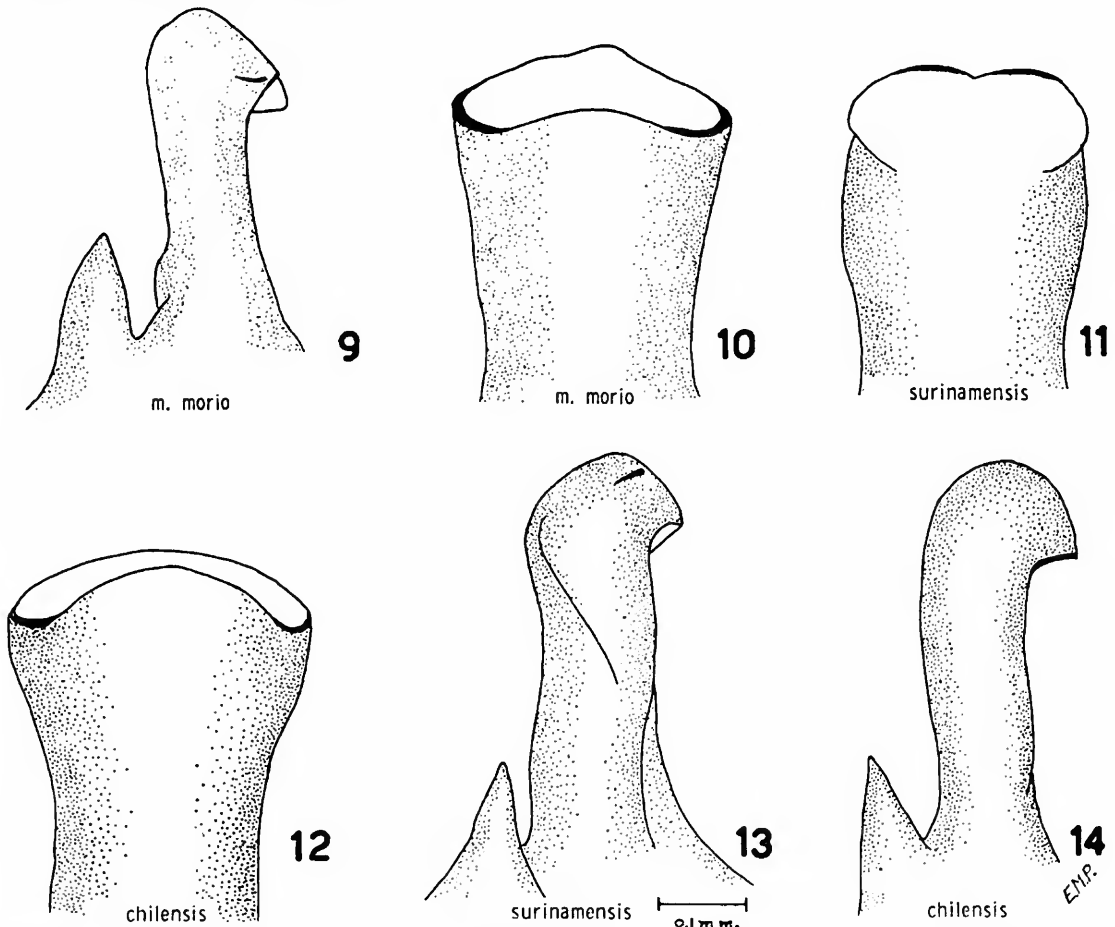
Body predominantly bluish black with black hairs but orange red ones between base of wing and on the humeral callus, the tuft between wing and haltere with white above, orange below. Head predominantly yellow. Wing black, tip, three central spots and one in second basal cell hyaline, usually a small clear spot in fourth posterior cell, the dark area at wing tip curved smoothly. Length 9 to 20 mm.

Male. Ground color black, thorax and legs dark brown, head yellow, area around ocelli and a spot in front brownish black, occiput behind mouthparts smoky.

Head with sparse black hairs on face and front, a dense patch of these in front of ocelli and a smaller one between the latter and base of antennae. Hairs of occiput and occipital fringe minute, yellow. Second antennal segment dark brown, about as long as wide, first segment three times length of second, third long, con-

cal, six times length of second; first and second with rather dense black hairs, base of antenna surrounded with longer black hairs. Proboscis exceeding mouth opening by length of labellae, palpi brownish with sparse brownish hairs.

Thorax with black hairs, much shorter on dorsum, long and black between humeral calli and on propleura; humeral callus with orange red hairs and some black ones posteriorly, the stripe of orange red hairs extending from humeral callus to base of wing; a small tuft of white hairs above and a large tuft of orange red hair below between base of wing and haltere. Spines of scutellum and post alar callus black.



Male genitalia of species of *Hyperalonia*. 9, lateral view of aedeagus of *m. morio*; 10, dorsal view of tip of aedeagus of *m. morio*; 11, dorsal view of tip of aedeagus of *surinamensis*; 12, dorsal view of tip of aedeagus of *chilensis*; 13, lateral view of aedeagus of *surinamensis*; 14, lateral view of aedeagus of *chilensis*.

Abdomen above and below with black hairs including those about genitalia.

Legs with short black hairs and black spines, spines on front tibiae rather small, small hairs below front tibiae and tarsi brownish, claws black, no visible pulvilli.

Wings black, tip hyaline, outline of black there smoothly curved; hyaline spots as follows: center of marginal and first submarginal cell, second spot occupying distal half of discal cell and base

of first posterior cell above, third spot in center of third posterior cell, not reaching wing margin, a large spot in apex of second basal cell and a small spot in center of fourth posterior cell. First posterior cell open about two thirds length of r-m crossvein. Contact of discal and fourth posterior cells four fifths as long as base of fourth posterior cell. Anal cell narrowly open. Base of costa with black hairs, alular fringe of black scales. Haltere black, tip and below somewhat smoky.

Female. Similar to male. Eight to ten brownish non hooked spines about ovipositor, some orange red pile on propleura.

Specimens from the following localities have been studied (fig. 15):

ARGENTINA. *Buenos Aires*: Buenos Aires (1 ♂, 1 ♀); Mar del Plata, 1.II.1951, 2.II.1957, 2.VI.1957, S. Bolle & Foerster col. (3 ♂, 4 ♀); B. Naval, P. Belgrano, 2.II.1938, Biraben-Scott col. (1 ♂); *Catamarca*: Hualfin, 12.II.1949, A. Area col. (1 ♀); El Suncho, 1850 m, 18.VIII.1911, Golbach col. (1 ♀); *Córdoba*: Córdoba, 18.XII.1948, Padre Lopez col. (1 ♂, 3 ♀); Capilla del Monte, 17.II.1942, A. H. Argemí col. (1 ♂, 1 ♀); *Corrientes*: Manantiales, Th. d. Apostol[es], XI.1945 (1 ♀); *Formosa*: Gran Guardia, 1.II.1953, Foerster col. (1 ♀); *Jujuy*: La Cienaga, 21.I.1948, Willink-Monrós col. (1 ♀); Tilcara, 2100 m, 25.I.1948, Willink-Monrós col. (4 ♀); *Mendoza*: Potrerillos, 4000 ft., 11-20.III.1920, R. G. Harris col. (1 ♂); Uspallata, 14.I.1947, Hayward-Willink col. (3 ♀); *Misiones*: 16.XI.1909, 1.I.1910, 4.II.1910 (2 ♂, 2 ♀); *Neuquén*: Covunco Centro, 15.IV.1941, R. Maldonado Bruzzone col. (1 ♀); Zapala, 19-22.XII.1946, Hayward & Willink col. (1 ♂); *Salta*: Cafayate, 1.II.1951, Hayward col. (2 ♂, 1 ♀); *Rio Negro*: (2 ♀); Choele Choel, 5.III.1913 (1 ♀); *Santiago del Estero*: Beltrán, 4.VIII.1941, R. Maldonado col. (2 ♀); Jimenez, 26.X.1946, Andeld [?] col. (1 ♀); Turena, Dto. Robles, 22.XI.1939, R. Maldonado Bruzzone col. (1 ♂); *Tucumán*: Fronterita, 12.III.1948, Ares col. (1 ♂); Los Bulacios, 30.I.1948, Ares col. (1 ♀); Táfi del Valle, 9.XII.1945, Hayward col. (2 ♀); Dpto. Trancas, 2.X.1947, Ares col. (1 ♂); Tucumán, I.1949, H. P. Colalao col. (2 ♀)

BOLÍVIA. *Cochabamba*: Capinota, 5, 6, 9, 10.I., 5, 6, 9, 10, 11.II. 1948, H. Merubia col. (2 ♂, 8 ♀).

BRAZIL. *Amazonas*: Rio Negro, S. Antônio, XII.1931, Hepper col.; *Ceará*: 21.XII.1937, D. D. Rocha col. (1 ♀); Limoeiro, VI.1940, Shannon & Alves col. (1 ♂); *Goiás*: Campinas, II.1938, R. Spitz col. (1 specimen); *Guanabara*: Rio de Janeiro (1 ♂); Serra da Carioca, J. C. Vasques col. (1 ♂); *Mato Grosso*: Maracaju, III.1937, Shannon & Lane col. (7 ♂, 2 ♀); III.1937, R. C. Shannon col.; *Minas Gerais*: Alpinópolis, IV.1961, C. Elias col. (1 ♀); Lavras, 15. IX.1964, W. E. & C. A. Triplehorn col. (3 ♀); *Paraná*: Jacarèzinho, 11, 13.II.1961, N. Marston col. (4 ♂, 1 ♀); *Rio de Janeiro*: Cabo Frio, 2.IV.1920, E. G. Holt col. (1 ♀); *Rio Grande do Sul*: Bagé, 27.II.1961, N. Marston col. (1 ♀); Guarani (now Guaramano), 18. III.1932, C. M. Biezanko col. (1 ♂); Pelotas, 5, 30.III.1957, C. M. Biezanko col. (1 ♂, 1 ♀); Pôrto Alegre, 24.II.1961, N. Marston col. (3 ♂, 2 ♀); São Leopoldo, J. W. Stahl col. (1 pr.); *Santa Catarina*: Nova Teutônia, 27°11'B, 52°23'L, 3, 4, 27.I.1939, F. Plaumann col. (2 ♂, 2 ♀); *São Paulo*: Avaré, III.1936, J. Lane col.; Batatais,

III.1943, A. Stefuzza col. (1 ♂, 1 ♀); XII.1943, Pe. Pereira col.; II.1946, Pe. F. S. Pereira col.; Campinas, III.1924, F. X. Williams col. (1 ♂); Monte Alegre, Faz. N. S. Encarnação, 29.III.1944, J. Lane col. (1 ♀); Osasco, 10.III.1952, M. A. V. A. col. (1 ♂, 1 specimen); XII.1955, A. Martinez & d'Andretta col.; T. & O. (= Itaquaquecetuba), Townsend col. (1 ♀); Villa Americana, II.1924, F. X. Williams col. (1 ♂).

CHILE. *Coquimbo*: El Manzano, Rapelsillo and Los Sapitos, Ovalle, XI.1961, 10.XII.1964, L. E. Peña col. (2 ♂).

PARAGUAY. Areguá, XI.1936 (1 ♀); Asunción, XI.1943 (1 ♀); Concepcion, 20.XII.1932, A. Schulze col. (1 ♀); Independencia, XII.1951, J. Foerster col. (1 ♀); Sapucay, III, W. T. Forster col. (1 ♀); Villarica, X, XI.1936, F. Schade col. (17 ♂, 1 ♀); Yegros, 23.II.1946 (1 ♂).

URUGUAY. Maldonado, 22.XII.1944 (2 ♀); Montevideo, J. Tremoleras col. (3 ♂, 2 ♀); Paysandú, Santa Rita, 15.I.1948, on beach and dunes, Uruguay R., C. S. Carbonell col. (30 ♂, 2 ♀); X, XI, XII.1936, F. Schade col.; San José, Alred. de la Ciudad (Dept. Capital de Uruguay), 4.II.1932 (1 ♂).

***Hyperalonia morio erythrocephala* (Fabricius, 1805)**

(Figs. 5, 7, 15)

= *Exoprosopa coeruleiventris* Macquart, 1846.

= *Anthrax* (*Exoprosopa*) *flaviceps* Guérin-Ménéville, 1844.

Fabricius, 1805: 118; Guérin-Ménéville, 1844: 539; Macquart, 1846: 1909; Kertész, 1909: 3; Edwards, 1930: 178; Paramonov, 1931: 64, 65; Copello, 1932: 117.

Two females in the Copenhagen Museum are both marked type and are in almost perfect condition. The larger also carries a label in Fabricius' handwriting, "*A. erythrocephala* ex Am. mer. Smidt"; the smaller one has a small clear spot in the fourth posterior cell not present in the larger specimen.

Two specimens in the Bigot collection in the British Museum (Natural History) are probably the types of *coeruleiventris* Macquart, 1846 (fig. 5). One is only a body fragment and a wing, the other a fairly well preserved female. Both are labeled "*Exoprosopa coeruleiventris* Macq. nov. sp." and "Brasil Minas Coll. Fairmaire". The two were compared with a specimen similar to the type of *erythrocephala* and belong to the same taxon. The type of *Exoprosopa flaviceps* Guérin-Ménéville, 1844, was not found but apparently from the description, it is also a synonym of *erythrocephala*. The year reference (1846) in Kertész (1909) is incorrect.

This subspecies differs from the nominate one in having orange hairs across the front of the thorax and on much of the propleura. The spot in the second basal cell is usually smaller and oblong, the median three hyaline spots are also usually smaller and coalesce into a narrow stripe. The clear spot in the fourth posterior cell, present in *morio*, is usually absent in *erythrocephala*.

Specimens that are apparently intermediate between the two subspecies are not uncommon.

It is perhaps questionable whether these two forms represent true subspecies but groups of specimens can be separated on the characters given and the two names are maintained pending further investigation of their relationship to each other. *H. m. erythrocephala* tends to be more northern and *H. m. morio* more southern. The two subspecies may have different insect hosts. Intermediate specimens were studied from these localities:

BRAZIL. *Guanabara*: Rio de Janeiro (Leblon), X.1932, L.T.F. col. (1 ♂); *Mato Grosso*: Utiariti, Rio Papagaio, 325 m, VII-VIII. 1961, K. Lenko col. (5 ♂, 1 ♀); *Pará*: Óbidos, IV.1952, VII.1953, José Brazilino col. (1 ♂, 3 ♀); *Rio de Janeiro*: Angra dos Reis, Faz. Japuhya, III.1951, E. Rabello col. (1 ♂); *São Paulo*: Bata-tais, XII.1943, Pe. Pereira col. (1 ♀).

VENEZUELA. *Trujillo*: R. Mombu (Mombuy), XII.1932 (1 ♂).

Specimens of *m. erythrocephala* from these localities were studied (fig. 15):

BRASIL. *Bahia*: Igrapiúna, 23-29.VI.1919 (1 ♀); Iguassu, 13.VII., Roman col. (1 ♂, 1 ♀); Santa Rita, IV.1958, E. Dente col. (2 ♀); *Ceará*: Cariús, IX.1939, D. C. Alves col. (1 specimen); *Maranhão*: São Luiz, X.1938, D. C. Alves col. (1 specimen); *Pará*: Belém, 13.I.1924, I.1945, G. N. Wolcott col. (2 ♂); Unt. Amaz. Tapérinha b. Santarém, 1-10.VIII.1927, Zerny col. (2 ♂, 2 ♀); *Rio Grande do Norte*: Macahyba (Macaíba), IV.1939, D. C. Alves col. (1 ♂); Natal, VII.1955, Pe. Pereira col. (1 ♂).

FRENCH GUIANA. St. Jean, Maroni, Wm. Schaus col. (1 ♀).

GUYANA. Georgetown, W. H. B. Moore col. (1 ♀).

SURINAM. Kabelstation, 21-27.VIII.1938, Geyskes col. (1 ♂); *Pará District* (1 ♂); Zanderij I, Boven, 22.IV.1927 (1 ♂); Paramaribo, 28.IV.1927 (1 ♀).

VENEZUELA. *Federal District*: El Valle, nr. Caracas, 23.VI.1926, H. E. Box col. (1 ♂); Las Adjuntas, 959 m, VII.1926, H. E. Box col. (1 ♀); Caracas, 11.III.1935, Svenson (?) col. (1 ♂).

***Hyperalonia surinamensis* Rondani, 1863**

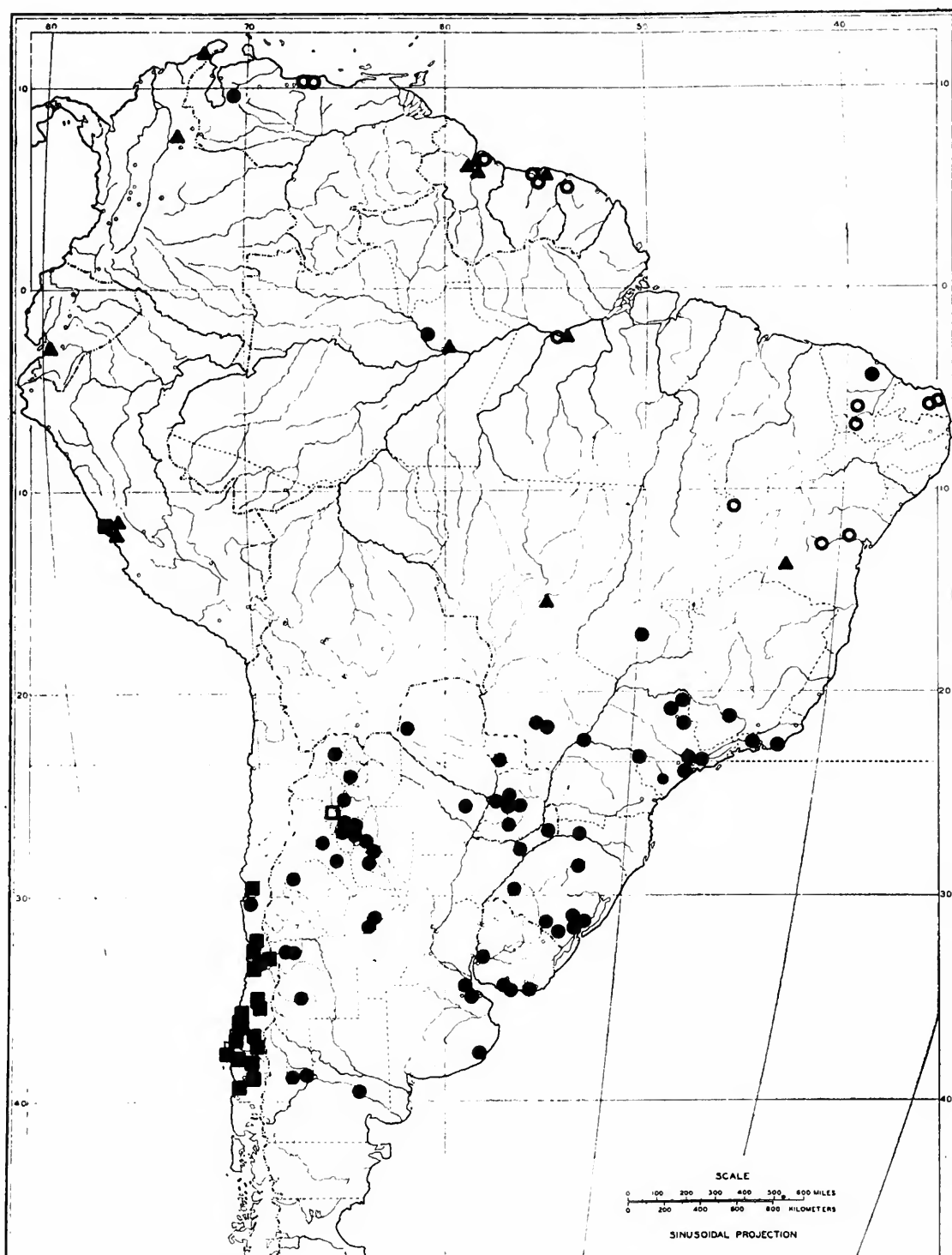
(Figs. 6, 11, 13, 15)

Rondani, 1863: 58; Kertész, 1909: 4; Paramonov, 1931: 65.

One male specimen in the Istituto di Zoologia, Università di Napoli Museum, bears the labels "M? Zool? N.º 42078", "*Hyperalonia surinamensis*", "Ron. Suriname", is in good condition except that it has some fungus, lacks the third segment of left antenna and most of one hind leg.

Similar to *Hyperalonia morio morio* (Fabricius); but with central clear areas in wing much more extensive, boundary of black at tip of wing a straight line, not curved. Area of white pile behind wing larger than in *morio*. Body somewhat more robust. Length 17 mm.

Male. Ground color black. Head except ocellar tubercle bright orange. First two antennal segments orange to brown, the second



15, Map of distribution of species of *Hyperalonia*: *ater* (open square); *chilensis* (black square); *morio erythrocephala* (open circle); *morio morio* (black circle); *surinamensis* (black triangle).

darker. Scutellum orange red. Post alar calli, humeral calli, and a spot in front of scutellum brown. Sides of abdominal segments, specially near apices brownish black. Genitalia mahogany brown. Legs brown.

Head with face prominent but retreating at oral margin. Proboscis exceeding mouth opening by distance somewhat longer than labellae. A few scattered short black hairs on gena and face, a line of them extending down from antenna to near eye margin. Front with scattered short black hairs and a denser patch a short distance below ocelli. A few black hairs on occiput, occipital fringe yellow.

Thoracic ruff yellow, a tuft of black hairs between front coxae and a few on propleura. An abundant patch of orange yellow hair in front of wing and another in front of haltere. A dense tuft of white hairs behind post alar callus, on sides of scutellum, and above tufts of yellow hairs in front of haltere. Remainder of sparse hair of thorax black, mostly short.

Abdominal pile all black, shorter on dorsum, longer on sides and venter. Genitalia mahogany brown, clothed with black hairs.

Legs with sparse black pile and black spines, no spines on front tibiae.

Wing black with hyaline areas distributed as in *H. morio* but more extensive. Tip of wing hyaline, the margin running from the tip of vein R_1 straight across to tip of vein R_s . Hyaline spot in center of wing occupies base of first posterior cell and three fourths of discal cell and is separated from spot in third posterior cell by a band of black bordering the base of that cell. A hyaline triangular spot near tip of second basal cell, another near apex of fourth posterior cell and a fifth spot at tip of first submarginal cell and middle of marginal. Vein in this hyaline spot narrowly bordered with black. Portion of vein M in hyaline spot in discal cell yellow as are veins at tip of wing. Remaining veins dark brown. Pile on base of costa black, alular fringe of white scales. Haltere dark brown, knob yellow.

The larger clear area in the center of the wing with the black band along the posterior vein of the discal cell and the straight margin of the black at tip of the wing are characteristic of this species. The white pile behind the wing is generally more abundant than in other species. The hyaline areas in specimens from Peru are smaller than those from areas farther north and east.

Specimens from these localities were studied (fig. 15):

BRAZIL. *Amazonas*: Manaus, 28.X.1924, Melin col. (2 ♂, 1 ♀); *Bahia*: D. Davis col. (1 ♀); Iguassu, 28.VII., Roman col. (2 ♂); *Mato Grosso*: Chapada (dos Guimarães) (1 ♂); *Pará*: Santarém, IX.1920 (1 specimen); Unt. Amaz. Taperinha b. Santarém, 1-10. VII., 11-20.VII.1927, Zerny col. (15 ♂, 2 ♀); *São Paulo*: Pôrto Cabral, Rio Paraná, 6-14.X.1941, L. Travassos Filho col. (1 ♀).

COLOMBIA. *Guajira*: Pajaro, 13.VIII.1927 (1 ♂); *Magdalena*: G. Salt col. (1 ♂).

EQUADOR. 2 mi. N Santa Rosa, El Oro, 10 m, 24.I.1955, E. I. Schlinger & E. S. Ross col. (1 ♂).

GUYANA. Bartica, 26.V.1901 (1 ♂); Bartica Dist. (1 ♂); Georgetown, W. H. B. Moore col. (1 ♂); Wismar, 20.XI.-11.XII.1934, A. S. Pinkus col. (1 ♂).

PERU. North Central Coast, 1.IV.1951, Michelbacher col.; Lima: Chosica, 3200-3500 ft., 14.II., C. H. Townsend col. (3 ♂); 23.III.1964, "caught in a desert place", Peter Hocking col.; Lima, I.1949 (1 specimen); Loreto: Iquitos, III, IV.1931, R. C. Shannon col. (1 ♂).

SURINAM. Paramaribo, Bot. Gard., 25.VIII.1939, Geyskes col. (2 ♂); Cultuurtuin, 1.VIII.1938, Geyskes col. (1 ♂).

REFERENCES

COPELLO, A.

1932: Biologia de *Hyperalonia morio* (Diptera: Bombyliidae). *Rev. Soc. Ent. Argentina* 5 (22): 117-120.

COQUILLET, D. W.

1910: The type species of the North American genera of Diptera. *Proc. U. S. Nat. Mus.* 37: 499-647.

DALLAS, W. S.

1866: Insecta, Diptera, Bombyliidae. *Zool. Record* 2: 648-651.

EDWARDS, F. W.

1930: *Diptera of Patagonia and South Chile. Part V. Bombyliidae, Nemestridae, Cyrtidae.* London. British Museum (Natural History), pp. 162-197.

FABRICIUS, J. C.

1775: *Systema entomologicae ... Flensburgi et Lipsiae.* 832 pp.

1781: *Species insectorum exhibentes eorum differentias specificas, synonyma, auctorum, loca natalis, metamorphosin.* Vol. 2. Hamburgi et Kilonii. 510 pp.

1794: *Entomologia systematica emendata et aucta.* Vol. 4. Hafniae. 472 pp.

1805: *Systema antliatorum secundum ordines, genera, species.* Brunsvigae. 373 + 30 pp.

GUÉRIN-MÉNEVILLE, F. E.

1844: Douzième ordre. Les Diptères, pp. 531-559 (livr. 50). in *Iconographie du règne animal de G. Cuvier*. Vol. 3: Texte explicatif, Insectes, 576 pp. Paris (livr. 45-50).

KERTÉSZ, C.

1909: *Catalogus Dipteriorum* 5,199 pp. Lipsiae, Guilelmum Engelmann.

MACQUART, J.

1846: Diptères Exotiques nouveaux ou peu connus. Suppl. 1. *Mém. Soc. Roy. Sci., de l'Agr. et Arts, Lille*, 1844: 133-364, 20 pls. (1845). Also published separately as *Diptères exotiques nouveaux ou peu connus. Supplément.* (1): 5-238, Paris, 1846.

PAINTER, REGINALD H.

1930: Notes on some Bombyliidae from the Republic of Honduras. *Ann. Ent. Soc. Amer.* 23: 793-806.

1939: Notes on type specimens and descriptions of new North American Bombyliidae. *Trans. Kans. Acad. Sci.* 42: 267-301.

PAINTER, REGINALD H. & ELIZABETH M. PAINTER

- 1962: Notes on and redescrptions of North American Bombyliidae (Diptera) in European Museums. *Journ. Kans. Ent. Soc.* 35: 2-164.

PARAMONOV, S. J.

- 1931: Beitræge zur Monographie der Bombyliiden-Gattungen *Amictus*, *Lyophlaeba*, etc. (Diptera). *Mem. Ukraine Acad. Sci. Class Sci. Nat. Tech.* 9, 218 pp.

RONDANI, C.

- 1864: Dipterorum species et genera aliqua exotica. *Archiv. Zool. Anat. Fisiol. Modena* 3: 1-99.

RUIZ, P. F.

- 1929: Breves notas biologicas sobre *Exoprosopa erythrocephala* (Fabr.). *Rev. Chilena Hist. Nat.* 32: 57-60 (1928).
1930: Nuevas observaciones sobre la biologia de *Exoprosopa erythrocephala* (Fabr.). *Ibidem* 34: 155-158.

STUARDO ORTIZ, CARLOS

- 1946: *Catalogo de los Dipteros de Chile*. Ministerio de Agricultura. 250 pp.

WIEDEMAN, C. R. W.

- 1828: *Aussereuropaeische zweifluegelige Insekten*. Hamm. 1, 608 pp.
1830: *Idem*. Hamm. 2, XII + 684 pp., 5 pls.

WILLISTON, S. W.

- 1901: *Biologia Centrali-Americana, Diptera*, 1, suppl., pp. 249-332.

ZIMSEN, ELLA

- 1964: *The type material of J. C. Fabricius*. Copenhagen, Munksgaard, 656 pp., Diptera pp. 449-503.

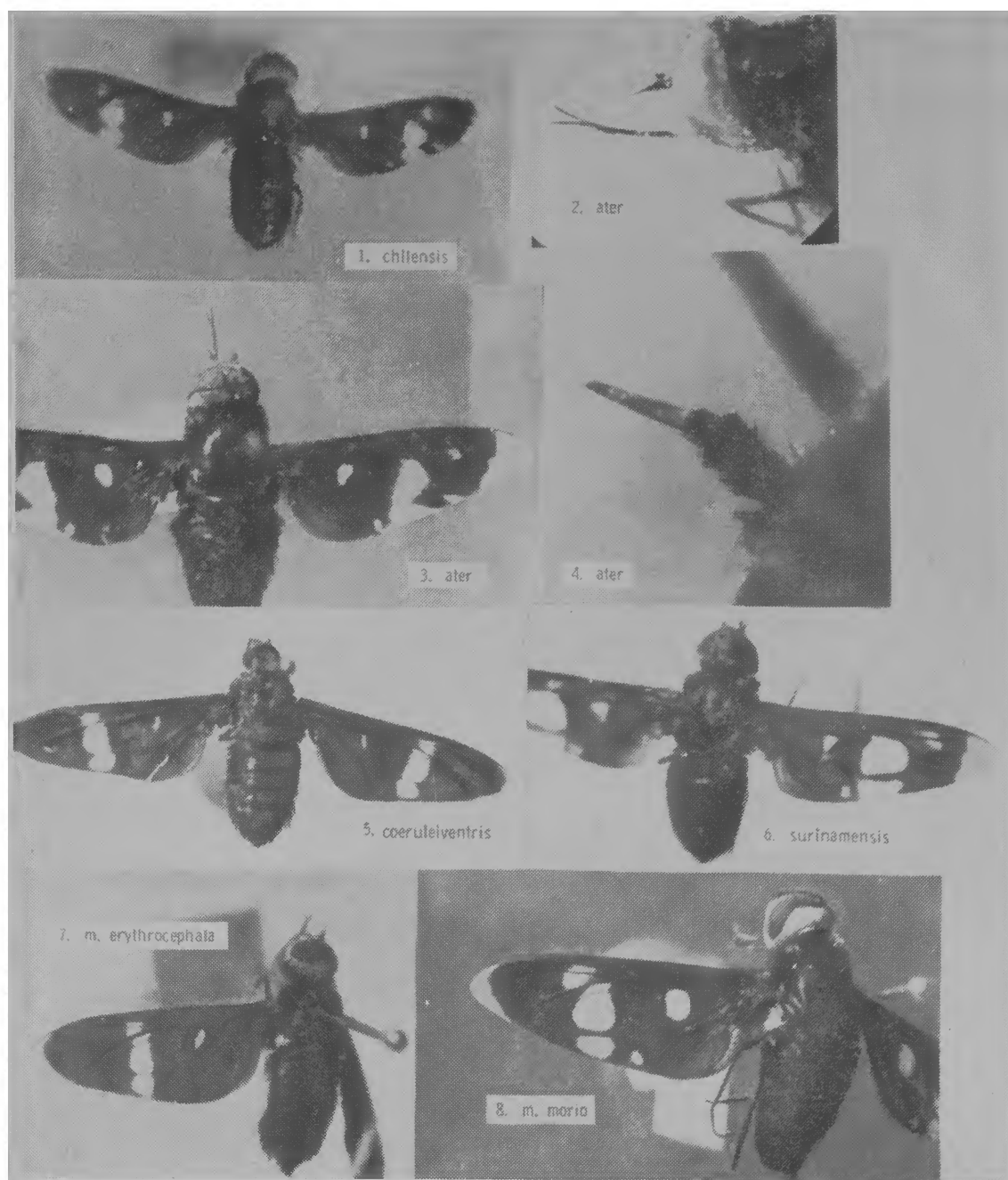


Plate 1: 1, *Hyperalonia chilensis* Rondani, type male; 2, *ater*, sp. n., type, head; 3, *ater*, sp. n., type male; 4, *ater*, sp. n., type, antennae (tip broken); 5, *coeruleiventris* (Macquart) type female, synonym of *m. erythrocephala* (Fabricius); 6, *surinamensis* Rondani, type male; 7, *morio erythrocephala* (Fabricius), type female; 8, *morio morio* (Fabricius), typical specimen.

Papéis Avulsos de Zoologia

PAPÉIS AVULSOS ZOOL. S. PAULO, VOL. 22, ART. 13: 123-144, pls. 1-3 1.IV.1969

ON A LARGE AND SURPRISING SAMPLE OF *CALLISCINCOPUS AGILIS* FROM BRASIL, WITH THE INVALIDATION OF THE GENUS (SAURIA, TEIIDAE)

P. E. VANZOLINI
REGINA REBOUÇAS-SPIEKER

ABSTRACT

A large sample of this rare teiid obtained in Oriximiná, State of Pará, differs from other materials in body proportions and scale counts. Sex ratio at birth differs from that of the adult population; rates of survival, growth and gonadal maturation differ in males and females. There is apparent evidence that the number of body scales may increase with growth. There is no competition for food with *Cnemidophorus lemniscatus*, the only ground lizard of comparable size found in the locality in large numbers. A study of variation is presented, and the genus *Calliscincopus* is shown to be a synonym of *Tretioscincus*.

In January, 1967, one of us (PEV) obtained in the town of Oriximiná, on the lower Rio Trombetas, State of Pará, Brasil, more than 200 specimens of the hitherto rare teiid *Calliscincopus agilis* Ruthven, 1916, all collected by children in about 3 days. Previous field work in the locality, during the dry season (September and October) had failed to produce any specimens; in January, at the beginning of the heavy rains, the animal was extremely frequent in perianthropic environments, such as leafpalm walls of huts, empty lots, backyards, rubbish piles, etc.

We started this work with the intention of gathering data on the variation of a large, geographically homogeneous sample, to serve as criteria in the study of a group where seldom more than 1 or 2 specimens are available per locality. However, we found many interesting aspects, some of them quite puzzling, and must acknowledge that more questions are raised than solved. This in itself is a worthwhile result, as it brings out how deceptive is the apparent simplicity of differentiation patterns of rare species.

While working on the species we had our attention called to its generic position, and came to the conclusion that *Calliscincopus* is a synonym of *Tretioscincus*.

MATERIALS AND METHODS

The materials reported upon in this paper were collected by the "Expedição Permanente da Amazônia, EPA" (Permanent Ex-

Departamento de Zoologia, Secretaria da Agricultura, São Paulo.

pedition to Amazonia), jointly maintained by this Departamento, the Museu Paraense "Emílio Goeldi", the Instituto Nacional de Pesquisas da Amazonia (INPA) and the Fundação de Amparo à Pesquisa do Estado de São Paulo.

We had 212 specimens, but used in this paper only the 199 for which all characters under study could be unambiguously checked.

As comparative materials we had one female (DZSP 8503) in our collection, from the Tiriós Indian village in northern Pará, near the Surinam border, plus published data on 4 males, i.e. the type and paratype of the species, from Dunoon, Guyana, and the types of two synonyms, *Tretioscincus romani* Andersson, from Manaus, and *Tretioscincus brasiliensis* Müller, from the lower Tocantins. The consideration of these specimens showed that the Oriximiná sample is a very peculiar one. Given the fact that the other specimens agree very closely and represent a very broad geographical area (Map 1), encompassing Oriximiná from three sides, we found it unnecessary to secure further specimens to broaden our inductive basis.

The statistical methods here used can be conveniently found in Mather (1965) and Siegel (1956); attention is called to chapter 3 of the latter book on choice of methods. Some of our tables present grouped data; these are included only for illustration, all computations having been made on unreduced data. Computations were usually carried one decimal further than shown in the text or tables.

The contents of the alimentary tract were identified by Hans Reichardt, and Persio de Biasi, of this Department. We gratefully acknowledge their help. Dr. E. E. Williams has criticized the manuscript.

***Tretioscincus agilis* (Ruthven, 1916)**

(Plates 1-3)

Calliscincopus agilis Ruthven, 1916: 2. Dunoon, Guyana.

Tretioscincus romani Andersson, 1918: 5. Manaus.

Tretioscincus brasiliensis Müller, 1923: 55. Lower Tocantins.

Rostral distinctly visible from above. Internasal very large, in contact with the rostral, the nasals, the loreals, the prefrontals and the frontal. Prefrontals from small to large, from distinctly separated to almost in contact. Frontal variable, elongate, in contact with the internasal, the prefrontals, the first pair of supraoculars and the frontoparietals. Supraoculars two, the first much larger. Superciliaries two or three. Fronto-parietals divergent. Parietal small to large, more or less shield- or diamond-shaped. Occipital small. Nasal elongate, undivided; nostril very large, near the lower margin. Loreal high. One post-loreal, which might be called preocular or first infraocular. Five supralabials to the level of the posterior margin of the eye, then 2 or 3 scales resembling the temporals, which grade into the body scales. Symphyisial broad; post-symphyisial with arched anterior margin. Three pairs of large chin-shields, in contact on the midline, the sutures forming

a zig-zag. Anterior and middle gulars slightly enlarged. Four infralabials to the level of the posterior margin of the eye.

Dorsals large, smooth, very broad in the neck; at times submucronate on the sacral region, weakly but distinctly keeled.

Ventrals similar to dorsals. Pectorals 5 or 7, the central one diamond-shaped.

Preanal plate with one antero-median and one postero-median scale, and 2 or 4 laterals, forming a semicircle. Innermost preanal pore in contact with the anterior medial preanal.

Dorsal, anterior and posterior scales of the arm approximately isodiametric; one row of granules on the ventral aspect. Dorsal scales of the forearm very large, the remainder like those of the arm. Large scales on the dorsum of hand and fingers; palm granular. Four fingers, clawed, length in the following order: II and V, III, IV.

Hind limb with quincuncial keeled scales on the dorsal, smooth on the ventral aspect. Plantar surface with high granules, almost spiny. Five toes, clawed, length in the following order: I, II, V, III, IV.

Proximal portion of tail with keeled scales dorsally, smooth ventrally.

COLOR IN LIFE IN THE ORIXIMINÁ SAMPLE

Dorsum brown, getting lighter posteriorly. In each scale the keel and a line parallel to the hind margin are lighter.

One continuous light (tending to flesh-colored) line from the rostral through the canthus, the temporal edge and the sides of the body to the anterior fifth of the tail.

Flanks and dorsal aspect of the limbs a deep, warm brown.

Ventral parts reticulate, darker or lighter: general ground color whitish, with fine, dense punctuations in the middle of the scales, especially those adjacent to the brown area on the flank. Rosy metallic reflections on the throat, greenish elsewhere.

Intact tail proximally dark brown, distally deep blue. Regenerated portions of tail a lighter blue.

VARIATION IN SHAPE AND RELATIONSHIPS OF SCALES IN THE ORIXIMINÁ SAMPLE

The topological and morphological features of head and body scales are a major tool in lizard taxonomy; their usefulness depends essentially on an adequate knowledge of variability and, above the species level, on an estimation of their significance in indicating evolutionary patterns. In the microteiids much attention has been paid to the presence or absence of individual head scales and to their contacts. The prefrontals have attracted especial attention, but recently have been shown to be less important than formerly believed (Vanzolini, 1961; Thomas, 1965, 1965a).

The number and relationships of the head scales are remarkably constant in this sample. There is, however, a certain degree of variability in the shape and size of the scales of the top of the head (Plate 3).

The prefrontals never meet on the midline, in the Oriximiná sample. This is a character used to diagnose the genus *Calliscopeus*. There is, however, great variation in this region. The anterior margin of the frontal, whose shape depends on the width

of the prefrontals, varies from practically straight to wavy and in a few cases forms an angle, open backwards. In two specimens the prefrontals almost but not quite meet on the midline. In one specimen the right prefrontal does not meet the internasal.

The shape of the frontal and of the ensemble of frontoparietals and parietal varies much. In one case the frontal, in another the parietal, are transversely divided. In one specimen there is an extra scale on each side of the parietal.

The scale that is currently called the occipital (as we do for convenience in this paper) is not really a head scale. It is a remnant of the vertebral row of small scales clearly seen, for instance, in *Gymnophthalmus speciosus*, and, already beginning to get disorganized, in *Tretioscincus bifasciatus* (Plate 1); this row has been suppressed by the considerable enlargement of the anterior median dorsals seen in *Tretioscincus agilis* and, to a larger degree still, in *Iphisa elegans*. The contact of this scale with the parietal is very variable.

The lateral and ventral norms of the head present practically no variability, even in the number of labials.

The dorsals are usually smooth, but, in a dozen or so specimens the scales of the posterior fifth of the trunk are submucronate and have a weak but quite evident keel.

INVALIDATION OF CALLISCINCOPUS

This species was described as new three times within 7 years. Ruthven's description of *Calliscincopus agilis* was published in 1916, Andersson's of *Tretioscincus romani* in 1918 and Müller's of *T. brasiliensis* in 1923. Judging from their comments, the two latter authors were completely unaware of Ruthven's work, and of each other's.

To Andersson and Müller, *agilis* was a good and unmistakable *Tretioscincus*, and they compared it with *T. bifasciatus* and *T. laevicauda* Cope, now a *Gymnophthalmus* and known to them only through the original description.

Ruthven clearly recognized the relationships of his new form with *Tretioscincus bifasciatus* and *Iphisa elegans*. He says (1916:4): "Remarks: This form is near the genera *Iphisa* and *Tretioscincus*. It differs from both of these genera in having small and widely separated praefrontals and a semidivided nasal, from *Tretioscincus* also in having relatively larger scales on the dorsal region of the neck and a larger frontal and frontonasal, and from *Iphisa* in having subequal dorsal scales on the body and ventral surface and a small number of femoral pores. On the whole it seems to be nearest to *Tretioscincus* and it bears a superficial resemblance to *Tretioscincus bifasciatus* Dum."

The three forms seem to be really related within the assemblage of the microteiids with quincuncially arranged round scales. The eyelids and ear opening are well developed; the digits are slender and elongate; the body scales are "scincoid", and there is little difference between dorsals and ventrals; there has been no loss of head scales; sex dimorphism in preanal pores is complete, only the males having them.

Iphisa elegans (Plate 1) shows one very characteristic feature, which sets it apart from the others, at least as far as externals

go; the head scales are well differentiated from the body scales, and have linear non-imbricating sutures. This character is strong enough to preclude any decisions on generic allocation without recourse to anatomical and other additional data.

On the other hand, the differences between *Tretioscincus bifasciatus* and *Calliscincopus agilis* are rather trivial, and offset by some very striking resemblances, i.e.: (i) there is complete agreement in shape of body scales, in spite of the almost complete absence of keeling in *agilis*; (ii) the posterior head scales tend to resemble body scales, several of them having a free hind margin; (iii) the pectoral scales are practically identical; (iv) the series of preanal pores is shortened (in *Iphisa* it occupies the whole thigh); (v) the scalation of the gular region and that of the sides of the head are extremely alike.

To us, these characters show that both forms are on the same evolutionary lineage, and we are inclined to give special weight to the condition of the posterior head scales. On the contrary, none of the differences between *bifasciatus* and *agilis* can be said to indicate marked evolutionary divergence. The main ones — dorsals keeled against unkeeled (not a complete difference either), and prefrontals meeting against separated — are too trivial to deserve comment.

It would seem that *Calliscincopus* has survived for so long as a separate genus only because of its rarity in collections.

BIOMETRY OF THE ORIXIMINÁ SAMPLE

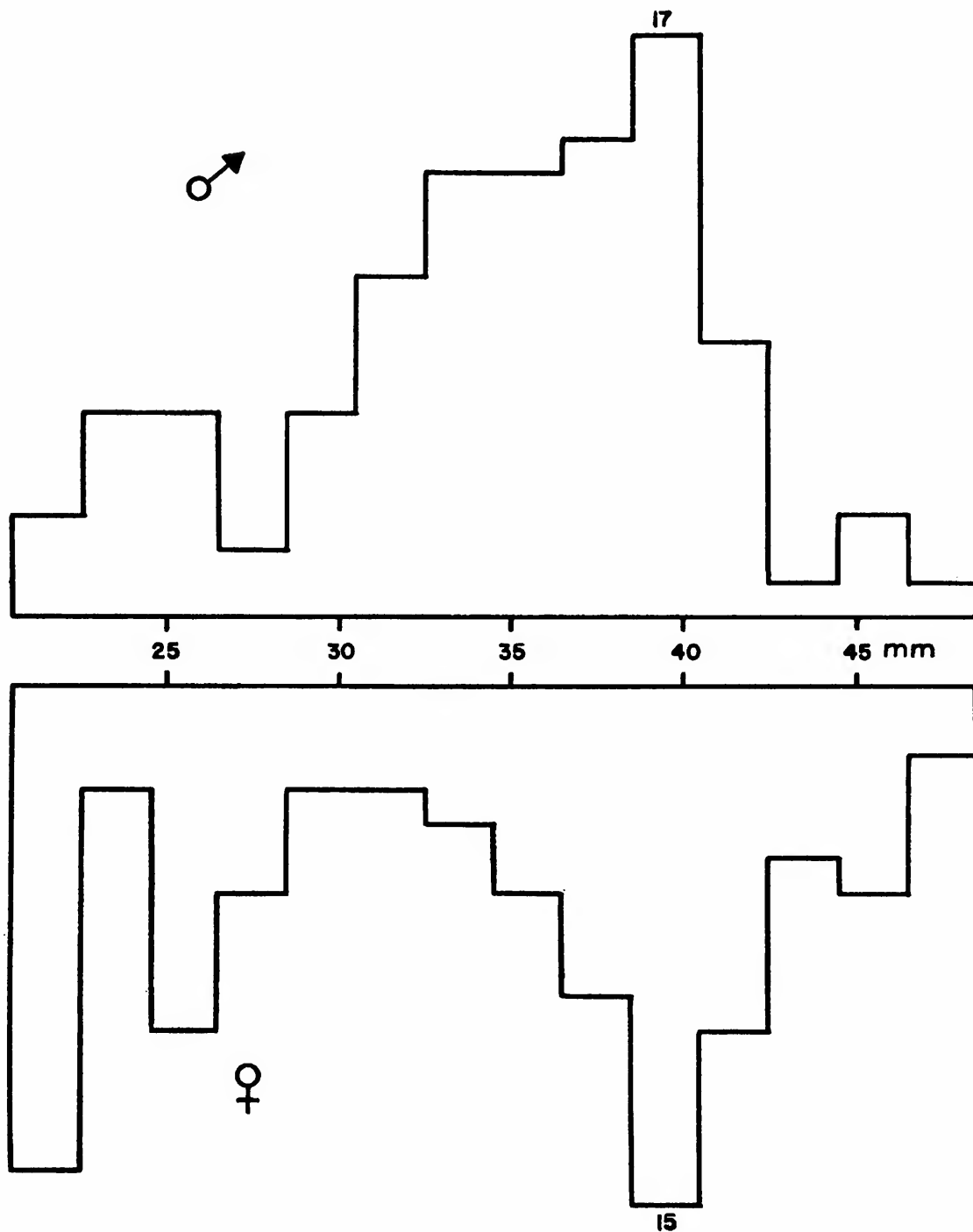
BODY LENGTH AND SEXUAL MATURITY

A simple inspection of the distribution of the rostro-anal length (Table 1, Graph 1) shows a marked difference between males and females; the computed chi square (39.342 with 26 degrees of freedom) is significant at the 5% level. It is quite apparent that

Table 1

Body length, males and females

Length	♂	♀
21 - 22	3	14
23 - 24	6	3
25 - 26	6	10
27 - 28	2	6
29 - 30	6	3
31 - 32	10	3
33 - 34	13	4
35 - 36	13	6
37 - 38	14	9
39 - 40	17	15
41 - 42	8	10
43 - 44	1	5
45 - 46	3	6
47 - 48	1	2
	103	96



Graph 1, histograms of body length.

the female distribution is bimodal, the left member being strongly skew and the right member symmetrical. The male distribution may be considered either unimodal, and very skew or, more probably, also bimodal, with a small left member and a large skew right member.

A first explanation of this marked sexual difference would be the presence of many mistakes in ascertaining the sex of the very small specimens. Sexing was done on the basis of the presence of femoral pores, of which males have 4 or 5 on each side and the females none; if pores were absent or very inconspicuous in small males, these would be considered as females, biasing the distributions. However, we found no indication that the appearance of the pores is related to size (= age), and they were always quite evident in the juveniles identified as males. Thus we reject this hypothesis, and prefer to believe that the sex ratio at birth differs from that of the adults, and that the sexes differ in growth rate. Thus the body size scale has a different temporal meaning for each sex, equality being reached at termination of growth. In other words, the two "valleys" between the left and right members of the bimodal curves, although displaced on the axis, correspond to the same moment in time, the difference disappearing by the time both modes (and right extremes) are reached.

At this point we took into account the data of our Tiriós female and of the published specimens. Three of the body lengths available are: Tiriós 57 mm; Ruthven's type 55.5 mm; Müller's type 58 mm. It is obvious that these body lengths are definitely outside the range of the Oriximiná sample.

This immediately raised the possibility that we were dealing with a sample of juveniles. So we dissected a number of specimens (Table 2), beginning with large males and females. The males had very large testes, some visibly congested; the females had oviducal eggs. In all females but one two eggs were present, the left one posterior to the right. In one case the only egg present was the right, but situated as far posteriorly as the left would be if present, indicating that one egg had already been laid.

Table 2

State of the gonads in dissected specimens (distribution of frequencies)

Body length	Testes		Body length	Eggs	
	—	+		f	O
26	2		30	1	
29	-	2	31	2	
30	1	1	33	1	
31	-	1	34	2	1
32	2	1	38		1
33		2	39		1
35		3	42		2
36		1			
38		1			
39		1			

Testes: —, undeveloped; +, well developed. Eggs: f, follicular only; O, oviducal.

After deciding that breeding specimens were present in the sample, we dissected successively smaller specimens, trying to find the approximate minimum body length at which reproduction occurs. In specimens in the body length range from 26 to 32 mm the testes were either large, 2.5-3.0 mm long, or very small, .5-1.0 mm long; no intermediates were found. We call the large testes "developed" (+) in table 2, and the small ones "undeveloped" (—); males 33 mm long and above had developed testes (2.5 to 5 mm). Females to 33 mm had no oviducal eggs; 1 of 34 mm had well developed eggs, 2 others did not; above this length all had ripe eggs.

Males then mature at a shorter body length than females; this difference is roughly parallel to that between the valleys of the body length histograms. Accepting that maturation of both sexes must be synchronous, we have a confirmation of the hypothesis offered above for the difference in shape of the histograms, that the growth rates of the sexes differ.

More important, we see that the right member of each histogram corresponds to an adult, reproducing population, whose body size is considerably (almost 20%) inferior to that of specimens from other areas.

This fact may be interpreted in two ways. One is that we have here a dwarf population. The other is that the real body length distribution has at least one more mode to the right of the observed ones (Graph 1) and that this age class is absent in the Oriximiná sample, either undetected on account of peculiar ecological preferences or actually absent due to some catastrophe in previous years.

The second hypothesis was tested during a second visit to Oriximiná, in January, 1968. The rains were late this time, and the collection assembled was not as large as that made in 1967 (12 specimens in 3 days), but the size distribution of the new sample was about the same as that reported here. Thus we believe the Oriximiná population to be a dwarf one.

SCALE COUNTS

We counted the number of: (i) dorsal scales between the occipital and the level of the hind margin of the thigh; (ii) ventral scales between the pectorals and the anterior median preanal plate; (iii) longitudinal scale rows at midbody; (iv) femoral pores.

The first two characters showed variability and will be discussed below; midbody scale rows were in all our specimens, as in those in the literature, 16; femoral pores, always symmetrical, were either 4/4 or 5/5 (Table 3). Ruthven's and Müller's specimens had 4/4; Andersson's 5/5.

Table 3
Number of femoral pores

Pores	N	p	I
4/4	24	.233	.158 — .332
5/5	79	.767	.668 — .842

103

N, number of individuals; p, percentage;
I, confidence interval, binomial, 95%, of p.

RELATIONSHIPS BETWEEN SCALE COUNTS AND BODY LENGTH

Large samples containing numerous juveniles are especially favorable to the study of the selective value of meristic characters. The presence in the young of extreme scale counts, not found in adults, obviously means that the individuals presenting these counts do not reach adulthood, an evidence of selection at work. Another possibility that must be checked whenever feasible, is that of an increase in meristic characters with growth. The number of scales is thought to be related to the number of somites, and should be constant throughout life; on the basis, usually implicit, of this assumption, indiscriminate use is made in herpetological practice of juveniles in descriptions and comparisons.

In Tables 4 to 8 are presented the data on dorsal and ventral scales. Tables 4 to 6 (dorsals in males and females, ventrals in males) are closely similar and very clear: the lowest scale count class never includes very large specimens, and the highest classes do not contain small specimens. In all 3 cases Spearman's coefficient of rank correlation is significant at the .05 level (Table 8). In table 7 (ventrals in females) the correlation is not significant, but the distribution is consistent with the others.

On one side the presence of positive regression between body length and number of scales, and on the other the absence of juveniles with high scale counts, tend to indicate that there is addition of scales during life. We have not been able, however, to find indications of the appearance of intercalary scales in our specimens.

Table 4

Number of dorsal scales x body length, males

Length	Scale rows				
	29	30	31	32	33
21 - 22		1	2		3
23 - 24	2	1	3		6
25 - 26	-	4	2		6
27 - 28	1	1	-		2
29 - 30	1	2	2	1	6
31 - 32	2	4	4	-	10
33 - 34	-	4	9	1	14
35 - 36	-	3	5	4	1
37 - 38	-	4	8	1	13
39 - 40	1	6	7	3	17
41 - 42		3	4	1	8
43 - 44		1	-	-	1
45 - 46			2	1	3
47 - 48			1		1
	7	34	49	12	1
					103

Table 5

Number of dorsal scales x body length, females

Scale rows						
Length	30	31	32	33	34	
21 – 22	3	6	5			14
23 – 24	-	1	2			3
25 – 26	1	5	4			10
27 – 28	-	4	2			6
29 – 30	-	2	1			3
31 – 32	-	1	2			3
33 – 34	1	-	3			4
35 – 36	-	3	2	1		6
37 – 38	-	3	5	1		9
39 – 40	4	3	3	4	1	15
41 – 42	-	3	6	1		10
43 – 44	1	1	3	-		5
45 – 46		2	1	3		6
47 – 48			2			2
	10	34	41	10	1	96

Table 6

Number of ventral scales x body length, males

Scale rows						
Length	17	18	19	20	21	
21 – 22		1	2			3
23 – 24	1	1	2	2		6
25 – 26	-	3	3	-		6
27 – 28	-	2	-	-		2
29 – 30	-	2	3	1		6
31 – 32	1	5	4	-		10
33 – 34	4	-	6	3		13
35 – 36	-	4	3	5	1	13
37 – 38	1	2	8	3	-	14
39 – 40		4	9	2	2	17
41 – 42		1	5	2		8
43 – 44		-	-	1		1
45 – 46		1	1	1		3
47 – 48				1		1
	7	26	46	21	3	103

Table 7

Number of ventral scales x body length, females

Scale rows

Length	18	19	20	21	22	
21-22	1	5	5	3		14
23-24		1	2	-		3
25-26		2	3	3	2	10
27-28		1	4	1	-	6
29-30		-	2	1	-	3
31-32		1	1	1	-	3
33-34		1	2	1	-	4
35-36		1	3	1	1	6
37-38		-	5	4	-	9
39-40		3	5	6	1	15
41-42		3	2	4	1	10
43-44		1	3	1		5
45-46		1	2	3		6
47-48		1	1			2
	1	21	40	29	5	96

Table 8

Data on rank correlations of scale counts x body length

Scales	Sex	r_s	t	df
Dorsals	♂	.2197	2.263	101
	♀	.2829	2.860	94
Ventrals	♂	.2577	2.654	101
	♀	-.1660	1.632	94

r_s , Spearman's coefficient of rank correlation; t, Student's to test the significance of r_s ; df, degrees of freedom.

In the case of femoral pores association was tested by means of the median test and found not significant ($X^2 = .974$ with 1 degree of freedom).

SEXUAL DIFFERENCES

Both in number of dorsals and ventrals the females have approximately one more scale than the males (Tables 9 and 10), the differences being significant at the .001 level.

Table 9

Number of dorsal and ventral scales, sexes compared

	Dorsals			Ventrals	
	♂	♀		♂	♀
29	7	-	17	1	-
30	34	10	18	26	1
31	49	34	19	46	21
32	12	41	20	21	40
33	1	10	21	3	29
34	-	1	22	-	5
	103	96		103	96

Table 10

Number of dorsal and ventral scales, data on the frequency distributions, males and females

		N	R	M	V	t
Ventrals	♂	103	29-33	30.67 $\pm$.0809	2.64	7.542
	♀	96	30-34	31.56 $\pm$.0856	2.71	
Dorsals	♂	103	17-21	18.87 $\pm$.0836	4.43	10.744
	♀	96	18-22	20.17 $\pm$.0884	4.30	

N, number of individuals; R, range; M, mean $\pm$ its standard deviation; V, coefficient of variability; t, Student's for difference between means.

NUMBER OF DORSALS AND VENTRALS IN OTHER LOCALITIES

The three males for which counts are available in the literature have 26 (2 specimens) and 27 dorsals. Two of them are large animals (no data on Andersson's), and these counts are significantly lower than ours. Our Tiriós female, also a large specimen, has 27 dorsals and 16 ventrals, again significantly below the Oriximiná sample.

These differences cannot be attributed to differences in body size and clearly indicate the presence of geographical variation in the species, giving greater strength to the hypothesis that the Oriximiná sample represents a variant population.

ASSOCIATION BETWEEN CHARACTERS

All meristic characters studied were found statistically independent.

Table 11

Data on regressions

		N	R _x	b	a	r ²
Tail *	♂	12	23 - 37	2.54 ± .254	- 22.65 ± 8.22	.909
	♀	14	21 - 42	2.01 ± .075	- 13.44 ± 2.33	.983
Tail **	♂	12	23 - 37	174.52 ± 15.93	- 203.33 ± 12.93	.923
	♀	14	21 - 42	140.16 ± 22.20	- 158.34 ± 8.04	.982
Head *	♂	103	15 - 38	.134 ± .0168	4.51 ± .45	.386
	♀	96	14 - 39	.148 ± .0113	3.65 ± .31	.648

* linear regression ** log-arith regression; N, number of individuals; R_x, range of the independent variable; b, regression coefficient and its standard deviation; a, regression constant and its standard deviation; r², square of the correlation coefficient.

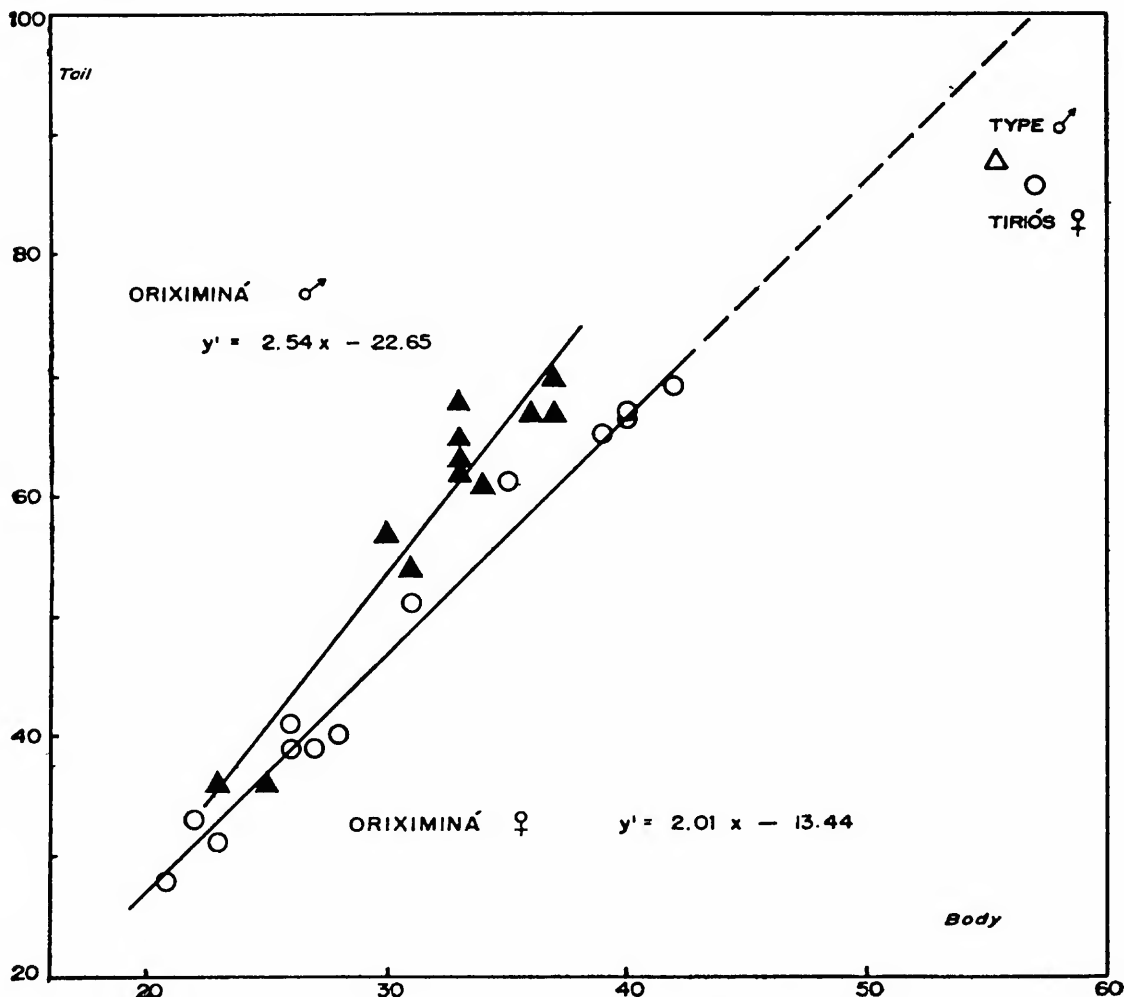
TAIL LENGTH

The tail of this lizard is fragile, and autotomy frequent. Of the 199 specimens included in this study 52 had regenerated tails (26.1 per cent, interval of confidence, at the 95% level, 21.6 to 34.7); no sexual difference was found (32 males, 20 females). Many other specimens had tails recently broken in nature, or by the children who collected them, or during preparation and transportation to S. Paulo. So we have measured only 26 intact tails (Table 11, Graphs 2 and 3).

A first study of the regression of tail length on body length showed that a linear regression describes quite well the relationship in both sexes. Table 10 shows that body length explains 98.3 per cent of the variance of tail length in females and 90.0 per cent in males (as measured by r², the square of the correlation coefficient). A routine fitting of a second degree to the data showed exactly no improvement for the females and a very small, non-significant, improvement for the males.

It was noticed, however, that the tail length of the large Tiriós female falls short of the extrapolated Oriximiná linear regression; it has 86 instead of the computed 101.1 mm (Graph 2). A still larger difference (88 instead of 118 mm) is found for Ruthven's type. Before ascribing these differences to geographical differentiation, and especially considering that extrapolation of regression lines beyond the observed range of the independent variate is never safe, we tried several anamorphoses. It was found (Table 11, Graph 3) that regression of tail length on the logarithm of body length (log-arith), while neither improving nor worsening the fit of the Oriximiná sample of females (r² = .982 against a previous .983), furnished a line that, upon extrapolation, came very close (87.8 mm) to the 86 mm tail length of the Tiriós female (not included in the regression).

Fitting a log-arith regression to the males showed, as it had been the case with the second degree parabola, a slight but not significant improvement of the fit ($r^2 = .923$ against a previous $.909$). However, this anamorphosis does not bring the type in line with the Oriximiná males — it falls almost exactly on the female regression.



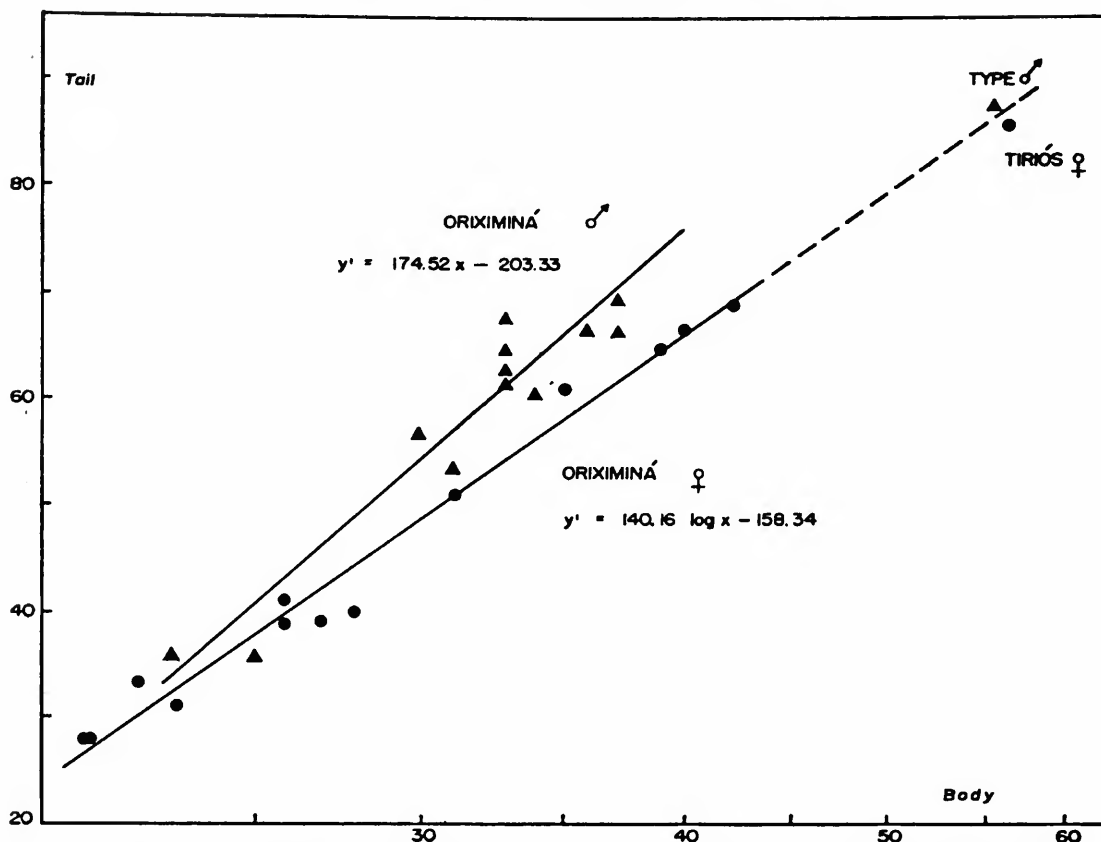
Graph 2: regression of tail length on body length.

These facts cannot be thoroughly explored and understood on the basis of present materials. They show, however, once more, the peculiarity of the Oriximiná sample.

It is obvious from graphs 2 and 3 that males have relatively longer tails, and that the difference tends to increase with body growth. In fact the difference between the regression coefficients is significant at the 5% level ($t = 2.306$ for 22 degrees of freedom).

HEAD

Head length, from the tip of the snout to the anterior margin of the ear, was measured to the nearest millimeter, which is rather gross measurement, but sufficient in the present case, given the large sample available. It is shown against trunk length (body minus head) in Tables 11, 12 and 13; because of the large number



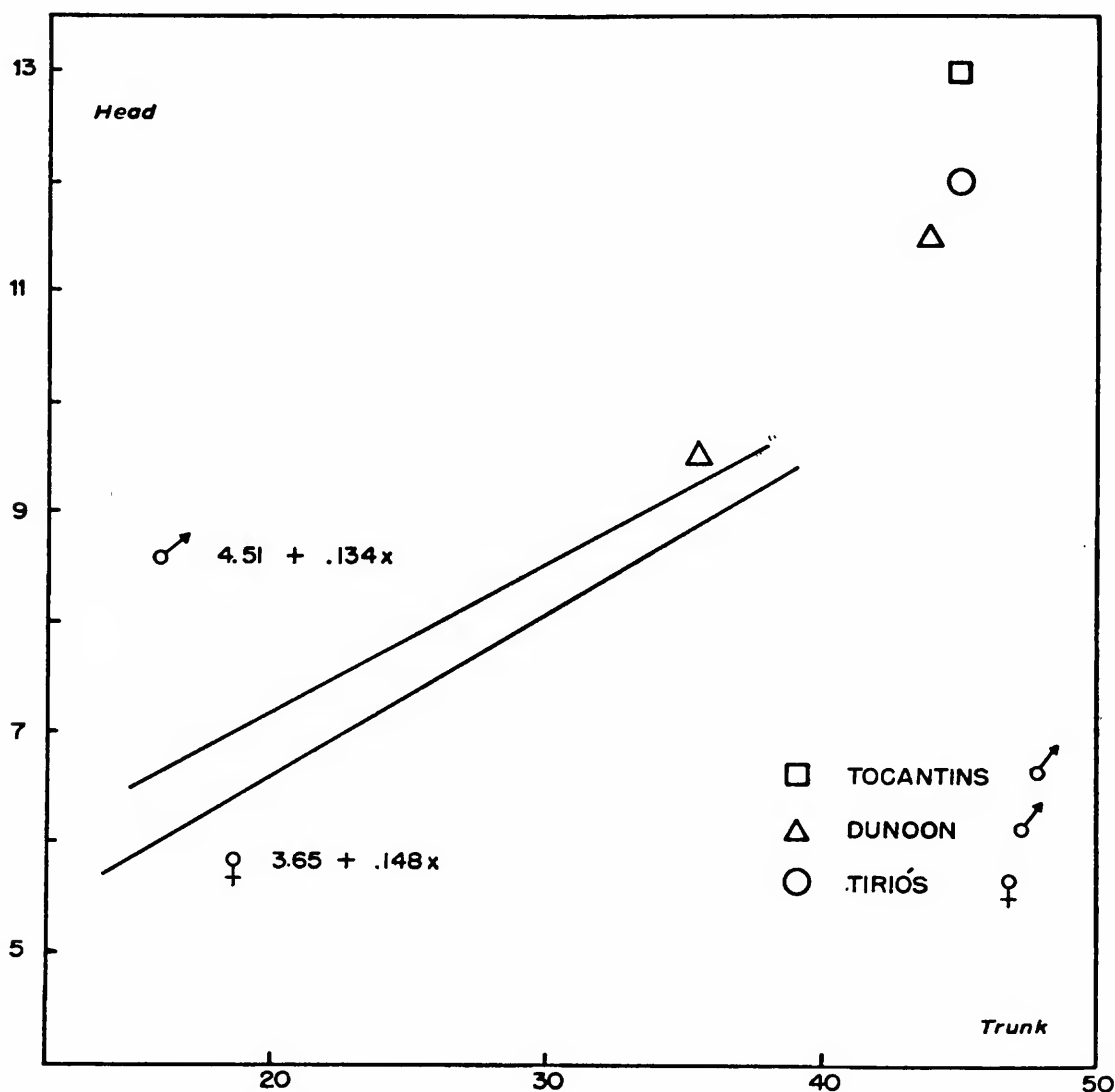
Graph 3: regression of tail length on logarithm of body length.

of specimens with the same trunk and head length, the tables portray better the regression than graphs would. The regressions are linear, but by no means as good as those of the tail length. Furthermore, the males are strikingly more variable; their trunk length explains only 39 per cent of the head length, against 65 per cent for the females.

Table 12
Head length on trunk length, males

	Head					
Trunk	5	6	7	8	9	10
15 – 16	1	2	3			
17 – 18		4	-			
19 – 20		3	2	1		
21 – 22		1	2	3		
23 – 24			2	4		
25 – 26			6	6	6	1
27 – 28			3	3	7	1
29 – 30			1	9	5	4
31 – 32			2	6	2	3
33 – 34			1	2	2	1
35 – 36				-	-	1
37 – 38					3	

The male regression line (Graph 4) is above the female line; the latter has a higher regression coefficient. Within the observed range of trunk lengths the difference between regression coefficients is not significant, but that of position, taken a joint regression coefficient, is highly so.



Graph 4: regression of head length on trunk length.

If we plot on the Oriximiná graph the extralimital specimens, we have a curious picture: (i) the Dunoon paratype falls in very well with the Oriximiná males; (ii) all other specimens (the large ones) are much above the Oriximiná lines, and we found no anamorphosis that could bring them in line. In spite of the situation of the smaller Dunoon specimen, it is very probable that Oriximiná regressions (based as they are on such large samples) really differ from the remainder. Even if they do not and the curves show a sharp bend upwards for trunk lengths above 40 mm, it is

Table 13
Head length on trunk length, females

Trunk	Head					
	5	6	7	8	9	10
14-15		3	3			
16-17	4	5	-			
18-19	-	5	3			
20-21	2	3	3			
22-23		2	2	3		
24-25			1	1		
26-27			2	2	1	
28-29			3	5	4	
30-31			-	8	5	
32-33			2	5	5	
34-35				1	2	2
36-37				2	3	2
38-39				2		

indisputable that the relative head length of the specimens from Oriximiná (or in their size range) is smaller than that of the large specimens.

COMMENTS

We do not intend to analyse at this time the geographical differentiation of *Tretioscincus agilis*, but some striking features of the Oriximiná sample must be considered.

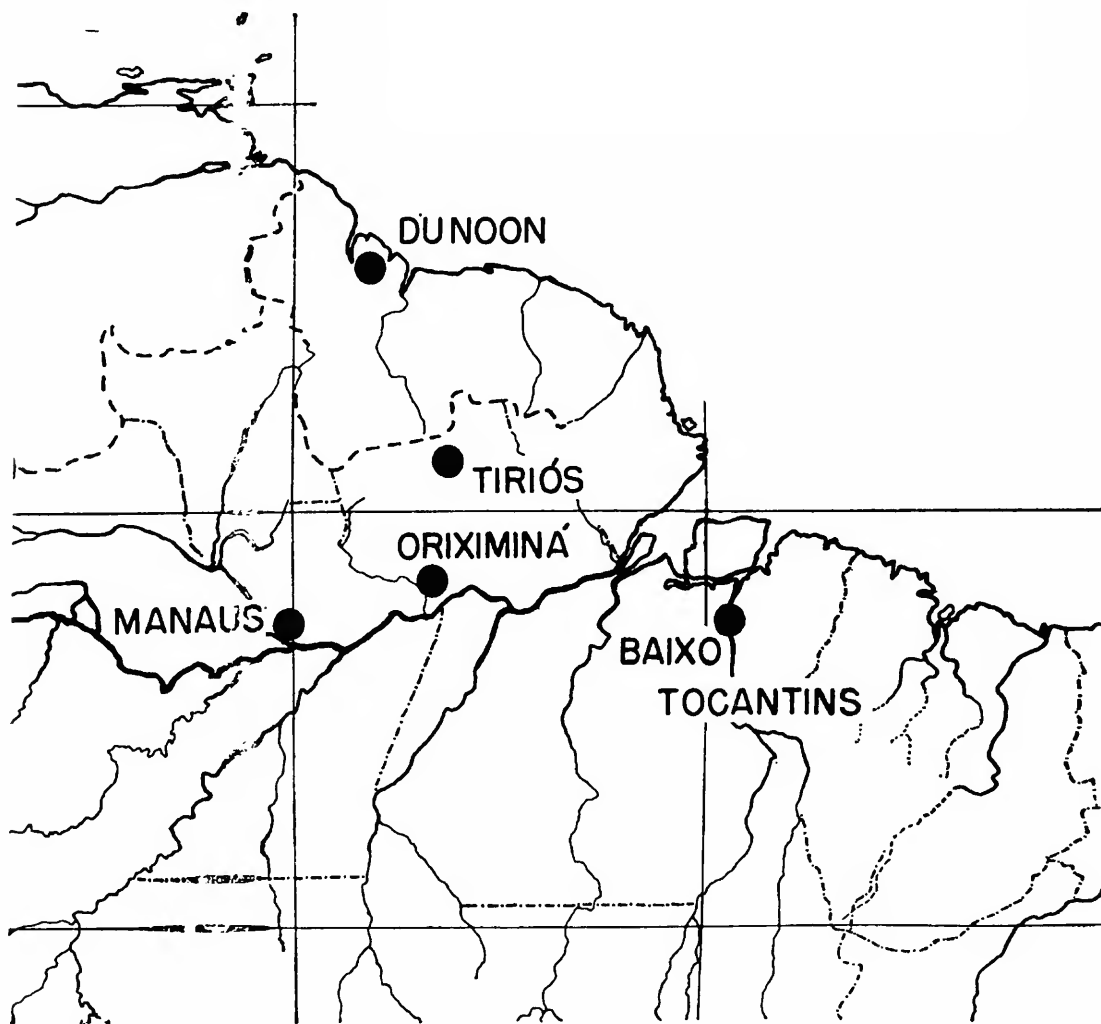
First, there is the matter of the relatively enormous abundance at the place and time of collecting. Then come the reduced body size and the difference in number of scales, dorsals and ventrals, and in relative head and tail length.

Scarcity of a species in collections may be due to many different causes, acting individually or concurrently. Lack of intensive collecting by professionals, restricted range, short season of activity, unawareness of the correct habitat, etc. In the present case, the fact that reasonably intensive collecting for 2 months in the same area, but in a different season, had produced no specimens (with practically the same children helping both times) indicates that the general difficulty in collecting this lizard may often have been due to unfavorability of the season. But this cannot be the case consistently for a species with such a large range, some parts of which have been extensively, if somewhat randomly, collected. "Blooms" of the animal should have been detected before if they were geographically widespread. The fact that they have not supports the idea that the situation in Oriximiná is special.

Looking at the geography of the case (Map 1), Oriximiná is seen to be neatly bracketed by the 4 localities from which we have

data. Thus if we have here a sample with significantly lower body length, it is very probable that the population represented is an enclave — the area of which only further collecting can ascertain. It is unavoidable to bring all these facts together and propose the hypothesis that a dwarfish population of *T. agilis* has found, on account of the nanism itself, either a much less strongly occupied niche than the standard-size populations, or a better protected one against predators, and has been able thus to increase its numbers and, in doing so, differentiated in other characters.

The environmental feature most directly related to body length, in the range of size of these lizards, is size of prey (Rand, 1967). That this could be the efficient selective agent here is enhanced by the fact that the diminution in body size of the Oriximiná sample is compounded by the small relative head size. This is an attractive hypothesis, but we have nothing to offer in its support.



Map 1: localities cited in the text.

Only one ground lizard occurs in the Oriximiná area, competition with which could have caused the displacement of the body size of *T. agilis*. It is the very common *Cnemidophorus lemniscatus*, of which at the time a good series was obtained. We examined the contents of the alimentary tract of 25 *T. agilis* and 41 *C. lemniscatus*.

The *Cnemidophorus* sample was divided into 3 sub-samples: body length 33-50 mm, 51-60 mm and 61-73 mm. The first group corresponds to Oriximiná, and the second to non-Oriximiná *agilis*. The large specimens are considered separately because young and adult *Cnemidophorus* do not forage together; when they meet the small specimen may be eaten. In this sample there was one small *Cnemidophorus* in the stomach of a 73 mm specimen and a piece of tail in the stomach of another measuring 67 mm.

We have no detailed field records of habitat preference of *Cnemidophorus* in Oriximiná, but some older observations of ours made in Bahia are quite conclusive: the adults were abundant in the tall grass and scrub, while the young kept to the very sparse grass and were always running for cover, never stopping to look around and wave the forefoot as the adult is fond of doing.

Before preparing tables 14 and 15, which summarize the comparisons, we tested each sample internally for possible differences due to size or sex. No relevant ones were found.

In Table 14 we give the number of food items, taxonomically classified; the relative frequency (%) is taken over the total number of food items for the sample.

Table 15 shows the number of individual lizards in which each prey category was found; the percentages are over the number of lizards in the sample with identifiable food in the alimentary tract. This table complements table 14 in that it permits to identify cases where the fortuitous presence of a large number of a certain item in one or two specimens may weigh unduly. The differences in quality of prey that exist among the *Cnemidophorus* subsamples are irrelevant to this argument, as they concern types of prey not found in *T. agilis*.

The differences between *T. agilis* and *C. lemniscatus* are so striking that no analysis is needed beyond inspection of the tables. The main food of *agilis*, spiders, is present in small amounts in *Cnemidophorus*. Roaches, termites and isopods, which constitute 40% of *agilis* diet are not found in *lemniscatus*. And beetles, the only type of food with heavy presence in *Cnemidophorus* (50%), are absent in the contents of *agilis*.

Additionally, a certain number of spiders could be identified to family or genus. In table 16 they are classified in 3 groups as to ecological preferences: A, in leaf litter, under logs and similar environments; B, broad preferences; C, in vegetation. Group A occurs only in the alimentary tract of *T. agilis*, and group C only in that of *C. lemniscatus*.

Table 14

Absolute and relative frequency of food items of *T. agilis* and *C. lemniscatus*

Prey	<i>T. agilis</i>		<i>Cnemidophorus lemniscatus</i>					
	f	%	33-50 mm		51-60 mm		61-73 mm	
	f	%	f	%	f	%	f	%
Arachnida	26	35.6	2	3.4	3	8.8	3	4.7
Isopoda	9	12.3	-	-	-	-	-	-
Blattaria	12	16.4	-	-	-	-	-	-
Isoptera	9	12.3	-	-	-	-	-	-
Orthoptera	9	12.3	3	5.1	-	-	6	9.4
Homoptera	-	-	8	13.6	-	-	1	1.6
Lepidoptera, imagos	-	-	1	1.7	1	2.9	2	3.1
larvae	1	1.4	-	-	1	2.9	3	4.7
Coleoptera, imagos	-	-	34	57.6	17	50.0	30	46.8
larvae	1	1.4	3	5.1	-	-	4	6.2
Formicidae, winged	2	2.7	-	-	7	20.6	-	-
not	-	-	6	10.2	1	2.9	3	4.7
Apoidea	-	-	-	-	1	2.9	6	9.4
Diptera	2	2.7	1	1.7	3	8.8	-	-
Others	2*	2.7	1**	1.7	-	-	6***	9.4
Total	73		59		34		64	

* Thysanura (1), Psocidae (1). ** Psocidae (1). *** Chilopoda (1), Hemiptera (2), Odonata (1), Sauria (2).

Table 15

Occurrence of prey per lizard, *T. agilis* and *C. lemniscatus*

Number of lizards Prey	<i>T. agilis</i>		<i>Cnemidophorus lemniscatus</i>					
			33-50 mm		51-60 mm		61-73 mm	
	25		33		8		20	
Arachnida	14	56.0	2	15.4	1	12.5	1	5.0
Isopoda	4	16.0	-	-	-	-	-	-
Blattaria	11	44.0	-	-	-	-	-	-
Isoptera	5	20.0	-	-	-	-	-	-
Orthoptera	8	32.0	3	23.1	-	-	5	25.0
Homoptera	-	-	1	7.7	-	-	1	5.0
Lepidoptera, imagos	-	-	1	7.7	1	12.5	1	5.0
larvae	1	4.0	-	-	1	12.5	3	15.0
Coleoptera, imagos	-	-	8	61.5	7	87.5	14	70.0
larvae	1	4.0	1	7.7	-	-	1	5.0
Formicidae, winged	1	4.0	-	-	1	12.5	-	-
not	-	-	3	23.1	1	12.5	3	15.0
Apoidea	-	-	-	-	1	12.5	4	20.0
Diptera	2	8.0	1	7.7	3	37.5	-	-

Table 16

Occurrence of identifiable spiders, *T. agilis* and *C. lemniscatus*

Ecology	Spiders	<i>T.</i>	<i>C.</i>
		<i>agilis</i>	<i>lemniscatus</i>
A	Eusparassidae (<i>Heteropa</i> sp.)	1	
	Clubionidae (<i>Castanieira</i> sp.)	2	
	Ctenidae	1	
	Linyphiidae	4	
B	Lycosidae	2	2
	Salticidae	5	3
	Sicariidae	2	
C	Argiopidae		2
	Theridiidae		1
	Thomisidae		2
	Pisauridae		1

It is obvious from these data that *T. agilis* searches for its prey under things, and *C. lemniscatus*, of all ages, in the open. Then it is not avoidance of competition for food with *C. lemniscatus* that has caused the dwarfism of Oriximiná *T. agilis*.

E. E. Williams (*in litt.*) has suggested that *T. agilis* may occupy in Oriximiná a niche which is differently occupied elsewhere. This possibility remains to be verified by further field work in the region, but so far there are no indications that this is the case, as there is no ground lizard frequent in other localities and obviously missing in Oriximiná. Thus we have here a dwarf population which cannot readily be explained with recourse to the most usual selective mechanisms, beyond the broad one of adaptation to perianthropic environments.

REFERENCES

ANDERSSON, L. G.

- 1918: New lizards from South America collected by Nils Holmgren and A. Roman. *Ark. Zool. Stockholm* 11 (16): 9 pp.

MATHER, K.

- 1965: *Statistical analysis in biology*. 267 pp. London: Methuen (University Paperbacks reprint of the fourth edition, 1951).

MÜLLER, L.

- 1923: Neue oder seltene Reptilien und Batrachier der Zoologischen Sammlung des bayr. Staates. *Zool. Anz.* 57 (3/4): 49-61.

RAND, A. S.

- 1967: Ecology and social organization in the iguanid lizard *Anolis lineatopus*. *Proc. U.S. Nat. Mus.* 122 (3595): 79 pp.

RUTHVEN, A.

- 1916: Description of a new genus and species of lizard from British Guiana. *Occ. Papers Mus. Zool. Univ. Michigan* 22: 4 pp.

SIEGEL, S.

- 1956: *Nonparametric statistics for the behavioral sciences*. xvii+312 pp. New York, Toronto and London: McGraw-Hill.

THOMAS, R.

- 1965: A new species of *Bachia* (Sauria:Teiidae) from Brazil. *Herpetologica* 21 (1): 18-22.
- 1965a: The smaller teiid lizards (*Gymnophthalmus* and *Bachia*) of the southeastern Caribbean. *Proc. Biol. Soc. Washington* 78: 141-154.

VANZOLINI, P. E.

- 1961: *Bachia*: espécies brasileiras e conceito genérico (Sauria, Teiidae). *Papéis Avulsos Dep. Zool. S. Paulo* 14: 193-209.

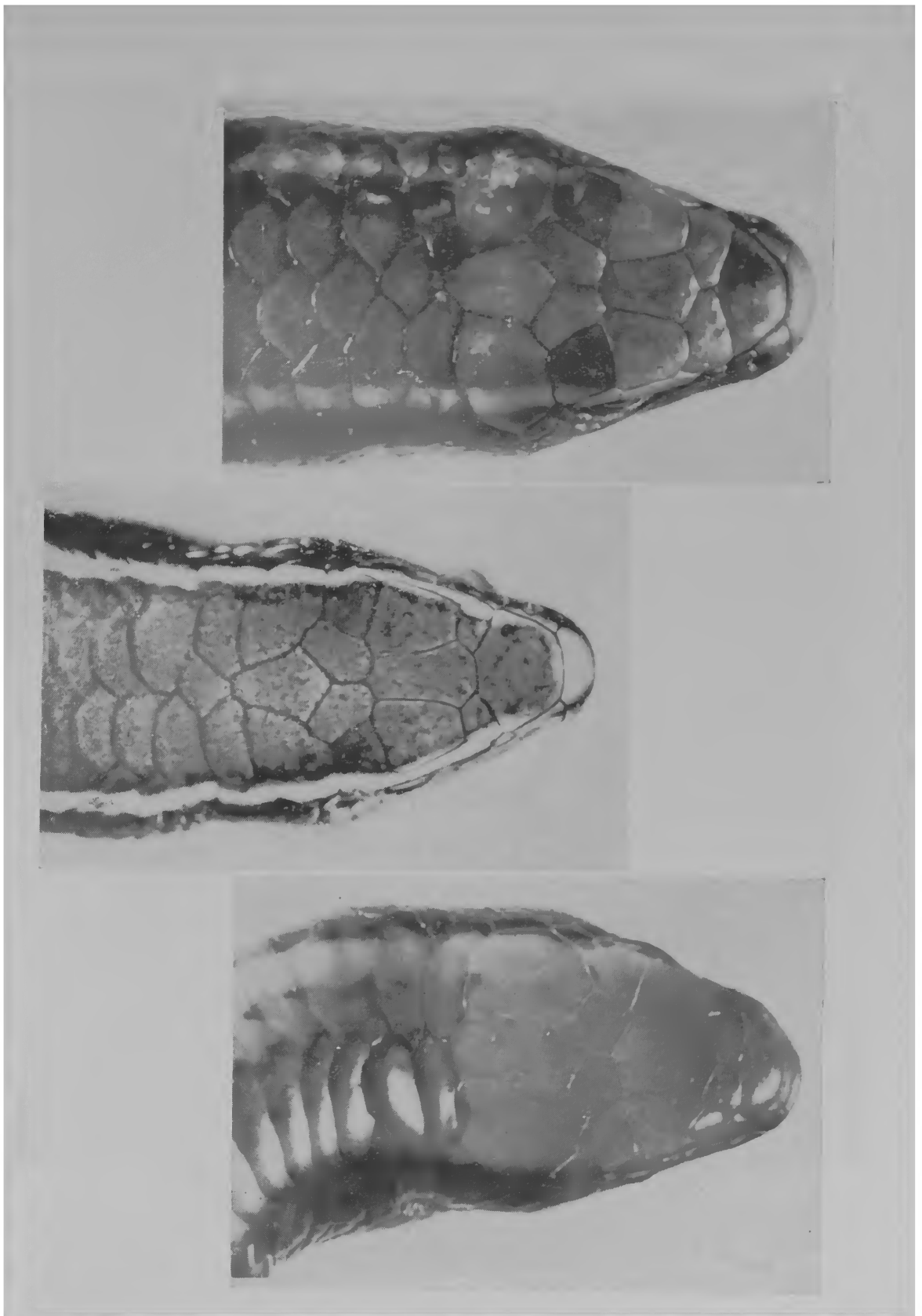


Plate 1. *Tretioscincus b. bifasciatus*, DZSP 2057, Sierra Nevada de Santa Marta, Colombia. *Tretioscincus agilis*, DZSP 12449, Oriximiná, Pará. *Iphisa elegans*, DZSP 8354, Amazonas.

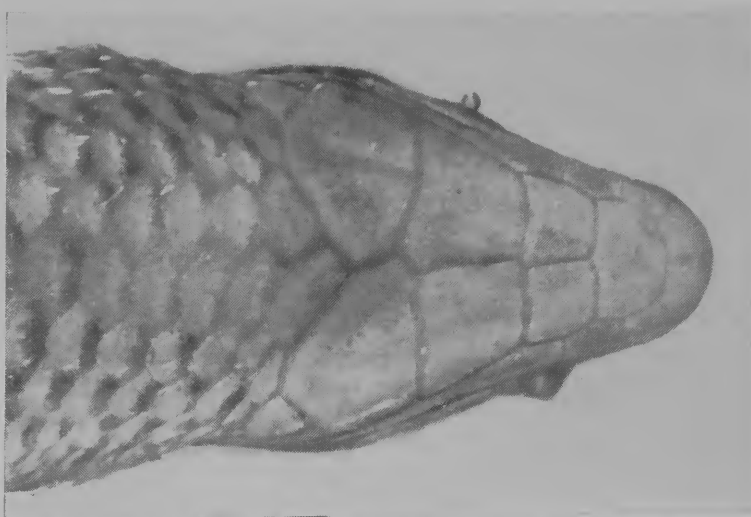
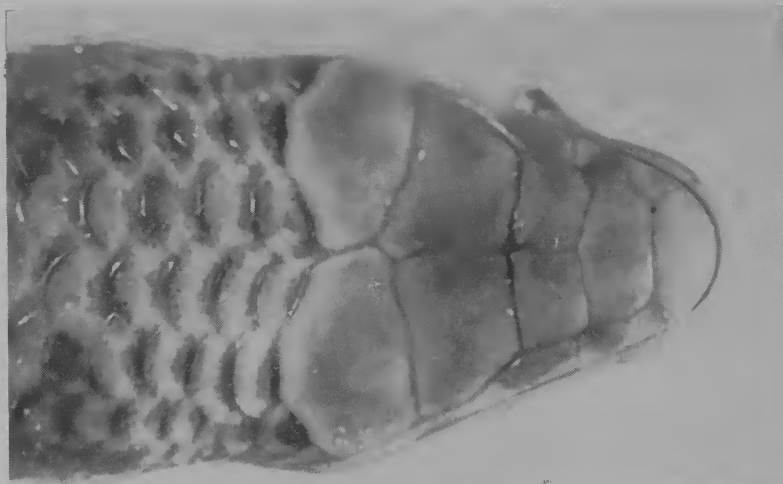


Plate 2. *Tretioscincus b. bifasciatus*, DZSP 2057, Sierra Nevada de Santa Marta, Colombia. *Tretioscincus agilis*, DZSP 12449, Oriximiná, Pará. *Iphisa elegans*, DZSP 8354, Manaus Amazonas.

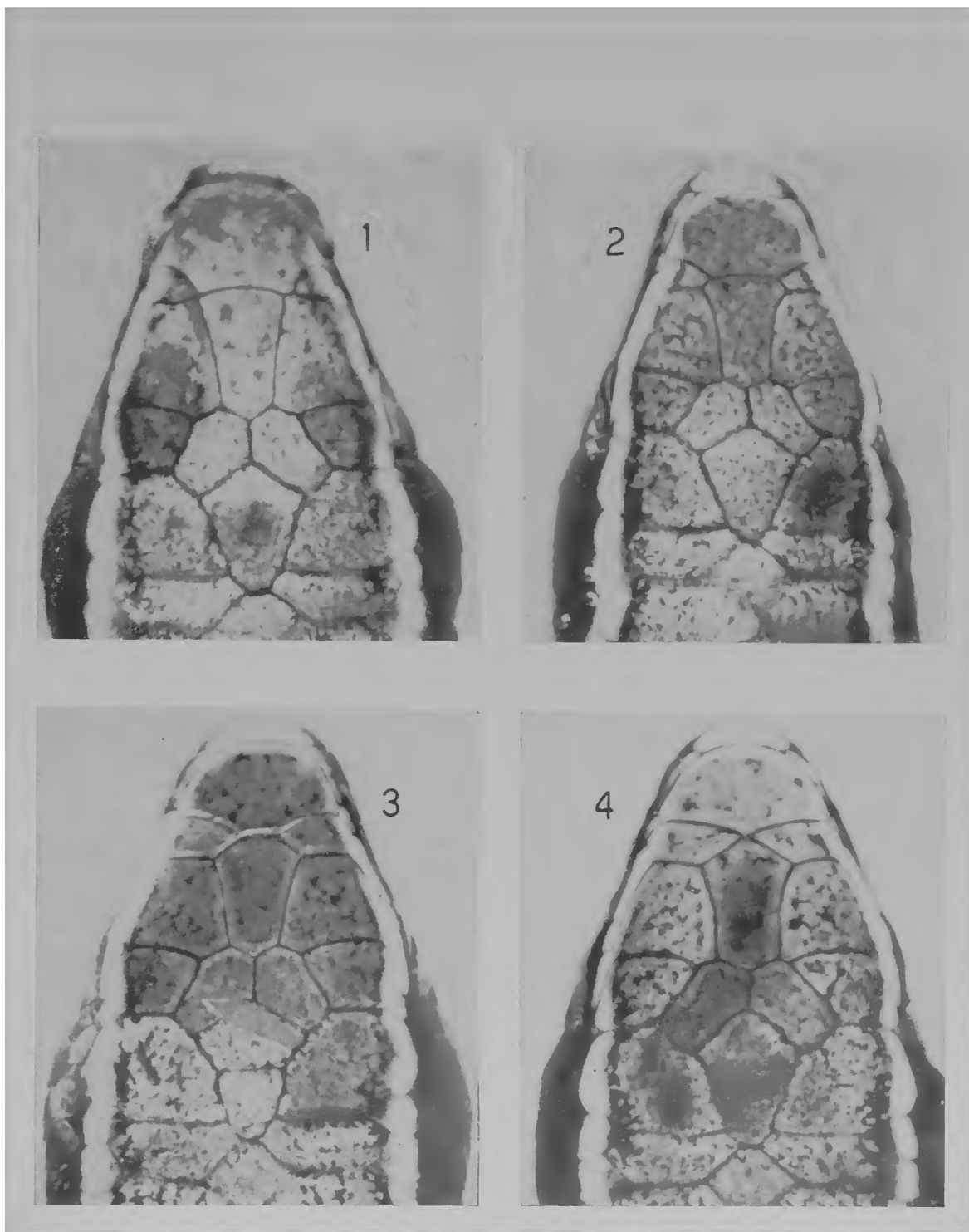


Plate 3. *Tretioscincus agilis*, Oriximiná, Pará. 1, DZSP 12383, prefrontals widely separated, one not meeting the frontal. 2, DZSP 12385, intermediate condition. 3, DZSP 12453, prefrontals large, parietal transversely divided. 4, DZSP 12393, prefrontals very large, almost meeting on the midline.

Papéis Avulsos de Zoologia

PAPÉIS AVULSOS ZOOL. S. PAULO, VOL. 22, ART. 14: 145-151, pls. 1-11 1.IV.1969

ELECTRON MICROSCOPE OBSERVATIONS ON HONEYBEE SEMINAL VESICLES (*APIS MELLIFERA ADANSONII*, HYMENOPTERA, APIDAE)

CARMINDA DA CRUZ-LANDIM¹

MARIA ALICE DA CRUZ HÖFLING²

ABSTRACT

A comparison was made between the seminal vesicles of adult males and late pupae of *Apis mellifera adansonii*. Differences were found in the epithelium, musculature, and membranous tunic.

INTRODUCTION

The seminal vesicle of the honeybee is a simple dilation of the vas deferens, where the spermatozoa are retained until copulation.

The walls are formed by three layers. The epithelium is made up of tall and narrow cells, covered by an inner sheath of circular muscle fibers, and by an outer sheath of longitudinal fibers. There is also an external membranous tunic. In the seminal vesicles, the spermatozoa have their heads embedded in the epithelium, where it was thought they attain their final form (Snodgrass, 1956).

The only work we know on the ultrastructure of seminal vesicles of insects is Bawa's (1966) on the epithelium of *Thermobia domestica*. Work on vertebrates (Deane & Porter, 1960; Deane, 1962; Dangelo & Munger, 1964; Deane & Wurzelmann, 1965) is only partly comparable to that of invertebrates.

This paper is the first of a series of reports on aspects of the ultrastructure of the organs involved in the storage and maturation of sperm.

MATERIALS AND METHODS

Seminal vesicles were obtained from pupae ready to emerge and from mature adults of *Apis mellifera adansonii* Latreille. The

Supported by Fundação de Amparo à Pesquisa do Estado de São Paulo, Conselho Nacional de Pesquisas and Rockefeller Foundation.

1. Departamento de Biologia Geral, Faculdade de Filosofia, Ciências e Letras, Rio Claro, SP.

2. Present address: Departamento de Histologia e Embriologia, Faculdade de Medicina, Universidade de Campinas, Campinas, SP.

animals were anesthetized by freezing, and the organs removed and placed in saline. Specimens were fixed immediately in phosphate-buffered 1% OsO_4 (Millonig, 1964), phosphate-buffered 1% OsO_4 with glucose (Caufield, 1957) and phosphate-buffered 3% glutaraldehyde followed by post fixation in 1% OsO_4 in the same buffer (Sabatini, Bensc & Barnett, 1963). After fixation the organs were quickly dehydrated in acetone and embedded in Epon. Blocks were sectioned with glass knives on a MT2 Ported Blun ultramicrotome.

Sections were double-stained with uranyl acetate (Watson, 1958) and lead citrate (Reynolds, 1963), and examined in a Siemens Elmiskop I Microscope, at the Section of Virology, Instituto Agromônico, Campinas, thanks to the courtesy of Drs. Alvaro Santos Costa and Elliot W. Kitajima.

Light micrographs of 7 μ paraffin sections of the seminal vesicles have been used to study the overall organization within the organ. The material was then fixed in Bouin's fluid and sections stained with Delafields's hematoxylin and eosin.

RESULTS

The results will be described by structure rather than by age of specimens, to avoid repetition.

WHOLE ORGAN STRUCTURE

In the pupa each seminal vesicle consists of a slightly curved tube composed of the same layers described by Snodgrass (1956) for adults. In the adults seen the organ was dilated by the presence of spermatozoa inside it.

Figure 1 shows a longitudinal section of a seminal vesicle from an adult. One can see that the epithelium is much folded internally. In the younger animals, the folds were even more conspicuous due to the absence of spermatozoa. The cells are tall and very narrow; accordingly, the nuclei are elongated, crowded and pushed to different levels, so that the epithelium seems to be of the pseudostratified type. In the adults the spermatozoa crowded in the lumen distend the walls and push the cells against the basal membrane, resulting in a single columnar rather than a pseudostratified arrangement.

The cytoplasm of the epithelial cells is more basophilic in the pupa than in the adult. The outer fibrous membrane of the organ is also thicker in the pupa.

CYTOLOGY OF THE EPITHELIUM

The epithelial cells of the seminal vesicles are very tall, columnar in shape, almost filiform (fig. 2). In the pupae, they were on the average 30 μ high and 2.5-3 μ wide; in the adults, respectively 20 μ and 3.5-4 μ wide. They typically bulge somewhat into the lumen, the apical membrane forming crowded, long microvilli; these are longer (1-1.5 μ) and more crowded in the pupa than

in the adult, where they are short and irregularly spaced. The microvilli generally have a dense filament within (fig. 6). The lateral margins of the cells show slight undulations and some interdigitations, more easily seen in cross or oblique section through the epithelium (fig. 6). In the adult, intercellular spaces are also frequent. The apical portions of the cell are tightly bound together by broad, dense, junctional complexes (figs. 2, 4 and 8) that are entirely typical of the terminal bars found in most mammalian columnar epithelia (Farquhar & Palade, 1963). Although the resolution of micrographs 2 and 8 does not permit identification of the layers of membranes, there is a *zonula occludens* and an underlying *zonula adherens*, which can be seen in figure 5 (cross section). In the rest of the lateral margins there are septate desmosomes (Wood, 1959).

The epithelial cells of the seminal vesicles display prominent membrane infoldings, very elaborate on the basal side (figs. 2 and 7). A thicker basal lamina (700 m μ) of lower density to the electrons is always present.

In pupal cells the electron density of the cytoplasm (figs. 2 and 3) is low, as compared to that of the adult (figs. 8 and 9), because of the absence of electron-dense structures.

The endoplasmic reticulum is not greatly developed even in pupal cells. Only scattered, short lengths of ergastoplasm are found in sections. These membranes associated with ribosomes occupy a very small proportion of the cell volume, chiefly around the nuclei. The greater basophilly of the pupal cells seems to be due to the clusters of ribosomes scattered in the cytoplasm. In the adult this type of ribosome almost disappears and most ribosomes appear attached to membranes. Thus, even if cell basophilly is lower in the adult, the development of the ergastoplasm in the cells is practically the same as in the pupae.

The Golgi complex (fig. 7), located around the nucleus, appears only in pupal cells, where it is small and undistended. We have never seen unequivocal enlargement of the Golgi vesicles or granule formation in the Golgi zone.

The epithelial cells show fairly abundant mitochondria. These organelles are slender and quite long (exceeding 2 μ in length) in the apical part of the cell (fig. 2), and are more rounded basally, where they are encircled by the plasma membrane infoldings (fig. 7). However, a typical association between the plasma membrane infoldings and the mitochondria has not been seen. The apical border is richer in mitochondria than the rest of the cell, and the cells of adults are richer in these organelles than those of the pupae. Opaque granules within the mitochondria are very uncommon in the younger specimens, but very frequent in adults (figs. 10 and 11). Some of the mitochondria that contain granules become greatly enlarged (fig. 11); those occur preferably in the basal portion of the epithelial cell, although they may also be found on the apical side.

The nuclei are large and ovoid-spherical in shape, depending on age. Generally they tend to be spherical in the adult. In all specimens the nucleus, cut on the appropriate plane, shows one or more nucleoli.

The epithelial cells in both pupa and adult show a few segments of microtubules (figs. 4 and 6). Apparently there is not a preferential location or orientation of these structures. Some multivesicular bodies are also seen in the pupal cells. They are absent in the adult.

No granules were found which could be interpreted as secretory material; however, in adults, the apical border frequently forms bubbles that later become free in the lumen. These bubbles were also seen, but less frequently, in the pupae. On the other hand, in the cytoplasm, above the nucleus, enormous vesicles appear, filled with a low density material which could be a secretory product (fig. 10). Small vesicles also appear but there is no evidence that they would, by fusion, originate the large ones. Structures very frequent in the adult cells are bodies made up of concentric arrays of membranes (fig. 9). These organelles, if they may be so called, were described by Gabe & Arvy (1961) as parasomes.

Figure 25 is a diagrammatic representation of the seminal vesicle epithelium, showing the principal differences between adult and pupa.

MUSCULATURE

The musculature of the seminal vesicle is striated and arranged in two layers, one inner, circular and one outer, longitudinal. The muscle fibers are characterized by the length of the sarcomeres, about $6\ \mu$ from Z line to Z line. In the preparations the bands are not well set off (figs. 12 and 13), but it was possible to ascertain that band A was $5\ \mu$ long. Figure 13 shows a muscle fiber sectioned at the Z line level. Miofilaments within a given fiber may not be parallel (fig. 12) but this condition is very rare. Sarcomeres (mitochondria) are small and scarce, scattered in the sarcoplasm, among the bundles of miofibrils. The endoplasmic reticulum is also poorly developed and the ribosomes appear free in the sarcoplasm. Adjacent fibers may come into contact at certain point by projection of the sarcolemma (fig. 3); it was impossible to make sure whether there is a real connection or a simple contact. The intercellular spaces are crossed by wavy filaments (fig. 13, 14 and 15), perhaps belonging to the intercellular substances. This musculature is innervated, and frequently sections of axons are found among the muscle fibers (fig. 15); however, actual connection between muscle and axon was not seen. The muscle shows the same features in pupa and adult, with the exception that the former has more ribosomes.

FIBROUS MEMBRANE

The fibrous membrane is built of flat cells belonging to the fat body or to the haemolymph. In the pupa these cells are more rounded, rich in glycogen (fig. 16) and have also a few lipidic droplets. In the adult the cells are remarkably different. The lipidic drops are still present, and in some cases in larger numbers; besides this, there appears a membrane made of peripheral granules

with a dense peripheral zone (fig. 17). These granules vary in size ($0.5-3\ \mu$), as does the thickness of the dense peripheral zone. They are very similar to the granules usually described for serous glandular cells. Another interesting feature is the abundance of microtubules in these cells (figs. 18 and 19). The microtubules are also present in the pupa but in the adult they seem to be more numerous. They form bundles (fig. 19) and, although they are not parallel, in the same cells cross and longitudinal sections of them never appear simultaneously. They are frequently found parallel to the modified and greatly elongated mitochondria (fig. 18).

DISCUSSION

Several points of this report seem to deserve comment.

In broad outline, the maturation of the seminal vesicle epithelium follows the expected pattern, but there are many gaps in the morphological sequence. The immature cell contains an abundance of polyribosomes but only a little endoplasmic reticulum and a small Golgi zone. The adult cells exhibit a decrease in polyribosome content, practically the only ribosomes remaining being those attached to the reticulum membrane. This fact is consistent with the evidence for the action of the polyribosomes as a messenger RNA; indeed such ribosomal aggregates must occur in great numbers before secretory activity begins.

Although it is to be expected that the cells of the seminal vesicles produce some proteic secretion, typical development of the ergastoplasm and enlargement of the Golgi saccules have never been seen. In the pupa the Golgi apparatus appears in a pre-secretory stage; in the adult it has already disappeared. Only in a few cases it was possible to see small vesicles in the Golgi zone; thus secretory granules were not seen. The only product that could be considered as secretion was that within the vesicles in figure 10. It must be said, here, that the fixation of this epithelium was very difficult, and that the best preparations were obtained with Caufield's fixative, which contains sucrose. According to Deane (1962) fixation of rat seminal vesicle epithelium is also difficult, and improved by sucrose. This may be due to the nature of the secretory products. In many species of vertebrates the epithelium secretes fructose, which serves as a nutrient for the spermatozoa. The presence of fructose within the cells would cause an increased intake of water from a hypotonic solution of fixative (Deane, 1962). In spite of the seminal vesicles of bees being morphologically quite different from those of the rat, their secretion has the same function, the nutrition of the spermatozoa during a phase of their life. The absence of secretory granules in the epithelium of the seminal vesicle of bees could be explained by admitting that it secretes fructose. Otherwise, in some glandular cells of bees (Cruz-Landim, 1968 and Cruz-Landim & Camargo, in press), the secretory products are so fluid that they do not form granules or vesicles, but deposits of low density in the cytoplasm; this may be the case here. Sucrose and protein eventually produced would go into the apical cytoplasm before being eliminated by bubbling through the apical membrane. This would also explain the little development of the Golgi apparatus. In this case the

resorption of the solute would occur by the microvilli (Cruz-Landim, 1967). Another fact in accordance with these hypotheses is the presence of mitochondria with dense granules in the matrix in the apical part of adult epithelial cells. It is known that these organules are specially prominent in tissues transporting large amounts of ions of water (Fawcett, 1966).

The parasomes are seen in the cells when debris must be resorbed; therefore, their presence in adult cells is taken as evidence of resorption.

The epithelial cells, as well as the peripheral ones, present a cytoskeleton of microtubules. It is known from the works of Du Praw (1965), Freed (1965), and Sandborn, Zeberenyi & Messier (1966), that they act in saltatory movements of the cytoplasm and in intracellular transport mechanisms. It seems that in the present case they perform similar functions.

Finally, the cells that form the fibrous membrane are structurally more related to the fat body than to the haemolymph. Probably they are not functionally linked to the seminal vesicle, but form only a sort of adventitia around the organ.

REFERENCES

BAWA, S. R.

- 1966: Epithelium of the male reproductive duct of an insect, *Thermobia domestica*. VI Intern. Congr. Electron Microscopy, p. 663.

CAUFIELD, J. B.

- 1957: Effects of varying the vehicle for OsO_4 in tissue fixation. *Journ. Biophys. Biochem. Cytol.* 3: 827-830.

CRUZ-LANDIM, C.

- 1968: Histoquímica e ultraestrutura das glândulas salivares das abelhas (Hymenoptera, Apoidea). *Arq. Zool. S. Paulo* 17 (3): 113-166, ests. 1-39, 4 figs.

CRUZ-LANDIM, C. & I. B. CAMARGO

- Light and Electron microscope studies on the mandibular gland of *Lestrimelitta limao* (Hymenoptera: Meliponinae). *Journ. Kansas Ent. Soc.* (in press).

DANGELO, J. G. & B. L. MUNGER

- 1964: The ultrastructure of the rat preputial gland. *Journ. Ultrastructure Research* 11: 230-245.

DEANE, H. W.

- 1962: Properties of the ergastoplasm of seminal vesicle epithelium. V. Intern. Congr. Electron Microscopy.

DEANE, H. W. & K. R. PORTER

- 1960: Response of the epithelium of mouse vesicular glands to altered levels of circulating androgen. I. Intern. Congr. Endocrinology, p. 971.

DEANE, H. W. & S. WURZELMANN

- 1965: Electron Microscopic observations on the post-natal differentiation of the seminal vesicle epithelium of the laboratory mouse. *Amer. Journ. Anat.* 117 (1): 91-134.

DUPRAW, E. J.

- 1965: The organization of Honey Bee embrionic cells. I. Microtubules and amoeboid activity. *Developm. Biol.* 12: 53-71.

FARQUHAR, M. G. & G. E. PALADE

- 1963: Functional complexes in various epithelia. *Journ. Cell Biol.* 17: 375-412.

FAWCETT, D. W.

- 1966: *An Atlas of fine structures. The cell, its organelles and inclusions.* W. B. Saunders Co., Philadelphia and London, V + 448 pp.

FREED, J. J.

- 1965: Microtubules and saltatory movements of cytoplasmic elements in cultured cells. *Journ. Biol.* 27: 29.

GABE, M. & L. ARVY

- 1961: *Gland cells.* In V. J. Brachet & A. E. Mirsky ed., *The Cell* 5: 1-88. Academic Press, New York.

MILLONIG, G.

- 1964: Studio sui fattori che determinamo la preservazione della ultrastruttura. In *From molecule to cell. Symposium on Electron Microscopy*, pp. 347-362, P. Buffa ed., Roma.

REYNOLDS, E. S.

- 1963: The use of lead citrate at high pH as electron opaque stain in electron microscopy. *Journ. Cell Biol.* 17: 208-212.

SABATINI, D. D., K. BENSCH & R. J. BARNETT

- 1963: Cytochemistry and Electron-microscopy. The preservation of cellular ultrastructure and enzymatic activity by aldehyde fixation. *Ibidem* 17: 19-58.

SANDBORN, E. B., A. ZEBERENYI & P. E. MESSIER

- 1966: Filaments, Microtubules and Membranes. *VI Intern. Congr. Electron Microscopy*, p. 409.

SNODGRASS, R. E.

- 1956: *Anatomy of the Honeybee.* XIV + 334 pp. Comstock Publishing Association, Ithaca, N.Y.

WATSON, M. L.

- 1958: Staining of tissue sections for electron microscopy with heavy metals. II. Application of solutions containing lead and barium. *Journ. Biophys. Biochem. Cytol.* 4: 427-729.

WOOD, R. G.

- 1959: Intercellular attachment in the epithelium of *Hydra* as revealed by electron microscopy. *Ibidem* 6: 343-351.

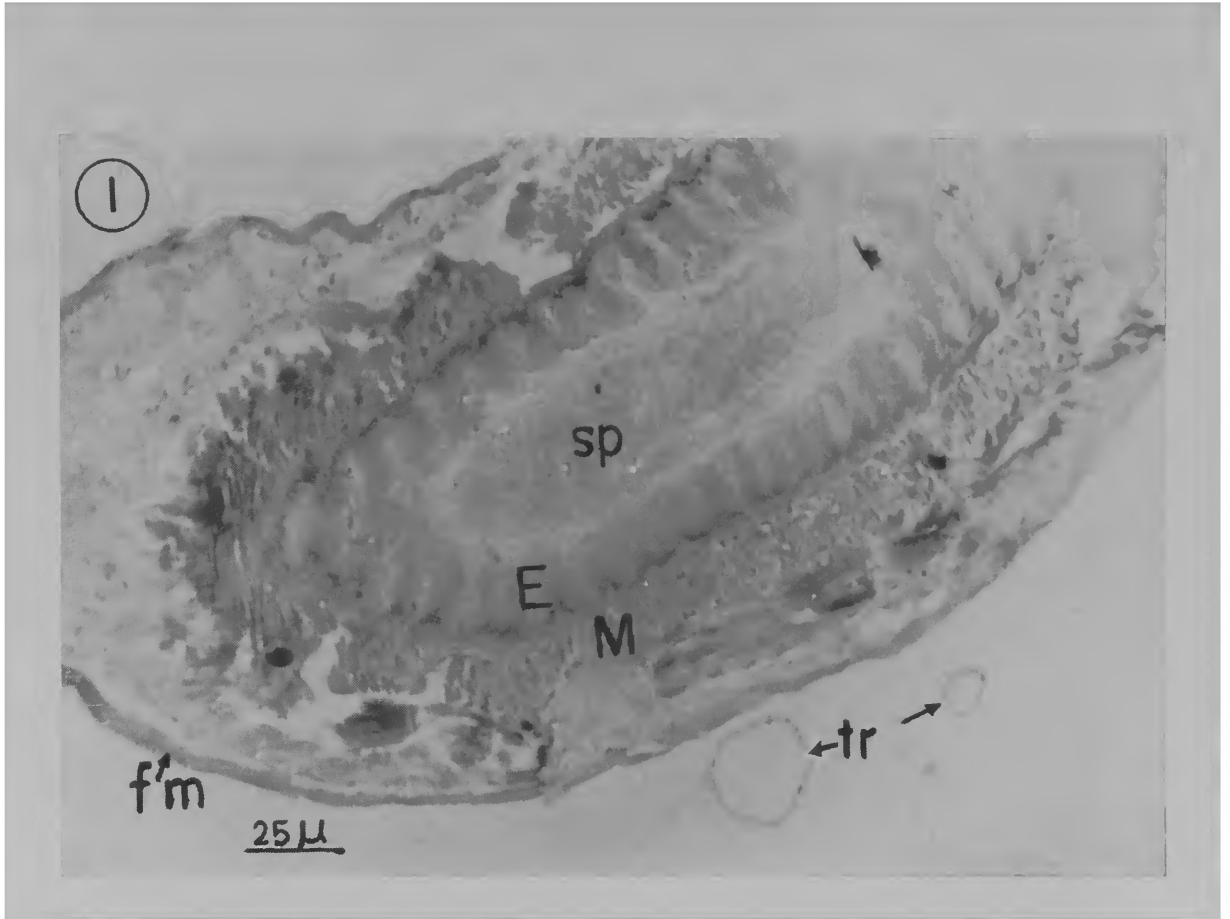


Plate 1: Light microscope micrograph of the seminal vesicle of an adult bee. Spermatozoa (sp) appear in the lumen; the epithelium (E) is folded and the nuclei basally placed; two sheaths of muscle (M) can be seen the inner circular, and the outer longitudinal; envolving the whole organ is a fibrous membrane (fm); some tracheoles (tr) are also seen.

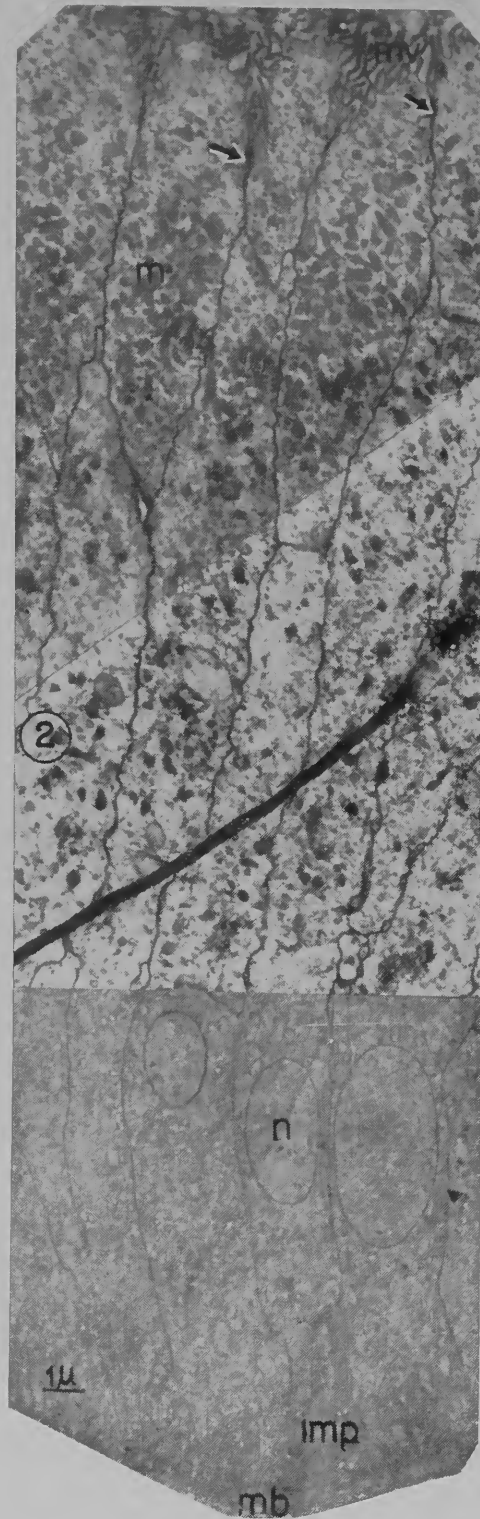


Plate 2: Ultrathin section of the seminal vesicle of a pupa seen at the electron microscope under low magnification. The epithelial cells appear very tall; the pseudostratified organization is clear; all cells are similar, with basal nuclei (n), sinuous lateral contacts, basal infoldings of the plasma membrane (imp), great quantity of mitochondria (m) in the apices, and microvilli (mv) in the apical membrane; the arrows point to the terminal bar; the epithelium basal membrane is labelled mb.

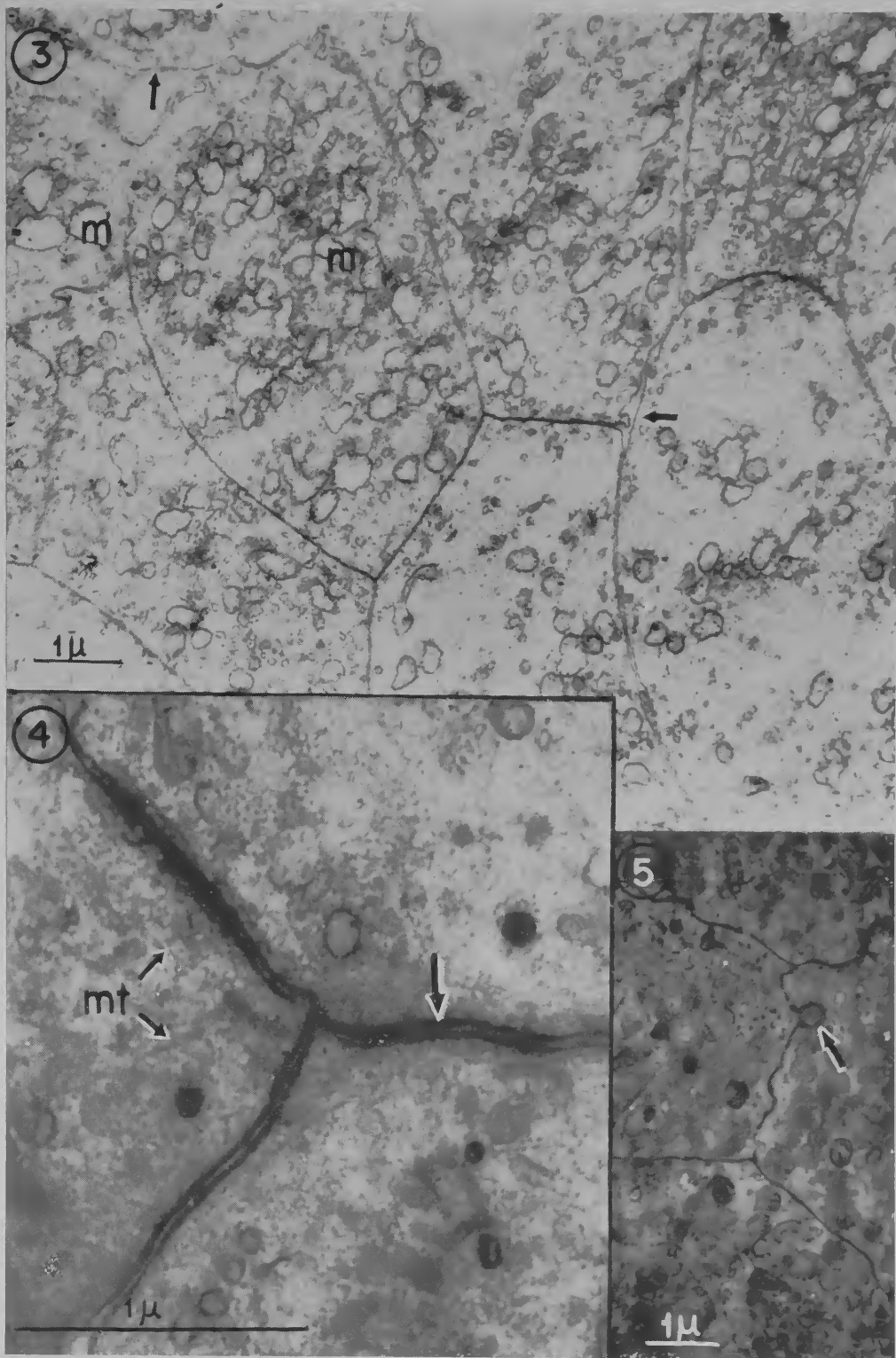


Plate 3: Cross sections of pupal seminal vesicles. 3, section through the zone that bulges into the lumen, just below the microvilli; cytoplasm very rich in mitochondria (m); the arrows point to remains of microvilli. 4, section through the junctional complex (terminal bar); microtubules (mt) present in the cytoplasm. 5, section below the preceding one showing *zonula adherens* (arrow).

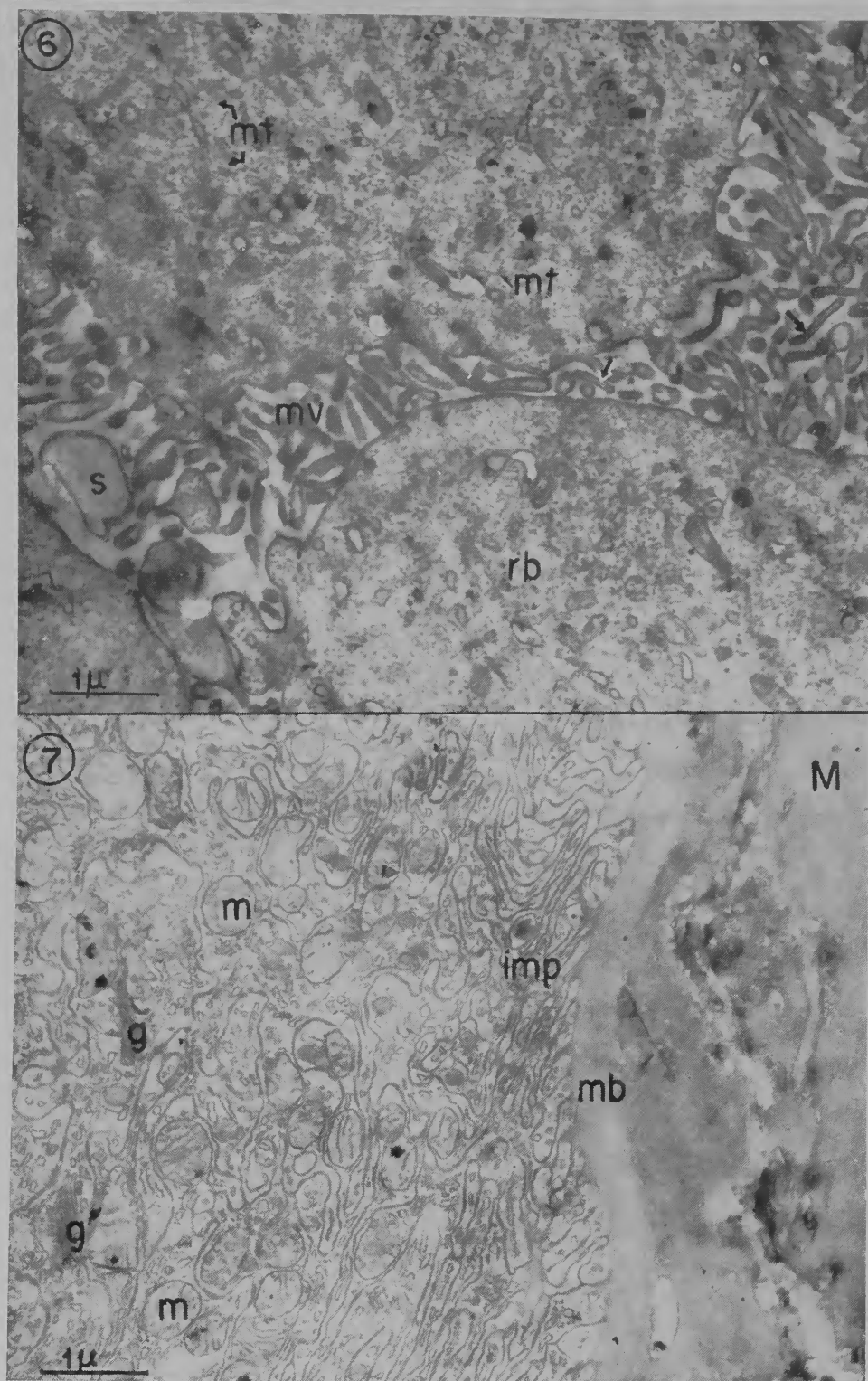


Plate 4: Pupal seminal vesicles. 6, apical portion of epithelial cells showing microtubules (mt), free ribosomes (rb), and microvilli with a dense filament within (arrow); the apical membrane forms bubbles presumed to be filled with secretion (s). 7, basal infoldings of the plasma membrane (imp) with some mitochondria surrounded by them; a few Golgi (g) zones are also shown.

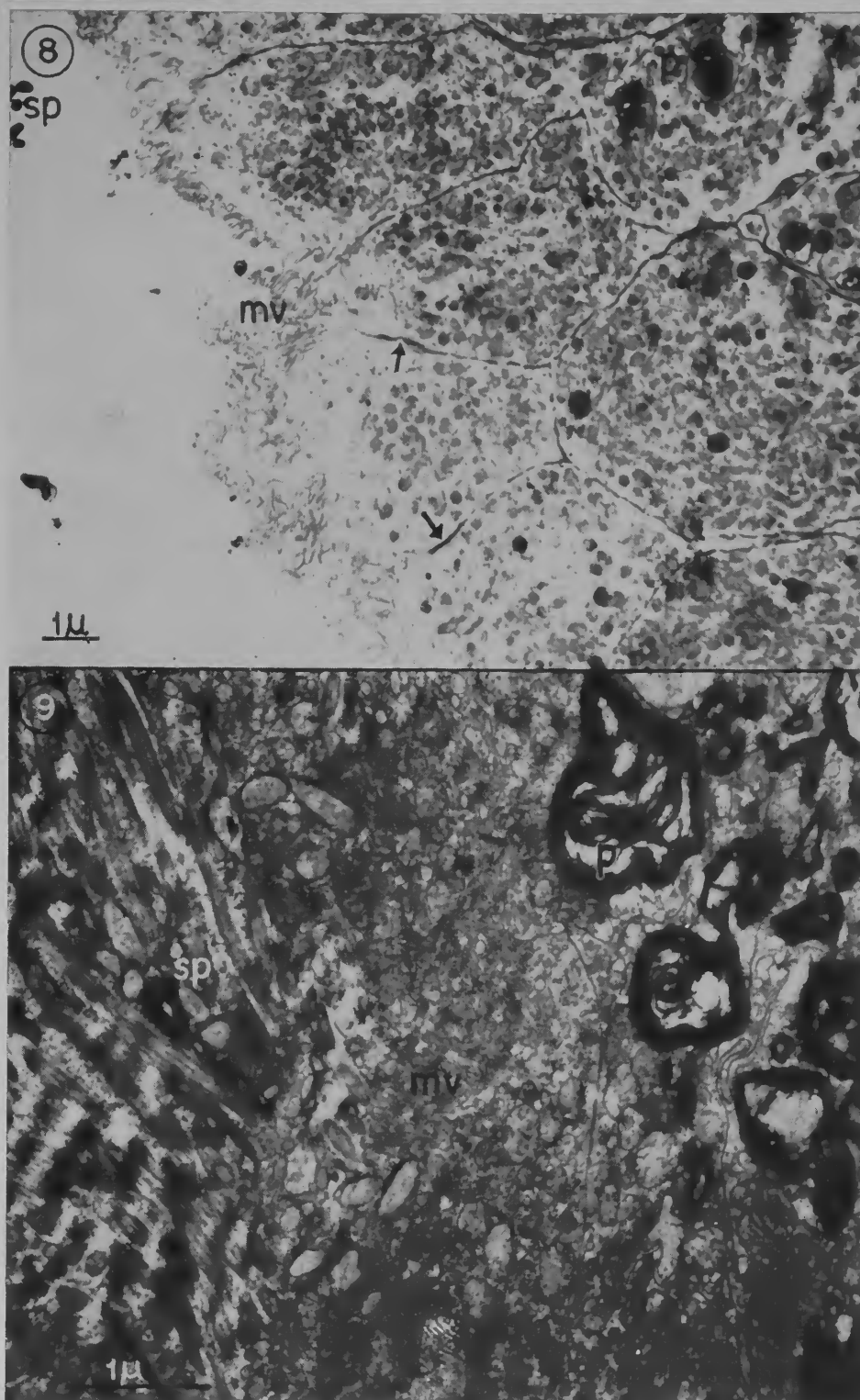


Plate 5: Apical portions of epithelial cells of adults. 8, the cells present several dense corpuscles (p) in the apical cytoplasm, better seen in 9; also concentric arrays of dense lamellae (parasomes); spermatozoa (sp) present in the lumen.

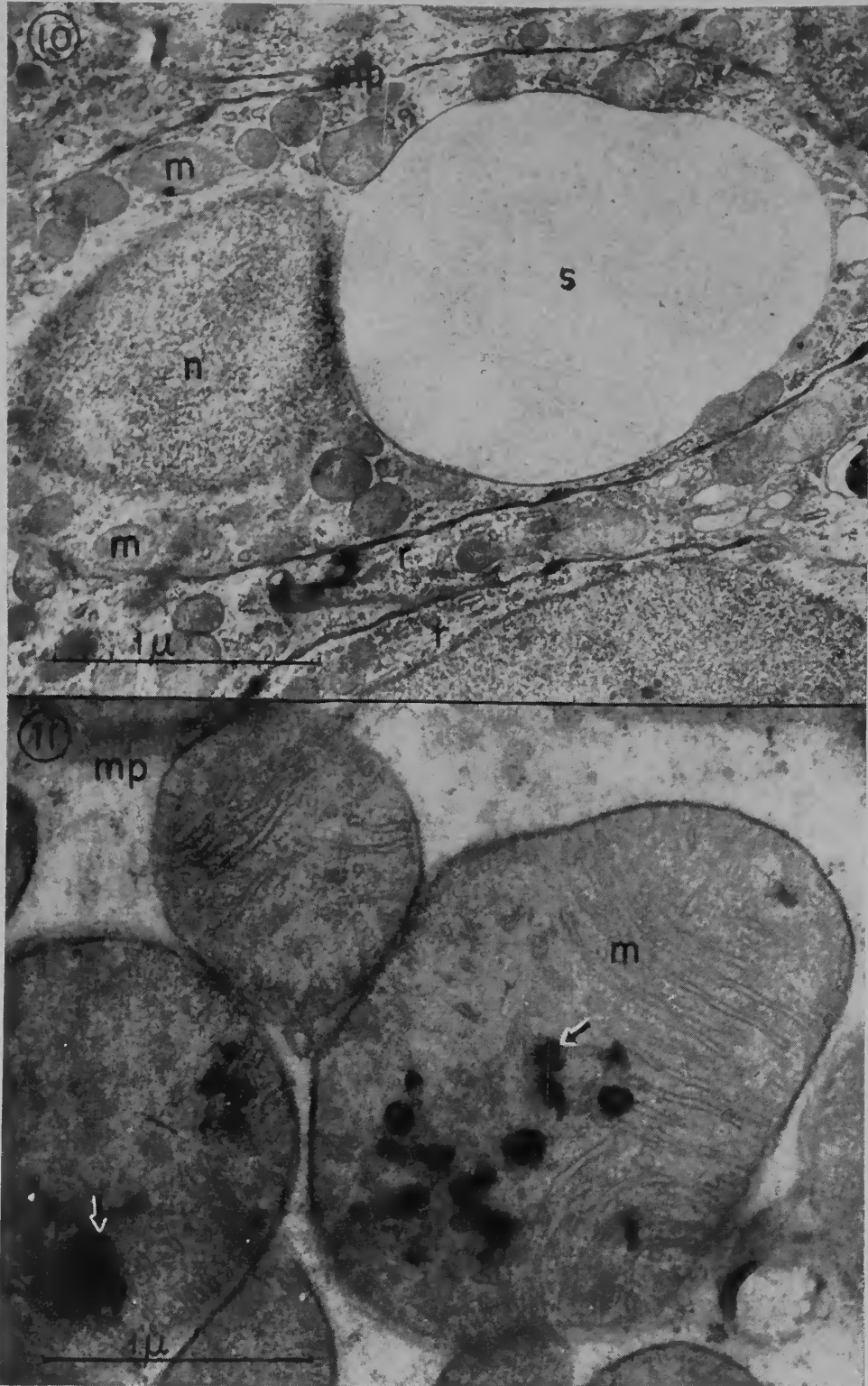


Plate 6: Two aspects of epithelial cells of an adult. 10, this cell besides the normal components had a great vesicle with secretion (s) above the nucleus (n); ribosomes are more frequently attached to the endoplasmic reticulum (r) in this phase. 11, some mitochondria from the apex of the epithelial cells with dense granules (arrows) within them; the short segment of the plasmic membrane (mp) shown in this picture shows septate desmosomes.

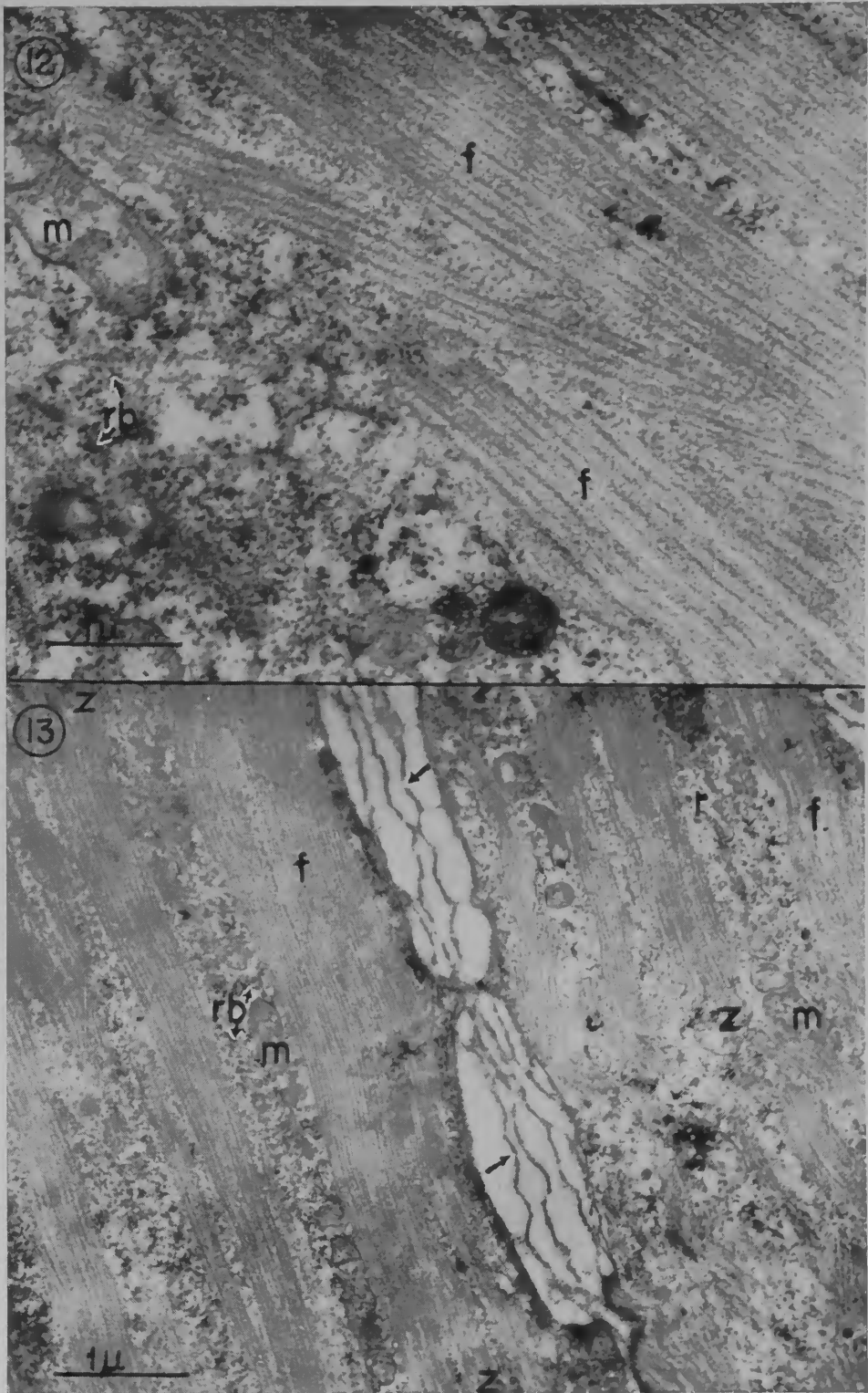


Plate 7: Musculature of a pupal seminal vesicle (longitudinal sections). 12, sarcoplasm rich in ribosomes (rb) and unexpected array of miofilaments (f). 13, a more typical picture; the muscular fibers have very long sarcomeres, few sarcosomes (m) and also little sarcoplasmic reticulum (r); filaments are frequent in the intercellular spaces (arrows).

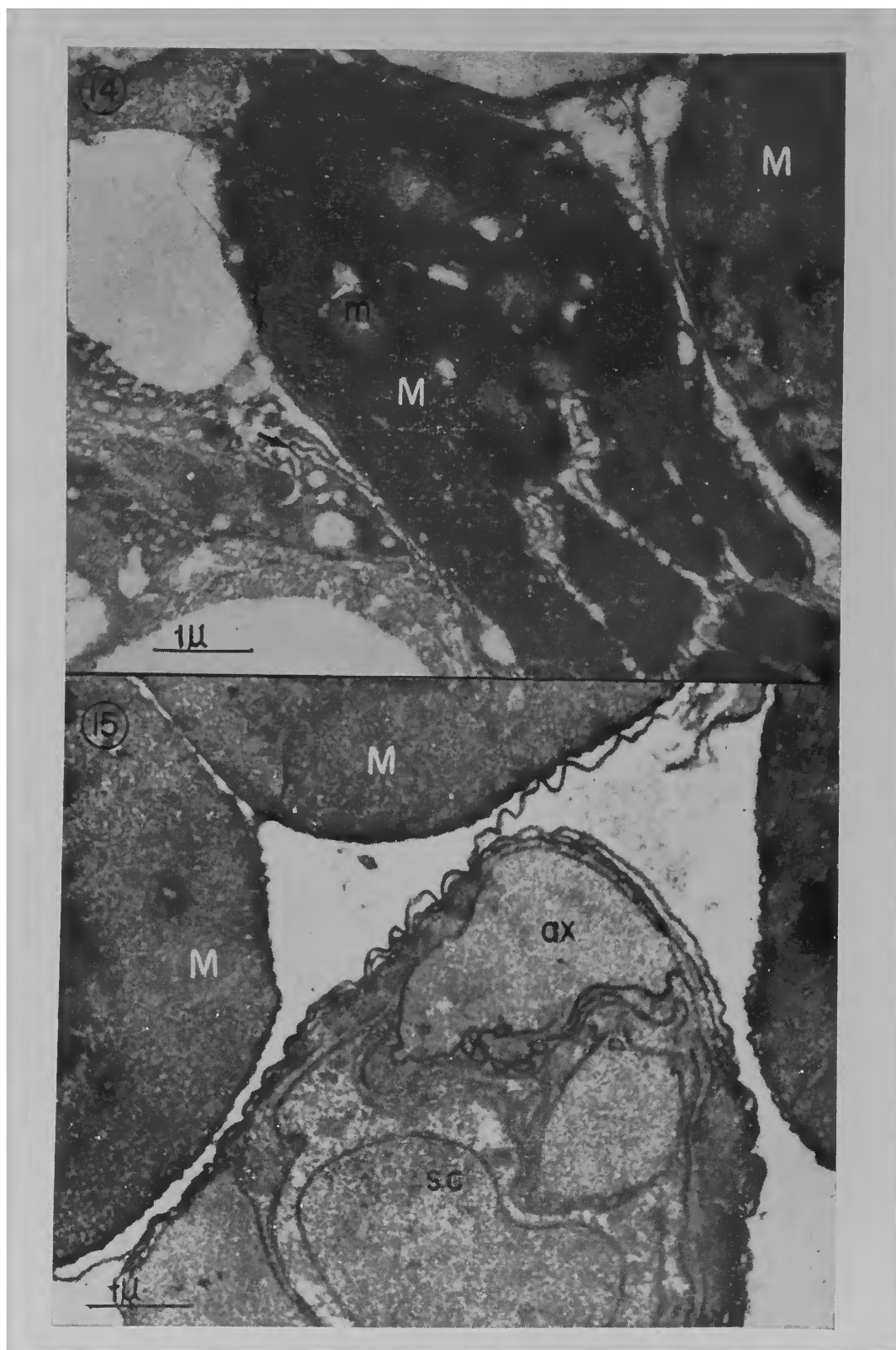


Plate 8: Cross section of adult muscles (m). 14, cross section through the Z line of a muscle fiber. 15, cross section of an axon (ax) among the muscle fibers; sc, nucleus of Schwann cell.

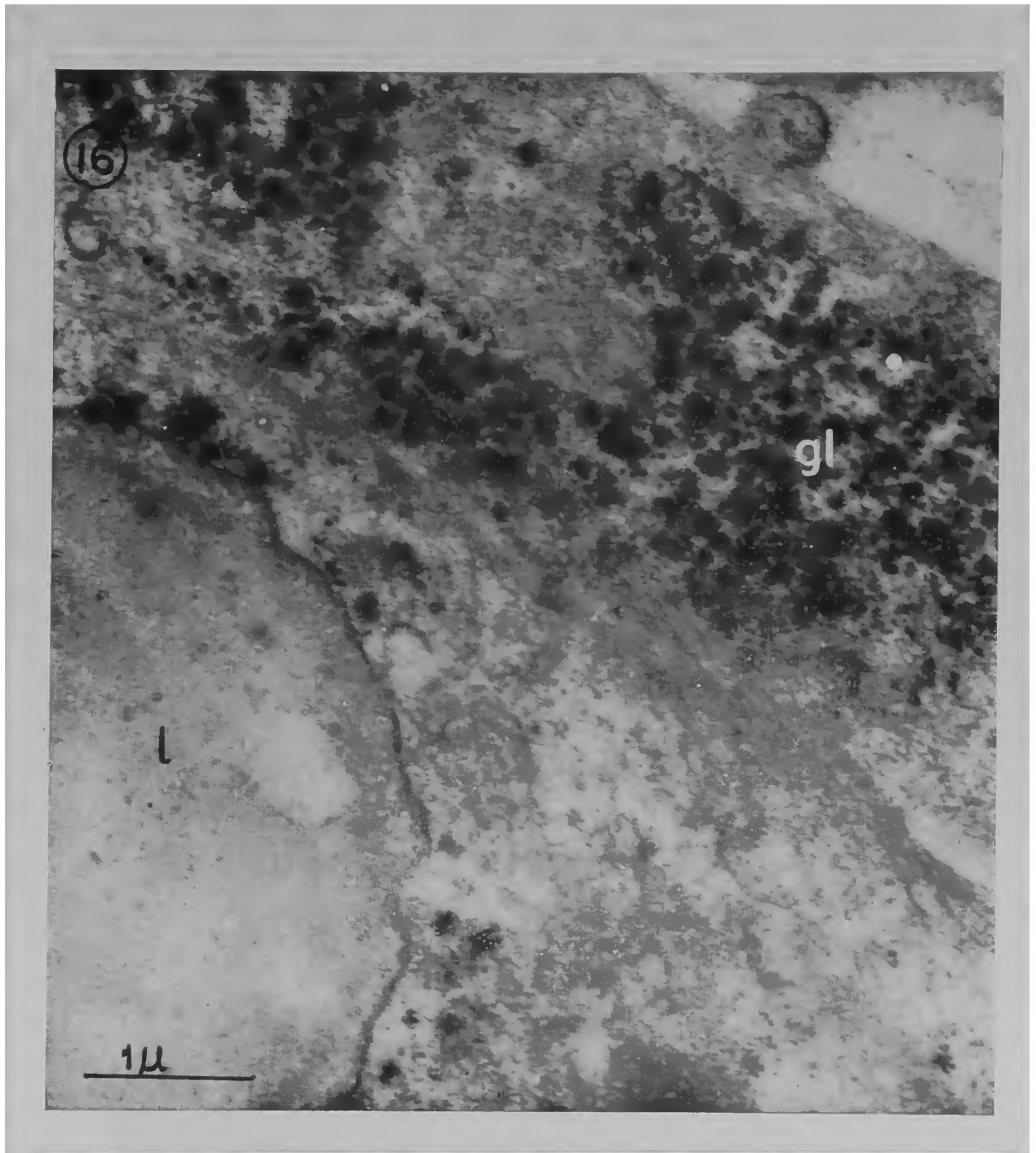


Plate 9: Cell of the fibrous membrane of a pupal seminal vesicle, showing glycogen (g) deposits and a lipid (l) droplet.

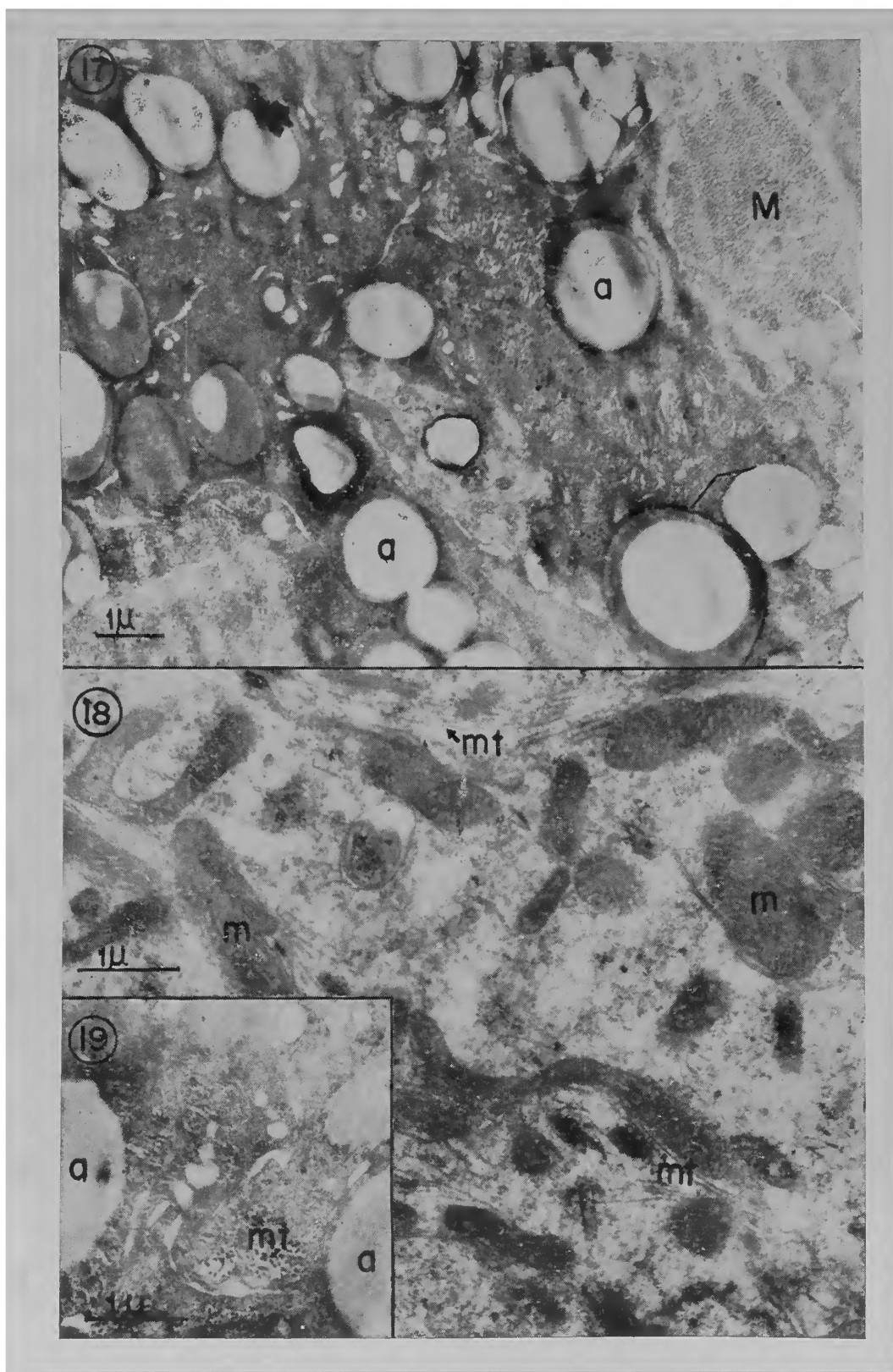


Plate 10: Fibrous membrane of adult, showing numerous unexplained inclusions (a) in 17 and bundles of microtubules in 18; 19 shows a bundle of microtubules cross sectioned.



Plate 11: Diagrammatic representation of epithelial cells of pupa (left) and adult (right), showing certain features that are not seen in the photographs, as well as the presence of intercellular spaces (ie) in the adult epithelium and multivesicular bodies (mb) in the pupal cytoplasm.

DIE NITIDULIDEN FAUNA VON BRASILIEN (COLEOPTERA, NITIDULIDAE), ERSTER TEIL

O. MAREK

ABSTRACT

Based on the collection of the Departamento de Zoologia, São Paulo, the author proposes to study the family Nitidulidae in Brazil. In this first contribution three species are described as new: *Prometopia pereirai* and *Camptodes plaumanni* (type-locality, Santa Catarina, Nova Teutônia) and *Lobiopa nigra* (type-locality, Minas Gerais, Serra do Caraça).

Durch die Liebenswuerdigkeit des Herrn Pe. F. S. Pereira, CMF, bekomme ich zur Bestimmung das Nitidulidae Material, welches dem Departamento de Zoologia, Secretaria da Agricultura in São Paulo gehoert. Es handelt sich vor allen um Material, welches aus verschiedenen Gebieten von Brasilien herkommt.

Die Vertreter der Familie Nitidulidae, obwohl sie wirtschaftlich sehr wichtig sind, denn der groesste Teil von ihnen gehoert zu den Schaedlingen der landwirtschaftlichen Pflanzen und Produkten (diese Beobachtungen wurden bisher vor allem in Europa festgestellt), werden bis juengst selten gesammelt. Deshalb sind sie auch in den grossen Sammlungen der Institutem und Museen verhaeltnissmassig nur selten vertreten.

Die Nitiduliden Fauna von Brasilien is wenig bekannt. Bei dem groessten Teil der Sammlungen und in der Literatur des verflossenen Jahrhunderts sind die Lokalitaeten nur mit den Namen des Zustaendigen Landes, ohne naeheren Fundort und Sammlugsdatum, eingefuehrt. Herr A. Grouvelle gibt im Junk-Schenkling Katalog (1913) aus dem Gebiete von Brasilien 188 Arten; R. E. Blackwelder (1945), 217 Arten an. Weil die Mehrheit von Gebieten Brasiliens nur wenig durchgeforscht ist, werden durch systematisches Sammeln viele neue Arten beschrieben werden.

UEBERSICHT UEBER PROMETOPIA VON SUED-AMERIKA

- | | |
|--|---|
| 1. Koerper selten behaart | 2 |
| Koerper dicht behaart | 3 |
| 2. Die Scheibe des Halsschildes ohne Makel... <i>bicolor</i> Grouvelle | |
| Die Scheibe des Halsschildes mit Makel ... <i>confluens</i> Erichson | |

3. Kurz oval *germaini* Grouvelle
 Lang oval 4
4. Kleiner, glaenzend, gewoelbter, lang behaart, Halsschild, ohne
 Makel *dohrniana* Reitter
 Groesser, maessig glaenzend, flacher, kurz behaart, Halsschild
 mit Makeln *pereirai*, sp. n.

***Prometopia pereirai*, sp. n.**

Laenge, 5,5 cm, Breite 2,5 cm.

Laenglich oval, flach, gelblich, maessig glaenzend, dicht, kurz, gelbtestaceus, auf den dunkeln Ploetzen braun behaart, ziemlich stark und ziemlich dicht punktiert.

Kopf gebraeunt, zwischen den Augen flach verschraegt, ziemlich dicht punktiert, die Stirn testaceus behaart. Maennchen hat Vorderrand mit Mandibeln scharfeckig vorgezogen. Augen halbkugelig, schwarz. Fuehler kurz, einfarbig testaceus. Halsschild quer, mehr als zweimal breiter als lang, auf Basis am breitesten, nach vorn stark bogenfoermig verengt, Vorderrand tief ausgesch-

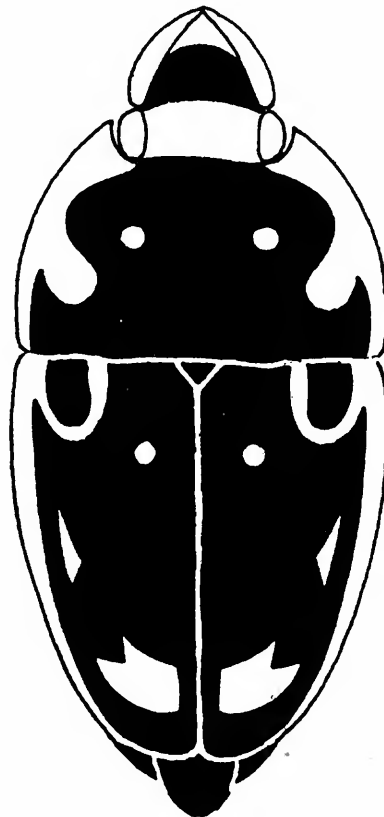


Fig. 1: *Prometopia pereirai*, sp. n.

nitten, in der Mitte geradlinig, Vorderecken scharfeckig, Hinterrand ausgebuchtet, Hinterecken nach hinten ausgezogen, scharfeckig, die Seiten maessig abgesetzt. Der schwarze Makel beginnt in der Mitte vom geraden Teil des Vorderrandes, bildet zuerst konvexe und dann konkave Linie und endet bei den Hinterecken. In jedem konvexen Teil ist ein kleiner gelblicher Makel. Schildchen klein, quer, mehr als zweimal breiter als lang, fein, dicht punktiert. Fluegeldecken fast $1 \frac{1}{3}$ mal so lang als breit, zur Spitze sehr verengt, dann fast geradlinig, dicht, kurz, gelblich, auf den dunkeln Ploetzen braun behaart, ziemlich stark und dicht punktiert. Der ovale Humeralmakel, ein grosser Makel fast die ganzen Fluegeldecken bedeckend, schwarz. Der breit abgesetzte Seitenrand, ein halbeliptischer Subhumeralmakel, ein kleiner Makel in der Naehе der Naht, ein laenglicher Makel am Seitenrand und ein laenglicher vor der Spitze, gelblich. Oft sind diese laengliche Makel mit dem Seitenrand verbunden. Pygidium sehr dicht und sehr kurz weissgrau behaart, braun. Die Unterseite gelblichbraun, glaenzend, Metasternum und Bauchglieder lang weissgrau behaart. Beine kurz, rotgelblich.

Durch die Zeichnung und Faerbung mit *P. germaini* Grouvelle verwandt, aber viel groesser, lang oval, minder glaenzend, der Kopf nach vorn mehr gedehnt.

FUNDORT

Brasilien. *Santa Catarina*, Nova Teutônia, IX.1965, F. Plaumann col. (Holotype, und 1 Paratype im Departamento de Zoologia, São Paulo; 1 Paratype in meiner Sammlung); *Rio Grande do Sul*, Fortaleza, VIII.1951, F. Plaumann col. (2 Parotypen im Departamento de Zoologia, São Paulo, und je 1 Paratype im Muséum National d'Histoire Naturelle, Paris und in meiner Sammlung).

Zu Ehren von Herrn Pe. Francisco S. Pereira, CMF, benannt.

Lobiopa nigra, sp. n.

Laenge 5,5 cm, Breite 3 cm.

Laenglich oval, convex, glaenzend, schwarz, mit kurzen, gelbroten Haerchen, und abstehenden, ziemlich dichten, braunen bis schwarzen, harten Boerstchen, welche auf den Fluegeldecken laengliche Reihēn bilden.

Kopf quer, sehr dicht und maessig stark punktiert. Vorderrand des Kopfschildes und Mandibeln rostrot. Augen schwarz, halbkugelig, Vorderrand mit kurzen, harten, schwarzen Boerstchen. Fuehler einfarbig rostrot. Halsschild quer, zweimal so breit als lang fein kantig, der abgestzte Seitenrand maessig breit, nach vorn stark, nach hinten schwach verengt, in der Mitte mit seichter, laenglicher Furche, die sich zur Basis vertief und verbreitet. Vorderrand tief ausgeschnitten, Vorderecken vorragend, scharf, Hinterrand leicht doppelbuchtig, Hinterecken stumpf. Auf den Seiten

der Furche bis zum abgesetzten Seitenrad sind grosse, seichte Gruebchen. Schwarz, Seitenraender, Vorder- und Hinterecken rostrot, sehr dicht und ziemlich stark punktiert, fein und dicht behaart, ziemlich stark beborstet. Schildchen klein, dreieckig, mehr als zweimal so breit als lang, dicht, maessig stark punktiert. Fluegeldecken 1 1/2 mal so lang als breit, bis zur Mitte parallel, dann stark verengt, mit der groessten Laenge bei der Naht, glaenzend, schwarz. Naht, zwei Makel auf den Seiten des Schildchens, zwei etwas weit bei der Naht, ein, sehr klein, auf der Naht in der Mitte der Fluegeldecken und maessig abgesetzter Seitenrand, rostrot. Dicht, maessig stark punktiert, fein, wie Halsschild behaart und reihig beborstet. Pygidium verdeckt seicht, dicht und maessig stark punktiert, kurz, fein, gelb behaart. Unterseite schwarz, Rand rostrot, glaenzend, Metasternum und Bauch fein, dicht, grau behaart, dicht und fein punktiert. Beine dunkelrostrot, vordere heller.

FUNDORT

Brasilien. *Minas Gerais*, Serra do Caraça, 1380 m. XI.1961, Martins, Kloss & Lenko col. (Holotype und 1 Paratype im Departamento de Zoologia, São Paulo; 1 Paratype in meiner Sammlung).

Camptodes plaumanni, sp. n.

Laenge 8,5 cm, Breite 6,5 cm.

Gross, breit, wenig glaenzend, Kopf, Halsschild, Schildchen gruen, Pygidium schwarz, alles mit violett schimmerndem Glanze, Fluegeldecken blauviolett. Nahtstreifen der Fluegeldecken weiter von der Naht, Klauen gezaehnt, ganze Oberseite chagriniert.

Kopf kurz, breit, Vorderteil dicht, fein, Mittelteil duenner, staerker punktiert, Hinterteil fast ohne Punkte. Stirn beiderseits zwischen den Fuehlerwurzeln eingedrueckt und staerker quertief. Am Scheitel sind drei kurze, laengliche Furchen, zwei vorne und einige zwischen ihnen hinten. Augen golden. Fuehler dunkel rotbraun, Keule matt, schwarz. Halsschild 2 1/2 mal so breit als lang, nach vorne sehr verengt, vorne maessig ausgeschnitten und ganz gerandet, hinten jederseits schwach gebuchtet. Vorderecken stumpf, Hinterecken nach hinten leicht vorgezogen, an der Basis ein wenig breiter als Fluegeldecken. Scheibe sehr fein und spaerlich, auf den Seiten staerker und dichter punktiert. Schildchen gross, breiter als lang, maessig fuenfleckig, sehr fein und spaerlich punktiert. Fluegeldecken blauviolett, fast so breit als lang, bis 2/3 parallel, dann schraeg verengt, in der Naehة der Naht gerundet. Nahtstreifen weiter von der Naht erreichen fast das Schildchen, fein gestreift, die Zwischenraeume kraeftiger und dicht punktiert. Pygidium leicht glaenzend, wie die Fluegeldecken punktiert. Unterseite des Halsschildes schwarz, Prosternalaufsatz, Metasternum und Abdomen stark punktiert, schwarzgruen mit violett schimmernden Glanze und hellbraunen, dichten Haerchen. Beine schwarzgruen, stark punktiert, Haerchen auf den Hintertarsen breit, goldbraun. Klauen gezaehnt.

FUNDORT

Brasilien. *Santa Catarina*, Nova Teutônia, 300-500 m, II.1963, F. Plaumann col. (Holotype im Departamento de Zoologia, São Paulo); selber Fundort, I.1956, F. Plaumann col. (Paratype, im Departamento de Zoologia, São Paulo); selber Fundort, XII.1965, F. Plaumann col. (Paratype, in meiner Sammlung).

SCHRIFTTUM

BLACKWELDER, R. E.

1945: Checklist of the Coleopterous Insects of Mexico, Central America, the West Indies and South America. *Bull. U. S. National Museum* 185 (3): 343-550.

GROUVELLE, A.

1913: Byturidae, Nitidulidae, in W. Junk, *Coleopterorum Catalogus*, pars 56, 223 pp., Berlin.

Papéis Avulsos de Zoologia

PAPÉIS AVULSOS ZOOL. S. PAULO, VOL. 22, ART. 16: 159-174

1.IV.1969

NOTES ON AFRICAN BOLBOCERATINI (COLEOPTERA, GEOTRUPIDAE)

M. A. VULCANO¹

A. MARTINEZ²

F. S. PEREIRA, CMF¹

ABSTRACT

The study of a collection of African *Bolboceras*, s. l., showed that 5 new genera had to be erected to include the known species. Since only a few of the species are known to the authors, the majority of the species are left unplaced. The new genera are *Microbolbus*, gen. n. (type-species, *Microbolbus decoratus*, sp. n.) *Mimobolbus*, gen. n. (type-species, *Bolboceras ornatellum* Peringuey), *Bolboceroides*, gen. n. (type-species, *Bolboceras capense* Klug), *Bolbaffer*, gen. n. (type-species, *Bolboceras princeps* Kolbe) and *Bolbocaffer*, gen. n. (type-species, *Bolboceras sansibarium* Kolbe).

According to Cartwright (1953) the old genus *Bolboceras* was restricted to holarctic species, since the type-species of *Bolboceras* Kirby and *Odontaeus* Klug are the same species. For this reason the various species from other parts of the world, described as *Bolboceras*, have to be transferred to different genera.

Howden (1954) raised to generic level some of Boucomont's subgenera, described to include some Australian, Asiatic and American species, leaving almost all the Neotropical, Asiatic and the totality of the African species, unplaced.

Having received some African specimens of Geotrupidae for determination, and based on the above reasons, we describe five new genera for some species of the African Continent. We have seen very few specimens, representing only a few species; however, we judge that many African species, included up to now in *Bolboceras*, will have to be included in some of these new genera.

KEY TO THE NEW GENERA OF AFRICAN BOLBOCERATINI

- | | |
|---|---|
| 1. Pronotum without basal margin | 2 |
| Pronotum with complete basal margin | 3 |

1. Departamento de Zoologia, Secretaria da Agricultura, São Paulo. With help of the Conselho Nacional de Pesquisas.

2. Investigador de la Carrera. Consejo Nacional de Investigaciones Científicas y Técnicas; adscrito al Comando Militar Argentino.

2. Sternellum flat, small, unarmed; metasternum as wide as long and without sulcus between intercoxal area *Microbolbus*, gen. n.
Sternellum keeled and toothed; metasternum with intercoxal area longer than wide and sulcate *Mimobolbus*, gen. n.
3. Front border of pronotum only marginate; sternellum flat or with a small, longitudinal ridge and a denticle in front of it *Bolboceroides*, gen. n.
Front border of pronotum with a strong and raised keel; sternellum not flattened, and produced posteriorly into a strong longitudinal keel; pronotum alike in both sexes 4
4. Ninth antennite with a smooth and well delimited area on lower face; mesosternum with four longitudinal, smooth areas; upper surface of labrum without transverse carina; second elytral stria beginning behind base of elytra; strong sexual dimorphism *Bolbaffer*, gen. n.
Ninth antennite completely pilose and without smooth area; mesosternum without the four longitudinal, smooth areas; upper surface of labrum with transverse carina; second elytral stria beginning at base; inconspicuous sexual dimorphism *Bolbocaffer*, gen. n.

***Microbolbus*, gen. n.**

Allied to *Bolbocaffer*, gen. n. and *Bolbaffer*, gen. n., and easily recognized by the following characters: basal border of pronotum immarginate; prosternum not raised, and without longitudinal carina on post-coxal area; a different metasternal process between middle coxae; pronotal sculpture inconspicuous.

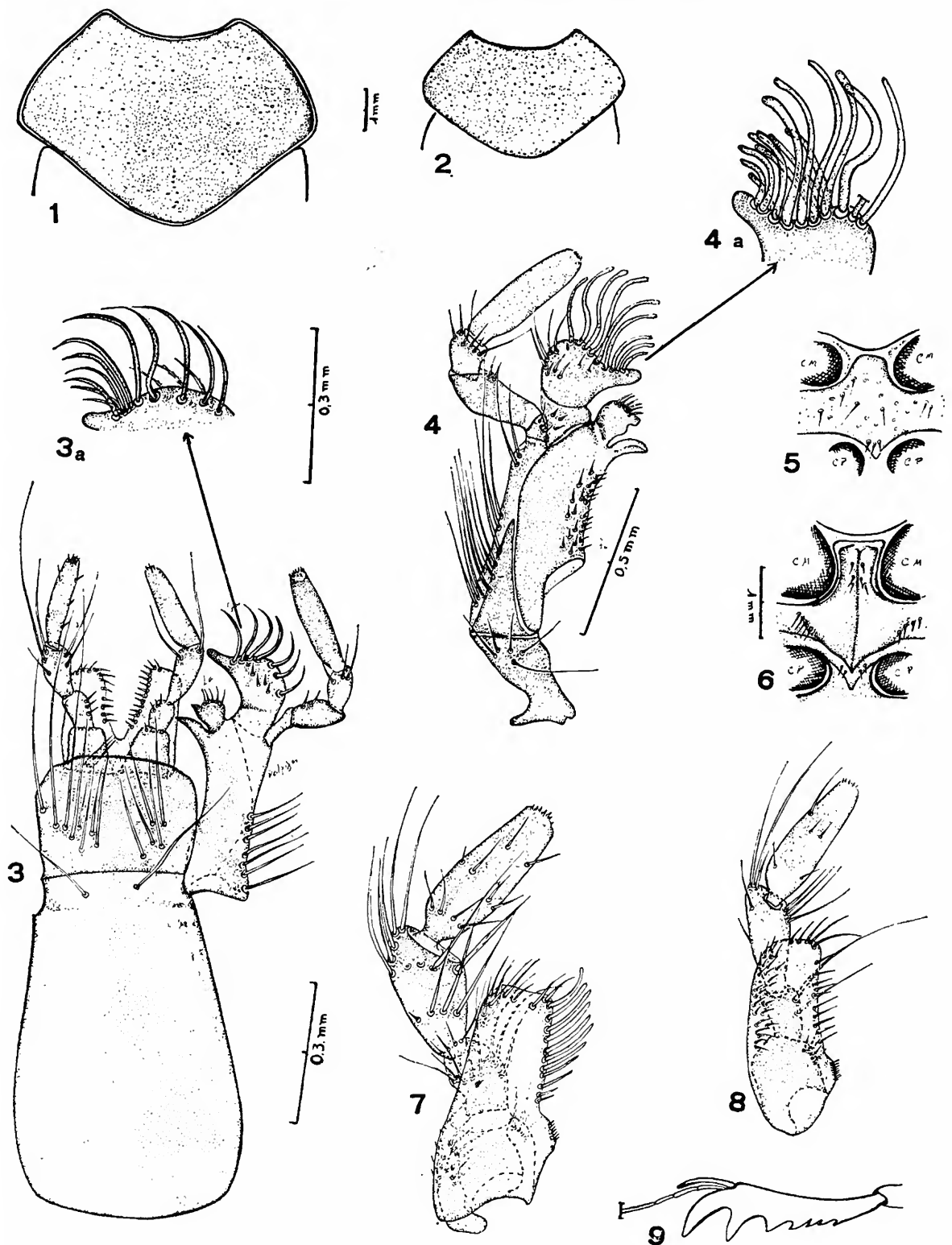
This genus is well differentiated from other genera, having only some similarities with the Australian *Blackburnium* Boucomont and *Bolborhachium* Boucomont, with which it has in common an identical number of elytral striae between the suture and the humeral callus; but differing by the cordiform central area of the metasternum; the mesosternum wide in the middle and hollowed between the middle coxae; pronotum regularly convex and without raised or depressed areas. It differs from the Asiatic *Bolbochromus* Boucomont, by the not completely divided eyes and the sutural elytral stria which does not reach the base of elytra. There is no relation with the American genera.

Head trapeziform; anterior margin of clypeus raised, the margins convergent at sides and straight in front; with rounded angles; clypeo-frontal suture sulcate, inconspicuous and almost straight; frontal region bituberculate behind, laterally with a thin carina formed by the prolongation of the clypeal borders and disappearing in the occipital region; ocular canthus large and lobuliform, reaching the middle of the eyes; antennae with long and claviform, slightly curved, right-angled scape, truncate at apex; second antennite subcordiform; 3-6 short and campanuliform; 7-8 disciform (the seventh irregularly so); 9-11 long and lentiform; the ninth

glabrous in the central-basal portion, and the eleventh covered with thin and dense setae on lateral surface. Maxillae (fig. 3) elongate, with securiform galea, which has a small and stout process in the middle, its free margins with robust and well chitinized setae (fig. 3a); subgalea forming a sharp and laminiform tooth in the inner-apical portion; lacinia small, laminiform and with an obtuse and flat tooth in the median-distal region; maxillary palpi (fig. 3) 4-segmented, with the first article small, cylindrical, subclaviform and obliquely truncate at apex; third cylindrical and smaller than second; fourth the largest, fusiform, dressed with micro-setae and with membranous apex; labium (fig. 3) with quadrangular mentum scarcely wider than long, front margin arched and with a small incision on each side, the lateral borders rounded, and the hind border straight; labial palpi 3-segmented, the first article twice as long as wide, the second twice as long as wide at base, with truncate apex; paraglossae long and almost reaching the median portion of the second article of the labial palpi and with a file of spiniform setae on inner and apical margins; submentum short, with a transverse sulcus; gula convex and longer than wide; mandibles alike, the left one with the lateral margin regularly rounded, the median margin sinuous in basal half and with clear and small incision at distal half, and the apex forming two small denticles; the right mandible with rounded lateral margin, slightly sinuous in basal half, with a large, dentiform process at distal half, forming an apical and an inner submedian tooth, both sharp and conspicuous; labrum wider than long, with anterior margin slightly elevated in the middle.

Pronotum transverse and regularly arched thinly emarginate on anterior and lateral borders; hind border marginated only up to the humeral region of the elytron; front border sinuous; lateral border rounded and incised on each side of the hind border, arched in the middle; anterior angles obtuse or almost right, hind angles completely rounded. Prosternum with front border arched in the pre-coxal region, and with two short, longitudinal and cariniform lines and the middle, which are contiguous with the coxal keels and surround a depressed area; post-coxal portion flattened and unarmed; pre-episternum thin and long. Scutellum slightly longer than wide, with convergent borders and arched distally, forming a semicircle with the opposite margin. Elytra with thin and punctate striae; with 7 striae between suture and humeral callus, the first one not reaching the base; 2-7 touching elytral base; the others (except the marginal one) far from the margins, with a file of punctures in distal half, between the tenth and ninth striae; interstriae wide and convex; elytral suture with a thin margin; epipleurae large, long and narrowed posteriorly, with weakly keeled margins, and surface with hair-bearing punctures. Mesosternum very broad and long; anterior margin thickened in the middle, depressed behind and between the coxae. Metasternum with cordiform and unkeeled disc; broad in front and well separated between the middle coxae; with straight meso-metasternal suture; lateral area forming a wide triangle; metaepisternum cuneiform.

Front tibiae flat, arched and apically enlarged (fig. 9), with 7 marginal teeth (progressively increasing in size), the apical one being the largest; calcares very large, flat and cuneiform, as wide



Bolbocaffer sansibaricum (Kolbe): 1, dorsal view of pronotum. *Mimobolbus ornatellus* (Peringuey): 2, dorsal view of pronotum; 4, maxillae and maxillary palpi; 4a, detail of galea; 6, metasternum; 7, labial palpi and paraglossae. *Microbolbus decoratus*, sp. n.: 3, gula, mentum, labial palpi, paraglossae, maxillae and maxillary palpi; 3a, detail of galea; 5, metasternum; 8, labial palpi and paraglossae; 9, front tibiae and tarsi.

as the inner side of the apex of the tibia; front tarsi filiform, almost as long as tibia, with the first tarsomeron shorter than the second; tarsomera 2-4 of the same size; the fifth the largest, with long, thin, arched and sharp claws; onychium formed by two setae. Middle legs oblique and transverse, completely separated by the metasternal process; trochanteres thin and cuneiform; middle femora thin, slightly convex in front and arched behind; middle tibiae shorter than femora, slightly arched and thickened distally, with an oblique keel and a salient denticle on ventral side of the lateral margin; with apex truncate at right angle and a dentiform angle in the ventral side; with small and irregular denticles above the keel of the lateral-ventral border; calcares large and longer than the first tarsomeron, the upper one spiniform, larger and almost straight, the lower one shorter and arched; middle tarsi almost as long as tibiae, with the first tarsomeron very large, almost twice long as the second; 3-4 decreasing in size, the fifth slightly shorter than the first; claws similar to those of anterior tibiae. Hind coxae transverse, sulcate ventrally; hind femora slightly longer than those of the median pair, with front and hind borders slightly arched; hind tibiae longer than the median ones, slightly arched and similarly sculptured; calcares almost equal but more thickened and flattened; hind tarsi almost like the median ones.

Abdomen membranous and completely covered with hairs; the five first sternites almost of the same size, the sixth slightly larger; pygidium small, semicircular.

Type-species: *Microbolbus decoratus*, sp. n.

We presume that many other species, at present included in *Bolboceras*, s. l., will have to be transferred to this new genus; according to descriptions, f. ex., *Bolboceras nigropiceum* Felsche and *B. sedhiounense* Paulian.

***Microbolbus decoratus*, sp. n.**

(Figs. 3, 5, 8, 9)

Colour reddish dark brown, with mouthparts, calcares and tarsi lighter; head, scutellum and clypeal suture dark; pronotum, margins excepted, reddish brown; body covered with golden hairs.

Head with strongly punctured clypeus, with long hair along front margin, labrum and canthus; dorsal portion swollen in the middle, and with strong, transverse ridges, not touching the margins; frons short and broad, with a slight, transverse and depressed sulcus, and two small, spine-like median elevations on the hind-central part of the vertex; sculpture, with strong and coalescent punctures, which are rugose on anterior-lateral area; vertex with slightly smooth surface and very few, strong punctures, mixed with small and very dense punctures on hind and lateral borders; ocular canthus with some strong punctures on upper surface, immediately behind the keel, and all free borders marginate, with long and dense pilosity; lower surface dressed with dense and thin hair;

antennae with a tuft of long and thin hairs on distal area of the scape.

Pronotum with sparse, strong punctures, denser on disc, the median sulcus, indicated only by smaller punctures, not touching the hind border; entire surface covered with minute punctures mixed with a few strong ones, and with small and foveiform impression on each side of the disc on the median-lateral margins; prosternum with thin hairs on anterior half, surrounding the borders and surface of the proepisternum. Scutellum punctured along two short, median files on the discal area, which, however, do not reach the apex. Elytra with 14 striae (including the lateral one), strongly punctured, with smooth intervals; intervals 2-7 more widened towards the apex, and the first one widened along its whole length; epipleurae prominent on lateral margins, sulcate and covered with thin hairs along the lateral stria. Mesosternum with sparse punctures, glabrous on the thickened anterior portion, and densely pilose in remaining areas; mesoepisternum with punctures and hairs longer than those of the mesosternum. Metasternum (fig. 5) without median sulcus, and with some sparse setae; with the borders of the posterior half with a thin keel; surface smooth and glabrous, with strong punctures and hairs discally as well as in proximal half; metaepisternum entirely covered with strong hairs.

Front femora covered with micro-punctures on lower surface, with long and thin hairs, and only a very small, smooth and glabrous patch along anterior border, with a thin, cariniform margin on the front-lower border; front tibiae only longer than femora, with lateral teeth increasing in size towards apex, the lower face with a longitudinal, slightly sinuous keel in the middle, with long hairs; this carina and borders somewhat enlarged in the middle; dorsal face with a pilose sulcus ending at the base of the distal tooth, as well as the median border, and with spine-like calcares. Middle legs with trochanteres pilose on lower and hind faces; femora with files of hair-bearing punctures on front border and with a small area of minute, hairy punctures which are stouter behind, the first with short and the second with long hairs; tibiae dressed with long hairs and spine like calcares. Hind legs with almost glabrous trochanteres, with only some long hairs along hind border; femora with smooth and glabrous area in the middle of lower surface, with minute punctures and long hairs on front and hind borders; tibiae like in the middle pair, as well as the tarsi, which have the apex of the segments covered with minute hairs.

Abdomen with minute and dense punctures with long and thin hairs.

Length 6.5 mm; width 4.5 mm.

Holotype ♀: Kawasbilenga (700 m), Congo (ex Belgian Congo), Mission C. F. de White 829a col., 14-25.X.1947 (Musée Royal de l'Afrique Centrale, Tervuren, Belgium).

Mimobolbus, gen. n.

Allied to *Bolbocaffer*, gen. n., and *Microbolbus*, gen. n. Differing from the former by the following characters: pronotum with

immarginate base, head with complete clypeo-frontal carina, pronotum without tubercles on anterior margin; from the latter by the following characters: head with clypeo-frontal carina, post-coxal area of prosternum with a longitudinal keel, lateral borders of the front tibia with more numerous teeth, and by the different labial and maxillary palpi, as well as the different paraglossae (fig. 7).

Head with very thinly marginate clypeal border, continued posteriorly, curving and disappearing in the vertex; with clypeo-frontal suture present or not, if present, thin and complete, arched and laterally fused with the lateral borders, and with a nodiform tubercle in the middle; frons slightly depressed; vertex anteriorly with or without short, transverse keel or tubercle; ocular canthus reaching the middle of the eyes, with the front and lateral sides weakly marginate; labrum dorsally with a more or less evident transverse keel; anterior margin widely incised in the middle; ventrally with a longitudinal, median keel; with setae on the borders and hair-bearing punctures on the rest; antennae with claviform and robust scape, the second antennite forming a short and truncate cone; 3-8 discoidal; 9-11 lentiform, the ninth with smooth and glabrous area near base, on lower face; maxillae elongate, with the free borders of galea covered with very well differentiated, cylindrical and hyaline setae (fig. 4a); subgalea prominent with a laminiform, stout tooth on distal-median region; maxillary palpi (fig. 4) with the first segment moniliform, second long and forming an irregular cone with obliquely truncate apex; mentum wider than long, with prominent anterior margin which is arched in the middle, the lateral margins almost straight, except anteriorly, where they are arched and fused with the front borders, but not forming a clear angle; hind border arched and slightly curved; labial palpi (fig. 7) 3-articulate, with large and quadrangular palpiger, with first article 1.5 times longer than wide, the second with truncate apex and three times longer than wide basally, with membranous apex; paraglossa (fig. 7) large, reaching the apex of the second article of the labial palpi, and having on its inner face eleven long, broad and cylindrical setae; submentum short, broad and transversely excavated; gula convex and much longer than wide; mandibles different from each other, similar to those of *Microbolbus*, gen. n., but the right one with the inner tooth of the dentiform process triangular.

Pronotum wider than long, convex, with more or less triangular impression anteriorly, and another foveiform impression laterally; front and side borders marginate, the lateral one almost straight; hind margin with a sulcus prolonged to the level of the humeral callus; in the center this sulcus disappears and is represented only by a file of minute punctures; front angle right or almost so, hind angles rounded; prosternum with impressed, longitudinal sulcus on frontal-median region and margined on each side by an arched, cariniform line which does not reach the arched, anterior border; post-coxal area with longitudinal cariniform

line in the middle, not touching hind border; proepisternum narrow in the middle, widened in front and behind the coxae. Scutellum tongue-shaped. Elytra with 7 well impressed striae between suture and humeral callus, the first one not reaching elytral base, which is immarginate; 2-7 reaching base; 8-10 originating behind the humeral callus; eleventh originating in distal half; 11-12 united basally; fourteenth originating near thirteenth, in the anterior fourth of elytra, fused with the lateral border in posterior half; interstriae weakly convex; elytral apex slightly angulate before its junction with the elytral suture, which is thinly marginate, forming a weak lateral carina. Mesosternum wide and short, depressed behind and in the middle, between the coxae; meso-metasternal suture dark, very thin and slightly angulate in center; mesoepisternum quadrangular and widened. Metasternum narrow and produced between the separated, median coxae, with a median sulcus and a patch of setae near hind coxae; intercoxal process with fine carina converging towards front area, surrounding the median cotyloid cavities; discal plate arched and with a dark longitudinal line in the middle; lateral areas with borders convergent or angulate anteriorly; metaepisternum cuneiform and elongate.

Front femora normal; front tibiae flattened and widened distally, with 6-10 lateral teeth, increasing in size towards apex, the distal one digitiform and pointing forward; ventral face with a strong carina in basal half, and another one, weaker and sinuous ending behind the insertion of the calcares; the dorsal face with a longitudinal median sulcus and with flat, long spiniform calcares; front tarsi almost as long as front tibiae, with tarsomera 1-4 slightly decreasing in size, the 5th the largest and weakly arched, with strong, curved and sharp claws. Middle legs with wide and cuneiform trochanteres; middle femora with almost straight front margin, enlarged distally and slightly arched ventrally with a transverse carina, inconspicuous distally; with sharp and lobiform ventral-lateral posterior border, with distal apex obliquely truncate, and sharp apical borders with stout and spine-like calcares, which are slightly arched and sinuous; middle tarsi shorter than tibiae, with very long first tarsomeron, at least twice as long as the 2nd; 2-4 decreasing in size, the 5th slightly arched and twice as long as the 4th; claws similar to those of preceding pair, but slightly longer. Hind legs with sharp, cuneiform and arched trochanteres; hind femora with arched front border; hind border straight, sometimes arched only in the apical portion, and slightly surpassing the sides of elytra, but not larger than the median pair, more flattened, with the keel of the lateral face more arched and the lateral-ventral border irregularly toothed above the keel, with prolonged apex, as a ventral lobe in the middle, just before the insertion of the spiniform calcares; the ventral one smaller and more arched than the dorsal one, both almost straight; hind tarsi shorter than tibiae and similar to those of the median pair.

Abdomen completely membranous, covered by the elytra; pygidium short and broad, with arched borders.

Type-species: *Bolboceras ornatellum* Peringuey, 1901.

1. Vertex unarmed; clypeo-frontal suture inconspicuous
 *M. interruptus* (Kolbe), comb. n.
 Vertex armed with keel or tubercles 2

2. Vertex with two small and well separated tubercles; pronotum
 with strong and sparse punctures on each side of the disc.
 *M. congolensis* (Paulian), comb. n.
 Vertex with a short and weakly bituberculate keel; pronotum
 with moderate and dense punctures on side of disc
 *M. ornatellus* (Peringuey), comb. n.

Related to *Bolbocaffer*, gen. n., differing by the form of the cephalic armature in both sexes; by the 9th antennite with a large, smooth and glabrous area on ventral face; by the arched mandibles, which are slightly toothed distally on median border; by the lacinia with bidentate apex; by the fore tibiae with a sinuous inner margin on apical region; by the strong middle and hind tibiae, with robust teeth on lateral borders, and by the spine-shaped hind trochanteres.

Head broader than long; clypeus with anterior carina continued posteriorly into margins, forming a small denticle near the clypeo-genal suture, and then surrounding the front and inner borders of the eyes, and finally disappearing in the occipital region; clypeo-frontal suture weakly delimited; front and vertex unarmcd; ocular canthus short and widened, not surpassing the middle of the eye, with front and lateral borders elevated into weak keel, antennae typical, with strong, long and claviform scape, slightly arched and truncate distally, with antennites 3-8 discoidal (median area of 5-8 obtusely angulose); 9-11 lentiform, 9th with large, shining, smooth and glabrous area in the lower face; mandibles fal-ciform, and different from each other, the left one with a large, median incision on the inner border, slightly toothed apically; with sharp apex and the outer margin regularly curved; the right mandible with an irregular and thin incision on basal half of the median border; just above the middle of the margin with a tooth-shaped process, with sharp apex and a strong tooth in the middle, with arched lateral borders and tuberculiform apex; labrum with anterior margin more or less strongly incised, the irregular upper face with an inconspicuous transverse carina in the middle; maxillae similar to those of *Bolbocaffer*, gen. n.; galea weakly sinuous on front border; lacinia bidentate; maxillary palpi with first article small and triangular, the 2nd obliquely truncate at apex, third shorter than preceding, cylindrical, slightly arched and thickened distally, 4th fusiform, almost equal to 2nd, with membranous apex; mentum broad, with lateral borders slightly convergent in front, the front border sinuous; the hind one straight, with inconspicuous

anterior angle; labial palpi with articles increasing in size, the first very short, shaped as a truncate cone, the 2nd claviform, the 3rd fusiform with membranous apex, and slightly longer than the preceding; gula longer than wide; submentum short and transverse concave.

Pronotum wider than long, convex, with inconspicuous impression on anterior half; completely marginate with widely incised front border; lateral border arched and progressively confused with the slightly sinuous hind border; front angles straight and slightly salient, hind angles inapparent. Prosternum with a strong impression on median, pre-coxal region, which does not touch the anterior border, marginate laterally by a strong carina the front border salient and forming a wide lobe; post-coxal region scutiform, with a slightly longitudinal, dentiform or bigibous carina in the middle; proepisternum narrow in the middle, without a longitudinal cariniform line on the inner face of hind angles.

Scutellum tongue-shaped, as wide as long. Elytra with 14 more or less irregular striae, 7 placed between suture and humeral callus; the first one not reaching base, the 14th inconspicuous and almost disappearing laterally; all erased apically; the first interstria very broad; epipleurae wide in front, narrowing backwards; elytral suture thinly keeled. Mesosternum with a shining and smooth area on front-median portion, which is projected backwards, forming two median and thin files; with an inconspicuous sulcus in the middle; meso-metasternal suture inapparent; mesoespisternum oblique, elongate and almost twice as wide as long.

Front tibiae slightly arched and widened distally, with 6 lateral teeth on lateral border; the median margin sinuous and reflected on discal apex which is dentiform in the inner corner; front tarsi filiform and shorter than tibiae, with the first tarsomeron as long as the 2nd or slightly shorter; 2-4 decreasing in size, the 5th largest, slightly arched and thickened apically. Middle legs separated by the metasternal process; trochanteres enlarged, with sharp and arched margins; median femora short with slightly incised front border, the hind border arched and the lateral one denticulate, with a strong tooth on lateral-lower border and a transverse and short keel on the lateral border; apex almost truncate at right angle, with sides projecting into a small tooth; calcares spiniform, the lower one slightly arched; middle tarsi as long as tibiae, with the first tarsomeron only smaller than 2-4 together, those decreasing in size, the 5th as long as the first, subclaviform and slightly arched; claws sharp and curved. Hind legs with widened trochanteres, projected posteriorly into a small tooth; hind femora claviform and slightly larger than the median ones, slightly arched and denticulate laterally, the keel of the lower face forming an inconspicuous tooth on each side, the apex projected in the middle into a salient lateral-ventral dentiform lobe; calcares sinuous and spine like; hind tarsi similar to those of the median pair.

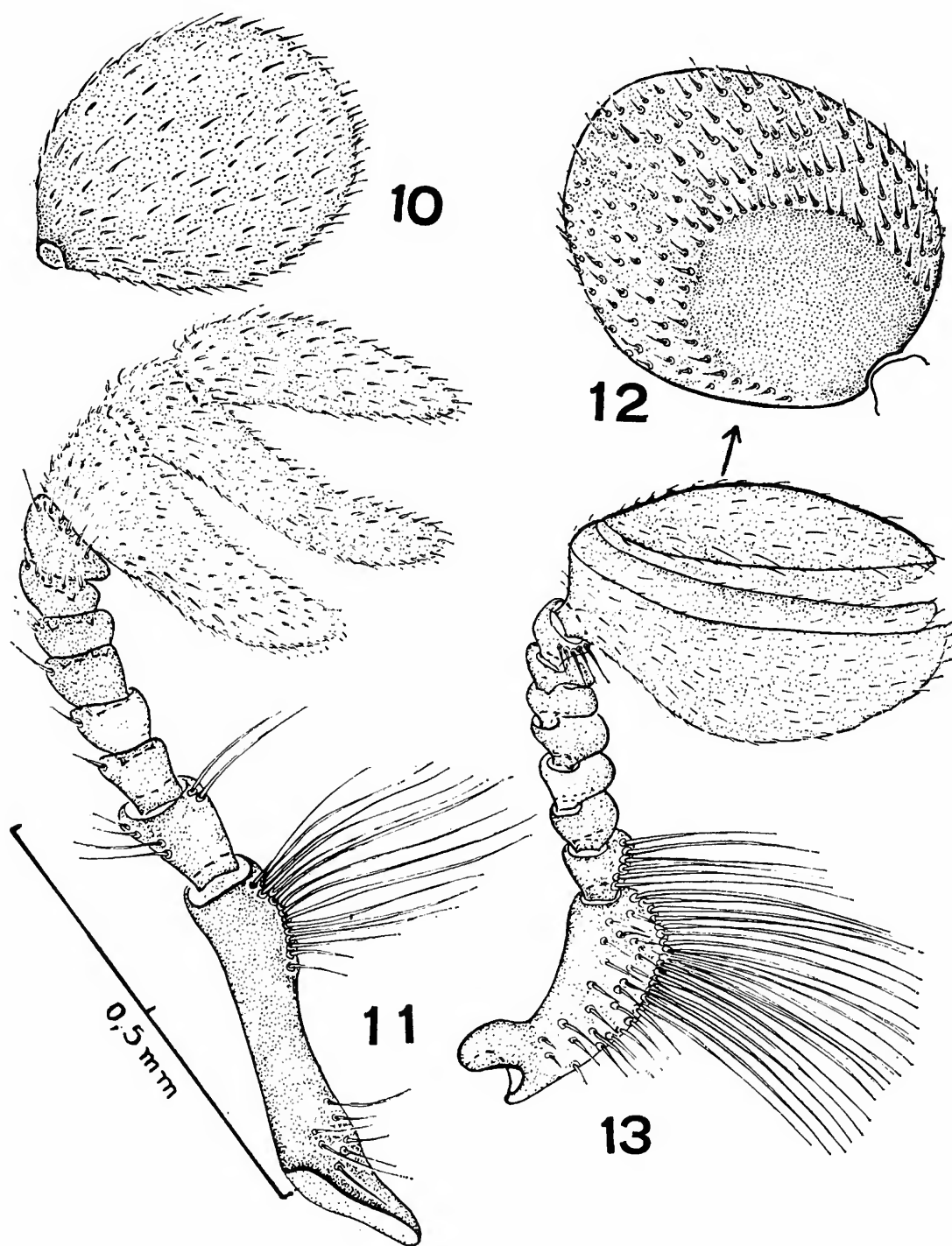
Abdomen membranous; pygidium only slightly wider than long.

Type-species: *Bolboceras capense* Klug, 1843.

Bolbaffer, gen. n.

Allied to *Bradycinetulus* Cockerell, *Bolbocerastes* Cartwright and *Zefevazia* Martinez; differing from the first by the hind tibiae protruded into a lobuliform process, similar to a fixed calcar, by the present hind prosternal process, by the pronotal anterior border keeled in the middle, and by the presence of the metasternal plate; from *Bolbocerastes* by the simple, elongate and cariniform prosternal spine, not bituberculate or transverse, by the front border of the pronotum elevated and cariniform in the middle, by the male abdomen with sternites 5-6 differently conformed in relation to the females, by the presence of tubercles on hind border of the pronotum, and by lacking a transverse carina in the females; from *Zefevazia* by the presence of the prosternal process, by the hind tibiae without a lobuliform process, by the pronotum unarmed behind the anterior border, and in the females by lacking a median transverse carina.

Head irregularly pentagonal; clypeus with a narrow, transverse and complete carina on front border, passing laterally over the lateral borders until reaching the hind margin of the occipital region; in the males there is another transverse keel on the clypeus, just behind the first one, touching the lateral borders; the females have the transverse carina toothed laterally, the front and lateral borders marginate by a thin and cariniform line; ocular canthus short, enlarged, not dividing the eyes, only reaching the middle of the eyes; antenna with 11 antenites, the scape the largest, and claviform; the 2nd short, shaped as a truncate cone, broader at distal base; 3-6 decreasing in length, each slightly enlarged in the middle and narrowed towards apex; 7-8 clearly lentiform; 9-11 lamelliform, the 9th with a large, smooth and glabrous area with borders delimited irregularly in the inner face, the remaining parts covered with micro-punctures as the 11th antenite, the 10th smaller and enclosed by the 9th and 11th; labrum short, lobuliform and enlarged, with a declivous area on each side of anterior upper face and a cariniform line in the middle of the lower one; mentum subcordiform, convergent and narrowed anteriorly, with anterior border truncate at right angle; prementum inconspicuous; maxillae with galea and lacinia pointed at base, narrow, elongate and membranous; stipes protruded into a flat tooth; galea and lacinia lobuliform; the lacinia small, enlarged, sharp in the middle, with bidentate apex; maxillary palpi 4-segmented, with the first article very short, the 2nd very long and slightly narrowed distally, the 3rd much smaller than the preceding and with the shape of a truncate cone, enlarged distally; the 4th largest, with almost parallel sides and membranous apex, labial palpi with 3 articles, excluding the palpiger; first article small and slightly longer than large, arched and widened distally; 2nd almost twice as long as the preceding, subfusiform and narrower with membranous apex; submentum and gula without clear delimitation, the gula regularly convex and the submentum with a transverse depression; mandibles different from each other, the left one falciform, with the



Bolbocaffer sansibaricum (Kolbe): 10, internal face of 9th antennite; 11, antenna. *Bolbocaffer princeps* (Kolbe): 12, internal face of 9th antennite, showing smooth area; 13, antenna.

outer side arched and slightly sinuous, the median border irregularly incised and angulose in the distal third, with a sharp tooth in the junction with the outer border; the right mandible forming an irregular lobe, with stout apex, and with a salient, dentiform process in distal third of median border.

Pronotum wider than long, with the lateral and hind borders marginate, the front border cariniform and elevated in the middle, the lateral borders arched, with front angles salient at a more or less right angle; hind angles rounded; the hind margins confused with the hind border which is also regularly arched and with a feeble longitudinal sulcus in the middle; males with flattened pronotum, declivous in the distal region, the declivity delimited behind and at sides by a corniform process, with or without 2-3 nodiform tubercles on pre-scutellar area, and with an inconspicuous longitudinal sulcus; the pronotum of females convex with a transverse keel on disc, which is shorter than the width of the central portion of head; without nodiform processes and the median longitudinal sulcus represented only by a thin longitudinal patch; prosternum cuneiform in anterior half, between the coxae, and depressed laterally, with posterior half narrowed and protuded into a tubercle keeled longitudinally in the middle; proepisternum forming an irregular semicircle and hollowed anteriorly. Scutellum wider than long, with arched and convergent sides. Elytra very convex, each elytron longer than wide and completely marginate; the 7 striae between suture and humeral callus not touching the base; 1-5 originating behind the front border of the elytron; 8-12 beginning far from humeral callus; striae slightly convex, the sutural one much wider; humeral callus inconspicuous; epipleurae reflected and narrowed backwards. Mesosternum broader than long, with a median impression behind. Metasternum with irregular plate with thin, longitudinal sulcus between the middle coxae, the lateral areas very broad; metaespisternum elongate.

Front tibiae elongate, slightly arched distally and with 5 teeth on lateral borders; distal tooth the largest and lobuliform, with obliquely truncate apex; calcares very long and slightly narrowed at the end, in the males with a pediform and oblique apex; front tarsi elongate. Middle coxae contiguous; the middle tibiae arched, with a salient, lateral keel on ventral border; the lateral borders with some denticles just above the transverse carina of the upper and lower faces; calcares elongate, spine-like, longer than the first tarsomeron, and of different shape, one straight and the other one curved; with two strong and sharp claws. Hind femora different in both sexes; hind tibiae similar but much longer than the median ones and with the transverse carina, tooth and denticles weaker, and the lateral lower apex without a tooth; calcares elongate, flattened slightly sinuous and sharp at the end; hind tarsi similar to the median ones.

Abdomen membranous, clearly chitinized, broader than long, convex and with very distinct sexual differences.

Type-species: *Bolboceras princeps* Kolbe, 1894.

Bolbocaffer, gen. n.

Allied to *Elephastomus* Kirby by the linear conformation of the metasternum between the contiguous coxae; differing from it by the following characters: metasternal plate differently shaped and unkeeled posteriorly; shape of head also different, with the front border similar in both sexes; absence of sexual dimorphism; labrum salient, with a visible, transverse carina just on the anterior border of dorsal face; prosternum without a salient post-coxal process; front margin of pronotum with bituberculate margin almost in the middle; abdominal sternites different.

Head enlarged, slightly convergent in front, with anterior margin truncate almost at right angle and elevated into a feeble carina; clypeus bituberculate behind and in front, at each side with an erased keel on occipital region, thinly carinate up to hind border; canthus enlarged, lobuliform and almost reaching the middle of the sphaeric eyes; antennae 11-articulate, with a short and claviform scape; 2nd antennite cylindrical, irregular and much smaller than the preceding one; 3-6 similar to the 2nd but shorter, the 4th slightly larger; 7th irregularly campanuliform and narrowed in the median border; 8th lentiform with a sharp median border; 9-11 forming the long and lentiform lamellar process with the median face of the 9th and the lateral face of the 11th covered with dense and recumbent pile (fig. 10); labrum short, enlarged, with the anterior border slightly emarginate, the transverse and salient keel of the dorsal face slightly arched behind, the front border and lower face with longitudinal, median carina; mentum subquadrangular and lobuliform; paraglossae membranous, semicircular; maxillae with elongate palpifer, stipes with strong teeth on medial-distal region; galea lobuliform, with flat tooth on median-distal region; maxillary palpi 4-articulated, with the first article very small, the 2nd subclaviform and slightly arched, the 3rd securiform and shorter than the preceding, the 4th the largest, fusiform and slightly arched, with membranous apex; labial palpi 3-articulate, excluding the palpiger, with the first article small and short, the 2nd subclaviform and equal to the 3rd, which is subclaviform, with membranous apex; submentum short, with transverse excavation, the suture between the submentum and mentum almost straight; the suture between mentum and gula only delimited by a file of setigerous punctures, without evident separation; gula very broad and long, convex and smooth, except on anterior region, where setigerous punctures appear; mandibles different from each other, with upper face concave and lower face convex; the left mandible falciform, with the lateral margin irregularly arched and the median border angulate, with a membrane with long and thin pile in the middle of basal half; the right mandible irregularly lobuliform, with stout apex, and median border with a salient process, arched laterally and toothed in the middle, with the border behind the process marginate by thin and dense pile, very similar to that of the left mandible.

Pronotum wider than long and entirely marginate, with median part of the front border elevated or feebly bituberculate, the emargination sometimes effaced on pre-scutellar area; front angles more or less salient or almost right-angled, the hind ones rounded, with lateral borders arched and the hind margin forming a sinuous arch, with an inconspicuous lobe in the middle; surface

more or less irregular in front, with a depression and a median longitudinal sulcus posteriorly and a circular depression on each side; prosternum with an elongate, median depression, marginate in anterior half by a thin keel laterally proespisternal sutures salient and cariniform with hind portion small and convex, with median longitudinal, spine-like carina, or a depressed tooth; proepisternum narrow, forming an irregular circle. Scutellum tongue-like as wide as long basally. Elytra convex, each one longer than wide, emarginate, the basal emargination interrupted only in a small area before the humeral callus; with 14 narrow striae, 7 between the suture and the callus; 2-7 beginning immediately behind the anterior border, the first on the margin of the scutellum; 8-11 originating behind the inconspicuous humeral callus; interstriae slightly convex; epipleurae reflected and narrowed posteriorly. Metasternum with a rhomboid plate protruded frontwardly between middle coxae, like a narrow and thin process, slightly widened apically, depressed in the middle, and with the lateral borders elevated and cariniform, dividing symmetrically the discal area.

Front tibiae with 6-7 lateral teeth increasing in size towards apex; calcares spiniform and sharp; front tarsi filiform and as long as tibiae, the first article as long as the 2nd; 2-4 slightly decreasing in size, the 5th the largest, slightly arched and ending by two long, arched and sharp claws. Middle coxae separated by the metasternum; median tibiae arched, with transverse carina apically, protruded over lateral face, lobuliform and laminiform in front and with discal apex truncate at right angle, and slightly toothed dorsally; calcares spiniform; middle tarsi shorter than tibiae, with the first tarsomeron almost equal to 2-4 together; these small and decreasing in size; 5th smaller than first, arched, with strong, curved and sharp claws. Hind tibiae slightly longer than the middle ones, and very similar to those, but less arched, and the dorsal keels and lateral teeth less evident; calcares longer and stronger than the median ones, but sinuous, the dorsal one longer than the ventral one and with stout apex; hind tarsi similar to the median ones, also larger.

Abdomen completely membranous, with 6th sternite longer than the preceding one; pygidium small, semicircular; wider than long, with hind margin feebly incised in the middle.

Type-species: *Bolboceras sansibaricum* Kolbe, 1894.

The following species are included in this new genus: *Bolboceras gautieri* Boucomont, *rugiferum* Kolbe and *senegalense* Castelnau. Of course many other African species, unknown to us, will have to be transferred to it.

KEY TO KNOWN SPECIES

1. Elytra with shining and smooth interstriae 2
 Elytra with opaque and coriaceous interstriae 3
2. Pronotum with a triangular depression anteriorly; depression with punctures of three different types: minute and scarce ones all over the surface, simple and thin ones in the depression and longitudinal sulcus, and strong and scarce ones on the borders of the depressions; basal margin more

- or less effaced on pre-scutellar area; head with scarce punctures behind the clypeo-frontal tubercles
 *B. senegalense* (Castelnau), comb. n.
- Pronotum without excavation, file of punctures on median sulcus; only with two types of punctures: scarce micropunctures mixed with other strong ones on surface; basal margin complete; head with rugose punctures behind the clypeo-frontal tubercle *B. rugifer* (Kolbe), comb. n.
3. Head smooth and only with few and scarce punctures behind the clypeo-frontal tubercles; scutellum with strong punctures on basal half; elytra with very narrow striae and with normal punctures
 *B. gautieri* (Boucomont), comb. n.
- Head with strong rugosity and punctures, evanescent on vertex, behind clypeo-frontal tubercles; scutellum smooth; elytral striae sulcate, with strong punctures
 *B. sansibaricum* (Kolbe), comb. n.

REFERENCES

BOUCOMONT, A.

- 1902: Coleoptera, Lamellicornia, Fam. Geotrupidae. In Wytsman's *Genera Insectorum* 150, 20 pp., 1 pl.
- 1909: Notes sur quelques Sous-Genres de *Bolboceras* (Col.) et Description D'un Sous-Genre Nouveau. *Bull. Soc. Ent. France*: 116-118.
- 1910: Contribution a la Classification des Geotrupidae (Col.). *Ann. Soc. Ent. France* 79: 333-350.

CARTWRIGHT, O. L.

- 1953: Scarabaeid Beetles of the Genus *Bradycinetulus* and closely related Genera in the United States. *Proc. U. S. Nat. Mus.* 103 (3318): 95-120, pls. 3-4, figs. 14-16.

HOWDEN, H. F.

- 1954: Notes on Australian Beetles in the Tribe Bolboceratini formerly in the genus *Bolboceras*. *Proc. Linn. Soc. N. S. Wales* 79: 142-144.
- 1955: Biology and Taxonomy of North American Beetles of the Subfamily Geotrupinae with Revision of the Genera *Bolbocerosoma*, *Eucanthus*, *Geotrupes* and *Peltetrupes*. *Bull. U. S. Nat. Mus.* 104: 151-319, 18 pls.
- 1964: The Geotrupinae of North and Central America. *Mem. Ent. Soc. Canada* 39: 1-91, 88 figs.

KOLBE, H. J.

- 1894: Beitrage zur Kenntniss der Mistkaefer Lamellicornia Onthophila. *Stett. Ent. Zeit.* 55: 166-170.

MARTINEZ, A.

- 1954: Un nuevo Género de Bolboceratini Neotropical (Col. Scarab.). *Rev. Brasil. Ent.* 2: 193-204, figs. 1-11.

PAULIAN, R.

- 1941: Revision des Bolboceras Africains. *Rev. Zool. Bot. Afr.* 35: 1-71, 8 pls.

Papéis Avulsos de Zoologia

PAPÉIS AVULSOS ZOOL. S. PAULO, VOL. 22, ART. 17: 175-189

1.IV.1969

SÔBRE O GÊNERO *EPIMETOPUS* (COL., HYDROPHILIDAE)

ARISTIDES A. ROCHA

ABSTRACT

In this paper *Epimetopus balfourbrownei*, sp. n., *E. leechi*, sp. n., *E. alvarengai*, sp. n. and *E. tuberculatus*, sp. n., are described from Brazil. *E. trogoides* (Sharp, 1875) is redescribed and the original description of *E. graniger* (Mulsant, 1851) is reproduced. A new combination for *Georyssus plaumanni* Costa Lima, 1954 (Family Georyssidae) is established; the species really belongs to the genus *Epimetopus* (Family Hydrophilidae). The first instar of the larva of *Epimetopus thermarum* Schwarz & Barber, 1917, is redescribed.

A subfamília Epimetopinae, segundo Balfour-Browne (1949) compreende dois gêneros: *Epimetopus* Lacordaire e *Eumetopus* Balfour-Browne.

Eumetopus reúne as espécies asiáticas e difere de *Epimetopus* por ter as cavidades coxais anteriores abertas atrás, prosterno curto e metasterno sem grânulos glabros.

Epimetopus, do Novo Mundo, divide-se em dois grupos: o primeiro engloba as formas que têm olhos completamente divididos por uma quilha: *Epimetopus trogoides* (Sharp, 1875), *E. thermarum* Schwarz & Barber, 1917, *E. vianai* Balfour-Browne, 1949, *E. plaumanni* (Costa Lima, 1954), comb. n., *E. balfourbrownei*, sp. n., *E. leechi*, sp. n. e *E. alvarengai*, sp. n.

O segundo grupo compreende espécies com olhos parcialmente divididos: *E. graniger* (Mulsant, 1851), tipo do gênero, *E. costatus* (LeConte, 1874), *E. lacordairei* d'Orchymont, 1933, *E. angulatus* Balfour-Browne, 1949, *E. hintoni* Balfour-Browne, 1949 e *E. tuberculatus*, sp. n.

No presente trabalho, além da descrição das quatro espécies novas citadas acima, redescrevo *E. trogoides*, descrevo a larva de *E. thermarum* comparada com a de *E. trogoides* e esclareço a posição sistemática de "*Georyssus*" *plaumanni* Costa Lima.

Aproveito o ensejo para apresentar os meus agradecimentos ao Dr. J. Balfour-Browne do British Museum e ao Dr. H. B. Leech da California Academy of Sciences, cuja orientação e empréstimo de material foram de grande valia.

***Epimetopus trogoides* (Sharp, 1875)**

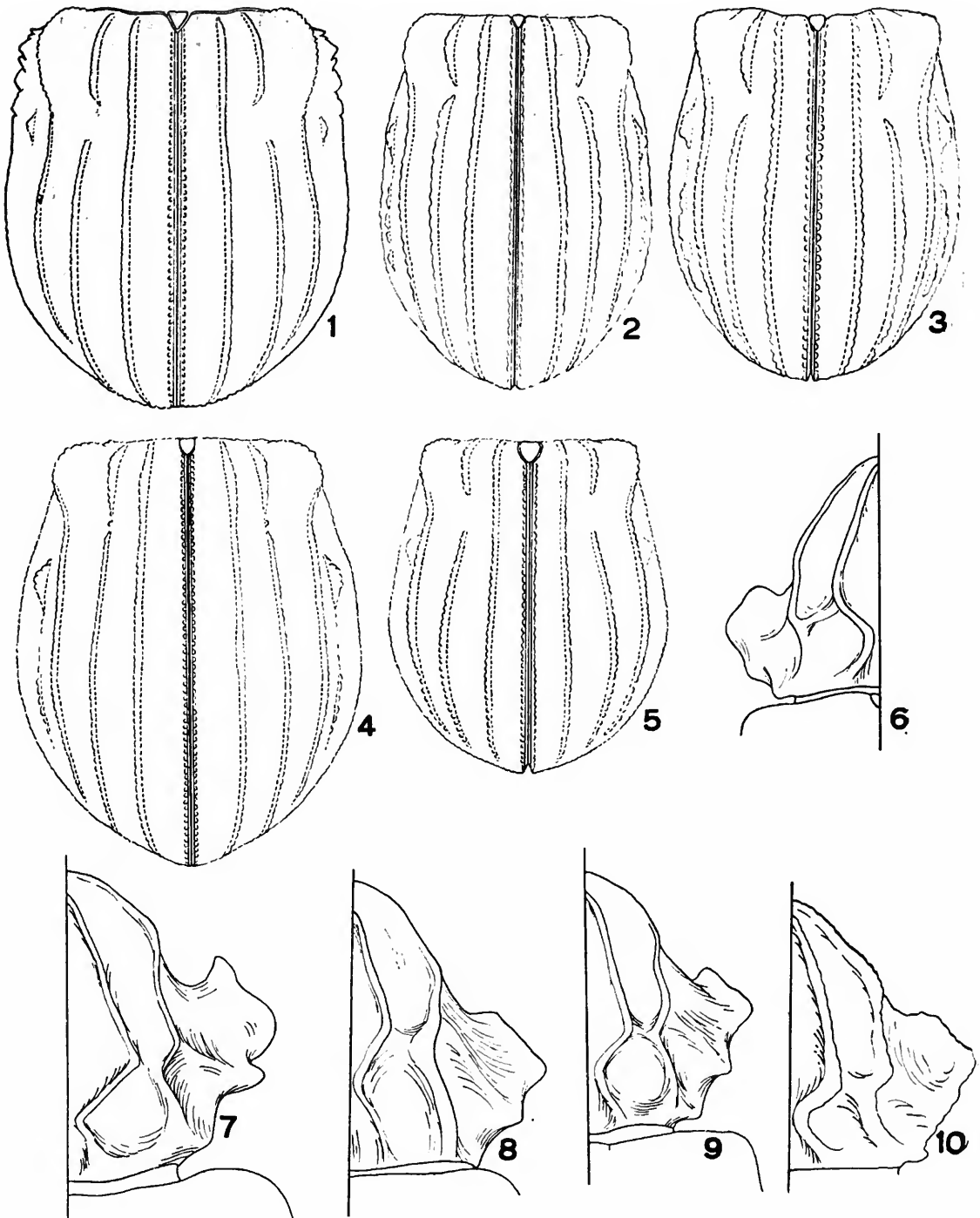
(Figs. 1, 7 e 13)

Sepidulum trogoides Sharp, 1875: 249.*Epimetopus trogoides*; Bedel, 1880: 73 (Cat); Zaitzev, 1908: 353 (Cat.); Schwarz & Barber, 1917: 132 (Chave); Knisch, 1924: 95 (Cat.); d'Orchymont, 1933: 287; Blackwelder, 1944: 168 (Cat.); Balfour-Browne, 1949: 13 (Chave); Rocha, 1967: 223-228 (Larva).**MATERIAL EXAMINADO**

BRASIL. *Goiás*: Santa Isabel do Morro (Ilha do Bananal), 1 ex., VI.1965, M. Alvarenga col. (DZSP). *Mato Grosso*: Barra do Tapi-rapé, 1 ex., XI.1964, B. Malkin col. (DZSP). Cáceres, 1 ex., 2-4.XII.1955, M. Alvarenga col. (CAS). Corumbá, 1 ex., 22.XI.1960, K. Lenko col. (DZSP). Cuiabá (ao sul da Fazenda Ricardo Franco), 4 ex., 10-11.III.1961, J. & B. Bechyné col. (DZSP). Jacaré (Parque Nacional do Xingu), 1 ex., XII.1965, M. Alvarenga col. (DZSP). Rosário Oeste, 1 ex., XI.1963, Alvarenga & Werner col. (DZSP). São Felix (Norte de Santa Isabel, próximo à Ilha do Bananal), 1 ex., VI.1961, M. Alvarenga col. (DZSP). *Minas Gerais*: Arinos, 7 exs., 6-8.XI.1964, Exp. Dep. Zool. col. (DZSP). Buritis (Ribeirão Confins), 8 exs., 29-31.XI.1964, Exp. Dep. Zool. col. (DZSP). Ca-beceiras (Lagoa Formosa), 1 ex., 22.XI.1964, Exp. Dep. Zool. col., em fungo (DZSP). Sete Lagoas, 1 ex., XI.1963, G. R. Kloss (DZSP). Mômro da Garça, 1 ex., 18-20.X.1964, Exp. Dep. Zool. col. (DZSP). *Rondônia*: Surumu, 1 ex., IX.1966, M. Alvarenga & F. M. Oliveira col. (DZSP).

REDESCRIÇÃO

Face superior do corpo castanho-escuro fôska; lado inferior negro-fôsko; pernas acastanhadas; fronte delimitada anteriormente por carena evidente; olhos salientes no lado interno e completamente divididos por uma quilha; mandíbulas, maxilas, lábio e antenas, amareladas. Pronoto (fig. 7) com duas linhas costais centrais que se iniciam adiante do terço anterior, divergem ligeiramente até pouco atrás do meio, quando desviam para o centro e seguem quase paralelas até a margem posterior; adiante da costa umeral encontra-se uma linha costal curta e quase transversal à orla posterior do protórax. Lados do protórax fortemente projetados. Margem lateral dividida em duas porções, a anterior mais longa e fracamente oblíqua e a posterior reduzida e arredondada. Élitros (fig. 1) com as seguintes costas: uma sutural, mais rasa; ao lado desta, uma outra, levemente tuberculada, mais ou menos contínua até o terço apical; entre esta e o úmero, um pouco para trás da base do élitro, começa outra costa que sofre uma interrupção ao nível do quarto anterior, desaparecendo na curvatura apical; segue-se uma costa umeral, iniciada numa projeção saliente e provida de tubérculos que desaparecem ao nível do quarto posterior; lateralmente, próxima do quarto anterior, aparece uma pequena elevação pouco conspícua. Bordos laterais dos élitros levemente denteados



Élitros: 1, *trogoides*; 2, *balfourbrownei*; 3, *leechi*; 4, *thermarum*; 5, *alvarengai*. Pronoto: 6, *leechi*; 7, *trogoides*; 8, *thermarum*; 9, *alvarengai*; 10, *balfourbrownei*.

em toda extensão, mas principalmente nos ombros. Metasterno prêto, com tubérculos pequenos e muito próximos; na região centro-posterior existe uma depressão transversal bem visível, mais lisa interiormente. Abdômen fortemente retraído de aspecto mais liso e brilhante com cinco urosternitos visíveis. Trocânteres com tubérculos pequenos. Fêmures anteriores grossos na metade basal e mais finos na metade apical, com tubérculos achatados e grandes na face externa, entremeados de alguns pêlos curtos e grossos com aspecto de escamas. Nos fêmures médios e posteriores, a escultura é semelhante, mas os tubérculos são menos evidentes e as escamas mais abundantes. Tíbias com fileiras longitudinais de escamas e corbelha apical. Tarsos com cinco segmentos; o último pouco mais longo que o terceiro e quarto juntos, apresenta projeção espiniforme apical. Entre as unhas insere-se um par de pêlos alongados. Genitália do macho (fig. 13).

***Epimetopus thermarum* Schwarz & Barber, 1917**

(Figs. 4, 8, 15-21)

Epimetopus thermarum Schwarz & Barber, 1917: 130; d'Orchymont, 1933: 287; Leech, 1948: 426; Balfour-Browne, 1949: 13 (Chave).

MATERIAL EXAMINADO

ESTADOS UNIDOS. *Arizona*: Hot Springs, 1 ♂, 1 ♀, 24.VI.1901, Schwarz & Barber col. (CAS, parátipos).

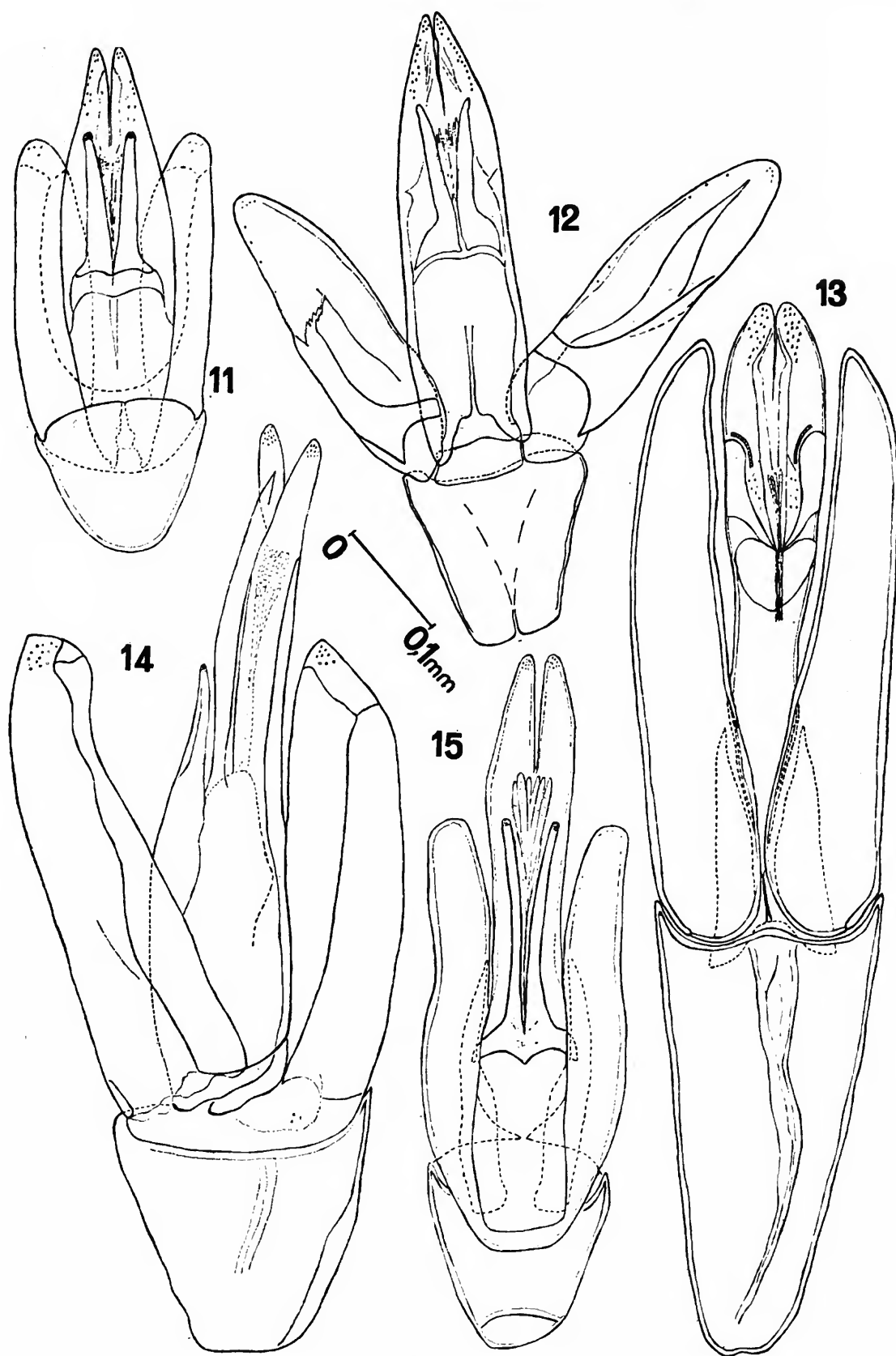
MÉXICO. *Baja California*: San Bartolo (5 milhas W), 2 ♀, 13.VII.1938, Michelbacher & Ross col. (CAS). *Nayarit*: Acaponeta (32 milhas S), 1 ex., 24.XI.1948, H. B. Leech col. (CAS). *Sonora*: Alamos, 1 ♂, 12.VIII.1960, P. H. Arnaud Jr., E. S. Ross & D. C. Rentz col. (CAS).

Ilustrações da genitália do macho (fig. 15), élitro (fig. 4) e pronoto (fig. 8).

DESCRIÇÃO DO PRIMEIRO INSTAR DA LARVA

As anotações que se seguem são baseadas em larvas extraídas de uma bolsa encontrada sobre o abdômen de uma fêmea; essa bolsa continha 15 larvas. Uma outra fêmea grávida possuía oito ovos na bolsa, cujo aspecto é apresentado na fig. 20.

A larva (fig. 17) é do tipo campodeiforme, corpo mais ou menos achatado, pouco esclerosado e cercos trisegmentados. Cabeça (fig. 16) em posição apenas elevada, quase horizontal, ligeiramente arredondada, com cerca de 1/6 do comprimento total. Mandíbula (fig. 18) menos desenvolvida do que na larva de *E. trogoides* (Rocha, 1967: 227, fig. 7); difere por apresentar na área membranosa um dente duplo. Maxila (fig. 19) com aspecto palpiforme alongado, cinco segmentos e cerdas curtas. Perna como na fig. 21. Antena, tórax e abdômen como em *E. trogoides* (Rocha, 1967: 227).



Genitália do macho: 11, *leechi*; 12, *balfourbrownei*; 13, *trogoides*; 14, *plau-manni*; 15, *thermarum*.

A larva de *E. thermarum* difere de *E. trogoideus* pela mandíbula menos desenvolvida e por apresentar um dente duplo na área membranosa.

***Epimetopus plaumanni* (Costa Lima, 1954), comb. n.**

(Fig. 14)

Georyssus sp. Costa Lima, 1953: 90, figs. 65-67.

Georyssus plaumanni Costa Lima, 1954: 177, figs. 1-5.

MATERIAL EXAMINADO

BRASIL. *Santa Catarina*: Nova Teutônia, 1 ♂, IX.1952, F. Plaumann col. (ENA, holótipo); 1 ♂, X.1953, F. Plaumann col. (ENA, parátipo, em lâmina); 2 ♀, IX.1955, F. Plaumann col. (DZSP).

Costa Lima baseou sua descrição em dois exemplares de Nova Teutônia, Santa Catarina, coletados por Fritz Plaumann em setembro de 1952 e outubro de 1953.

Apresento o desenho da genitália do parátipo ♂ (fig. 14) montada na lâmina n. 3898, caixa 62, divisão 28, da coleção da Escola Nacional de Agronomia (ENA), Rio de Janeiro. O holótipo também está depositado na mesma Instituição.

Como se observa pelas fotografias publicadas por Costa Lima (1954) e corroborado pelo exame que fiz do material, os exemplares referidos são Hidrofilídeos da sub-família Epimetopinae, *Epimetopus* do grupo com olhos completamente divididos.

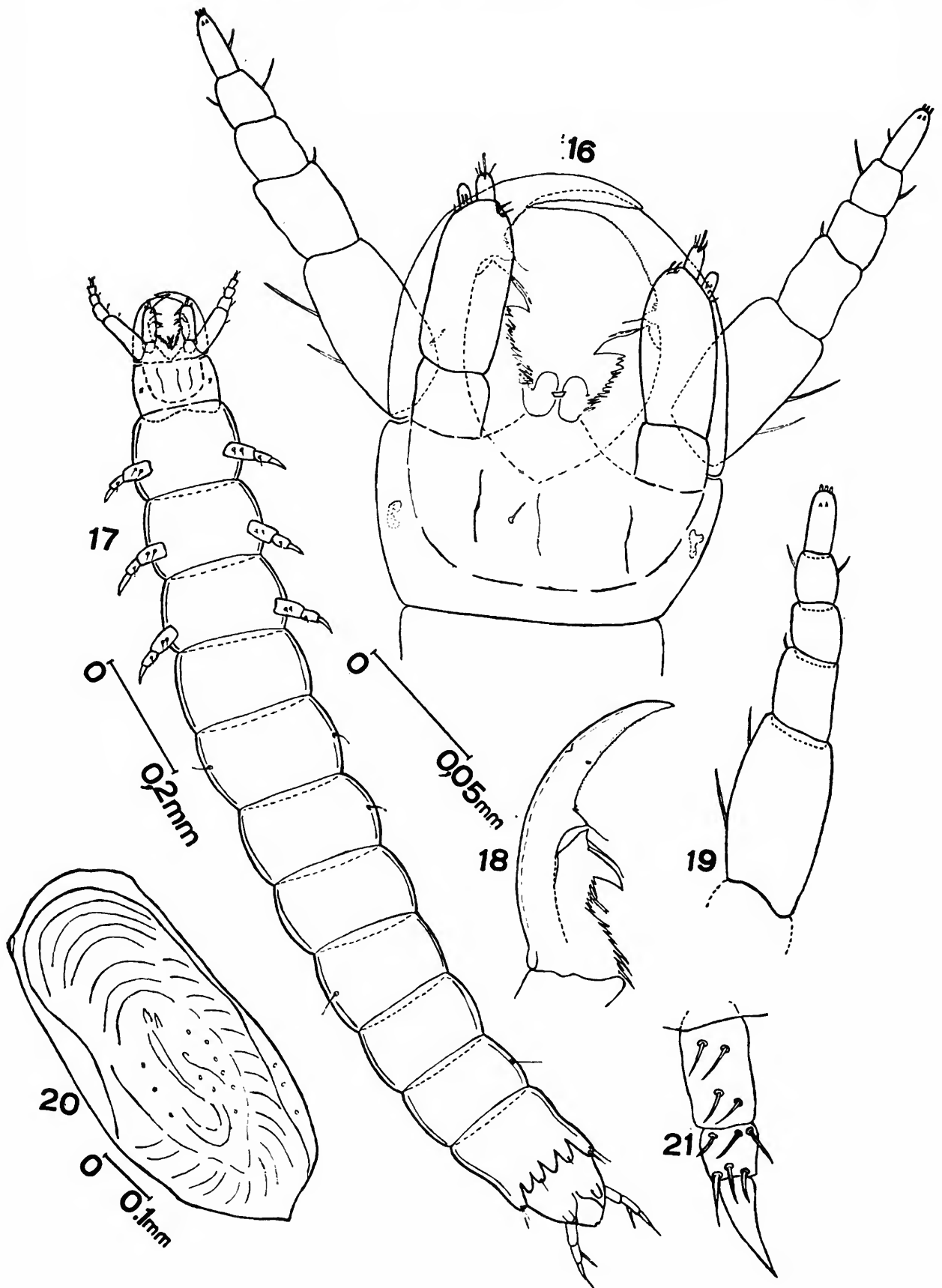
***Epimetopus balfourbrownnei*, sp. n.**

(Figs. 2, 10 e 12)

MATERIAL EXAMINADO

BRASIL. *Mato Grosso*: Jacaré (Parque Nacional do Xingu), 37 exs., XI.1965, M. Alvarenga col. à luz. Holótipo ♂ e 28 parátipos (sexo ?) no Departamento de Zoologia; 4 parátipos (sexo ?), no British Museum; e 4 parátipos (sexo ?) na California Academy of Sciences.

Face superior do corpo castanho-escuro fôsko com manchas pretas; lado inferior negro fôsko; pernas acastanhadas. Pronoto (fig. 10) com duas linhas costais que se iniciam no terço anterior, divergem até pouco atrás do meio, inclinam-se quase se unindo e divergem levemente até a margem posterior; adiante do escutelo apresenta duas costas longitudinais, levemente sinuosas, paralelas e curtas, quase unidas às linhas centrais. Lados do protórax fortemente projetados. Margem lateral não dividida e fracamente oblíqua. Élitros (fig. 2) com as seguintes costas: uma sutural, mais rasa, junto ao escutelo e pouco mais elevada até o meio; ao lado desta uma outra, mais saliente, contínua até a parte apical. Entre



Epimetopus thermarum, larva: 16, cabeça; 17, vista ventral; 18, mandíbula; 19, maxila; 20, ôvo; 21, perna.

esta e o úmero, um pouco para trás da base do élitro, começa outra costa que sofre uma interrupção logo no início, desaparecendo na curvatura apical. Segue-se uma costa umeral, iniciada numa projeção saliente, desaparecida ao nível do quarto posterior. Lateralmente uma quarta costa que tem início logo à frente de uma projeção tuberculiforme terminando no terço apical. Bordos laterais dos élitros levemente denteados em toda extensão. Metasterno prêto, com tubérculos pequenos e muito próximos; na região centro posterior existe uma depressão transversal bem mais lisa interiormente. Abdômen fortemente retraído com cinco urosternitos visíveis e de aspecto mais liso e brilhante. Trocânteres com tubérculos pequenos. Fêmures anteriores grossos na metade basal e mais finos na metade apical, com tubérculos achatados e grandes na face externa, entremeados de alguns pêlos curtos e grossos, com aspecto de escamas. Fêmures médios e posteriores com escultura semelhante. Tíbias com fileiras longitudinais de escamas e corbelha apical. Tarsos com cinco segmentos; o último pouco mais longo que o terceiro e quarto juntos. Entre as unhas insere-se um par de pêlos alongados.

Genitália do macho (fig. 12).

Dimensões (em milímetros)

	Comprimento total	Largura umeral	Maior largura	Largura do protórax	Comprimento do élitro
1	2,25	0,97	1,00	0,85	1,62
2	2,35	1,00	1,17	0,75	1,72
3	2,22	1,00	1,17	0,77	1,50
4	2,20	1,00	1,04	0,75	1,42

Esta espécie difere das demais pelo aspecto da genitália do macho (fig. 12), pelos élitros (fig. 2) e pronoto (fig. 10).

***Epimetopus leechi*, sp. n.**

(Figs. 3, 6 e 11)

MATERIAL EXAMINADO

BRASIL. *Goiás*: Santa Isabel (Ilha do Bananal), 1 parátipo ♀ (alótipo), 12-22.VIII.1957, B. Malkin col. *Mato Grosso*: Santa Isabel (Rio Araguaia), holótipo ♂, 10-20.VIII.1957, B. Malkin col. Ambos na California Academy of Sciences.

Face superior do corpo castanho escuro-fôsko, com manchas pretas: lado inferior negro fôsko; pernas acastanhadas. Fronte terminada anteriormente por carena evidente. Olhos salientes e completamente divididos. Mandíbulas, maxilas, lábios e antenas amareladas. Pronoto (fig. 6) com duas linhas costais iniciadas no terço anterior, divergentes até pouco atrás do meio onde formam como que um S e novamente afastadas na margem posterior; apresenta

ainda, duas costas longitudinais sinuosas quase unidas às linhas centrais; lados do protórax projetados, com margem lateral oblíqua. Élitros (fig. 3) com as seguintes costas: uma sutural, junto ao escutelo e elevada; ao lado desta uma outra mais saliente, contínua até a parte apical; entre esta e o úmero, inicia-se uma outra que sofre interrupção, continuando a seguir até a curvatura apical; segue-se uma umeral, iniciada em projeção saliente e continuada até próximo à curvatura apical; lateralmente aparece uma quarta costa de início tuberculiforme que logo a seguir desaparece e depois continua até o terço apical; bordos laterais dos élitros levemente denteados em toda extensão. Metasterno prêto, com tubérculos pequenos e muito próximos. Abdômen fortemente retraído com cinco urosternitos visíveis, de aspecto liso e brilhante. Trocânteros com tubérculos pequenos; fêmures anteriores grossos na metade basal e mais finos na metade apical; fêmures médios e posteriores com escultura semelhante; tíbias com fileiras longitudinais de escamas e corbelha apical; tarso com cinco segmentos; o último, pouco mais longo que o terceiro e quarto juntos; entre as unhas insere-se um par de pêlos alongados.

Genitália do macho como na fig. 11.

Dimensões (em milímetros)

	Comprimento total	Largura umeral	Maior largura	Largura do protórax	Comprimento do élitro
1	2,15	0,77	1,00	0,80	1,49
2	2,17	0,95	1,12	0,90	1,50

Esta espécie difere das demais pelos élitros (fig. 3), pronoto (fig. 6) e genitália do macho (fig. 11).

Epimetopus alvarengai, sp. n.

(Figs. 5 e 9)

MATERIAL EXAMINADO

BRASIL. *Mato Grosso*: Santa Isabel (margem do Rio Araguaia), holótipo ♀, 10-20.VIII.1957, B. Malkin col., na California Academy of Sciences.

Face superior do corpo castanho claro fôco, com manchas pretas; lado inferior negro fôco; pernas acastanhadas; fronte terminada anteriormente por carena evidente; olhos completamente divididos por uma quilha; mandíbulas, maxilas, lábios e antenas amareladas. Pronoto (fig. 9) com duas linhas costais iniciadas no terço anterior, divergentes até o meio e daí para trás inclinadas para afastarem-se levemente na margem posterior; apresenta ainda duas costas longitudinais sinuosas quase paralelas às linhas centrais; lados do protórax fortemente projetados e recortados; margem lateral quadrangular. Élitros (fig. 5) com as seguintes costas:

uma sutural, junto ao escutelo elevada até a margem apical; ao lado desta uma outra, mais saliente contínua até próximo à margem apical; entre esta e o úmero, inicia-se outra, curva, que sofre interrupção, continuando a seguir até próximo à curvatura apical; segue-se uma costa umeral, iniciada em uma saliência que continua até próximo à curvatura apical; lateralmente aparece uma projeção tuberculiforme; bordos laterais levemente denteados em toda extensão. Metasterno preto com tubérculos pequenos e muito próximos. Abdômen fortemente retraído com cinco urosternitos visíveis, de aspecto liso e brilhante. Trocânteres com tubérculos pequenos. Fêmures anteriores grossos na metade basal e mais finos na metade apical; fêmures médios e posteriores com escultura semelhante. Tíbias com fileiras longitudinais de escamas e corbelha apical. Tarsos com cinco segmentos; o último, pouco mais longo que o terceiro e quarto juntos; entre as unhas insere-se um par de pêlos alongados.

Dimensões (em milímetros)

Comprimento total	Largura umeral	Maior largura	Largura do protórax	Comprimento do élitro
2,20	1,00	1,22	0,85	1,60

Esta espécie difere das outras do grupo pelo aspecto dos élitros e pronoto (figs. 5 e 9).

* * *

Ao segundo grupo do gênero (olhos parcialmente divididos) pertence a espécie-tipo *E. graniger* (Mulsant, 1851) originalmente descrita da Colômbia; reproduzo sua descrição original.

***Epimetopus graniger* (Mulsant, 1851)**

Ceratoderus graniger Mulsant, 1851: 2-4

Epimetopus graniger; Bedel, 1880: 73 (Cat.); Zaitzev, 1908: 353 (Cat.); Balfour-Browne, 1949: 13 (Chave).

"C. Graniger. Suprà convexus, fuscus, elytris posticè dilutionibus. Prothorax in cornu aut in angulum elongatum et obtusus protensus, lateribus anguloso-dilatatus, posticè angustatus, granulosus, lineis quatuor elevatis. Elytris suturâ costique quatuor elevatis; interstitiis duplici serie punctatis, anticè granulosis, posticè laevioribus. Corpus infrâ fuscum ferruginesis.

Long. 0^m',0023, (1 l.) Larg. 0^m',0016, (2/5 l.).

Tête penchée; noire, mais souvent terreuse et alors plus ou moins grisâtre; granuleuse; rayée d'une ligne longitudinale sur le front. Canthus des yeux, granuleux. Antennes et palpes maxillaires d'un flave testacé livide: massue des premières, grisâtre. Prothorax offrant

dans les trois cinquièmes au moins de la largeur médiaire de son bord antérieur une saillie en angle allongé et très-émoussé, graduellement rétrécie et subarrondie à son extrémité, ombrageant le front et prolongée presque aussi avant que la tête; à angles antérieurs prononcés, un peu saillant, en forme de dent et embrassant une partie du côté postéro-externe des yeux; notablement élargi des angles de devant au tiers ou presque aux deux cinquièmes de la longueur, rétréci ensuite jusques un peu au-delà des deux tiers, subparallèle postérieurement, presque tranchant sur les côtés de cette dilatation anguleuse, fendu vers le cinquième antéro-latéral; tronqué à la base à peine aussi large ou moins large à cette dernière qu'aux angles antérieurs; d'un tiers plus large à la dite base que long à partir des angles de devant; inégalement convexe; d'un noir brun, ou d'un brun noir souvent terreux; fortement granuleux; chargé de quatre lignes longitudinales élevées: les deux médiaires confluentes en devant, près de la partie antérieure de la saillie, graduellement divergentes d'avant en arrière jusques vis-à-vis la dilatation anguleuse latérale, progressivement rapprochées ensuite jusqu'à la base: chacune des latérales liée au bord postérieur, vers le point intermédiaire entre le milieu et les angles de derrière, prolongée en devant jusqu'au tiers basilaire ou un peu plus du bord de la saillie antérieure. Ecusson petit. Elytres de deux cinquièmes plus larges en devant que le prothorax à ses angles postérieurs; un peu plus larges aux épaules que la dilatation prothoracique latérale; peu émoussées à l'angle huméral; élargies presque en droite ligne jusqu'aux quatre septièmes ou un peu plus de la longueur, largement en ogive à l'extrémité; munies d'un rebord subcrénélé; convexes; à calus huméral saillant; d'un noir brun ou d'un brun noir à la base, graduellement d'un rouge brun à l'extrémité; chargées chacune de cinq côtes subcréneles (y comprise la suturale et non le rebord externe): ces côtes naissant de la base, la suturale prolongée jusqu'à l'angle postérieur, les quatre suivantes graduellement un peu moins voisines de la partie du bord postérieur ou postéro-externe qui leur correspond: la quatrième passant sur le calus; la cinquième ou voisine du bord externe plus courte, plus faible, surtout dans son milieu; marquées dans les intervalles ou sortes de sillons séparés par ces côtes d'une double rangée de points, plus rapprochés et moins distincts en devant, moins voisins et très-évident postérieurement, les points de chaque série longitudinalement séparés les uns des autres par des granulations très-fortes près de la base, graduellement moins saillantes, moins convexes et plus affaiblies vers l'extrémité. Dessous du corps brun; finement granuleux. Pieds d'un rouge brun; fortement granuleux sur les cuisses et sur les jambes: arêtes de celles-ci denticulées.

Patrie: La Colombie. Ce singulier insecte fait partie de la riche collection de M. Dupont de Paris.

Obs. Le ventre manquait à l'exemplaire unique que j'ai eu sous les yeux."

Epimetopus tuberculatus, sp. n.

(Figs. 22 a 28)

BRASIL. Goiás: Jataí, 1 parátipo, I.1964, Martins, Morgante & Silva col., em globo de luz (no Departamento de Zoologia). Minas

Gerais: Arinos, holótipo e 6 parátipos, XI.1964, Exp. Dep. Zool. col., à luz na proximidade de aguadas (1 parátipo no British Museum, 1 parátipo na California Academy of Sciences; demais exemplares no Departamento de Zoologia).

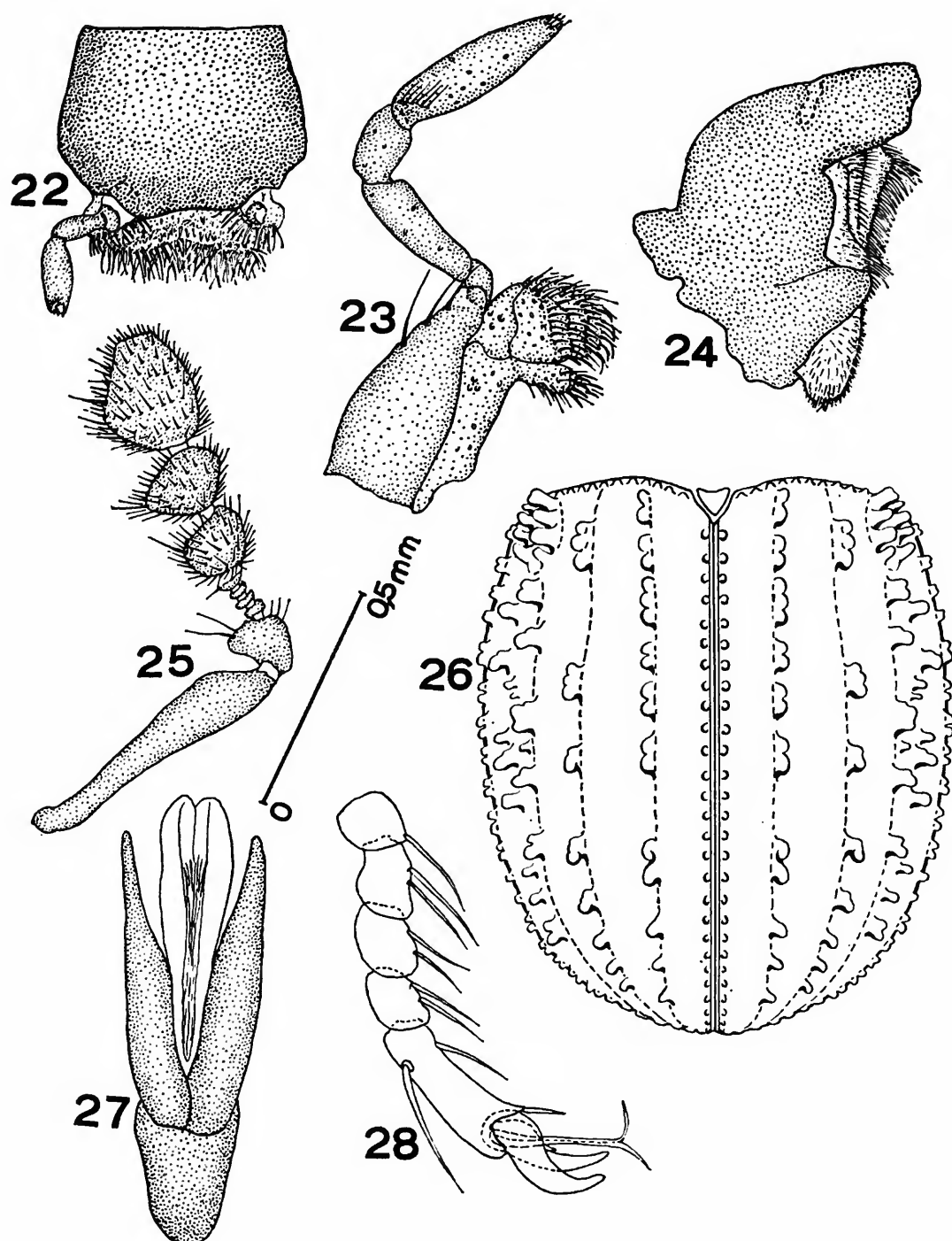
Superfície superior do corpo castanho-escuro, fôsko; superfície inferior negro-fôska; pernas acastanhadas.

Fronte (40 X) delimitada anteriormente por carena evidente, com tubérculos abundantes, arredondados superiormente e bem aproximados entre si; olhos salientes no lado interno; mandíbula, maxila, lábio e antena, como nas figs. 22-25; pronoto com duas linhas costais que se iniciam no têrço anterior, divergem ligeiramente e desaparecem pouco após o meio; adiante do escutelo apresenta duas costas longitudinais, paralelas e curtas, unidas às linhas centrais por ligeira elevação oblíqua; no meio, do lado externo de cada linha costal central, há uma projeção tuberculiforme; no têrço posterior, ao lado das costas curtas, existe uma linha tuberculada que não atinge a base; os lados do protórax são fortemente projetados; a margem lateral se divide em duas porções, a anterior, mais longa e oblíqua e a posterior, mais reduzida e arredondada; élitros (fig. 26) com as seguintes costas; uma sutural, mais rasa, junto ao escutelo e gradualmente mais elevada até ao meio; daí até o ápice, com tubérculos cada vez mais distantes; ao lado desta, uma outra, com tubérculos, mais ou menos contínua, até o têrço apical; entre esta e o úmero, um pouco para trás da base do élitro, tem início outra costa, que sofre uma série de interrupções, até desaparecer na curvatura apical; segue-se uma costa umeral, que se inicia numa projeção saliente, e que, através de uma sucessão de interrupções, desaparece ao nível do quarto posterior; lateralmente aparecem tubérculos isolados, organizados em fileira longitudinal; bordos laterais dos élitros denteados em toda extensão; metasterno (40 X) quase preto, com tubérculos pequenos e muito próximos; na região centro-posterior existe uma depressão transversal bem visível, interiormente mais lisa.

Abdômen pouco evidente, fortemente retraído, com cinco uroterritos visíveis e de aspecto mais liso e mais brilhante.

Trocânteres com pequenos tubérculos. Fêmures anteriores grossos na metade basal e mais finos na metade apical, com tubérculos achatados e grandes na face externa, entremeados de alguns pêlos curtos e grossos, com aspecto de escamas. Nos fêmures médios e posteriores, a escultura é semelhante, mas os tubérculos são menos evidentes e as escamas mais abundantes. Tíbias com fileiras longitudinais de escamas e corbelha apical. Tarso (fig. 28) com cinco segmentos; o último, pouco mais longo que o terceiro e quarto juntos, apresenta projeção espiniforme apical; entre as unhas insere-se um par de pêlos alongados.

Genitália do macho como na fig. 27.



Epimetopus tuberculatus: 22, lábio; 23, maxila; 24, mandíbula; 25, antena; 26, élitros; 27, genitália do macho; 28, tarso.

Dimensões (em milímetros)

	Comprimento total	Largura umeral	Maior largura	Largura do protórax	Comprimento do élitro
1	3,37	1,43	1,81	1,56	2,18
2	3,25	1,37	1,87	1,68	2,12
4	3,18	1,43	1,81	1,50	2,12
5	3,18	1,37	1,81	1,43	2,18
6	3,12	1,37	1,75	1,43	2,18
3	2,93	1,31	1,75	1,43	2,06
7	2,70	1,25	1,53	1,30	2,05

Um outro exemplar, em más condições de conservação, foi usado para estudo de genitália e não será incluído na série tipo.

Lâminas ns. L-1, L-2 e L-3 (1965) DZSP.

REFERÊNCIAS

BALFOUR-BROWNE, J.

1949: Notes on the subfamily Epimetopinae with the description of a new genus and three new species. *Proc. Ent. Soc. London* (B) 18: 12-18, 6 figs.

BEDEL, M. L.

1880: In *Bull. Soc. Ent. France* (5) 10: LXXII-LXXIII.

BLACKWELDER, R. E.

1944: Checklist of the Coleopterous insects of Mexico, Central America, the West Indies, and South America. *Bull. U. S. Nat. Mus.* 185 (1): XII + 188 pp.

COSTA LIMA, A. DA

1953: Família Georyssidae. In *Insetos do Brasil* 8: 90-92, figs. 65-68. Escola Nacional de Agronomia, série didática n. 10.

1954: Notas Coleopterológicas. *Rev. Brasil. Ent.* 1: 177-179, 5 figs.

KNISCH, A.

1924: *Coleopterorum Catalogus*, pars 79, 306 pp., Berlin, W. Junk ed.

LECONTE, J. L.

1874: American Coleoptera. *Trans. Amer. Ent. Soc.* 5: 47-48.

LEECH, H. B.

1948: Contributions toward a knowledge of the insect fauna of lower California, Coleoptera: Haliplidae, Dytiscidae, Gyridae, Hydrophilidae, Limnebiidae. *Proc. Cal. Acad. Sci.* 24 (11): 375-484, 2 pls.

MULSANT, E.

- 1851: Description d'une nouvelle espèce de coléoptère constituant un genre nouveau dans la tribu des palpicornes. *Mem. Acad. Sci. Lyon* (2) 1: 1-4.

D'ORCHYMONT, A.

- 1933: Genre *Epimetopus* et discription d'une sp. n. *Bull. Ann. Soc. Ent. Belg.* 73: 287-290.

ROCHA, A. A.

- 1967: Biology and first instar larva of *Epimetopus trogcides* (Col. Hydrophilidae). *Papéis Avulsos Zool. S. Paulo* 20 (19): 223-228, 10 figs.

SCHWARZ, E. A. & H. S. BARBER

- 1917: Two new hydrophilid beetles. *Proc. Ent. Soc. Washington* 19: 129-133, 3 figs.

SHARP, D.

- 1875: On three new species of Hydrophilidae. *Ent. Monthl.* 11: 247-249.

ZAITZEV, P. H.

- 1908: Catalogue des Coléoptères aquatique des familles des Dryopidae, Georyssidae, Cyathoceridae, Heteroceridae et Hydrophilidae. *Hor. Soc. Ent. Rossicae* 38: 283-420.

PROXOLONIA, NOVO GÊNERO DE MEMBRACÍDEOS DO BRASIL (HOMOPTERA, MEMBRACIDAE) ¹

ALBINO MORIMASA SAKAKIBARA ²

ABSTRACT

Proxolonia, a new genus, is proposed for *Proxolonia fonsecai*, sp. n. (type-locality, Pádua Sales, Conchal, São Paulo, Brazil). The new genus is related to *Xolonia* and *Cyphonia*. In Funkhouser's key for Ceresini (1950), the new genus runs to *Poppea* Stal. Characters are given to distinguish *Proxolonia* from related genera.

INTRODUÇÃO

Entre os exemplares que foram estudados para a revisão do gênero *Cyphonia* de Lap. pertencentes à coleção Pinto da Fonseca, atualmente depositada no Departamento de Zoologia da Secretaria da Agricultura do Estado de São Paulo, encontrou-se um de aspecto muito diferente, que à primeira vista, julgou-se pertencer ao gênero *Xolonia* Plummer do México. Consultando o trabalho de Plummer (1935), concluímos tratar-se de um gênero novo. Pela chave de Funkhouser (1950) o mesmo cai em *Poppea* Stal, porém assemelha-se muito mais a *Xolonia* e *Clepsydrus* no aspecto geral. Difere entretanto de *Poppea*, além do seu tamanho relativamente pequeno, pelos processos supra-umerais que são muito curtos e pela forma do processo posterior. *Xolonia* e *Clepsydrus* por sua vez, apesar da semelhança, distinguem-se de *Proxolonia*, gen. n., pela presença, no primeiro, de uma elevação dorsal, processos supra-umerais grossos e principalmente pela asa que apresenta apenas três células apicais; do segundo, por não apresentar os processos supra-umerais.

Proxolonia, gen. n.

Espécie tipo: *Proxolonia fonsecai*, sp. n.

Cabeça de forma aproximadamente triangular. Vértice pouco esculpido, com pilosidade mais ou menos densa entre os ocelos e

1. Contribuição n. 236 do Departamento de Zoologia da Faculdade de Filosofia da Universidade Federal do Paraná.

2. Bolsista do Conselho Nacional de Pesquisas.

nas margens inferiores. Ocelos conspícuos, equidistantes entre si e dos olhos e situados na altura da linha que passa pelo centro dêstes. Olhos globoides, mais ou menos ovalados vistos de perfil. Clípeo ovoide, duas vezes mais longo que largo e densamente piloso.

Pronoto brilhante, com pontuação grossa, mais condensada no metopídio que no restante do pronoto e esparsamente coberto de pêlos finos e longos. Metopídio convexo com um sulco transversal profundo logo acima da cabeça que se estende para trás até pouco além dos processos supra-humerais passando entre êstes e os ângulos humerais. Processos supra-humerais espiniformes, curtos e horizontais. Porção compreendida entre os processos supra-humerais e o processo posterior, fortemente comprimida acima das margens laterais e estrangulada na base do processo posterior, deixando a área supra-escutelar mais ou menos intumescida e ovalada quando vista de cima, e de perfil com a parte superior no mesmo nível da parte anterior, isto é, sem formar qualquer processo ou proeminência. Processo posterior com um glóbulo mediano mais ou menos esférico donde partem três ramos, dois laterais e um mediano, sendo aquêles engrossados na base e êste mais longo, delgado e paralelo ao bordo interno das tégminas.

Tégminas hialinas, com três células discoidais e cinco apicais sendo a terceira peciolada. Asas hialinas, pequenas e com três células apicais, a segunda peciolada.

Pernas simples, com as tíbias posteriores duas vezes mais longas que as anteriores.

***Proxolonia fonsecai*, sp. n.**

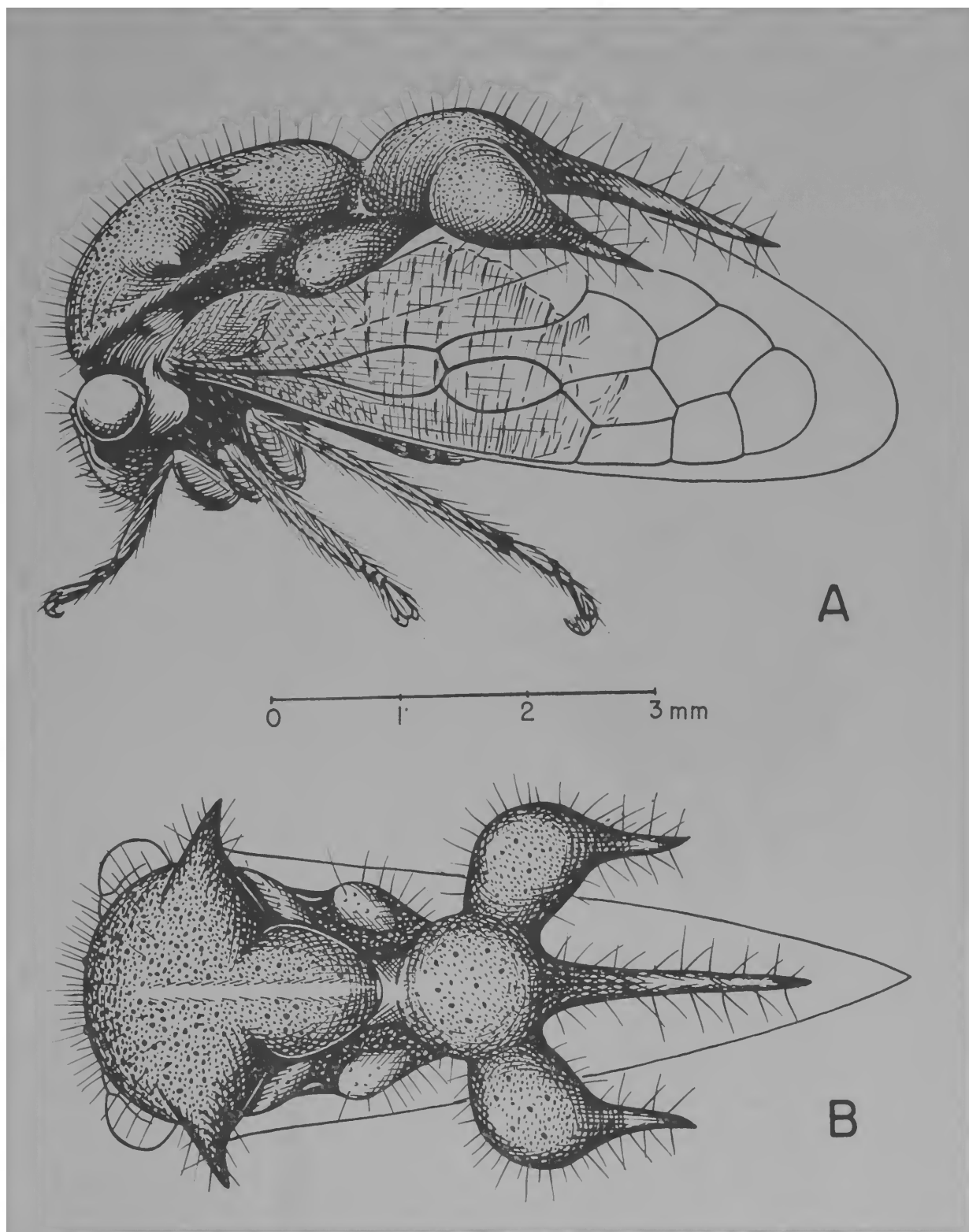
DIAGNOSE

Coloração geral castanho-escuro, com manchas amarelas nos lados e ao longo da linha média dorsal. Processos supra-humerais curtos, finos e horizontais. Área supra-escutelar vista por cima intumescida e ovalada. Processo posterior triglobuloso e triespinoso.

DESCRIÇÃO

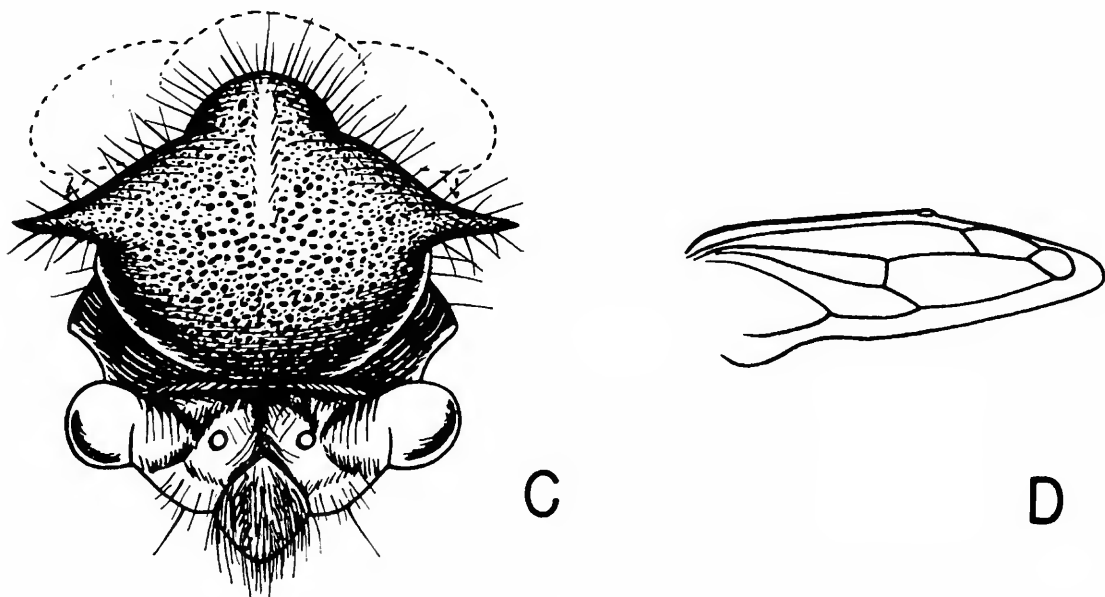
Cabeça com vértice castanho-claro, pouco esculpido, levemente enrugado em sentido longitudinal.

Pronoto brilhante e com pontuação grossa, sendo esta mais densa no metopídio que no restante do pronoto. Coloração geral castanho-escuro, com manchas amarelas distribuídas da seguinte maneira: uma nas expansões post-oculares e estendendo-se pelas margens até os ângulos umerais, uma faixa estreita no metopídio, acompanhando o sulco transversal em toda sua extensão e alargando-se logo após os processos supra-umerais em u'a mancha alongada; uma de cada lado sobre a calosidade das margens laterais; uma faixa estreita ao longo da linha média dorsal, desde o metopídio até à constrição existente na base do processo posterior;



Proxolonia fonsecal, gen. n., sp. n. A, vista lateral; B, vista de cima.

nas porções espiniformes do processo posterior, em forma de anel, sendo dois no ramo mediano e um nos ramos laterais. Processos supra-humerais espiniformes, curtos, finos e horizontais; partelátero-posterior dos mesmos, bem junto à base, com uma pequena calosidade. Área supra-escutelar bastante intumescida, vista de cima mais ou menos ovalada, levemente impressa aos lados logo atrás dos processos supra-umerais, vista de perfil, com a linha de contorno superior continua desde o metopídio até a base da processo posterior. Margens laterais entre os ângulos umerais e o processo posterior, intumescidas e ligeiramente projetadas para os lados. Processo posterior com uma forte constrição basal e com três ramos posteriormente partindo de um glóbulo central comum mais ou menos esférico de diâmetro pouco menos da metade do comprimento do ramo mediano; ramos laterais engrossados na base, subglobulares, de diâmetro aproximadamente igual a um terço do comprimento do ramo mediano, os ápices espiniformes e mais ou menos paralelos entre si.



Proxolonia fonsecai, gen. n., sp. n., C, vista de frente; D, asa.

Tégminas hialinas, levemente amareladas e com uma faixa transversal escurecida, quase imperceptível, na altura do ápice do clavo. Asas hialinas, pequenas, aproximadamente duas vezes mais curtas que as tégminas.

Pernas castanho-escuras.

Medidas em milímetros: comprimento total 6,41; comprimento do pronoto 5,50; largura entre os ângulos umerais 2,30; comprimento dos processos supra-umerais 0,50; diâmetro do glóbulo mediano 1,12; diâmetro dos glóbulos laterais, 0,76.

Holótipo, macho, de Pádua Sales, Município de Conchal, São Paulo, X.1936, Coll. Pinto da Fonseca, atualmente no Departamento de Zoologia da Secretaria da Agricultura do Estado de São Paulo.

É com prazer que dedicamos esta espécie ao Sr. José Pinto da Fonseca, do Instituto Biológico da Secretaria da Agricultura do Estado de São Paulo, que conseguiu fazer uma preciosa coleção de Membracídeos e foi até o presente um dos poucos estudiosos desta família entre nós.

REFERÊNCIAS

FUNKHOUSER, W. D.

1950: Homoptera, Fam. Membracidae. *Genera Insectorum* 208E, 383 pp., 14 pls.

PLUMMER, C. C.

1935: Descriptions of new Membracidae from Mexico. *Journ. N. Y. Ent. Soc.* 43: 373-384, pls. 27-28, 25 figs.

Papéis Avulsos de Zoologia

PAPÉIS AVULSOS ZOOL. S. PAULO, VOL. 22, ART. 19: 197-215

1.IV.1969

LISTA DOS TIPOS DE PEIXES DAS COLEÇÕES DO DEPARTAMENTO DE ZOOLOGIA DA SECRETARIA DA AGRICULTURA DE SÃO PAULO

HERALDO A. BRITSKI

ABSTRACT

This paper contains a list of types in the ichthyological collection of the Departamento de Zoologia, Secretaria da Agricultura, São Paulo (formerly of the Museu Paulista). A synopsis of the history of these collections is presented, as well as a list of types supposed to be in the collection, but which could not be located. Special notes are given on the types of Curimatidae described by Fernandez-Yepez (1948). Lectotypes are selected for several species.

No ano de 1961 iniciei, com Naércio A. Menezes, a revisão e reorganização das coleções de peixes deste Departamento, que haviam permanecido durante anos sem os cuidados de um curador, os tipos nunca havendo sido convenientemente arrumados. Tratei então de proceder à rotulagem e, quando necessário, à designação de lectótipos e paralectótipos.

Julgo oportuno apresentar inicialmente um breve resumo da história dessas coleções, o qual está baseado principalmente no documento de Orville A. Derby dirigido ao diretor do Museu Paulista (Rev. Mus. Paulista, 1895, vol. 1: 13), no trabalho de Olivério Pinto (1945) e em documentos deste Departamento.

Em 1890 o Conselheiro Mayrink adquiriu um prédio do Coronel Joaquim Sertório e, juntamente com êle, as coleções particulares desse colecionador, as quais incluíam plantas, objetos diversos e, além de peixes, animais de vários grupos. O Conselheiro Mayrink doou esse chamado "Museu Sertório" ao governo do Estado de São Paulo, que o colocou, no ano de 1891, sob a direção interina de Alberto Loefgren. No início de 1893 o museu foi anexado à Comissão Geográfica e Geológica de São Paulo dirigida por Orville A. Derby; dentro desta Comissão foi criada uma Secção de Zootologia, cujo primeiro chefe foi Hermann von Ihering. Em 1894 o "Museu Sertório", com as coleções a êle agregadas, foi desmembrado da Comissão Geográfica e Geológica, para formar o Museu Paulista, instituição que se dedicava a todos os campos de Ciências Naturais, da História e da Antropologia.

Departamento de Zoologia, Secretaria da Agricultura, São Paulo.

Depois da criação do Museu Paulista, as coleções ictiológicas originais entraram em fase de expansão, tendo-se destacado como coletores Beniamino Bicego, Francisco Guenther, João Leonardo Lima, Rodolfo von Ihering, Hermann Luederwaldt e, principalmente, Ernst Garbe. Esta fase de expansão perdurou até mais ou menos o ano de 1925, ocasião do falecimento de Garbe. Há que assinalar ainda os trabalhos de H. Luederwaldt, que rotulou adequadamente uma grande parte das coleções e organizou o livro de registros.

A identificação e a organização das coleções ictiológicas do Museu Paulista iniciaram-se com Rodolfo von Ihering, que trabalhou no museu de 1902 a 1917. Seus trabalhos tratam principalmente da descrição de novas espécies de siluróides, gimnotóides e ciclídeos. Seguiu-os neste trabalho Alípio de Miranda Ribeiro, ictiólogo do Museu Nacional do Rio de Janeiro (MNRJ), que gastou parte do ano de 1918 estudando estas coleções; identificou a maior parte dos peixes marinhos, siluróides e ciclídeos e descreveu, como resultado, nada menos que 5 gêneros e 20 espécies novos.

Depois disso, a Secção de Peixes permaneceu sem curador por muito tempo, havendo uma espécie de hiato no histórico das coleções. Cessaram os trabalhos de curadoria, assinalando-se apenas uma ou outra entrada ocasional de material.

Aos 11 de janeiro de 1939, a Secção de Zoologia do Museu Paulista desmembrou-se dêle, como uma instituição independente, o Departamento de Zoologia da Secretaria da Agricultura de São Paulo. Daquela época até nossos dias, apenas Antonia do Amaral Campos ocupou a curadoria da Secção de Peixes, no período compreendido entre 1940 e 1951. Dedicou-se ela principalmente ao estudo dos caracóides acumulados desde a criação do Museu Paulista, tendo também trabalhado sobre uma ou outra família de peixes marinhos.

Em 1952, P. E. Vanzolini, chefe da Secção de Herpetologia, foi encarregado da conservação da coleção ictiológica e, em 1960, sob sua orientação fui encarregado da curadoria.

Devido ao longo tempo em que as coleções permaneceram sem os cuidados diretos de um especialista, houve descuidos, que se traduzem hoje pelo desaparecimento de alguns tipos e pelo mau estado de conservação de muitos outros.

Os tipos estão aqui alistados dentro de cada família por ordem alfabética e as famílias ordenadas de acordo com a classificação de Greenwood *et al.* (1966).

Cada nome é acompanhado dos seguintes dados:

1. citação da descrição original;
2. número de catálogo nas coleções do Departamento de Zoologia;
3. dados merísticos e medidas dos tipos, colocados entre parênteses;
4. localidade;
5. coletor e data da coleta;
6. determinação do *status* sistemático atual, seguido da bibliografia pertinente.

A fim de confirmar se o material examinado era realmente o tipo, foram consultadas tôdas as descrições. Os lectótipos só foram selecionados quando havia segurança quanto à validade dos sín-tipos.

Nos casos em que houve designação de lectótipo, êste conser-vou o número original do lote e os paralectótipos receberam nú-meros novos. Quando havia parátipos reunidos sob um mesmo número, deu-se a um dêles o número original do lote e os outros receberam números novos.

Para cada parátipo ou paralectótipo é citado apenas, entre pa-rênteses, o comprimento padrão. Quando há vários exemplares é citado o comprimento padrão do maior e do menor.

Os lectótipos e, no caso de descrições originais não bem explí-citas, os holótipos são acompanhados de alguns dados merísticos e medições. As medidas sempre são expressas em milímetros e as abreviações usadas são:

Compr., comprimento padrão;

Alt., maior altura do corpo (geralmente em frente à nadadeira dorsal);

Cab., comprimento da cabeça (medido sempre do rostro até a parte posterior da abertura branquial);

Ôlho, diâmetro horizontal do ôlho;

Int., distância entre as órbitas;

Foc., focinho (medido do rostro até a margem anterior do ôlho)

D., número de raios da nadadeira dorsal;

A., número de raios da nadadeira anal;

P., número de raios da nadadeira peitoral;

V., número de raios da nadadeira ventral;

L. lat., número de escamas ou placas perfuradas na linha la-teral;

L. tr., número de escamas entre a origem da nadadeira dorsal e a linha lateral e entre esta e a origem da nadadeira ventral;

; *Pl. pre-D.*, número de placas ímpares à frente da nadadeira dorsal;

Pl. pre-Ad., número de placas ímpares entre as nadadeiras dorsal e adiposa;

Dentes, número de dentes nas maxilas superior e inferior;

Serra, número de espinhos ímpares ventrais.

Além dêstes dados, são incluídos esclarecimentos diversos sô-bre o tipo.

Não foram encontrados alguns tipos registrados nos livros do Departamento, que ôbviamente deveriam estar depositados nestas coleções. Como também não conseguimos localizá-los em outros museus, achamos conveniente dar uma relação delas:

Otocinclus (Microlepidogaster) tietensis R. v. Ihering, 1907 (holótipo);

Gymnotus aequilabiatatus nigriceps R. v. Ihering, 1907 (sintipos);

Corydoras meridionalis R. v. Ihering, 1911 (sintipos);

Hemipsilichthys garbei R. v. Ihering, 1911 (sintipos);

Plecostomus margaritifer butantanis R. v. Ihering, 1911 (holótipo);

Crenicichla biocellata R. v. Ihering, 1914 (holótipo);

Plecostomus ancistroides Ribeiro, 1918 ((sintipos);

Microlepidogaster bahiensis Ribeiro, 1918 (sintipos);

Paragonus sertorii Ribeiro, 1918 (holótipo);

Pseudopimelodus roosevelti Borodin, 1927 (parátipos);

Rhinolepis paraguensis Borodin, 1927 (parátipos);

Apareiodon pirassunungae Campos, 1945 (parátipos);

Oligosarcus pintoii Campos, 1945 (holótipo).

Perda ou desaparecimento de alguns sintipos ou parátipos, resultando em diminuição da série original, foram comuns e não são aqui especificados.

No final dêste trabalho, é apresentado um índice das localidades mencionadas.

TIPOS DAS ESPÉCIES DE CURIMATIDAE DESCRITAS POR FERNANDEZ-YEPEZ

Em 1948, Agustin Fernandez-Yepeze descreveu algumas espécies novas da família Curimatidae, baseando-se em material de nossas coleções. Incorreu êle numa série de equívocos que exigem esclarecimentos especiais. Tais esclarecimentos se baseiam em documentos diversos, principalmente correspondência, tudo arquivado na Secção de Peixes dêste Departamento.

No ano de 1930, a pedido de Barton W. Everman, o Museu Paulista emprestou à California Academy of Sciences (CAS) uma coleção de peixes do Brasil, a maior parte dos quais de água doce. Êstes peixes ficaram ali até 1949, quando parte deles retornou a São Paulo. Como Afrânio do Amaral, naquele tempo Diretor do Instituto Butantan, havia servido de intermediário no empréstimo de tais coleções, elas ficaram conhecidas na CAS como "Amaral fishes".

A maior parte de tais coleções (incluindo os Curimatidae) foi estudada na CAS por H. W. Clark, porém os resultados nunca foram publicados. Quando retornaram a São Paulo, as coleções continham as identificações de Clark, sendo que muitas das espécies eram rotuladas com nomes novos seguidos da expressão "sp. n."; êsses nomes manuscritos obviamente não têm validade nomenclatural.

Fernandez-Yepeze, examinou os Curimatidae dessas coleções na CAS antes do retorno das mesmas para São Paulo e, provavelmente, após a morte de Clark. Êle desconhecia os fatos acima relatados e verificando que os rótulos levavam o nome de A. do Amaral (provavelmente pela razão exposta acima), pensou que se

tratasse de Antonia do Amaral Campos, então ictióloga dêste Departamento. No caso dos rótulos que continham nomes novos (dados por Clark), supôs ainda que o nome de tais espécies novas eram de autoria de Antonia do Amaral Campos e que as coletas também haviam sido feitas por ela.

Assim, complicou Fernandez-Yepez duplamente os fatos, publicando espécies novas com os seguintes nomes: *Curimatorbis modestus* Amaral Campos, *Pseudocurimata grandocule* Amaral Campos e *Cruzentina insculpta* Amaral Campos.

Deve ficar claro, portanto, que Afrânio do Amaral e Antonia do Amaral Campos nada têm a ver com a denominação das três espécies novas acima citadas, nem tampouco coletaram os exemplares em questão. Por conseguinte, as espécies aqui consideradas aparecem nesta lista com o nome de Fernandez-Yepez, seu verdadeiro autor.

Há ainda outros equívocos na publicação de Fernandez-Yepez que na presente lista aparecem corrigidos. Assim, os números de registro atribuídos ao Indiana University Museum na realidade são das coleções de peixes do antigo Museu Paulista.

AGRADECIMENTOS

Quero expressar meu agradecimento ao colega Naércio A. Menezes que iniciou comigo o trabalho de rearranjo das coleções de peixes, primeiro passo para a concretização dêste trabalho. Também ao Dr. George S. Myers, Stanford University, cuja correspondência com P. E. Vanzolini muito contribuiu para aclarar o problema dos "Amaral fishes".

Sphyrnidae

Sphyrna nana Sadowski, 1965: 6, figs. 2 e 7.

Holótipo 4304 (♀ 1330 mm); "Off Cananéia (lat. 25°S, long. 45°52'W)", coletor não mencionado; 15.I.1963.

= *Sphyrna (Platysqualus) media* Splenger (*apud* Gilbert, 1967: 54).

Clupeidae

Harengula majorina Storey, 1938: 32, figs. 9, 12, 17.

Parátipo 772 (129 mm); Santos, Estado de São Paulo; R. v. Ihering col., 1912.

Characidae

Astyanax schubarti Britski, 1964: 214, fig.

Holótipo 4263 (Compr. 83; Alt. 34; Cab. 19; Ôlho 7,3; Int. 7; Foc. 5,5; D. ii+9; A. iii+28; P. i+14; V. i+7; L. lat. 39; L. tr. 7/6); rio Mogi Guassu, Emas, Estado de São Paulo, à jusante da barragem; P. E. Vanzolini & R. Rebouças col., IX.1962.

Parátipos 4264-4303 (52-90 mm); mesmos dados do holótipo.

Brycon travassosi Campos, 1950: 141, fig. 1.

Holótipo 3811 (Comp. 231; Cab. 53; Ôlho 12,5; Int. 21; Foc. 17; D. ii+9; A. iii+22; P. i+13; V. i+7; L. lat. 56; L. tr. 11/6); rio Bodoquena, Estado do Mato Grosso; Lauro Travassos Filho col., 1941.

Oligosarcus pinto Campos, 1945a: 456, fig. 9.

Parátipos 3488 e 4653 (54 e 50 mm); rio Mogi-Guaçu, Emas, Estado de São Paulo; O. Schubart col., 1943.

= *Oligosarcus* (*Paroligosarcus*) *pinto* Campos (*apud* Campos & Trewavas, 1949: 159).

Pristobrycon baratai Campos, 1946: 218, fig. 1.

Holótipo 3630 (Compr. 118; Alt. 73; Cab. 35; Ôlho 9,8; Int. 13,5; Foc. 9; D. ii+14; A. iv+29; P. i+13; V. i+6; Serra 32); rio Tapajós, Santarém, Estado do Pará; A. A. Campos col., 1944.

Parátipo 3631 (61 mm); mesmos dados do holótipo.

Abstenho-me de citar o *status* atual em virtude de existirem dúvidas quanto à validade do gênero *Pygocentrus*, do qual *Pristobrycon* é sinônimo.

Tomete maculatus Campos, 1944b: 211, fig.

Holótipo 3356 (Compr. 165; Alt. 98; Cab. 54; Ôlho 15; Int. 26; Foc. 17; D. ii+5; A. iii+35; P. i+14; V. i+6); rio Amazonas; E. Garbe col., 1902.

= *Myleus maculatus* (Campos) (*apud* Gosline, 1951: 41).

Segundo Pinto (1945: 274), E. Garbe no ano de 1902 coletou no rio Juruá na localidade de São Felipe (atual Eirunepé) e nos seringais de Dejedá e Mato-Piri; depois no rio Chirua, afluente da margem direita do Juruá e, finalmente, em Santarém, boca do Tapajós, onde fez pequena parada.

Waiteina fowleri Campos, 1946: 219, fig. 2 (*lapsus calami* por *Waiteina*).

Holótipo 3572 (Compr. 169; Alt. 86; Cab. 58; Ôlho 13; Int. 28; Foc. 16; D. v+14; A. iii+24; P. i+16; V. i+7; Serra 47); rio Tapajós, Santarém, Estado do Pará; A. A. Campos col., 1944.

= *Colossoma fowleri* Campos.

A. A. Campos, ao descrever esta espécie, elevou o subgênero *Waiteina* à categoria de gênero sem apresentar qualquer justificativa. Por esta razão é aqui citada como *Colossoma*.

Parodontidae

Apareiodon ibitiensis Campos, 1944a: 173, fig.

Holótipo 3411 (Compr. 108; Alt. 24; Cab. 23; Ôlho 4,8; Int. 7,5; Foc. 8; D. ii+10; A. ii+4+ii; P. i+13; V. i+6; L. lat. 40; L. tr. 4/3); rio Camanducaia, Monte Alegre, Estado de São Paulo, J. Lima col., 1943.

Na descrição original A. A. Campos menciona apenas o "tipo". Entretanto, a autora deve ter tido em mãos mais de um exemplar, pois cita diversas vezes a variação de caracteres. Ao que me parece, êsse tipo pertencia a um outro lote não registrado nas coleções do D.Z., mas contendo um rótulo com idênticos dados de localidade, coletor e data. A êsse lote devem referir-se os dados de variação contidos na descrição original.

Apareiodon pirassunungae Campos, 1945a: 442, fig. 8.

Holótipo 3469 (Compr. 57; Alt. 15; Cab. 13,3; Ôlho 3,2; Int. 5; Foc. 4,3; D. ii+11; A. ii+7; P. i+14; V. i+7; L. lat. 38; L. tr. 4/4); rio Mogi-Guaçu, Pirassununga, Estado de São Paulo; O. Schubart col., 1943.

Curimatidae

Cruzentina insculpta Amaral Campos, 1948: 53, fig. 27-28.

Holótipo 1376 (Compr. 107; Alt. 32; Cab. 29; Ôlho 7,8; Int. 11,5; Foc. 9,4; D. iii+9; A. iii+7; P. i+14; V. i+9; L. lat. 42; L. tr. 6/5); rio Tatuí, Estado de São Paulo; J. Lima col., IX.1906.

= *Cruzentina insculpta* Fernandez-Yepey.

Vide notas sobre esta espécie no início do trabalho.

Curimatorbis modestus Amaral Campos, 1948: 43, fig. 21.

Parátipos 1350, 5250 e 5251 (87-99 mm); Isla Victoria, São Paulo, Brasil.

= *Curimatorbis modestus* Fernandez-Yepey.

Vide notas sobre esta espécie no início do trabalho.

Na descrição original consta como número de catálogo "135" e a localidade tipo "Isla Victoria, São Paulo, Brasil". Entretanto, constatei que houve lapso na leitura do rótulo, cujo número é, na realidade, 1350, sendo a localidade tipo correta "rio Batalha, afluentes do rio Tietê, perto de Bauru, Estado de São Paulo; E. Garbe col. 1910".

Pseudocurimata grandocule Amaral Campos, 1948: 47, fig. 23.

Parátipo 1958 (123 mm); rio Doce, Estado do Espírito Santo; E. Garbe col., 1906.

= *Curimatorbis grandocule* (Fernandez-Yepey).

Coloco esta espécie no gênero *Curimatorbis* baseando-me em Böhlke (1954: 108).

Vide notas sobre esta espécie no início do trabalho.

Segundo Pinto (1945: 18) a maior parte das coletas de Garbe no rio Doce, em 1906, foram feitas nas vizinhanças de Linhares e na lagoa Juparanã.

Pseudocurimata santacatarinae Fernandez-Yepey, 1948: 50, fig. 25.

Parátipo 1806 (131 mm); Estado de Santa Catarina; W. Ehrardt col., 1908.

= *Curimatorbis santacatarinae* (Fernandez-Yepey).

Coloco esta espécie no gênero *Curimatorbis* baseando-me em Böhlke (1954: 108).

A localidade típica exata é Hansa, às margens do rio Itajaí, perto de Blumenau, Estado de Santa Catarina.

Vide notas sôbre esta espécie no início do trabalho.

Anostomidae

Leporinus aguapeiensis Campos, 1945b: 154, fig.

Holótipo 3040 (Compr. 188; Alt. 60; Cab. 53; Ôlho 12,3; Int. 23; Foc. 21; D. ii+10; A. ii+7+ii; P. i+16; V. i+8; L. lat. 39; L. tr. 5/6; Dentes 6/6); rio Aguapeí, Estado de São Paulo; J. Canella col., 1941.

Um outro exemplar, número 3492, com os mesmos dados do holótipo, constando no livro de registros do D.Z. como "tipo", não foi mencionado na descrição original.

Leporinus lacustris Campos, 1945b: 155, fig.

Holótipo 3458 (Compr. 111; Alt. 36; Cab. 29; Ôlho 7; Int. 14; Foc. 11; D. iii+9; A. ii+7+ii; P. ii+14; V. ii+8; L. lat. 33; L. tr. 4/4; Dentes 8/8); Pirassununga, Estado de São Paulo; O. Schubart col., 1943.

Parátipos 1449 e 5253-5258 (85-105 mm); Olímpia, Estado de São Paulo; E. Garbe col., 1916.

Um exemplar, de número 3706, do rio Mogi-Guaçu, Pirassununga, não mencionado na descrição original, consta no livro de registro do D.Z. como "cotipo".

Auchenipteridae

Glanidium melanopterum Miranda Ribeiro, 1918a: 643.

Lectótipo 345 (Compr. 130; Alt. 23; Cab. 34; Int. 19,5; Foc. 11; D. i+5; A. iv+7; P. i+5; V. i+5); Piquete, Estado de São Paulo; H. Silva col., I.1902.

Paralectótipos 2306 e 5259 (135 e 106 mm); Cachoeira, Estado de São Paulo; E. Garbe col., IX.1909.

Taunayia marginata Miranda Ribeiro, 1918a: 642.

Holótipo 2273 (Compr. 110; Alt. 20; Cab. 30; Ôlho 2,5; Int. 10; Foc. 12,3; D. i+6; A. iv+8; P. i+7; V. i+5); Piquete, Estado de São Paulo; J. Zech col., 1896.

Pimelodidae

Caecorhamdella brasiliensis Borodin, 1927: 1, fig.

Parátipo 2893 (88 mm); Estado de São Paulo; coletor e data não mencionados.

Heptapterus multiradiatus R. v. Ihering, 1907: 20 e 21.

Holótipo 294 (Compr. 96; Alt. 10,8; Cab. 14; Ólho 1,8; Int. 4; Foc. 5,2); ribeirão do Alto da Serra, Estado de São Paulo; coletor e data não mencionados.

Pimelodella rudolphi Miranda Ribeiro, 1918a: 637.

Paralectótipo 1061 (68 mm); rio Tamanduateí, São Paulo, Estado de São Paulo; J. Lima col., 1907.

Paralectótipos 2259, 5260 e 5261 (42-45 mm); Sorocaba, Estado de São Paulo; C. v. Zeidler col., V.1906.

Paralectótipos 2260, 2261 e 5262-5264 (88-105 mm); rio Tietê, Estado de São Paulo; H. Pinder col., 1897.

O lectótipo foi designado por Paulo de Miranda Ribeiro (1953: 404) sob o n. 857A MNRJ.

Pimelodella megalura Miranda Ribeiro, 1918a: 638.

Paralectótipos 1986 e 5265-5279 (70-144 mm); São Luiz de Cáceres, Estado de Mato Grosso; E. Garbe col., 1917.

O lectótipo foi designado por Paulo de Miranda Ribeiro (1953: 403) sob o n. 865A MNRJ.

Pimelodella garbei Miranda Ribeiro, 1918a: 639.

Paralectótipos 1057 e 5280-5298 (44-61 mm); Itaqui, Estado do Rio Grande do Sul; E. Garbe col., 1914.

O lectótipo foi designado por Paulo de Miranda Ribeiro (1953: 403) sob o n. 923A MNRJ.

Rhamdioglanis frenatus R. v. Ihering, 1907: 16-17.

Lectótipo 154 (Compr. 127; Cab. 27; Ólho 3,6; Int. 6,2; Foc. 12; D. i+6; A. iii+6+ii; P. i+9; V. i+5); arroios da Ilha de São Sebastião, Estado de São Paulo; F. Guenther col., 1906.

Paralectótipo 5299 (126 mm); mesmos dados do lectótipo.

= *Imparfinis piperatus* Eigenmann & Norris, 1900 (*apud* Hase-
man, 1911: 318).

Steindachneria scripta Miranda Ribeiro, 1918a: 640.

Lectótipo 2286 (Compr. 395; Cab. 128; Ólho 13,5; Int. 41; Foc. 53; D. i+6; A. vi+7; P. i+9; V. i+5); Itaqui, Estado do Rio Grande do Sul; E. Garbe col., 1914.

Paralectótipo 1236 (700 mm); mesmos dados do lectótipo (exemplar taxidermizado).

= *Steindachneridion scripta* (*apud* Gosline, 1945: 51).

Ageneiosidae

Cerathocheilus osteomystax Miranda Ribeiro, 1918a: 644.

Holótipo 2317 (Compr. 173; Cab. 34; Ólho 9; Int. 16; Foc. 14; D.i+4; P. i+14; V. i+13); rio Vermelho, Santa Rita das Antas, Estado de Goiás; H. Silva col., 1913.

= *Auchenipterus osteomystax* (*apud* Gosline, 1945: 14).

Trichomycteridae

Eremophilus camposi Miranda Ribeiro, 1957: 72, fig.

Holótipo 3426 (38 mm); Ribeirão Poço Grande, afluyente da margem direita do rio Juquiá, Fazenda Poço Grande, Juquiá, Estado de São Paulo; A. A. Campos col., 1940.

Pleurophysus hydrostaticus Miranda Ribeiro, 1918a: 636.

Lectótipo 2214 (Compr. 21; Alt. 3; Cab. 3,2; Ôlho 0,6; Int. 0,4; Foc. 0,9; D. 9; A. 7; P. 7; V. 5); Rio Claro, Estado de São Paulo; 1900, coletor não mencionado.

Paralectótipo 5252 (19 mm); mesmos dados do lectótipo.

Pseudostegophilus paulensis R. v. Ihering, 1918 (*in* Miranda Ribeiro, 1918b: 726).

Holótipo 2272 (Compr. 41; Alt. 6,4; Cab. 7; Ôlho 1,5; Int. 2,2; Foc. 2,4; D. ii+7; A. ii+5; P. i+5; V. i+4); rio Tietê, Avanhadava, Estado de São Paulo; E. Garbe col., 1904.

= *Pseudostegophilus paulensis* Miranda Ribeiro.

Miranda Ribeiro (1918b: 726-727) publicou a descrição, de sua própria autoria, de um peixe rotulado por R. v. Ihering como *Homodietus paulensis*. Dessa maneira, a espécie deve ser atribuída a Miranda Ribeiro.

Callichthyidae

Aspidoras rochai R. v. Ihering, 1907: 30-31.

Lectótipo 2195 (Compr. 40; Alt. 11; Cab. 11; Ôlho 1,8; Int. 4,8; Foc. 6; D. i+6+ii; A. i+7; P. i+9; V. i+5; L. lat. 25); Fortaleza, Estado do Ceará; Francisco Dias da Rocha col., I.1905.

Paralectótipo 5300 (37 mm); mesmos dados do lectótipo.

Corydoras eigenmanni R. v. Ihering, 1907: 34-35.

Lectótipo 153 (Comp. 58; Alt. 17; Cab. 18,5; Ôlho 3,9; Int. 5,5; Foc. 12; D. i+6+ii; A. ii+4+ii; P. i+9; V. i+5; L. lat. 26; Pl. pré-Ad. 5); riachos de Cubatão e Raiz da Serra, Estado de São Paulo; M. Wacket col., data não mencionada.

= *Corydoras barbatus* (Quoy & Gaimard) (*apud* Gosline, 1945: 15).

Ellis (1913: 409) faz referência ao seguinte material desta espécie: "10795 I.U.M. Two (type and cotype of *C. eigenmanni* von Ihering), 52 and 57 mm. Cubatão, Raiz da Serra, S.P. col., Haseman". Primeiramente, há equívoco em citar Haseman como coletor, pois, conforme consta em nosso livro de registro, o coletor foi M. Wacket. Também não encontramos qualquer documento que esclareça a remessa de tais tipos para o Indiana University Museum. W. I. Follett da California Academy of Sciences (onde foram depositadas as coleções do I.U.M.), gentilmente nos informou que ali não existe nenhuma documentação a respeito. Isto nos impede de esclarecer porque Ellis denominou aqueles dois exemplares da série sintípica original de "type" e "cotype".

Corydoras flaveolus R. v. Ihering, 1911: 386 e 387.

Holótipo 424 (Compr. 34; Alt. 11,8; Cab. 11; Ôlho 3; Int. 4; Foc. 6; D. i+8; A. i+6; P. i+8; V. i+5; L. lat. 22; Pl. pre-Ad. 3); pequenos riachos afluentes do rio Piracicaba, acima do Salto, Piracicaba, Estado de São Paulo; R. v. Ihering col., 1906.

= (?) *Corydoras paleatus* (Jenyns) (*apud* Regan, 1912: 212).

Corydoras garbei R. v. Ihering, 1911: 382 e 383.

Lectótipo 711 (Compr. 29; Alt. 11,2; Cab. 9,3; Ôlho 2,8; Int. 4,3; Foc. 4,6; D. i+7; A. i+5+ii; P. i+9; V. i+5; L. lat. 22; Pl. pre-Ad. 2); rio São Francisco, Estado da Bahia; E. Garbe col., 1908.

Paralectótipos 5301-5325 (22-34,5 mm), mesmos dados do lectótipo.

Segundo Pinto (1945: 280), E. Garbe coletou no rio São Francisco em 1908 no trecho entre a cidade da Barra e Joazeiro.

A espécie nova descrita por Miranda Ribeiro (1937: 54) como *Corydoras garbei* é homônima e sinônima de *Corydoras garbei* Ihering, 1911. Na verdade, é difícil compreender a atitude de Miranda Ribeiro, pois a descrição apresentada em 1937 como sendo sua, é a cópia exata daquela publicada por Ihering (1911). O fato de Miranda Ribeiro ter mencionado a espécie de Ihering em seu trabalho de 1918, p. 721, mostra que ele não a desconhecia. Portanto, designamos aqui o lectótipo de *Corydoras garbei* Ihering, considerando a designação de lectótipo de Paulo de Miranda Ribeiro (1953: 395) como sendo de uma espécie sinônima e homônima desta.

Corydoras juquiae R. v. Ihering, 1907: 36-37.

Lectótipo 1984 (Compr. 30; Alt. 10,4; Cab. 9,2; Ôlho 2,7; Int. 4,1; Foc. 4,4; D. i+8; A. i+6; P. i+8; V. i+5; L. lat. 22; Pl. pré-Ad. 3); Poço Grande, rio Juquiá, Estado de São Paulo; Moenkhaus col., 1898.

Paralectótipos 5326-5330 (31-50 mm); mesmos dados do lectótipo.

Regan (1912) examinou dois "cotipos" desta espécie e a colocou na sinonímia de *C. nattereri*. No ano seguinte Ellis, examinando um "tipo", julgou válida a espécie.

Ellis (1913: 403) diz ter examinado o seguinte material da espécie: "10996 I.U.M. Type, 66 mm, Rio Juquiá, Poço Grande, von Ihering". Aqui também se deve entender que o "type" de Ellis não se refere ao holótipo (vide notas sobre *Corydoras eigenmanni*).

Corydoras nattereri triseriatus R. v. Ihering, 1911: 386.

Lectótipo 342 (Compr. 34; Alt. 12,5; Cab. 10,7; Ôlho 2,9; Int. 4,4; Foc. 5,5; D. i+8; A. ii+5; P. i+9; V. i+5; L. lat. 22; Pl. pre-Ad. 2); rio Doce, Estado do Espírito Santo; E. Garbe col., 1906.

Paralectótipos 5331-5358 (23-35 mm); mesmos dados do lectótipo.

= *Corydoras triseriatus* R. v. Ihering (*apud* Weitzman, 1955: 101).

Apesar de Regan (1912) e Gosline (1940) suporem que esta forma fôsse um sinônimo de *C. paleatus*, Weitzman considerou-a uma espécie válida.

Corydoras venezuelanus R. v. Ihering, 1911: 383-385.

Lectótipo 146 (Compr. 32; Alt. 11,5; Cab. 9,2; Ólho 2,5; Int. 5; Foc. 5; D. i+8; A. ii+5; P. i+8; V. i+5; L. lat. 23; Pl. pre-Ad. 4); rio Cabriales, Valencia, Venezuela; R. Guerra Mendes col., data não mencionada.

Paralectótipos 5398 e 5359 (30-34 mm); mesmos dados do lectótipo.

= *Corydoras aeneus* (Gill) (*apud* Miranda Ribeiro, 1918b: 721).

Loricariidae

Ancistrus taunayi Miranda Ribeiro, 1918a: 631.

Lectótipo 975 (Compr. 39; Alt. 6,5; Cab. 12,7; Ólho 2,5; Int. 5,8; Foc. 8,4; D. i+7; A. i+3; P. i+6; V. i+5; L. lat. 24); rio Lageado, Itaquí, Estado do Rio Grande do Sul; E. Garbe col., 1914.

Paralectótipos 5398 e 5359 (30-34 mm); mesmos dados do lectótipo.

Farlowella henriquei Miranda Ribeiro, 1918a: 636.

Holótipo 2159 (Compr. 166; Alt. 8,2; Cab. 45; Ólho 2,7; Int. 8,3; Foc. 39; D. i+6; A. i+5; P. i+6; V. i+4; L. lat. 32; Pl. pre-Ad. 7); rio Vermelho, Santa Rita das Antas, Estado de Goiás; Henrique Silva col., 1913.

Loricaria piracicabae R. v. Ihering, 1907: 28-29.

Holótipo 2182 (Compr. 165; Alt. 13,4; Cab. 33; Ólho 6,2; Int. 6,6; Foc. 23); rio Piracicaba, Piracicaba, Estado de São Paulo; R. v. Ihering & J. Lima col., 1906.

Microlepidogaster depressinotus Miranda Ribeiro, 1918a: 633.

Holótipo 2156 (Compr. 27; Al. 5,6; Cab. 7,5; Ólho 1,5; Int. 4,1; Foc. 5); Piracicaba, Estado de São Paulo; R. v. Ihering & J. Lima col., 1906.

Microlepidogaster doceanus Miranda Ribeiro, 1918a: 684.

Holótipo 1016 (Compr. 27; Alt. 4; Cab. 7,7; Ólho 1,6; Int. 3,5; Foc. 5,2); rio Doce, Estado do Espírito Santo; E. Garbe col., 1906.

Vide nota sobre a localidade típica de *Pseudocurimata gran-docule*.

Microlepidogaster guntheri Miranda Ribeiro, 1918a: 634.

Lectótipo 1015 (Compr. 33; Alt. 4,7; Cab. 8,3; Ólho 1,8; Int. 4; Foc. 5,7; D. i+7; A. i+5; P. i+6; V. i+5; L. lat. 23; Pl. pre-D. 4); Ilha de São Sebastião, Estado de São Paulo; F. Guenther col., I.1906.

Paralectótipos 5365-5380 (23-34 mm); mesmos dados do lectótipo.

Otocinclus depressicauda Miranda Ribeiro, 1918a: 635.

Lectótipo 1004 (Compr. 33; Alt. 5,2; Cab. 8; Ólho 1,9; Int. 4,2;

Foc. 5,2; D. i+7; A. i+5; P. i+6; V. i+5; L. lat. 23); Sorocaba, Estado de São Paulo; C. v. Zeidler col., III.1906.

Paralectótipos 5381-5384 (21-26 mm); mesmos dados do lectótipo.

Otocinclus francirochai R. v. Ihering, 1928: 2.

Lectótipo 3258 (Compr. 30; Alt. 5; Cab. 7,8; Olho 1,8; Int. 4; Foc. 4,8; D. i+7; A. i+3; P. i+6; V. i+5; L. lat. 24); "creeks by Pirangy, head waters of the rio Turvo (into Rio Grande of the Paraná-La Plata)"; R. v. Ihering col., 1928.

Paralectótipos 5387-5397 (24-33 mm); mesmos dados do lectótipo.

Plecostomus interruptus Miranda Ribeiro, 1918a: 632.

Holótipo 2110 (Compr. 123; Alt. 22; Cab. 29; Olho 5,6; Int. 13,5; Foc. 22); rio Juquiá, Poço Grande, Estado de São Paulo; Moenkhaus col., 1898.

Segundo Gosline (1947: 112) esta espécie parece pertencer a outro gênero, que não especifica.

Plecostomus lacerta Nichols, 1919a: 414, 424.

Parátipo 964 (54 mm); Estação de Raiz da Serra, Estado de São Paulo; coletor e data não mencionados.

Plecostomus lexi R. v. Ihering, 1911: 387, 389.

Holótipo 2126 (Compr. 350; Alt. 80; Cab. 100; Olho 13,5; Int. 34; Foc. 78); rio Pardo, perto de Barretos, Estado de São Paulo; Fausto Lex col., VII.1910.

= *Plecostomus albopunctatus* Regan (*apud* Gosline, 1947: 113).

Plecostomus (Rhinelepis) microps R. v. Ihering, 1907: 24, 25.

Holótipo 2154 (Compr. 50; Alt. 8; Cab. 15; Olho 1,7; Int. 5; Foc. 10,5); Piquete, Estado de São Paulo; J. Zech col., 1896.

= *Pareiorhina rudolphi* (Miranda Ribeiro, 1911) (*apud* Gosline, 1947: 104).

Esta espécie havia sido denominada *Rhinelepis rudolphi* por Miranda Ribeiro (1911: 84), devido à homonímia com *Plecostomus microps* Steindachner, 1876.

Plecostomus scaphycephus Nichols, 1919a: 416, 425.

Parátipo 1014 (37 mm); Alto da Serra, Estado de São Paulo; coletor e data não mencionados.

Plecostomus variipictus R. v. Ihering, 1911: 390, 391.

Holótipo 2114 (Compr. 300; Alt. 70; Cab. 77; Olho 16,5; Int. 33,5; Foc. 62); rio Pardo, perto de Barretos, Estado de São Paulo; Fausto Lex col., VII.1910.

Pseudancistrus luderwaldti Miranda Ribeiro, 1918a: 632.

Holótipo 2109 (Compr. 66; Alt. 10; Cab. 18; Ôlho 3; Int. 6,5; Foc. 12,5); Hansa, Estado de Santa Catarina; H. Luederwaldt col., 1910.

Vide nota sobre a localidade tipo de *Pseudocurimata santacatarinae*.

Pseudotocinclus intermedius Nichols, 1919b: 534, 540.

Parátipo 714 (48 mm); Alto da Serra, Estado de São Paulo; B. Benjamin col., I.1895.

Parátipo 1003 (47 mm); Perus, Estado de São Paulo; B. Benjamin col., I.1896.

Serranidae

Bodianus brachyrhynchus Miranda Ribeiro, 1918c: 787.

Holótipo 2398 (Comp. 95; Alt. 34; Cab. 37; Ôlho 8,4; Int. 5,9; Foc. 10; D. ix+16; A. iii+10; P. 18; V. i+5); Estado da Bahia; Bicego col., VI.1896.

= *Cephalopholis brachyrhynchus* (apud Fowler, 1941: 156).

Cichlidae

Crenicichla biocellata R. v. Ihering, 1914: 333, 334.

Parátipo 1781 (153 mm); Porto Cachoeiro, rio Doce, Estado do Espírito Santo; E. Garbe col., 1912.

Porto Cachoeiro atualmente é a cidade de Santa Leopoldina, às margens do rio Santa Maria da Vitória, e não às margens do rio Doce, como consta na descrição original.

Crenicichla mucurina R. v. Ihering, 1914: 335, 336.

Lectótipo 2526 (Compr. 102; Alt. 20; Cab. 33; Ôlho 6,2; Int. 6,5; Foc. 11,2; D. xxi+11; A. iii+8; P. ii+15; V. i+5; L. lat. 23+13); rio Todos os Santos, afluente do rio Mucuri, Teófilo Otoni, Estado de Minas Gerais; E. Garbe col., 1908.

Paralectótipos 5385 e 5386 (71-110 mm); mesmos dados do lectótipo.

= *Crenicichla lacustris* (Castelnau) (apud Miranda Ribeiro, 1918b: 776).

Crenicichla jupiaensis Britski & Luengo, 1968: 171.

Holótipo 4363: rio Paraná, Salto de Urubupungá, entre os Estados de Mato Grosso e São Paulo; Britski col., IX.1964.

Parátipos 4364-4365; mesmos dados do holótipo.

Parátipo 4366; lagoas marginais do rio Paraná, em frente a Jupia, Estado de Mato Grosso; Britski col., IX.1964.

Parátipos 4367-4371; rio Paraná, em frente a Jupia, Estado de Mato Grosso; Britski col., IX.1964.

Parátipos 4372-4375; rio Sucuriú, Município de Três Lagoas, Estado de Mato Grosso; Britski col., IX.1964.

Gymnogeophagus cyanopterus Miranda Ribeiro, 1918c: 790.

Holótipo 2549 (Compr. 115; Alt. 61; Cab. 40; Ôlho 9,5; Int. 17; Foc. 25; D. xiii+14; A. iii+9; P. ii+13; V. i+5; L. lat. 20+12; L. tr. 5/1/10); Itaqui, Estado do Rio Grande do Sul; E. Garbe col., 1914.

ÍNDICE DAS LOCALIDADES BRASILEIRAS REFERIDAS NESTE TRABALHO

Aguapeí: rio do Estado de São Paulo, afluente da margem esquerda do Paraná.

Alto da Serra: estação da Estrada de Ferro Santos a Jundiaí, atualmente denominada Paranapiacaba, Estado de São Paulo.

Batalha: rio do Estado de São Paulo, afluente da margem esquerda do Tietê, na altura de Bauru.

Bodoquena: rio do Estado de Mato Grosso, afluente da margem esquerda do Miranda. O Miranda é afluente do Aquidauana e êste do Paraguai.

Cachoeira: localidade do Estado de São Paulo, atualmente Cachoeira Paulista, às margens do rio Paraíba.

Camanducaia: rio do Estado de São Paulo, afluente do Jaguari e êste do Piracicaba.

Cananéia: localidade no litoral sul do Estado de São Paulo.

Cubatão: localidade na Estrada de Ferro Santos a Jundiaí, próxima da cidade de Santos.

Doce: rio do leste cuja foz está ao norte de Vitória, Estado do Espírito Santo

Fortaleza: capital do Estado do Ceará.

Grande: rio limítrofe dos Estados de São Paulo e Minas Gerais, um dos formadores do Paraná.

Hansa: localidade do Estado de Santa Catarina, às margens do rio Itajaí atualmente denominada Corupá.

Itajaí: rio do Estado de Santa Catarina, cuja foz está ao norte de Florianópolis.

Itaqui: localidade do Estado do Rio Grande do Sul, às margens do rio Uruguai.

Juquiá: rio do Sul do Estado de São Paulo, afluente do Ribeira de Iguape.

Mogi-Guaçu: rio do Estado de São Paulo, afluente do Pardo, que é afluente do Grande.

Mucuri: rio do leste, cuja foz está ao norte da do rio Doce.

Olímpia: localidade do Estado de São Paulo, na bacia do rio Grande.

Paraíba: rio que nasce no Estado de São Paulo e desemboca no litoral norte do Estado do Rio de Janeiro.

Pardo: rio do Estado de São Paulo, afluente da margem esquerda do Grande.

Piquete: rio afluente da margem esquerda do Paraíba no Estado de São Paulo. Também localidade às margens daquele rio.

Piracicaba: rio do Estado de São Paulo, afluente da margem direita do Tietê.

- Pirassununga: localidade do Estado de São Paulo, na bacia do rio Mogi-Guaçu. As menções a esta localidade, referem-se mais propriamente ao povoado de Emas, às margens daquele rio.
- Pôrto Cachoeiro: localidade do Estado do Espírito Santo, atualmente denominada Santa Leopoldina, às margens do rio Santa Maria da Vitória.
- Raiz da Serra: localidade do Estado de São Paulo, atualmente denominada Piassaguera, na Estrada de Ferro Santos a Jundiá.
- Ribeira de Iguape: rio do sul do Estado de São Paulo, que desemboca ao norte da divisa deste estado com o do Paraná.
- Santa Maria da Vitória: rio do Estado do Espírito Santo, que desemboca junto à cidade de Vitória.
- Santarém: localidade do Estado do Pará, na desembocadura do rio Tapajós.
- Santos: localidade do litoral do Estado de São Paulo.
- São Luiz de Cáceres (ou Cáceres): localidade do Estado de Mato Grosso, às margens do rio Paraguai.
- São Sebastião: ilha do litoral norte do Estado de São Paulo, em frente à cidade do mesmo nome.
- Sorocaba: localidade do Estado de São Paulo, na bacia do rio Tietê.
- Tamanduateí: rio afluente do Tietê, na cidade de São Paulo.
- Tatui: rio do Estado de São Paulo, afluente do Sorocaba e este do Tietê.
- Teófilo Otoni: localidade do Estado de Minas Gerais, às margens do Mucuri.
- Tietê: rio do Estado de São Paulo, afluente da margem esquerda do Paraná.
- Turvo: rio do Estado de São Paulo, afluente da margem esquerda do Grande.
- Vermelho: rio do Estado de Goiás, afluente da margem direita do Araguaia.

REFERÊNCIAS

BÖHLKE, J.

- 1958: Studies on fishes of the family Characidae — N° 14. A report on several extensive recent collections from Ecuador. *Proc. Acad. Nat. Sci. Philadelphia* 110: 1-121, 7 pls.

BORODIN, N. A.

- 1927: A new blind catfish from Brazil. *American Mus. Nov.* (263): 1-5, 1 fig.

BRITSKI, H. A.

- 1964: Sobre uma nova espécie de *Astyanax* do rio Mogi-Guaçu (Pisces, Characidae). *Papéis Avulsos Depto. Zool. São Paulo* 16: 213-215, fig.

BRITSKI, H. A. & J. A. LUENGO

- 1968: Sobre *Crenicichla jupiaensis*, sp. n., espécie aberrante do rio Paraná (Pisces, Cichlidae). *Papéis Avulsos Zool. S. Paulo* 21: 169-182, fig.

CAMPOS, A. DO AMARAL

- 1944a: Primeira contribuição ao conhecimento da fauna ictiológica de Monte Alegre (Estado de São Paulo). *Papéis Avulsos Depto. Zool. São Paulo* 4: 169-176, 1 fig.
- 1944b: Peixes da subfamília Mylinae existentes na coleção do Departamento de Zoologia da Secretaria da Agricultura de São Paulo. *Ibidem* 4: 197-212, 7 figs.
- 1945a: Sobre os caracídeos do rio Mogi-Guaçu (Estado de São Paulo). *Arq. Zool. São Paulo* 4: 431-466, 3 pls.
- 1945b: Contribuição ao estudo das espécies brasileiras do gênero *Leporinus*. *Papéis Avulsos Depto. Zool. São Paulo* 5: 141-158, 14 figs.
- 1946: Novo gênero e novas espécies de caracídeos do Baixo Amazonas. *Ibidem* 7: 217-220, 1 pl.
- 1950: Sobre a subfamília Bryconinae. *Ibidem* 9: 137-143, 1 fig.

CAMPOS, A. DO AMARAL & E. TREWAWAS

- 1949: *Oligosarcus* Günther, a genus of South American characid fishes, and *Paroligosarcus*, subgen, nov. *Ann. Mag. Nat. Hist. (12)* 2: 127-131, fig.

ELLIS, M. D.

- 1913: The plated nematognaths. *Ann. Carnegie Mus.* 8: 384-413, pls. 25-31.

FERNANDEZ-YEPEZ, A.

- 1948: Los Curimatidos. *Bol. Taxonómico N° 1. Lab. Pesqu. Caiguire* Caracas: 86 pp., 27 figs.

FOWLER, H. W.

- 1941: A list of fishes known from the coast of Brazil. *Arq. Zool. São Paulo* 3: 115-184.

GILBERT, C. R.

- 1967: A revision of the hammerhead sharks (Family Sphyrnidae). *Proc. U. S. Nat. Mus.* 119 (3539): 1-88, 10 pls., 22 figs., 10 tab.

GOSLINE, W. A.

- 1940: A revision of the the neotropical catfishes of the family Callichthyidae. *Stanford Ichth. Bull* 2 (1): 1-29, 4 figs., 1 tab.
- 1945: Catálogo dos Nematognatos de água-doce da América do Sul e Central. *Bol. Mus. Nac. Rio de Janeiro (n. s.) (33)*: 1-138.
- 1947: Contributions to the classification of the loricarid catfishes. *Arq. Mus. Nac. Rio de Janeiro* 41: 77-137, 7 pls., 11 figs.

HASEMAN, J. D.

- 1911: Descriptions of some new species of fishes and miscellaneous notes on others obtained during the expedition of the Carnegie Museum to Central South America. *Ann. Carnegie Mus.* 7: 315-328, pls. 47-52.

IHERING, R. VON

- 1907: Diversas espécies novas de peixes Nematognathas do Brazil. *Notas preliminares Mus. Paulista* 1 (1): 13-39.
- 1911: Algumas espécies novas de peixes d'água doce (Nematognatha). *Rev. Mus. Paulista* 8: 380-404.
- 1914: Duas espécies novas de peixes da fam. Cichlidae. *Ibidem* 9: 333-337.
- 1928: Uma nova espécie de *Otocinclus* (Pisces, Nematognatha) "cascudinho" de São Paulo. *Bol. Biol. São Paulo* (11): 1-3, 1 fig.

MIRANDA RIBEIRO, A.

- 1911: Fauna brasiliense. Peixes. IV (A). Eleutherobranchios Aspirophos. *Arq. Mus. Nac. Rio de Janeiro* 16: 511 pp., pls. 25-54, figs. 44-144.
- 1918a: Três gêneros e dezessete espécies novas de peixes brasileiros. *Rev. Mus. Paulista* 10: 629-646.
- 1918b: Lista dos peixes brasileiros do Museu Paulista. 1ª parte. *Ibidem* 10: 705-736; (2ª parte): 759-783.
- 1918c: Dous gêneros e três espécies novas de peixes determinados nas collecções do Museu Paulista. *Ibidem* 10: 785-791, 1 pl.
- 1937: Sobre uma collecção de vertebrados do Nordeste Brasileiro. Primeira parte: peixes e batráquios. *O Campo*, Janeiro de 1937: 54-56.

MIRANDA RIBEIRO, PAULO DE

- 1953: Tipos das espécies e subespécies do Prof. Alipio de Miranda Ribeiro, depositados no Museu Nacional. *Arq. Mus. Nac. Rio de Janeiro* 42: 389-418.
- 1957: Notas para o estudo dos Pygidiidae brasileiro (Pisces-Pygidiidae). VI. *Papéis Avulsos Depto. Zool. São Paulo* 13: 71-73, fig.

NICHOLS, J. T.

- 1919a: Cascudos brasileiros do gênero *Plecostomus* do Museu Paulista. *Rev. Mus. Paulista* 11: 409-426.
- 1919b: Um nôvo gênero de cascudos da família Loricariidae. *Ibidem* 11: 531-540.

PINTO, O.

- 1945: Cinquenta anos de investigações ornitológicas. *Arq. Zool. São Paulo* 4: 261-340, fotos, 1 mapa.

REGAN, C. T.

- 1912: A revision of the South-American siluroid fishes of the genus *Corydoras*, with a list of the specimens in the British Museum (Natural History). *Ann. Mag. Nat. Hist.* (8) 10: 209-220.

SADOWSKI, V.

- 1965: The hammerhead sharks of the littoral zone of São Paulo, Brazil, with the description of a new species. *Bull. Mar. Sci.* 15 (1): 1-12, 7 figs.

STOREY, M.

- 1938: West Indian clupeid fishes of the genus *Harengula* with notes on *H. thrissina* from the Pacific Coast. *Stanford Ichth. Bull.* 1 (1): 3-56, 17 figs., 6 tab.

WEITZMAN, S. H.

- 1955: Redescription and relationships of *Corydoras triseriatus* von Ihering from the rio Doce, Brazil. *Wasm. Journ. Biol.* 13 (1): 101-106, fig. 1.

Papéis Avulsos de Zoologia

PAPÉIS AVULSOS ZOOL. S. PAULO, VOL. 22, ART. 20: 217-223

1.IV.1969

THE FOOD OF *BRYCON* AND THREE CLOSELY RELATED GENERA OF THE TRIBE ACESTORRHYNCHINI

NAÉRCIO A. MENEZES

INTRODUCTION

The South American Characidae are a relatively well studied group taxonomically but little work has been done on the food of these fishes. This kind of work, however, is not only needed but also important for further studies of the poorly understood subgroups of this large family.

During the revision of the tribe Acestrorhynchini (in press) I examined the stomach contents of most of the species in the three component genera and of two species of *Brycon*, now regarded as one of the most primitive characid genera. The objective of this paper is to present the data on the food of these species and to briefly compare their diets.

In order to reach accurate conclusions about food preferences in a given species, stomach examinations must be made on specimens taken at different seasons of the year because some species are known to change their preferences due to changes in availability of certain foods. Most of the species upon which this work is based were caught in different months of the year, in different years, and from different localities. Thus, they were represented by good series which contained specimens of all sizes. The results therefore may be regarded as reasonably accurate.

METHODS AND MATERIALS

The stomach was chosen for analysis because, as emphasized by Corbet (1961:5) and Hynes (1950:36), it is easily defined and contains the least digested food. In all cases the stomach was isolated from the rest of the digestive tract, incised, and the contents washed into a Petri dish. The organisms were counted and identified under the stereomicroscope. Only stomach containing recognizable food were considered.

Many methods have been developed for the quantitative analysis of stomach contents (see for instance, Hynes and Corbet, *l. c.*). For the purposes of this study Corbet's Occurrence Method seemed to be the most adequate. However, as many comparisons were involved, the method was modified, the occurrence of food types being expressed not as a percentage of total stomachs containing recognizable food, but as a percentage of the total number of food items found.

The types of food considered are as follows:

Arthropods: refers to all arthropod remains except Insecta and Crustacea.

Insects: include both terrestrial and aquatic adult forms.

Insect larvae: refers to the larvae of all aquatic and terrestrial insects.

Crustaceans: Decapods are the main component.

Oligochaets: includes mainly earthworms.

Plant material: includes fragments of leaves, stems and reproductive organs of both aquatic and terrestrial plants (Phanerogamae), other than the next category.

Fruits: refers to both seeds and intact fruits.

Fishes: includes many teleostean groups. No attempt has been made to identify the specimens.

All the specimens examined belong to the Departamento de Zoologia, Secretaria da Agricultura, São Paulo, Brazil (DZSP) and to the Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts (MCZ).

Brycon chagrensis (Kner)

PANAMA. Canal Zone (MCZ).

Brycon petrosus Meek & Hildebrand.

PANAMA. Canal Zone (MCZ).

HONDURAS. (MCZ 31692).

Paroligosarcus pinto Campos & Trewawas

BRAZIL. São Paulo: Pirassununga, Lagoa São Vicente (DZSP 4668-70); Pirassununga, Rio Mogi Guaçu (DZSP 3488, 4652-58); Usina do Limoeiro, Represa do Limoeiro (DZSP 4659-67); Pereira Barreto, Córrego do Pernilongo (DZSP 4671-78).

Acestrorhampus jenynsii (Günther)

URUGUAY. Maldonado: (MCZ 20549, 20549b, 20549d, 20549g).
Florida: Estancia Santa Adela, Arroyo Chamizo (DZSP 4682, 4684).

BRAZIL. São Paulo: Registro, Rio Ribeira (DZSP 3090); Cubatão (DZSP 4616-17, 1477); São Luís do Paraitinga, Rio Paraitinga (DZSP 2033). Rio de Janeiro: Lagoa Feia (DZSP 4736); São Fidélis, Rio Paraíba (DZSP 4746-48, 4750-52, 4754); São João da Barra. Rio Paraíba (DZSP 4739, 4743, 4745); Atafona, Rio Paraíba (DZSP 4741). Espírito Santo: Cachoeiro do Itapemirim, Rio do Frade e da Feira (DZSP 4765); Rio São José (DZSP 4686). Bahia: Belmonte, Rio Jequitinhonha (DZSP 4797, 2798).

Acestrorhamphus hepsetus (Cuvier)

BRAZIL. São Paulo: Iguape, Rio Ribeira (DZSP 4702, 4704); Registro, Rio Ribeira (DZSP 4708); Iporanga, Rio Ribeira (DZSP 4701); Iporanga, Rio Betari (DZSP 4706); Juquiá, Rio Juquiá (DZSP 4709, 3774, 3091); São Luís do Paraitinga, Rio Paraitinga

(DZSP 1734, 4758); Santa Branca, Rio Paraíba (DZSP 4738). *Rio de Janeiro*: Magé, Rio Guapimirim (DZSP 4769).

Acestrorhamphus sp. A.

BRAZIL. *Rio Grande do Sul*: Montenegro, Rio Caí (DZSP 4819); Ponta Grossa, Rio Guaíba (DZSP 4696-97, 4700).

URUGUAY. Rio Uruguay (DZSP 4679-80).

Acestrorhamphus sp. B

BRAZIL. *Minas Gerais*: União de Caeté (DZSP 4614-16, 4618-19; MCZ 45859).

Acestrorhynchus falcatus (Bloch)

BRAZIL. *Pará*: Ilha de Marajó, Cachoeira do Arari, Rio Arari (MCZ 45238-44); Belém, Igarapé Icatu (MCZ 45244-49); Belém (DZSP 4576-77, 4579, 4583, 4585, 4589-90).

Acestrorhynchus abbreviatus (Cope)

BRAZIL. *São Paulo*: Pirassununga, Rio Mogi-Guaçu (DZSP 4401-02); Corumbataí, Rio Corumbataí (DZSP 4403-04, 4536-37, 5229-34); Piracicaba, Rio Piracicaba (DZSP 4525); Alfredo de Castilho, Córrego do Moinho (DZSP 4530). *Mato Grosso*: Três Lagoas (DZSP 4556); Ilha Solteira, Rio Paraná (DZSP 4557). *Minas Gerais*: Pirapora, Rio São Francisco (DZSP 4542); Três Marias, Rio São Francisco (DZSP 4407-08, 5335-39). *Bahia*: Rio São Francisco (DZSP 4544, 4550).

Acestrorhynchus falcistrostris (Cuvier)

BRAZIL. *Pará*: Ilha de Marajó, Cachoeira do Arari, Rio Arari (MCZ 45276-78); Boa Vista, Rio Apeú (MCZ 45285); Gurupá, Rio Amazonas (MCZ 20519, 20519L); Belém (DZSP 4594); Lago Jacaré, Rio Trombetas (DZSP 4601-02).

VENEZUELA. *Guarico*: Rio Chimire (DZSP 4925).

Acestrorhynchus microlepis (Schomburgk)

BRAZIL. *Pará*: Codajás, Rio Amazonas (MCZ 20581a); Óbidos, Rio Amazonas (MCZ 20559); Pôrto do Moz, Rio Amazonas (MCZ 20540); Lago Jacaré, Rio Trombetas (DZSP 4607). *Amazonas*: Paurintins, Rio Amazonas (MCZ 20506); Jatuarana, Rio Amazonas (MCZ 20599).

Acestrorhynchus sp. A

BRAZIL. *Pará*: Ilha de Marajó, Cachoeira do Arari, Rio Arari (MCZ 45252-74); Lago Arari (DZSP 4585). *Mato Grosso*: São Luís de Cáceres, Rio Paraguay (DZSP 2049).

ARGENTINA. *Rosario*: Rio Paraná (MCZ 832).

Acestrorhynchus sp. B

BRAZIL. Amazonas: Lago Januari (MCZ 20528); Lago Maximo (MCZ 20532); Lago Aleixo (MCZ 20589); Itacoatiara, Rio Amazonas (MCZ 20591); Jatuarana, Rio Amazonas (MCZ 20598). Pará: Ilha de Marajó, Cachoeira do Arari, Rio Arari (MCZ 20624); Lago Jacaré, Rio Trombetas (DZSP 4608-09).

A study of the tribe Acestrorhynchini which includes a taxonomic revision of the species here considered is being published elsewhere (Menezes, 1969).

DISCUSSION

The quantitative data of food types found in the stomach of all species is presented in a table at the end of this paper.

Brycon chagrensis

The food of *B. chagrensis* consists largely of plant material and fruits. Much of the plant material was fragments of leaves and stems, always associated with mud. This suggests that most of the food was taken from the bottom of the stream, perhaps from submerged aquatic plants. The fruits, on the other hand, must have fallen from overhanging trees and probably taken at the surface of the water.

Insects and other arthropods seem to constitute an insignificant part of the diet of this species. Only fragments of members of these two groups were found.

Brycon petrosus

B. petrosus shows feeding habits closely similar to *B. chagrensis*. The former, however, seems to have eaten a larger amount of insects.

Paroligosarcus pinto

Contrary to the latter, this species seems to restrict its diet almost exclusively to insects, which constitute the largest percentage of food taken. *P. pinto* apparently eats a large variety of insects. There seems to be no preference for either hard-bodied forms like Coleoptera, Hemiptera and Hymenoptera on one hand, or soft-bodied forms like Diptera and Insect larvae on the other hand, the two being about equally consumed. Insects must have been captured on the water surface, where they have accidentally fallen. A considerable number of these forms were undamaged. Rests of organisms, however, were found in many stomachs associated with sand and small stones and this is an indication that *P. pinto* also feeds on dead animals in the sandy bottom.

Plant material and fruits as well as arthropods and crustaceans are represented by small percentages and seem to form an insignificant part of the diet of *P. pinto*.

Acestrorhamphus jenynsii

A. jenynsii has a varied diet but prefers fishes, which are represented by the largest percentage. Besides fishes, the other important foods are insects and insect larvae, the remaining types being roughly equally less eaten. Most of the fishes and insects were found whole in the stomach, clearly suggesting that *A. jenynsii* does not take pieces out of its prey but rather swallows the organism intact.

Acestrorhamphus hepsetus

This species essentially shows the same food preferences exhibited by *A. jenynsii*. It seems, however, to have been feeding less frequently on insects and more on fruits.

***Acestrorhamphus* sp. A**

This species has fishes as the main component of its diet and in this respect it is closely similar to the last two mentioned species. Apparently it is more specialized, because, besides fishes, only crustaceans and plant material were found in its stomach. These two food items, represented in the table by small percentages, apparently are not significant components in its diet.

***Acestrorhamphus* sp. B**

The food of this species consists very largely of insect larvae. Fishes, however, seem to represent an important part of its diet with a small percentage of plant material. As to food preferences, this species is more closely related to the last three than to *Paroligosarcus pintoii* which has no fishes at all in its diet.

All the species of the genus *Acestrorhynchus*, as the table suggests, are highly specialized feeders, having almost exclusively fishes in their diets. *A. falcatus* and *Acestrorhynchus* sp. A were found to have been feeding also on crustaceans (exclusively shrimps) but these are secondary foods. The stomach of all species contained in a great number of cases, almost intact fishes, strongly suggesting that they primarily swallow their prey whole.

CONCLUSIONS

Based on the above data, we can make some generalizations about food preferences on the four genera involved in this study.

The primitive genus *Brycon* is essentially herbivorous. Although our conclusion is based on the analysis of two species taken at the same locality and season, other data from the literature (e.g. Lowe, 1964:128) seem to indicate that all species in this genus show a strong preference for plant material. Many Brazilian fishermen know that it is worthless to try to catch *Brycon* using animal baits. They use instead, a special preparation of "mandioca" (*Cassava* sp.) which is put in the water to attract the fishes.

The monotypic genus *Paroligosarcus* is omnivorous with a strong preference for insects.

All the species of the genus *Acestrorhamphus* have a varied diet but fishes form always a very important part of this diet. The genus may also be regarded as omnivorous with a strong preference for fishes.

Acestrohynchus is carnivorous, all predatory species in this genus feeding almost exclusively on fishes.

REFERENCES

ALEXANDER, R. McN.

- 1964: Adaptation in the skulls and cranial muscles of South American characinoid fishes. *Journ. Linn. Soc. London (Zool.)*, n° 305, 45: 169-190.

CORBET, P. S.

- 1961: The food of the non-cichlid fishes in the Lake Victoria basin, with remarks on their evolution and adaptation to lacustrine conditions. *Proc. Zool. Soc. London* 136: 1-101.

HYNES, H. B. N.

- 1950: The food of fresh-water sticklebacks (*Gasterosteus aculeatus* and *Pigosteus pungitius*) with a review of methods used in studies of the food fishes. *J. anim. Ecol.* 19: 35-58.

JACKSON, P. B. N.

- 1961: The impact of predation especially by the Tiger-fish (*Hydrocyon vittatus* Cast.) on African freshwater fishes. *Proc. Zool. Soc. London* 136: 603-622.

KEAST, A. & D. WEBB

- 1966: Mouth and body form relative to feeding ecology in the Fish Fauna of a small lake Opinicon, Ontario. *J. Fish. Res. Bd. Canada (12)* 23: 1845-1874.

LOWE, (McCONNELL), R. H.

- 1964: The fishes of the Rupununi savanna district of British Guiana, South America. Part 1. *Journ. Linn. Soc. London (Zool.)*, n° 304, 45: 103-144.

MENEZES, N. A.

- 1969: Systematics and evolution of the tribe Acestrorhynchini (Pisces, Characidae). *Arq. Zool. S. Paulo* 18 (1-2).

Table of ocurrence of food types. For each species, the absolute number of food items are recorded in the first column and the percentages in the second

FOOD	<i>Brycon chagrensis</i>	<i>Brycon petrosus</i>	<i>Paroligosarcus pintoi</i>	<i>Acestrorhamphus jenynsii</i>	<i>Acestrorhamphus hepsetus</i>	<i>Acestrorhamphus sp. A</i>	
ARTHROPODA	1	5.0	0	0	0	0	
INSECTS							
Coleoptera	1	5.0	3	10.7	10	26.3	
Diptera	0	0	1	3.5	7	18.4	
Hemiptera	0	0	0	0	2	5.2	
Orthoptera	0	0	0	0	0	0	
Hymenoptera	0	0	0	0	5	13.1	
INSECT LARVAE	0	0	0	0	8	21.0	
CRUSTACEA	0	0	0	0	1	2.6	
OLIGOCHAETA	0	0	0	0	0	0	
PLANT MATERIAL	15	75.0	17	60.7	2	5.2	
FRUITS	3	15.0	7	25.0	2	5.2	
FISHES	0	0	0	0	0	0	
TOTAL	20	100.0	28	99.9	38	99.6	
				43	99.8	14	
					99.5	6	
						99.8	
FOOD	<i>Acestrorhamphus sp. B</i>	<i>Acestrorhynchus falcatus</i>	<i>Acestrorhynchus abbreviatus</i>	<i>Acestrorhynchus falcatrostris</i>	<i>Acestrorhynchus microlepis</i>	<i>Acestrorhynchus sp. A</i>	<i>Acestrorhynchus sp. B</i>
ARTHROPODA	0	0	0	0	0	0	0
INSECTS							
Coleoptera	1	9.1	0	0	0	0	0
Diptera	0	0	0	0	0	0	0
Hemiptera	0	0	0	0	0	0	0
Orthoptera	0	0	0	0	0	0	0
Hymenoptera	0	0	0	0	0	0	0
INSECT LARVAE	5	45.4	0	0	0	0	0
CRUSTACEA	0	0	1	6.6	0	0	0
OLIGOCHAETA	0	0	0	0	0	6	31.5
PLANT MATERIAL	2	18.2	0	0	0	0	0
FRUITS	0	0	0	0	0	0	0
FISHES	3	27.3	14	93.3	31	100.0	15
TOTAL	11	100.0	15	99.9	31	100.0	15
				10	12	100.0	15
						68.4	99.9
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
				</			

Papéis Avulsos de Zoologia

PAPÉIS AVULSOS ZOOL. S. PAULO, VOL. 22, ART. 21: 225-230, ests. 1-2 1.IV.1969

OCORRÊNCIA DE *MIKADOTROCHUS* NO BRASIL, COM DESCRIÇÃO DE UMA NOVA ESPÉCIE (GASTROPODA, PLEUROTO-MARIIDAE)

JOSÉ LUIZ MOREIRA LEME

LÍCIA PENNA

ABSTRACT

Mikadotrochus notialis, sp. n., based on a specimen found with a collection of fishes trawled off the coast of the State of Rio Grande do Sul, Brazil, depth 150 meters, mud bottom, is closest to *M. amabilis* Bayer, 1963, from which it differs in having: differently shaped shell, with convex spire, smaller selenizone, different radular formula, bicuspid rachidian teeth, and left epipedium as long as the right.

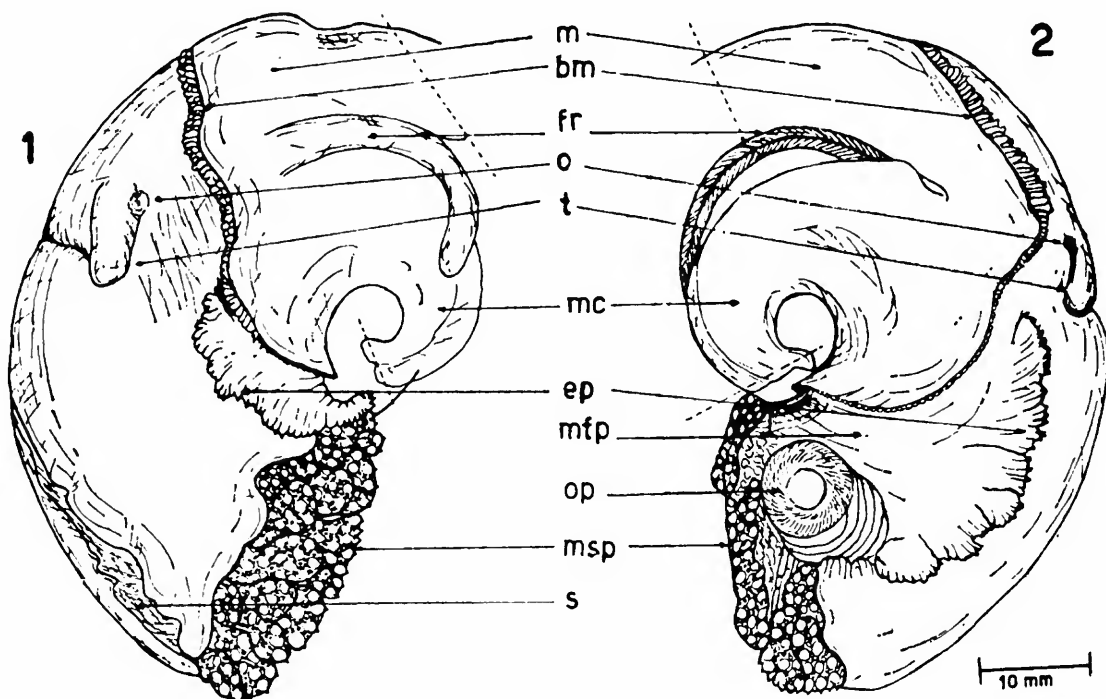
A família Pleurotomariidae é bem representada e amplamente distribuída do Mesozoico ao Eoceno. Conhecem-se sete espécies Recentes. Destas, três — *Perotrochus quoyanus* (Fischer & Bernardi, 1856), *Entemnotrochus adansonianus* (Crosse & Fischer, 1861) e *Mikadotrochus amabilis* Bayer, 1963 — vivem no Atlântico Ocidental, mas ainda não foram encontradas abaixo da linha equatorial. A dragagem de um espécime na costa do Rio Grande do Sul, Brasil, pelo navio oceanográfico “W. Besnard”, vem ampliar para o Sul a distribuição da família e aumentar o número de suas espécies.

— O exemplar, encontrado em meio a uma coleção de peixes feita ao largo da costa do Estado do Rio Grande do Sul, chegou às nossas mãos fixado em formol a 10%, estando a parte superior da massa visceral em adiantado estado de putrefação, imprestável para estudo. A parte anterior do corpo foi passada para álcool a 70% e dissecada. Da rádula, foi retirado um pedaço da porção distal, cuja preparação seguiu os seguintes passos: fervura em potassa a 10%, lavagem em água corrente, desidratação em série alcoólica, coloração pelo vermelho congo, diferenciação em creosoto e montagem em bálsamo, entre lâmina e lamínula. Para confirmação da determinação genérica foi feita uma radiografia da concha, também depositada na coleção malacológica do Departamento de Zoologia da Secretaria da Agricultura do Estado de São Paulo (DZSP).

Mikadotrochus notialis, sp. n.

Holótipo (DZSP n.º 18387), costa do Rio Grande do Sul, Brasil, 150 metros de profundidade, fundo lodoso.

Concha moderadamente grande, troquiforme, com mais de 8 voltas (neste exemplar faltam as primeiras voltas) convexas; a convexidade das voltas aumenta à medida que a concha cresce; as três últimas voltas são levemente angulosas. Sutura impressa e irregular. Côr esbranquiçada; numerosas e irregulares faixas longitudinais castanho-avermelhado claro. Abertura subquadrangu-



Mikadotrochus notialis, sp. n., região anterior do corpo: 1, lado esquerdo; 2, lado direito (fr, fita radular; mc, músculo columelar).

lar, nacarada; lábio externo com uma selenizona que representa aproximadamente $1/7$ da circunferência da última volta. A selenizona e a fasciola estão imediatamente abaixo da linha média da periferia. A margem columelar é espessada e a columela é espiralada; êste caráter foi comprovado por radiografia da concha. Base levemente convexa, mas fortemente côncava na região umbilical que é imperforada. A ornamentação consiste de linhas espirais, nodulosas devido à intersecção de finas costelas axiais; as linhas espirais apresentam uma textura mais grosseira e aumentam em número com o crescimento da concha; na quarta volta, são 9 acima da fasciola e 5 abaixo dela; nas últimas voltas, 14 a 18 acima e 5 ou 6 abaixo. A base da concha é também ornamentada de espirais delicadamente nodulosas; 27 no lado oposto à abertura e 33 junto dela; do meio da base, aproximadamente, para a região umbilical, a ornamentação desaparece, ficando visíveis apenas as linhas de cres-

cimento. Na fascíola, as linhas espirais também estão presentes, são em número de 4 e os pequenos nódulos são obsoletos.

O opérculo (op) é córneo, castanho-esverdeado e multiespiralado (fig. 11).

Dimensões do holótipo, em mm

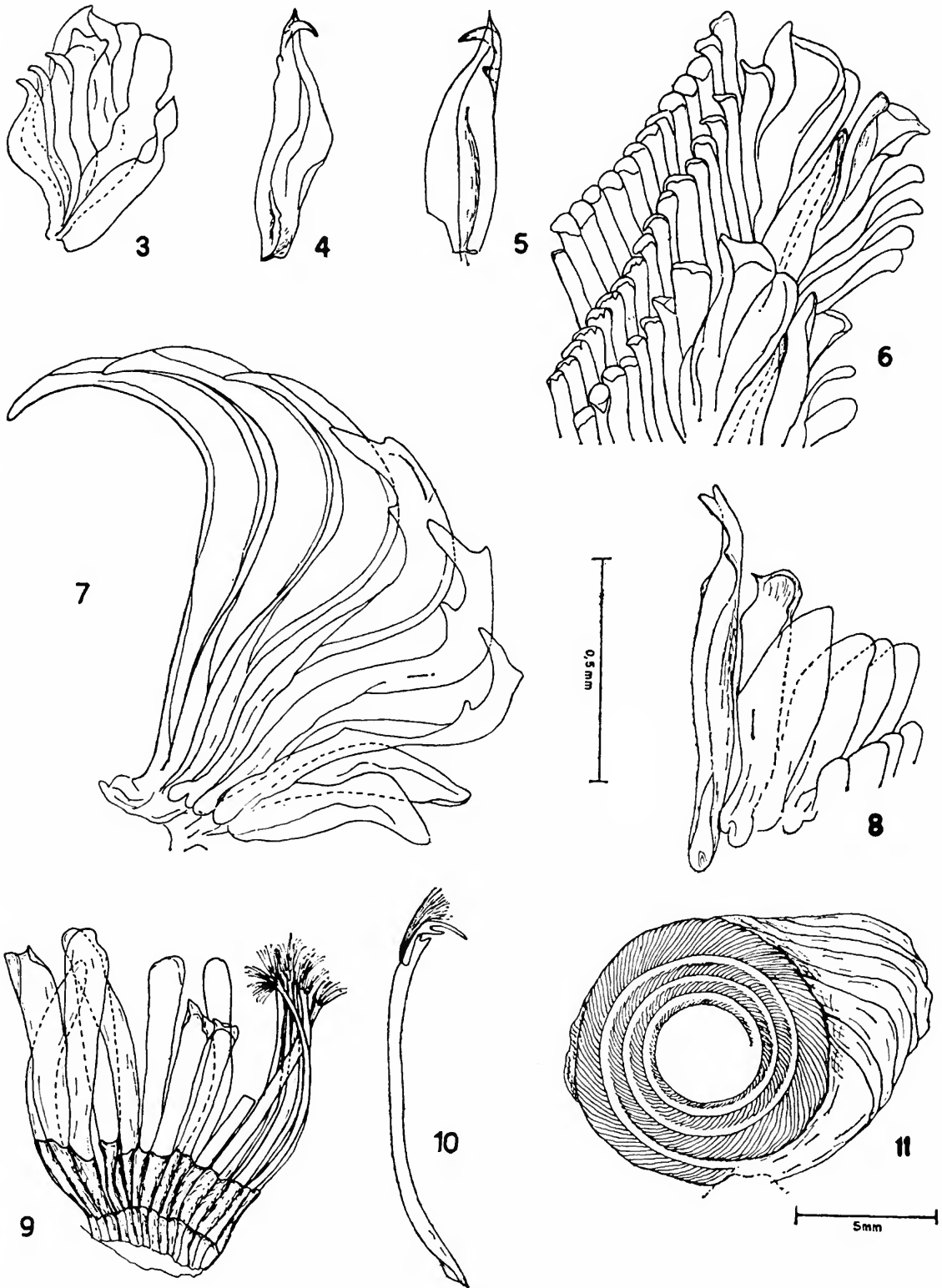
Altura	71+
Base: diâmetro maior	74
diâmetro menor	64,5
Selenizona: comprimento	28,5
largura	4,5

Cabeça volumosa, tentáculos (t) cilíndricos simples, olho (o) situado num pedúnculo curto e largo na base do tentáculo. Bordo livre do manto sinuoso, inteiramente franjado de papilas que são numerosas na região posterior e mais densas e mais desenvolvidas na região anterior; esta é entalhada e circunda as brânquias; a extremidade posterior é angulosa e está localizada na margem esquerda do metapódio.

Pé nitidamente dividido em propódio, mesopódio (msp), metapódio (mtp) e epipódio (ep). A extremidade anterior livre do propódio forma uma larga dobra sobre a fenda de abertura da glândula mucosa pedal. As superfícies laterais do propódio são inteiramente cobertas por papilas, grosseiramente arredondadas, umas maiores e outras menores, com distribuição aparentemente caótica; esta mesma estrutura é observada na cabeça e no pescoço. As papilas são esbranquiçadas e seus interstícios pigmentados de cinza; partes das papilas e dos interstícios apresentam-se cobertas de um muco de cor alaranjada, mascarando a coloração real. A fenda oblíqua que separa o propódio do mesopódio é muito mais evidente do lado esquerdo. No mesopódio, as papilas são mais desenvolvidas e reunidas em feixes elevados. A região pré-opercular do metapódio é larga e côncava, com papilas poligonais mal definidas; o lobo opercular metapodial ocupa cerca de 1/3 do comprimento total do metapódio e mais de 3/4 da largura da sua porção distal; a região pós-opercular é pouco menor que o eixo vertical do opérculo e coberta de papilas mais alongadas e definidas. O epipódio é franjado de papilas lobadas; o epipódio direito ligeiramente mais longo e menos curvo que o esquerdo, e estende-se da linha da extremidade anterior da sola (s) até a margem do opérculo; o esquerdo é bastante recurvado e vai de uma fenda profunda, situada logo abaixo do bordo do manto (bm), também na linha da extremidade anterior da sola, até a confluência das margens esquerdas do mesopódio e do metapódio, formando uma elevação recurvada.

A mandíbula é desenvolvida e formada por duas peças dispostas lateralmente na cavidade bucal; as peças mandibulares estão ligadas por musculatura na porção superior e separadas ventralmente, deixando um assoalho que é forrado de papilas esbranquiçadas e desenvolvidas.

A rádula, como em todas as espécies da família, é constituída de seis diferentes tipos de dentes: raquidiano, centrais, lamelares, unciformes, em pincel e flabeliformes. A fórmula radular pode ser representada por $R + 2 + 29 + 13 + 63 + 10$.

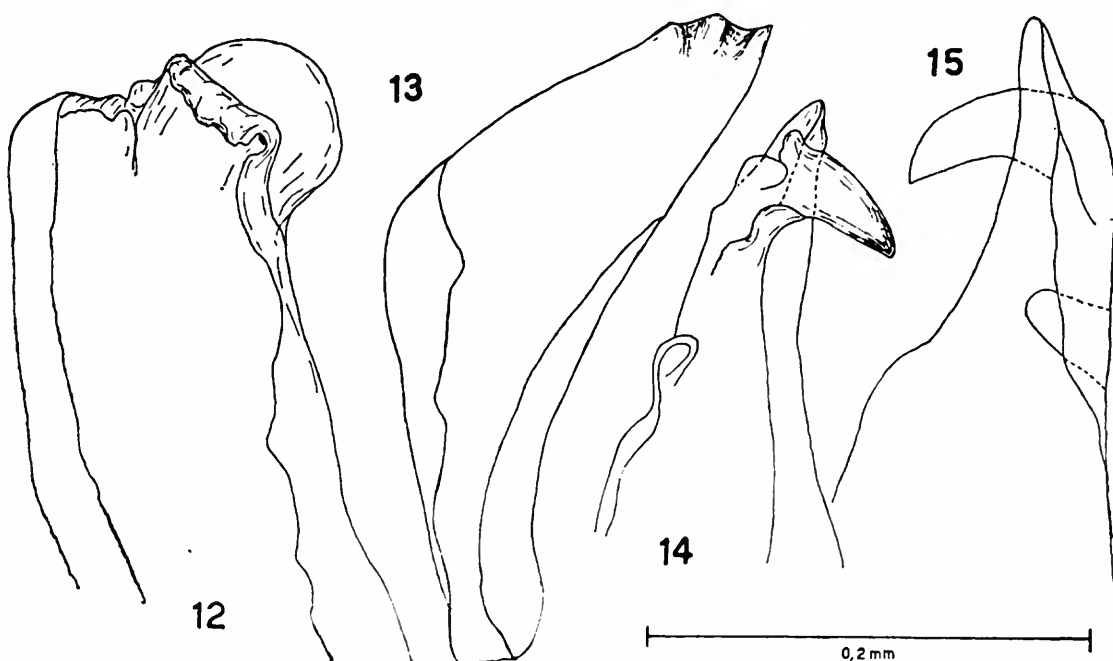


Mikadotrochus notialis, sp. n.: 3, dente raquidiano, dois centrais e quatro lamelosos; 4 e 5, dente raquidiano (perfil); 6, eixo radular e três fileiras de dentes lamelosos; 7, transição de forma dos dentes unciformes do 1º ao 6º; 8, transição dos dentes lamelosos para os unciformes; 9, dentes flabeliformes e em pincel; 10, dente em pincel; 11, opérculo. (Figs. 3-10 na mesma escala).

O dente raquidiano e os dois centrais, de cada lado, têm posição vertical no eixo da rádula, enquanto os demais estão dispostos em fileiras oblíquas. O dente raquidiano é estreito, alongado, sensivelmente menor que os centrais (figs. 3-6), com ápice agudo e duas cúspides, a superior recurvada, maior que a inferior, que é arredondada e lateral (figs. 14 e 15). Os 2 dentes centrais são foliáceos e os mais volumosos de todos os dentes; o segundo dente central é o maior e apresenta a extremidade livre lobada e com duas cúspides largas e recurvadas (figs. 3, 6 e 12). O terceiro dente inicia a fileira oblíqua e a série de dentes lamelares que são triangulares e gradativamente menores até o 21.^o; do 22.^o ao 29.^o (que é o transicional), o aumento de tamanho é progressivo (figs. 6, 8 e 13). Os dentes unciformes são em número de 13; os três primeiros são nitidamente tricúspides; a partir do 4.^o, a cúspide interna inferior desaparece e se inicia a redução progressiva da cúspide externa até o dente apresentar uma única ponta aguda (fig. 7). Os dentes em pincel, numerosos (63) e de difícil demarcação, também mudam gradativamente de caráter, especialmente quanto ao tamanho da cúspide principal e à presença e quantidade de pêlos do tufo terminal (figs. 9 e 10). Os 10 dentes flabeliformes são foliáceos e simples, apresentando uma cúspide mal definida (fig. 9).

DISCUSSÃO TAXONÔMICA

Referimos a presente espécie à família Pleurotomariidae porque apresenta selenizona longa e padrão radular característico, ímpar entre os Archaeogastropoda; ao gênero *Mikadotrochus*, por



Mikadotrochus notialis, sp. n.: 12, extremidade livre do 2.^o dente central; 13, dente lameloso; 14 e 15, extremidade livre do dente raquidiano visto de perfil.

ter área umbilical rasa, margem superior do lábio externo ultrapassando muito a inferior e columela espiralada, este último caráter evidenciado por radiografia.

Dentro do gênero *Mikadotrochus*, a espécie mais próxima é *amabilis* Bayer, 1963, que se assemelha a *notialis*, sp. n., pelas proporções da concha, pela última volta arredondada e pelo tamanho diminuto dos nódulos das linhas espirais. Contudo, a espécie de Bayer mostra espira côncava, periferia da última volta mais arredondada, 22 linhas espirais basais junto da abertura, 11 linhas espirais nodosas acima e 4 abaixo da selenizona, esta tomando cerca de 1/5 da circunferência da última volta; bordo livre do manto com a porção posterior lisa, epipódio esquerdo reduzido, fórmula radular $R + 3 + 24 + 21 + 63 + 8$ e dente raquidiano simples; a nova espécie mostra espira convexa, periferia da última volta menos arredondada, 33 linhas espirais basais junto da abertura, 18 linhas espirais nodosas acima da selenizona e 6 abaixo, e selenizona ocupando aproximadamente 1/7 da circunferência da última volta; bordo livre do manto inteiramente franjado, epipódio esquerdo quase tão longo quanto o direito, fórmula radular $R + 2 + 29 + 13 + 63 + 10$ e dente raquidiano bicúspide.

AGRADECIMENTOS

Agradecemos ao Instituto Oceanográfico da Universidade de São Paulo pela doação do material e ao Dr. Jorge de Faria Vaz pela elaboração e interpretação da radiografia.

REFERÊNCIAS

BAYER, F. M.

- 1963: A new pleurotomariid trawled in the Straits of Florida by R/V Gerda. *Bull. mar. Sci. Gulf & Caribb.* 13 (3): 454-466, 1 fig.

BOUVIER, E.-L. & P. FISCHER

- 1899: Étude monographique des Pleurotomaires actuels. *J. Conchyliol.* (4) 47: 77-151, figs. A-F, pls. 4-7.

DALL, W. H.

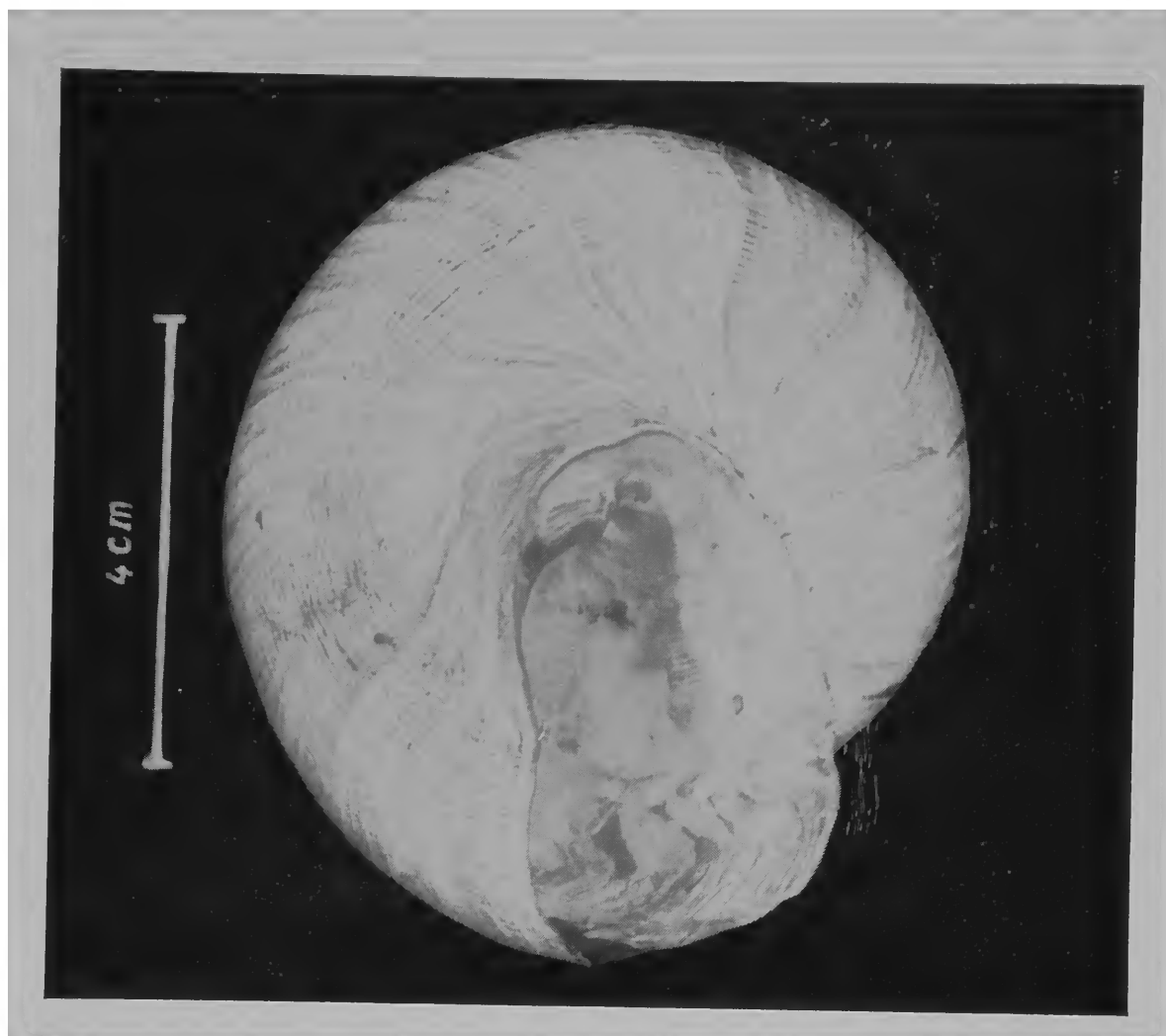
- 1889: Reports on the results of dredging, under the supervision of Alexander Agassiz, in the Gulf of Mexico (1877-78) and in the Caribbean Sea (1879-80), by the U. S. Coast Survey Steamer "Blake", Lieut.-Commander C. D. Sigsbee, U. S. N., commanding. XXIX. Report on the Mollusca. Part. II. Gastropoda and Scaphopoda. *Bull. Mus. Comp. Zool Harvard* 18: 1-492, 31 pls.

FRETTER, V.

- 1964: Observations on the anatomy of *Mikadotrochus amabilis* Bayer. *Bull. mar. Sci. Gulf & Caribb.* 14 (1): 172-184, 6 figs.



Estampa 1: *Mikadotrochus notialis*, sp. n., vista frontal e de perfil
(Foto de G. Pastore).



Estampa 2: *Mikadotrochus notialis*, sp. n., vista basal (Foto de G. Pastore).

Papéis Avulsos de Zoologia

PAPÉIS AVULSOS ZOOL. S. PAULO, VOL. 22, ART. 22: 231-243

15.VIII.1969

RECORDS AND DESCRIPTIONS OF TIPULIDAE FROM SOUTH AMERICA (DIPTERA). III¹

CHARLES P. ALEXANDER²

ABSTRACT

New species of crane flies belonging to the genus *Teucholabis* Osten Sacken are described, collected in Ecuador and Peru by Mr. L. E. Peña. The novelties include *Teucholabis* (*Teucholabis*) *cariosa*, *T.* (*T.*) *inermis*, *T.* (*T.*) *megaspatha*, *T.* (*T.*) *perproducta*, *T.* (*T.*) *sentosa*, *T.* (*T.*) *wirthiana* (all from Libertad, 6 km southeast of Tena, Napo-Pastaza, Ecuador), *T.* (*T.*) *cinderella* (from Avispas, Peru), *T.* (*T.*) *felicita*, *T.* (*T.*) *lipacantha*, *T.* (*T.*) *metatibiata* and *T.* (*T.*) *schistostyla* (all from Quincemil, Cuzco, Peru).

The preceding part under this title appeared in March 1968 (Papéis Avulsos de Zoologia, São Paulo, vol. 21, art. 8: 87-97). In the present report I again am considering species belonging to the Eriopterine genus *Teucholabis* Osten Sacken, vastly developed throughout Tropical America where more than 200 species have been described and unquestionably many more await discovery.

1. "Records and descriptions of Tipulidae from South America (Diptera). II" was published on March 5, 1968, as article 8, pages 87-97 of volume 21 of this journal. The list of species contained in the article is correctly cited in the paper's abstract, page 87. However, after the last proof had been returned to the printers, in part of the issue, a line (page 92), containing the heading *Teucholabis* (*Teucholabis*) *flavofimbria* was dropped and inadvertently substituted by another one, reading *Cryptolabis* (*Cryptolabis*) *phallostena*, a name correctly applied in page 94 to another species; in another part of the issue, a line (page 94), containing the heading *Cryptolabis* (*Cryptolabis*) *phallostena* was dropped and also inadvertently substituted by another one, reading *Teucholabis* (*Teucholabis*) *flavofimbria*, a name correctly applied on page 92 of this part of the issue.

This note is to ensure that the name *Teucholabis* (*Teucholabis*) *flavofimbria* Alexander is to be applied to the species described on page 92 of Papéis Avulsos de Zoologia, vol. 21 (type from Quincemil, Cuzco, Peru, August 1962, Luis E. Peña), and that the name *Cryptolabis* (*Cryptolabis*) *phallostena* Alexander is to be applied to the species described on page 94 of the same paper (type from Contulmo, Palo Botado, Nahuelbuta, Arauco, Chile, February 2, 1953, Luis E. Peña). The Editors.

2. Amherst, Massachusetts, 01002, U.S.A.

The genus *Teucholabis* was proposed by Osten Sacken in 1859 for a single Nearctic species, *T. complexa*, a new species, occurring throughout eastern North America. Only seven species of the genus presently are known from north of the Mexican border. In the Old World rather numerous species occur, particularly in the Oriental fauna. At this time I am describing a series of species from Ecuador and Peru that were collected by Señor Luis E. Peña to whom I am greatly indebted for the privilege of retaining the materials in the Alexander Collection of Tipulidae.

***Teucholabis (Teucholabis) cariosa*, sp. n.**

Size medium (wing of male about 6.5 mm); thorax almost uniformly reddish yellow, abdomen black; rostrum, antennae, halteres and legs black; wings strongly darkened, more uniformly in cells beyond cord; abdominal sternal pocket on segment five blackened, with numerous darkened tubercles, lateral setae relatively small; male hypopygium with spine of basistyle yellowed, curved into an acute blackened spine; outer dististyle a long simple rod with about eight long scattered setae, inner style with beak bidentate; aedeagus blackened, with four setae, terminal spine slender.

Male

Length about 6.5 mm; wing 6 mm; antenna about 1.5 mm.

Rostrum polished black, about one-half as long as remainder of head, palpi black. Antennae black throughout. Head apparently reddish yellow.

Thorax almost uniformly reddish yellow; praescutum and scutum with long erect setae. Halteres black. Legs with coxae and trochanters yellowed, fore coxae slightly darker; remainder of legs black, femoral bases very restrictedly yellowed, on fore legs including about the basal sixth, on middle and hind pairs more restricted; posterior tibiae near outer end with an elongate glandular area provided with abundant short erect setae, posterior basitarsi with more than proximal third dilated. Wings strongly darkened, more uniformly so in cells beyond cord, basal cells vaguely streaked with paler; a narrow scarcely evident darker seam over cord, stigma still darker; veins brownish black. Venation: Sc long, Sc₁ ending about opposite three-fifths Rs; R₂₊₃₊₄ about two-thirds R₂; m-cu close to fork of M.

Abdomen, including hypopygium, black. Sternal pocket on segment five placed far distad, subtriangular in outline, appearing blackened from very numerous short dark tubercles, surrounding setae relatively small; pocket on segment six with only five or six short setae. Male hypopygium with spine of basistyle a yellow horn that curves into an acute blackened point, the latter with long yellow setae at base; mesal flange blackened, margin virtually smooth, outer angle produced into a blackened spine. Outer dististyle a long simple rod, more than one-half longer than the spine of basistyle, narrowed gradually to a microscopic point, surface with about eight long setae arranged in pairs along the surface; inner style with beak bidentate. Aedeagus blackened, terminal spine slender; base with four setae, two near end of expanded part shorter, two longer setae before midlength of the narrowed portion, exceeding the latter in length.

Holotype, ♂, Libertad, 6 km southeast of Tena, Napo-Pastaza, Ecuador, May 10-12, 1963, Luis E. Peña col.

Other species that resemble the present fly in certain features include *Teucholabis* (*Teucholabis*) *atripennis* Alexander and *T.* (*T.*) *laxa* Alexander, differing in the details of the male hypopygium and of the modified sternal abdominal pocket.

***Teucholabis* (*Teucholabis*) *cinderella*, sp. n.**

General coloration of thorax polished black, variegated with yellow; frontal prolongation of head relatively short, reddened; knobs of halteres obscure yellow; fore legs chiefly blackened, basal fourth of femora yellowed, remaining femora and tibiae yellow, the former with a vague pale brown subterminal ring, posterior tibia with a small darkened glandular spot before apex; wings whitened, very restrictedly clouded with darker, more evident as a narrow seam at cord; male hypopygium with spine of basistyle slender, glabrous; outer dististyle with apical fourth abruptly narrowed into a spine.

Male

Length about 6.5 mm; wing 5.2 mm; antenna about 1.5 mm.

Frontal prolongation of head reddened, short, about one-third the remainder of head, palpi black. Antennae with scape and pedicel reddened, flagellum black; intermediate flagellar segments with lower face slightly produced, obtuse, outer segments shorter than verticils. Head with vertex polished black, more reddened beneath and on front and anterior vertex.

Pronotum yellowed, anterior end narrowly blackened. Mesonotum chiefly polished black, yellowed at suture; scutellum and anterior third of mediotergite yellowed; pleurotergite black, with very long setae. Pleura reddened, with conspicuous light silvery areas on dorsal sternopleurite and metapleura. Halteres with stem dusky, knob obscure yellow. Legs with all coxae and trochanters reddish yellow; fore legs blackened, basal fourth of femora yellowed, middle and hind legs with femora and tibiae yellow with a vague subterminal darkening on femora; tarsi black, middle legs with proximal half of basitarsi vaguely yellowed; posterior tibiae with a small darkened glandular area at near six-seventh the length, proximal third of basitarsi dilated. Wings whitened, restrictedly to scarcely evidently patterned with very pale brown along cord and over the broad wing apex, stigma dark brown; veins brown, more intensely so in the darkened areas, wing base yellow. Venation: Sc relatively short, Sc₁ about opposite one-fourth the arcuated Rs, R₂ at fork of Rs; vein R₅ deflected strongly caudad to wing tip, narrowing the cell, cell R₄ at margin subequal to cell R₂; m-cu at fork of M.

Abdominal tergites black, basal sternites yellow, variegated with black, outer segments paler, hypopygium black. Sternal pocket on segment five transverse, with abundant relatively short setae on all parts excepting the posterior margin; no pocket on segment six. Male hypopygium with spine of basistyle elongate, slender, subequal in length to the outer dististyle, glabrous, narrowed gradually to the acute tip; mesal flange reduced to a small blackened triangular

point, margins smooth. Outer dististyle expanded at midlength, thence abruptly narrowed into a slender spine, tip acute, margin of expanded part with microscopic denticles; inner style with beak microscopically bidentate, the teeth approximated. Aedeagus with a conspicuous obtuse flange on outer half.

Holotype, ♂, Avispas, Peru, September 20-30, 1962, Luis E. Peña col.

Teucholabis (Teucholabis) cinderella is generally similar to various other Neotropical species, including *T. (T.) azuayensis* Alexander, *T. (T.) hilaris* Alexander, *T. (T.) laterospinosa* Alexander, *T. (T.) neoleridensis* Alexander, *T. (T.) nigrosignata* Alexander, and some others, all differing among themselves chiefly in hypopygial characters, including the spine of the basistyle and both dististyles.

***Teucholabis (Teucholabis) felicitas*, sp. n.**

Size medium (wing of male 7 mm); general coloration of thorax and abdomen black, head paler; halteres black, base of stem obscure yellow; legs black, bases of fore femora yellow; wings whitened, with three conspicuous brown crossbands and a darkened spot at arculus, Sc long; male hypopygium with apex of basistyle a transverse bar, its mesal end produced outwardly into a strong spine, outer margin with numerous setae; outer dististyle a simple slender rod, beak of inner style bidentate.

Male

Length about 7.5 mm; wing 7 mm; antenna about 1.8 mm.

Rostrum black, relatively short, less than one-half the remainder of head, palpi black. Antennae black; flagellar segments oval, a little shorter than the longest verticils. Head brownish black above, front and anterior vertex brown, beneath more reddened; vertex with abundant erect black setae.

Pronotum obscure reddish yellow. Thorax polished black, including the pleura, dorsopleural membrane light brown. Halteres black, extreme base of stem obscure yellow. Legs with fore coxae and trochanters reddish brown, remainder of leg black excepting more than proximal third of femur which is yellow, proximal half of basitarsus brown; middle coxae black, trochanters brown, remainder broken; posterior legs entirely black, proximal third of basitarsus slightly dilated. Wings whitened, with three conspicuous brown bands and a darkened spot at arculus, reaching costa at h; basal dark band extending from R to tip of vein 1st A, generally parallelsided, a little expanded distad in cell M; band at cord broader at stigma, narrowed on posterior cord, slightly disconnected from a paler brown cloud at end of vein 1st A; outer dark band including the broad apex beyond the general level of outer end of cell 1st M₂, leaving only a small whitened spot in base of cell M₃, prearcular field yellowed, including the veins; veins yellowish brown, darker in the patterned areas, darkest at cord. Venation: Sc long, Sc₁ ending just beyond midlength of Rs; R₂₊₃₊₄ about one-third R₂; m-cu one-third its length beyond fork of M.

Abdomen black throughout. Sternal pocket on segment five heavily darkened, marginal setae numerous, of moderate length; segment six with about ten similar setae on either side of the broad

central area. Male hypopygium with apex of basistyle a transverse bar, its mesal end produced outwardly into a strong spine, outer margin with abundant long yellow setae; mesal flange unusually large, margin irregularly toothed, outer angle with long setae. Outer dististyle a simple slender rod with coarse setae; inner style with beak bidentate. Phallosome blackened, apex of aedeagus extended into a narrow rod, the tip slightly dilated.

Holotype, ♂, Quincemil, Cuzco, Peru, August 1962, Luis E. Peña col.

In its wing pattern this conspicuous fly bears a superficial resemblance to several species, including *Teucholabis* (*Teucholabis*) *cybele* Alexander, *T. (T.) formosissima* Alexander, *T. (T.) longispina* Alexander, *T. (T.) nigrocorporis* Alexander, *T. (T.) rostrata* Enderlein, *T. (T.) subpulchella* Alexander, *T. (T.) tartarus* Alexander, and some others, differing in details of coloration of the body, legs and wings, and especially in hypopygial structure. In the latter regard it is more like *T. (T.) biramosa* Alexander, especially in the apical spine of the basistyle, but in other respects the latter fly is entirely different.

***Teucholabis* (*Teucholabis*) *inermis*, sp. n.**

General coloration of thorax polished black, variegated with yellow on mesonotum and with a broad silvery pleural stripe; knobs of halteres light yellow; fore legs differing in color from the other pairs; wings whitish hyaline, very restrictedly patterned with brown, including the very pale apex, *Sc* short; male hypopygium without a terminal spine on basistyle; outer dististyle unequally bifid at near midlength.

Male

Length about 4.5 mm; wing 4.5 mm.

Rostrum brown, palpi black. Antennae black; proximal flagellar segments short-oval, with short abrupt apical pedicels, outer segments more elongate. Head black, heavily light gray pruinose anteriorly, less evident behind.

Prothorax, including pleura, light yellow. Mesonotum chiefly intense polished black, center of suture, including parts of both the praescutum and scutum, and the scutellum light yellow. Mesopleura broadly black above, sternopleurite similarly blackened, the two areas separated by a conspicuous silvery longitudinal stripe extending from behind the fore coxae to base of abdomen, widened behind to include the metapleura; dorsopleural region darkened, only the extreme praescutal border brighter. Halteres with stem black, knob light yellow. Legs with coxae and trochanters yellow; fore femora black, basal sixth yellowed, remainder of fore legs black; middle and hind femora yellow, tips narrowly black, including about the outer sixth or less, tibiae more obscure yellow, tips brownish black, tarsi black, proximal end of posterior basitarsus slightly dilated. Wings whitish hyaline, very restrictedly patterned with brown, including the large short-oval stigma and a narrower seam over cord to vein *Cu*; wing apex beyond general level of cell 1st *M*₂ very pale brown, scarcely apparent; veins brownish black to black, those at wing base yellowed. Venation: *Sc* short, *Sc*₁ ending

virtually opposite origin of R_s , branches of the latter strongly divergent, especially R_5 which ends at or close to wing tip, cell R_2 at margin about one-half cell R_4 ; R_2 at or close to end of R_s ; m-cu immediately before fork of M.

Abdominal tergites brownish black; incisures narrowly yellowed, especially on outer segments, hypopygium black; sternites with posterior borders broadly yellow. Sternal pockets on segments five, six and seven, largest on five, on the others clearly indicated laterally. Male hypopygium without a spine on basistyle. Outer dististyle a strong rod that is unequally bifid at near midlength, axial spine subequal in length to the base, lateral spine about one-third as long; inner style with blade long and narrow, tip decurved. Aedeagus broad, blackened, apex a small curved black spine and several longer setae.

Holotype, ♂, Libertad, 6 km southeast of Tena, Napo-Pastaza, Ecuador, May 10-12, 1963, Luis E. Peña col.

Other species that have the body and wing coloration much as in the present fly and with vein Sc short include *Teucholabis* (*Teucholabis*) *biacifera* Alexander, *T. (T.) cinereiceps* Alexander, and some others, all differing from the present fly in hypopygial structure. *T. (T.) desdemona* Alexander likewise is generally similar, differing in the open cell M_2 of the wings and in hypopygial structure, especially the dististyles and aedeagus.

***Teucholabis* (*Teucholabis*) *lipacantha*, sp. n.**

Male

Length about 6.5 mm; wing 6 mm; antenna about 1.6 mm.

Characters generally as in *perproducta*, sp. n., differing chiefly in hypopygial characters.

Wing with the darkened bands narrower, the white ground areas correspondingly widened, more extensive than the darkened bands, dark marking at cord virtually interrupted at base of cell 1st M_2 . Venation: Sc_1 ending opposite midlength of R_s , Sc_1 alone much longer, exceeding vein R_2 in length. Abdomen with sternal pocket of segment five with lateral setae fewer. Male hypopygium with apical spine of basistyle relatively short, less than the outer dististyle, appearing as a slightly arcuated rod that narrows gradually into an acute spine, margin of basal half with abundant setae. No secondary spine or spinule, as found in *bigladi*a and *perproducta*.

Holotype, ♂, Quincemil, Cuzco, Peru, August 1962, Luis E. Peña col.

***Teucholabis* (*Teucholabis*) *megaspatha*, sp. n.**

Allied to *hilaris* and *rubriceps*; general coloration of head and thorax orange, praescutum with a large oval black area on either side behind; knobs of halteres light yellow; posterior femora with base and apex black, posterior tibia with a modified glandular area near outer end; wings whitened, apex vaguely darkened, stigma and an area at arculus darkened, Sc relatively long; abdominal segments black, ringed with yellow; male hypopygium with phallo-

some bearing a very large oval darkened blade that extends some distance beyond apex of the small aedeagus.

Male

Length about 6.5 mm; wing 6 mm; antenna about 1.5 mm.

Head, including rostrum, orange yellow, center of posterior vertex slightly darker, palpi black. Antennae with scape and pedicel brown, flagellum black; flagellar segments long-oval, exceeding their verticils.

Thorax polished orange, conspicuously patterned with black, on the praescutum including a large oval area on either side behind that attains the border; each scutal lobe with two contiguous brownish black marks; median region of notum, including scutellum, light yellow. Halteres with stem black, knob light yellow. Legs with coxae and trochanters of fore and middle legs yellow, posterior legs with trochanters and tips of coxae black; fore legs broken; middle femora yellow, apical fourth or more black, tibiae yellow, tips more narrowly blackened, tarsi brownish black; posterior femora with basal seventh and apical fourth black, the broad central part light yellow, remainder of leg brownish black to black; tibia with a modified glandular area about twice its length from tip, proximal fifth of basitarsus slightly dilated. Wings whitened, tip vaguely darkened, extending from vein R_4 to M_3 ; stigma darker brown, subcircular, cord very narrowly and insensibly darkened; a conspicuous brown prearcular spot; veins brown, darker at cord, more yellowed in the prearcular anal field. Venation: Sc_1 ending opposite two-fifths Rs , in *hilaris* much shorter, at about one-fourth Rs .

Abdominal tergites black, outer segments with posterior borders narrowly yellowed; sternites bicolored, bases brownish black, apical half yellow, more uniformly yellowed on outer segments, styli of hypopygium black. Sternal pocket on segment five subcircular, with a more whitened circular central spot, all setae on cephalic margin, relatively short and abundant; pocket of sixth sternite with about 15 strong setae on either side of the broad central space. Male hypopygium with spine of basistyle broad and yellow at base, outwardly narrowed into a long darkened point, inner margin of base with abundant appressed yellow setae, outer margin of spine with microscopic spinules; outer mesal angle of style at base of spine produced into an acute black point; mesal flange very small, blackened, margin smooth. Outer dististyle a long simple gently sinuous rod, its tip an acute spine, surface with abundant setae, those of inner margin erect; inner style stout, terminating in a strong recurved spine, without a distinct basal lobe. Phallosome with a very large darkened blade that extends some distance beyond the small slender aedeagus, the latter with a pair of setae, the expanded blade with four longer setae near center of the disk.

Holotype, ♂, Libertad, 6 km southeast of Tena, Napo-Pastaza, Ecuador, May 10-12, 1963, Luis E. Peña col.

The closest relatives of this species are *Teucholabis* (*Teucholabis*) *hilaris* Alexander, *T. (T.) rubriceps* Alexander, and *T. (T.) subrubriceps* Alexander, all differing in details of coloration and especially in hypopygial structure, including the phallosome. The holotype male of *hilaris* formerly was preserved in the Hungarian

National Museum but was destroyed in 1956 during the riots in Budapest. A paratype male is in the author's collection.

Teucholabis (Teucholabis) metatibiata, sp. n.

General coloration of entire body polished black; rostrum elongate, subequal to remainder of head; knobs of halteres obscure yellow; legs with femora yellow, tips narrowly brownish black, the amount subequal on all legs, posterior tibiae with outer two-fifths darker and slightly more enlarged; wings very weakly tinted, unpatterned except for the small light brown stigma; male hypopygium with outer dististyle slender, strongly dilated at midlength, with a strong marginal spine, inner style with blade elongate, with a single apical spine; terminal spine of aedeagus slender.

Male

Length about 6 mm; wing 5 mm; antenna about 0.8 mm.

Rostrum elongate, subequal to remainder of head, black, palpi black. Antennae black, flagellar segments oval. Head polished black.

Pronotal scutum black, scutellum yellow. Mesonotum black, humeral region of praescutum and ends of suture slightly more yellowed. Pleura brownish black, with a vague longitudinal paler stripe. Halteres brownish black, knob elongate, obscure yellow. Legs with fore coxae brown, remaining coxae and all trochanters yellow; femora yellow, tips narrowly brownish black, subequal in amount on all legs, on posterior pair including about the outer eighth; tibiae brown, the posterior pair yellowed, the outer two-fifths darker and slightly more enlarged, tarsi black. Wings very weakly tinted, prearcular field light yellow; stigma small, short-oval, light brown; veins brown, slightly darker along cord, more yellowed in the brightened base. Venation: Sc_1 ending about opposite two-fifths the length of Rs ; cell 1st M_2 elongate, nearly equal to vein M_{1+2} beyond it.

Abdomen, including hypopygium, black. Sternal pockets weak, on segment five larger but indistinct, with small setae; segment six with a similar pale center with few weak marginal setae. Male hypopygium of holotype with spine of basistyle broad-based, narrowed outwardly into a blackened point, inner margin with a fringe of long yellow setae, in the paratype the spine longer and more uniformly slender; mesal flange with margin only weakly crenulate. Outer dististyle with basal third slender, thence strongly dilated, outer fourth suddenly narrowed, inner margin with a strong spine; inner style with blade long, with a single apical spine, basal lobe small, with three setae. Apical spine of aedeagus slender.

Holotype, ♂, Quincemil, Cuzco, Peru, August 1962, Luis E. Peña col. Paratopotype, ♂, with the type.

The most similar species include *Teucholabis* (*Teucholabis*) *rectangularis* Alexander and *T. (T.) unicingulata* Alexander, which differ in details of the sternal pockets and hypopygia. The modification of the posterior tibia should be noted.

Teucholabis (Teucholabis) perproducta, sp. n.

Allied to *bigladia*; size medium (wing of male over 6 mm); general coloration of thorax and abdomen black; rostrum, antennae and halteres black; fore femora yellow on proximal half, remainder black; wings whitened, very heavily banded with dark brown, including also a conspicuous spot at arculus; abdomen with sternal pocket of segment five triangular in outline; male hypopygium with apex of basistyle produced directly caudad into a blade that is farther extended into a spine; outer dististyle a simple rod, inner style with beak large, bidentate.

Male

Length about 8 mm; wing 6.5 mm; antenna about 1.5 mm.

Rostrum black, about one-third the remainder of head, palpi black. Antennae black; flagellar segments long-oval, terminal segment about two-thirds the penultimate. Head dark brown, paler on genae and beneath.

Pronotum above obscure reddish brown, sides blackened. Mesothorax polished black, pleura with a small pruinose area above the mid-coxa. Halteres black, extreme base of stem vaguely paler. Legs with all coxae black, trochanters brown, posterior pair black; a single leg (fore) remains, femora with proximal half yellow, remainder of leg black, proximal part of basitarsus paler. Wings whitened, with three very conspicuous dark brown bands additional to a large spot at arculus; basal band broad, from origin of Rs to tip of vein 2nd A, slightly widened in cell M, second band at cord, the cephalic end more intense, stigma not further differentiated, the band constricted at M; wing tip very broadly brown, including all cells beyond level of outer end of cell 1st M₂, including also a slightly darker seam at outer end of the latter; prearcular and costal fields slightly more yellowed; veins brown, darker along cord, prearcular veins yellowed. Venation: Sc long, Sc₁ ending about opposite midlength of Rs, R₂ just beyond the fork of Rs.

Abdomen black throughout. Sternal pocket of segment five large, triangular in outline, the point directed cephalad, center with very abundant microscopic black points, lateral setae numerous, of moderate size; sternite six with about a dozen scarcely modified setae on either side of median area. Male hypopygium with basistyle narrowed outwardly, produced into a blade that is extended into a long spine, margin of blade before the spine with relatively few yellow setae, margin of blade at base with a microscopic erect black spine; mesal flange conspicuous, appearing as a projecting knob with several strong setae. Outer dististyle a slender simple rod, narrowed outwardly, terminating abruptly in a microscopic spine, setae long but relatively sparse; inner style with beak large, bidentate, the teeth spinelike. Aedeagus blackened, with four setae, the abruptly narrowed apex cylindrical.

Holotype, ♂, Libertad, 6 km southeast of Tena, Napo-Pastaza, Ecuador, May 11, 1963, Luis E. Peña col.

The closest relative of the present fly is *Teucholabis* (*Teucholabis*) *bigladia* Alexander which is distinguished chiefly by hypopygial structure, including the apical blade of the basistyle;

in the present fly the second inner spine found in *bigladi* is reduced to a microscopic blackened point. A third related species is *T. (T.) lipacantha*, sp. n., which again has the apical blade of the style quite distinct, as described.

Teucholabis (Teucholabis) schistostyla, sp. n.

Allied to *nocturna*; general coloration of body black, thoracic pleura more pruinose; rostrum long, subequal to remainder of head; halteres black, knob vaguely more yellowed; legs black; wings whitened, the tip narrowly brown, Sc long; male hypopygium with spine of basistyle long and slender, outer dististyle broad, profoundly divided into two unequal arms, the outer one slender, inner style unusually narrow, without a lower beak.

Male

Length about 7 mm; wing 6 mm.

Rostrum black, unusually long, subequal to remainder of head, palpi black. Antennae black. Head polished black.

Pronotum black, pretergites light yellow. Mesonotum black, surface slightly opaque by a faint bloom. Pleura chiefly gray pruinose, ventral sternopleurite and anepisternum black, dorso-pleural membrane light yellow. Halteres black, knob very vaguely more yellowed. Legs with coxae and trochanters black, remainder of legs (fore pair lacking) black; posterior basitarsi dilated on nearly the proximal third. Wings whitened, prearcular field light yellow; wing tip narrowly brown, extending from cell R_2 into M_3 , stigma oval, dark brown; veins brownish black. Venation: Sc long, Sc_1 ending about opposite three-fifths Rs; m-cu shortly beyond fork of M.

Abdomen black throughout, surface subnitidous. Sternal pocket on segment five large, the center darkened by microscopic setae, marginal setae black, conspicuous, surrounding the pocket except at posterior end, segment six with about six or seven strong black setae on either side. Male hypopygium with spine of basistyle long and slender, tip acute, blackened; mesal flange conspicuous. Outer dististyle large, profoundly divided, outer arm slender, inner arm broad, its tip acute; inner style unusually narrow, the lower beak lacking; body of style with a low lobe that terminates in a small blackened point, near apex with a few strong black setae. Aedeagus with apical point a gently curved black hook, with two long setae at its base and two longer setae on back of the basal enlargement.

Holotype, ♂, Quincemil, Cuzco, Peru, August 1962, Luis E. Peña col.

The only closely related species is *Teucholabis (Teucholabis) nocturna* Alexander, of Venezuela, which differs especially in hypopygial structure, including the spine of the basistyle and both dististyles.

Teucholabis (Teucholabis) sentosa, sp. n.

General coloration of thorax yellowish brown above, light yellow on ventral pleura, above with three major black areas placed on

sides of praescutum and on dorsal pleurites; wings with the restricted ground obscure yellow, disk with extensive pale brown markings; male hypopygium with apical spine of basistyle a broad blade, the outer margin serrulate; outer dististyle a slender simple spine.

Male

Length about 6.3-6.5 mm; wing 5.8-6.2 mm.

Rostrum yellow, about one-half the remainder of head; palpi and antennae black, flagellar segments oval, smaller and more slender outwardly. Head above dark brown, beneath more brightened.

Pronotum brownish yellow. Mesonotal praescutum medially polished yellowish brown, blackened in front and before suture, sides with a major polished black area; posterior sclerites of notum obscure yellow, scutal lobes slightly more darkened, posterior border of mediotergite broadly black. Pleura yellow on ventral half, with a more whitened longitudinal stripe, dorsal pleura brownish yellow with two major black circular areas. Halteres dark brown. Legs with coxae and trochanters yellow; fore femora dark brown, basal third yellowed, tibiae and tarsi dark brown to brownish black; middle and hind femora and tibiae yellow, the latter clearer, tips narrowly and vaguely darkened; tarsi black, proximal end of posterior basitarsus slightly dilated. Wings with the restricted ground obscure yellow, including the basal fifth and a band before cord together with much of the costal border to beyond stigma; remainder of wing paler brown, including virtually all cells beyond cord and a broad band extending from Rs to Cu across the basal cells, cells Cu and the Anals with the exception of their bases paler brown; stigma dark brown, conspicuous; veins brown. Venation: Sc long, Sc₁ ending about opposite two-thirds Rs; branches of Rs generally parallel to one another throughout their lengths.

Abdominal tergites brownish black, basal sternites light yellow, patterned with brown, outer sternites darkened, eighth and ninth segments yellow, styli brownish black. Sternal pocket on segment five longitudinally oval, with numerous setae on all sides except posterior end, center of pocket without major setae; pocket of segment six with about five or six very weak and inconspicuous setae on either side directed mesad. Male hypopygium with spine of basistyle a broad conspicuously darkened blade, outer margin of distal half with microscopic serrulations, apex narrowed into a long black spine; margin at base of spine with a pencil of long yellow setae, the longest virtually equal to the spine, the row extended basad on face of blade for about one-half its length; mesal flange darkened, margins smooth; setae at apex of basistyle black, very long, nearly equal in length to the blade. Outer dististyle a slender simple yellow spine that is nearly as long as the blade of the basistyle, slightly dilated at near midlength, thence narrowed into a long slender point, surface with very sparse small setae; tip of inner style conspicuously bidentate. Apex of aedeagus narrowed to a cylindrical blackened rod.

Holotype, ♂, Libertad, 6 km southeast of Tena, Napo-Pastaza, May 10-12, 1963, Luis E. Peña col.. Paratopotypes, 3 ♂♂, with the

type. Paratypes, 2 ♂♂, Quincemil, Cuzco, Peru, August 18 and October 15-20, 1962, Luis E. Peña col..

In its general appearance *Teucholabis* (*Teucholabis*) *sentosa* suggests species such as *T. (T.) atripennis* Alexander and *T. (T.) mythica* Alexander, but is quite distinct in hypopygial structure, particularly the outer dististyle and armature of the basistyle.

***Teucholabis* (*Teucholabis*) *wirthiana*, sp. n.**

General coloration of body yellow, including the short rostrum; mesonotal praescutum with a conspicuous subcircular black spot on either side; halteres and legs yellow; wings light yellow, prearcular and costal fields more saturated, stigma brown, vein Sc long; male hypopygium with spine of basistyle distinctive, apically with two long points; outer dististyle with a small lateral spine, inner style without a lower beak.

Male

Length about 6 mm; wing 5.3 mm; antenna about 0.9 mm.

Rostrum light yellow, relatively short, slightly more than one-third the remainder of head, palpi obscure yellow, indistinctly patterned with light brown. Antennae short; scape and pedicel light yellow, flagellum light brown, incisures of the more proximal segments narrowly pale, outer segments darker brown; flagellar verticils much exceeding the segments, especially the more proximal ones. Head light yellow, the broad vertex light gray, its center weakly more darkened.

Prothorax yellow. Mesonotum fulvous yellow, praescutum on either side with a single subcircular black spot at more than its own diameter from margin, central region of praescutum vaguely more fuscous. Pleura almost uniformly yellow. Halteres pale yellow, knobs more saturated yellow. Legs with coxae and trochanters yellow; remainder of legs yellow, fore femora with extreme tip light brown, outer tarsal segments more infuscated; posterior basitarsi with proximal sixth slightly dilated. Wings light yellow, prearcular and costal fields somewhat more saturated, stigma small, oval, brown; veins yellow, m and veins comprising the cord brown. Venation: Sc relatively long, Sc₁ ending about opposite two-thirds Rs, cells R₂ and R₄ at margin subequal in extent.

Abdomen yellow, the segments vaguely more darkened basally, the pattern produced by dense microscopic black setulae. Sternal pocket of segment five indicated by a grouping of about a dozen long setae on either side of a narrow central unmodified area, setae darkened basally, outer ends pale, all such setae contiguous or decussate at midline; no setal modifications on sixth sternite. Male hypopygium with spine of basistyle distinctive, glabrous, broadly flattened, outer end slightly expanded, terminating in two long acute black points, the axial one slightly longer; mesal flange undeveloped. Outer dististyle a pale rod, at near two-thirds the length with an acute subappressed spine; inner style with beak blackened, elongate, cultriform, without a lower beak or clearly defined basal lobe. Aedeagus with base dilated, with four setae, apex extended, tip blackened, obtuse and weakly bilobed.

Holotype, ♂, Libertad, 6 km southeast of Tena, Napo-Pastaza, Ecuador, May 10-12, 1963, Luis E. Peña col..

I dedicate this species to Willis W. Wirth, outstanding student of the Diptera, co-author of the invaluable *Catalog of the Diptera of America north of Mexico* (Washington, 1965). In its general appearance *Teucholabis (Teucholabis) wirthiana* is similar to *T. (T.) jocosa* Alexander and some allied species, differing in all details of the male hypopygium, particularly the basistyle and outer dististyle, as well as in the very different sternal pocket. The bispinous terminal spine of the basistyle suggests the condition in *T. (T.) biramosa* Alexander, *T. (T.) scabrosa* Alexander, and *T. (T.) spica* Alexander, all quite distinct in other features.

Papéis Avulsos de Zoologia

PAPÉIS AVULSOS ZOOL. S. PAULO, VOL. 22, ART. 23: 245-247, 3 ests. 15.VIII.1969

UMA NOVA ESPÉCIE DE *THRENETES* (AVES, TROCHILIDAE)

ROLF GRANTSAU

ABSTRACT

A new species of *Threnetes*, *loehkeni*, sp. n., is described on the basis of 5♂♂ and 1♀ collected at Serra do Navio, Amapá, Brazil. The new species is compared to all other species of the genus; comparative data include measurements of all species; the habitat where *T. loehkeni* was collected, is described.

Das três espécies de *Threnetes* descritas até o presente, unicamente *T. leucurus* Linnaeus é conhecida do Brasil. Conhecem-se três formas de *leucurus*: *leucurus leucurus* Linnaeus, *l. medianus* Hellmayr e *l. cervinicauda* Gould. *Threnetes ruckeri* Bourcier é espécie conhecida da Venezuela, Colômbia e Equador, ao passo que *T. niger* Linnaeus é unicamente conhecida da Guiana Francêsa.

Estudando material de peles do Museu Nacional, Rio de Janeiro, notei um exemplar de *Threnetes* com cauda escura; inicialmente julguei tratar-se de um *T. niger* divergente na coloração. O exemplar em questão havia sido capturado por E. Dente na Serra do Navio, Território do Amapá, em uma rede japonesa, em 1966. Resolvi fazer uma excursão ao Amapá, para coletar este beija-flor. Em julho de 1967 coletei 3 dias na Serra do Navio. Esta localidade é coberta por densa e alta mata virgem; entre esta mata virgem e o rio Amapari, que atravessa a serra, situa-se um cinturão de capoeira. Na beira da mata e na capoeira existem ingazeiros, que florescem entre julho e setembro. Todos os exemplares da nova espécie de *Threnetes*, descrita abaixo, foram capturados ao visitar as flôres dos ingazeiros.

O Sr. Gasperek, que me acompanhava, abateu um macho, que pôs à minha disposição. Como não conseguisse outros exemplares, viajei uma segunda vez para a mesma região, em julho de 1968. Durante os 12 dias que aí permaneci, fui novamente mal sucedido. Em setembro do mesmo ano, meu amigo, Sr. W. Löhken, coletou mais quatro exemplares deste beija-flor, aparentemente raro, que descrevo a seguir.

***Threnetes loehkeni*, sp. n.**

Holótipo, ♂ adulto (n.º 7013), da Serra do Navio, Amapá, Brasil, 15.IX.1968, W. Löhken col. (no Departamento de Zoologia, Secretaria da Agricultura, São Paulo).

DESCRIÇÃO (DO HOLÓTIPO)

Dorso verde bronzeado escuro; região auricular castanho-negra; supercílio ocre; região malar branca; mento e garganta prêtos; papo ocre-avermelhado; pescoço, peito, flancos e coberteiras das asas como o dorso; abdômen cinza-ocre claro; asas pretas, com brilho purpúreo; secundárias com bordas esbranquiçadas; coberteiras superiores da cauda verde-escuro brilhante, com estreitas bordas brancas, coberteiras inferiores da cauda cinza-esverdeadas, com estreitas bordas ocre; rectrizes superiormente pretas, com brilho verde-escuro e estreita borda (2-3 mm) apical branca, e estreitas bordas ocre nas ramas internas; bico preto; base da mandíbula e cantos das maxilas na base, plúmbeos (na pele, esbranquiçados); pernas amarelas. Pêso, 5 g. Medidas: ver tabela abaixo.

Parátipos: todos da mesma localidade que o holótipo. 1 ♂ adulto, 10.IX.1968, W. Löhken col. (n.º 6951); 1 ♂ jovem, 19.VII.1967, J. Gasperek col. (n.º 2122); 1 ♂ jovem, 15.IX.1968, W. Löhken col. (n.º 7012); 1 ♂ jovem, 1966, E. Dente col. (n.º 29308, Museu Nacional, Rio de Janeiro); 1 ♀ adulta, 14.IX.1968, W. Löhken col. (n.º 7004).

Os machos jovens têm a mesma coloração dos adultos, mas as penas do lado dorsal têm margens esbranquiçadas; a fêmea adulta (pêso, 4 g) tem a mesma coloração geral do macho, mas tem o abdômen mais claro e ligeiramente ocráceo, e a mancha gular é mais pálida.

Medidas (em mm)	comprimento total	comprimento da asa	comprimento da cauda	comprimento do bico
<i>T. loehkeni</i>				
holótipo	118	63	34	29
fêmea	113	57	31	29
parátipos (média)	-	63	34,5	29
<i>T. leucurus</i>	-	60	33	30
<i>T. niger</i>	-	57	32	34
<i>T. ruckeri</i>	-	58	33	34

DISCUSSÃO TAXONÔMICA

Baseado na comparação com as demais espécies de *Threnetes*, convenci-me que se trata de uma espécie distinta. Não pode ser considerada como uma forma de *T. leucurus*, apesar de possuir coloração geral semelhante, por ser menos bem desenhada, e principalmente por causa da coloração totalmente diferente da cauda. *T. ruckeri* distingue-se pela base vermelha da parte inferior do bico, e também pela coloração distinta da cauda. Únicamente *T. niger* também tem cauda negra, entretanto, mais preta-verde-oliva, com brilho purpúreo, na face inferior (em aves jovens, as penas da cauda têm bordas côr de oliva); as coberteiras superiores têm bordas pretas, ao passo que as da nova espécie têm estreita borda branca.

T. niger distingue-se pela sua face inferior quase preta de tôdas as outras espécies do gênero.

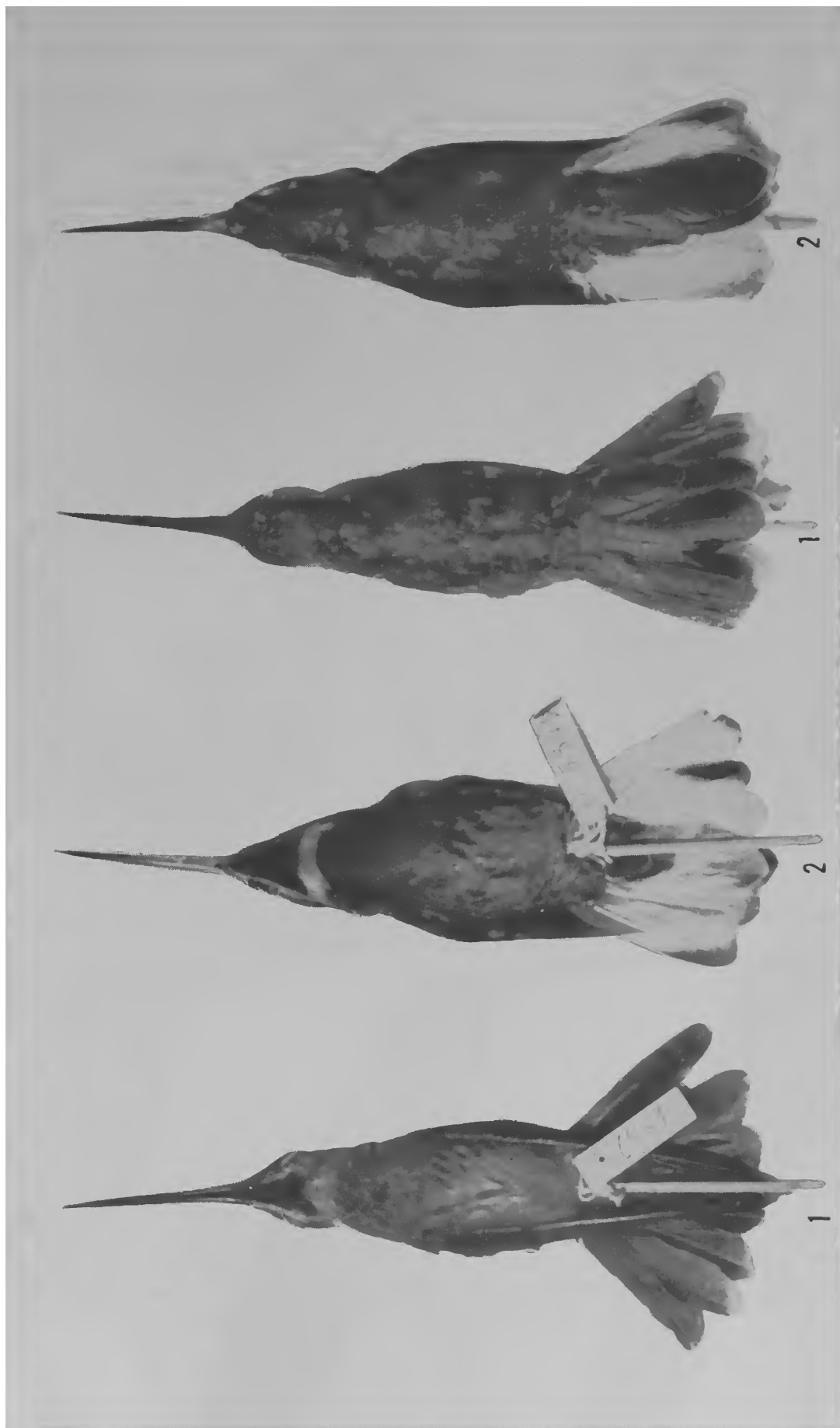
O nome da espécie é dado em homenagem ao Sr. Wilhelm Löhken.

ESPÉCIES DE BEIJA-FLÔRES COLETADAS OU OBSERVADAS POR NÓS NA SERRA DO NAVIO:

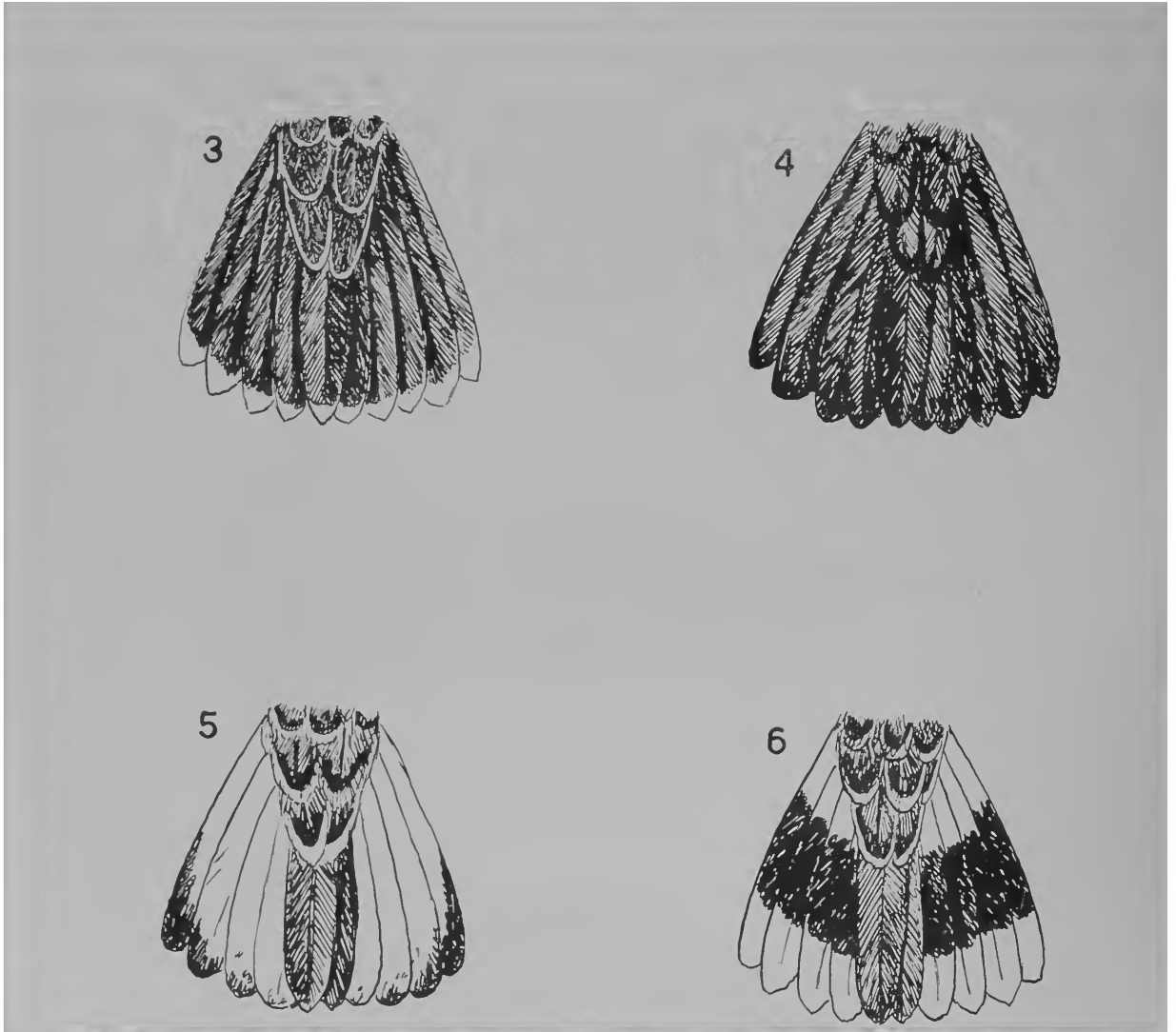
- | | |
|---|---|
| 1. <i>Glaucis h. hirsuta</i> Gmelin | 10. <i>Lophornis ornata</i> Boddaert |
| 2. <i>Threnetes loehkeni</i> , sp. n. | 11. <i>Discosura longicauda</i> Gmelin |
| 3. <i>Phaethornis malaris</i> Normann | 12. <i>Thalurania f. furcata</i> Gmelin |
| 4. <i>P. s. superciliosus</i> Linnaeus | 13. <i>Hylocharis s. sapphirina</i> Gmelin |
| 5. <i>P. bourcieri whitelyi</i> Boucard | 14. <i>Polytmus t. theresiae</i> da Silva Maia |
| 6. <i>P. r. ruber</i> Linnaeus | 15. <i>Amazilia versicolor milleri</i> Bourcier |
| 7. <i>Campylopterus l. largipennis</i> Boddaert | 16. <i>Topaza p. pella</i> Linnaeus |
| 8. <i>Florisuga m. mellivora</i> Linnaeus | 17. <i>Heliothrix a. aurita</i> Gmelin |
| 9. <i>Anthracothonax viridigula</i> Boddaert | 18. <i>Calliphlox amethystina</i> Boddaert |

AGRADECIMENTOS

Apresento agradecimentos à Fundação de Amparo à Pesquisa do Estado de São Paulo pelos auxílios concedidos para a execução das viagens de coleta; ao Departamento de Zoologia que, através dos Drs. P. E. Vanzolini e H. F. A. Camargo, tem pôsto ao meu dispor a coleção e tôdas as facilidades desta Instituição; ao Dr. H. Reichardt pelo preparo do manuscrito para publicação; ao Dr. H. Sick, do Museu Nacional, Rio de Janeiro. Agradeço ainda aos meus colegas, Srs. W. Löhken e J. Gasperek, pela companhia nas viagens de coleta; ao Sr. R. Behr pela tradução do manuscrito; e aos Srs. Drs. Marotta, J. L. A. Freire e R. Bicelli, da Icomi (Serra do Navio, Amapá); e finalmente à minha mulher, que além de nos acompanhar em parte das viagens, preparou o material ornitológico coletado.



Estampa 1: 1, *T. loehkeni*, sp. n.; 2, *T. leucurus*.



Estampa 2: caudas (vista dorsal): 3, *T. loehkeni*, sp. n.; 4, *T. niger*; 5, *T. leucurus*; 6, *T. ruckeri*.

Estampa 3: 1, *T. loehkeni*, sp. n., ♂ ad., Serra do Navio, Amapá; 2, *T. loehkeni*, sp. n., ♀ ad., *idem*; 3, *T. l. leucurus*, ♂ ad., Rio Mucujáí, Roraima; 4, *T. l. medianus*, ♂ ad., Belém, Pará; 5, *T. l. medianus*, ♀ ad., *idem*; 6, *T. l. cervinicauda*, ♀ ad., Rio Juruá, Amazonas.



Papéis Avulsos de Zoologia

PAPÉIS AVULSOS ZOOL. S. PAULO, VOL. 22, ART. 24: 249-262, 2 ests. 15.VIII.1969

GÊNERO *PYROPHORUS*. 2. REDESCRIÇÃO DE ALGUMAS ESPÉCIES (COL., ELATERIDAE)

CLEIDE COSTA

ABSTRACT

In continuation of a systematic revision of the genus *Pyrophorus*, the five species corresponding to Candèze's section I, are redescribed on base of the type-material. The species redescribed are: *Pyrophorus clarus* Germar, *indistinctus* Germar, *plagiophthalmus* Germar, *punctatissimus* Blanchard and *strabus* Germar.

INTRODUÇÃO

Apresentarei aqui a redescrição de algumas espécies do gênero *Pyrophorus*, já tratadas por Candèze (1863) em sua Secção I, que se caracterizam por apresentarem antenas curtas, não atingindo a borda posterior do protórax e vesículas luminescentes mais próximas da borda lateral do protórax do que da posterior.

Anteriormente (Costa, 1968), verifiquei que há muita confusão na sistemática deste gênero e tendo oportunidade de estudar o material tipo das espécies aqui tratadas, preferi não citar nas redescrções, os sinônimos e citações posteriores, a fim de esclarecer melhor as espécies. Estas são: *P. clarus* Germar, *P. indistinctus* Germar, *P. plagiophthalmus* Germar, *P. punctatissimus* Blanchard e *P. strabus* Germar.

Agradeço ao Dr. F. Hieke, do Institut für Spezielle Zoologie und Zoologisches Museum der Humboldt-Universität zu Berlin (MB) por ter-me enviado os tipos de Germar; à Mme A. Bons, do Muséum National d'Histoire Naturelle de Paris, por ter-me enviado o tipo de Blanchard. Também agradeço às seguintes instituições que enviaram material: American Museum of Natural History, New York (AMNH); British Museum of Natural History, London (BM); Carnegie Museum of Natural History, Pittsburg (CM); California Academy of Sciences, San Francisco (CAS); Chicago Natural History Museum (CNHM); Coleção Campos Seabra (CCS); Entomology Research Institute, Central Experimental Farm, Ottawa, Ontario (EIO); Facultad de Humanidades y Ciencia, Montevideo (FHC); Instituto Biológico, São Paulo (IBSP); Instituto de Ecologia e Experimentação Agrícolas, Rio de Janeiro (IEEA); Instituto Oswaldo Cruz, Rio de Janeiro (IOC); Museum of Comparative Zoology, Cambridge (MCZ); Museu Nacional do Rio de Janeiro (MNRJ) e Museum of the University of Helsinki (MZH).

COMENTÁRIO SOBRE OS TIPOS

Pyrophorus clarus. Descrita por Germar (1841) que cita material da Colômbia, "Santa Fé de Bogotá". Examinei três exemplares da Colômbia que se encontram no Zoologisches Museum, Berlin, e um exemplar do British Museum também da Colômbia. Este último é o único que possui o rótulo manuscrito de Germar, que é de cor verde clara, com margens pretas e com os dizeres "clarus Dj. St. Fé Bog". Os exemplares do Museu de Berlin possuem o rótulo de localidade de cor verde, com margens pretas, contendo apenas a palavra "Bogota". Um deles possui rótulos de determinação, também manuscritos, porém de cor branca; um com os seguintes dizeres: "clarus Dj, Bogota Dj" e o outro: "clarus Germ.*" Segundo Horn & Kahle, o rótulo típico de Germar é de coloração verde; por este motivo, considero como lectótipo o exemplar do British Museum e como paralectótipos os exemplares do Zoologisches Museum, Berlin.

P. indistinctus, de Germar (1841) que, em sua descrição, não cita número de exemplares, referindo-a a "Cayenne". Examinei dois exemplares do Zoologisches Museum, Berlin, um dos quais, com o rótulo manuscrito de Germar, de coloração verde, com os dizeres: "indistinctus Dj. Cayenne", o qual designo lectótipo.

P. plagiophthalmus, também de Germar (1841) que a descreveu da Jamaica, sem citar número de exemplares. Vi três exemplares do Zoologisches Museum, Berlin, um dos quais com um rótulo branco, com os seguintes dizeres: "plagiophthalmus Germ.* Jamaica". Apesar de nenhum destes exemplares possuir o rótulo verde característico de Germar, a caligrafia confere e trata-se de exemplares da série sintípica. O exemplar com o rótulo acima mencionado, é aqui designado como lectótipo, e os outros dois como paralectótipos.

P. punctatissimus, de Blanchard (1843), que estudou o material coletado por D'Orbigny em Montevideo e Corrientes, mas que não citou em sua descrição o número de exemplares de que dispunha. Examinei um exemplar do Muséum National D'Histoire Naturelle de Paris, que tem o seguinte rótulo impresso, "Museum Paris — Province de Corrientes — D'Orbigny 1834", mas que não possui rótulo de identificação. Este exemplar foi-me enviado por Mme. A. Bons como sendo o tipo de Blanchard; passo, portanto, a designá-lo como lectótipo da espécie.

P. strabus, de Germar (1841), que em sua descrição não cita número de exemplares, tendo estudado o material do "México (Sturm. Gory)". Recebi dois exemplares do Zoologisches Museum, Berlin, um dos quais possui o rótulo típico de Germar com os seguintes dizeres: "strabus Germ. México". Este exemplar é aqui designado como lectótipo, ficando o outro, que também é do México, como paralectótipo.

***Pyrophorus clarus* Germar, 1841**

(Figs. 5, 6, 11, 16)

Pyrophorus clarus Germar, 1841: 18 (localidade-tipo: St. Fé de Bogotá).

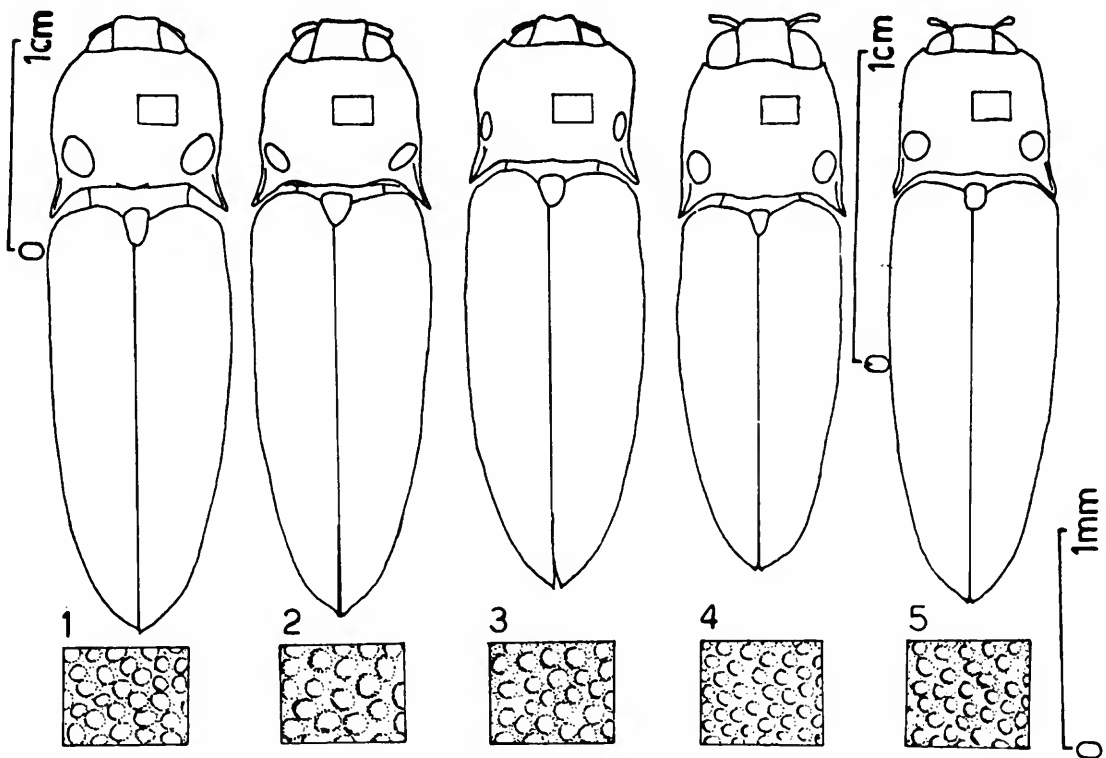
REDESCRIÇÃO

Coloração castanha-escura com os élitros um pouco avermelhados; pilosidade amarela.

Cabeça pequena, bem encaixada no protórax; fronte estreita, escavada anteriormente, com pontuação forte, umbilicada, densa, com intervalo entre os pontos micropontuado; clipeo achatado, em forma de semi-círculo e com pontos pilíferos bem demarcados. Antenas curtas, denteadas a partir do quarto segmento; os três primeiros segmentos e uma faixa mais ou menos mediana e longitudinal dos outros, de coloração mais escura e brilhante.

Protórax com largura maior do que o comprimento, com ângulos anteriores de lado externo arredondado e envolvendo levemente os olhos; borda anterior quase reta; bordas laterais levemente arredondadas (vista de cima e de perfil); ângulos posteriores pouco divergentes, com as extremidades um pouco voltadas para dentro, carenados, borda posterior sem nenhum tubérculo. Pronoto pouco convexo, emarginado lateralmente, bifoveolado, com vesículas luminescentes quase circulares, pouco convexas, mais próximas do bordo lateral, visíveis sob a forma de mancha amarelada irregular em baixo do protórax; pontuação forte, umbilicada, bastante densa, principalmente na região látero-anterior, com as fóveas pouco pontuadas e com os intervalos entre os pontos micro-pontuado.

Prosterno com pontuação bem forte, com os pontos maiores na região mediana e os menores na mentoneira e os mais esparsos



Vista dorsal e pontuação da região discal do pronoto: 1, *Pyrophorus strabus*; 2, *P. punctatissimus*; 3, *P. plagiophthalmus*; 4, *P. indistinctus* (em escala diferente); 5, *P. clarus*.

no processo prosternal. Pro-episternos com pontuação grande e umbilicada, porém na região correspondente à mancha luminosa os pontos são mais raros; os pontos diminuem de tamanho a partir da região central para as bordas.

Metasterno e abdômen fina e heterogêneamente pontuados.

Élitros pontuado-estriados com os pontos na região mediana bem menores e tão juntos que formam uma linha fina apenas perceptível; inter-estrias finamente rugosas.

Genitália do macho (fig. 6).

Dimensões, em mm	♂	♀
Comprimento total	31,0	35,0
Comprimento pronoto	7,0	9,0
Comprimento élitros	22,0	25,0
Largura pronoto	8,0	10,0
Largura umeral	9,0	11,0

MATERIAL EXAMINADO

COLÔMBIA. 2 exs., (Acc. 7689 CM); 7 exs., Felipe Ovalle col. (Acc. 33501 AMNH); 1 ex., (Acc. 2275 CM); 1 ex., Coll. Janson ex-Candèze (BM); 1 ex., H. T. Birch col., (CNHM). *Cundinamarca*: Bogotá, 1 ex., Coll. Janson ex-Schaum (1903-130 BM).

TIPOS

Lectótipo (designação presente): Colômbia, Santa Fé de Bogotá, Coll. Janson ex-Schaum e Buquet (1903-130 BM).

Paralectótipos: Bogotá, 3 exs. (MB).

DISTRIBUIÇÃO GEOGRÁFICA (fig. 11)

Colômbia.

DISCUSSÃO TAXONÔMICA

Diferencia-se das demais espécies pela forma do protórax, pela posição e forma das vesículas luminescentes; pela forma da genitália do macho; é mais próxima de *P. indistinctus*, por possuir vesículas luminescentes visíveis também embaixo do protórax.

***Pyrophorus indistinctus* Germar, 1841**

(Figs. 4, 8, 11, 12)

P. indistinctus Germar, 1841: 20-21 (localidade-tipo: Cayenne).

REDESCRIÇÃO

Coloração castanho-escuro, às vezes com o protórax um pouco mais escuro; pêlos amarelados, curtos e finos.

Cabeça pequena, olhos salientes (antenas em repouso, ultrapassam o bordo anterior do protórax depois do quarto artículo);

fronte retangular escavada longitudinalmente, com pontuação bem distinta e umbilicada; clipeo em semi-circunferência, convexo, bem pontuado. Antenas curtas, amareladas, com os três primeiros artículos e uma faixa longitudinal dos seguintes, mais escura; 11.º artículo com falso segmento pouco distinto de modo que os dois juntos têm forma oval-alongada.

Protórax com a largura mediana maior que o seu comprimento; ângulos anteriores pequenos, um pouco convergentes; borda anterior bisinuada; bordas laterais arredondadas, emarginadas principalmente na metade posterior; ângulos posteriores curtos, pouco divergentes, borda posterior sem tubérculo na região mediana. Vesículas luminescentes circulares, salientes, mais próximas do bordo lateral, com convexidade voltada para cima. Pontuação do pronoto forte e umbilicada principalmente na região látero-anterior, o intervalo dos pontos pilíferos é liso.

Prosterno com pontuação fina e esparsa; processo prosternal praticamente liso; pro-episternos densa e fortemente pontuados com os pontos decrescendo de tamanho a partir do centro para os lados.

Metasterno e abdômen fina e homogêneamente pontuados.

Élitros pontuado-estriados, com os pontos bem distintos em toda sua extensão, inter-estrias de aspecto rugoso.

Genitália do macho (fig. 1).

Dimensões, em mm	♂	
Comprimento total	18,0	23,0
Comprimento pronoto	4,0	6,0
Comprimento élitro	12,0	16,0
Largura pronoto	5,0	7,0
Largura umeral	5,0	7,0

MATERIAL EXAMINADO

MÉXICO. *Oaxaca*: Palomares (Finca San Carlos), 1 ex., 29.V.1959, G. & V. Halfter col. (IBSP).

HONDURAS BRITÂNICA. *Toledo*: Punta Gorda, 2 exs., V.1932 e V.1934, J. J. White col. (BM).

NICARÁGUA. Chontales, 2 exs., Coll. Janson (BCA) (BM).

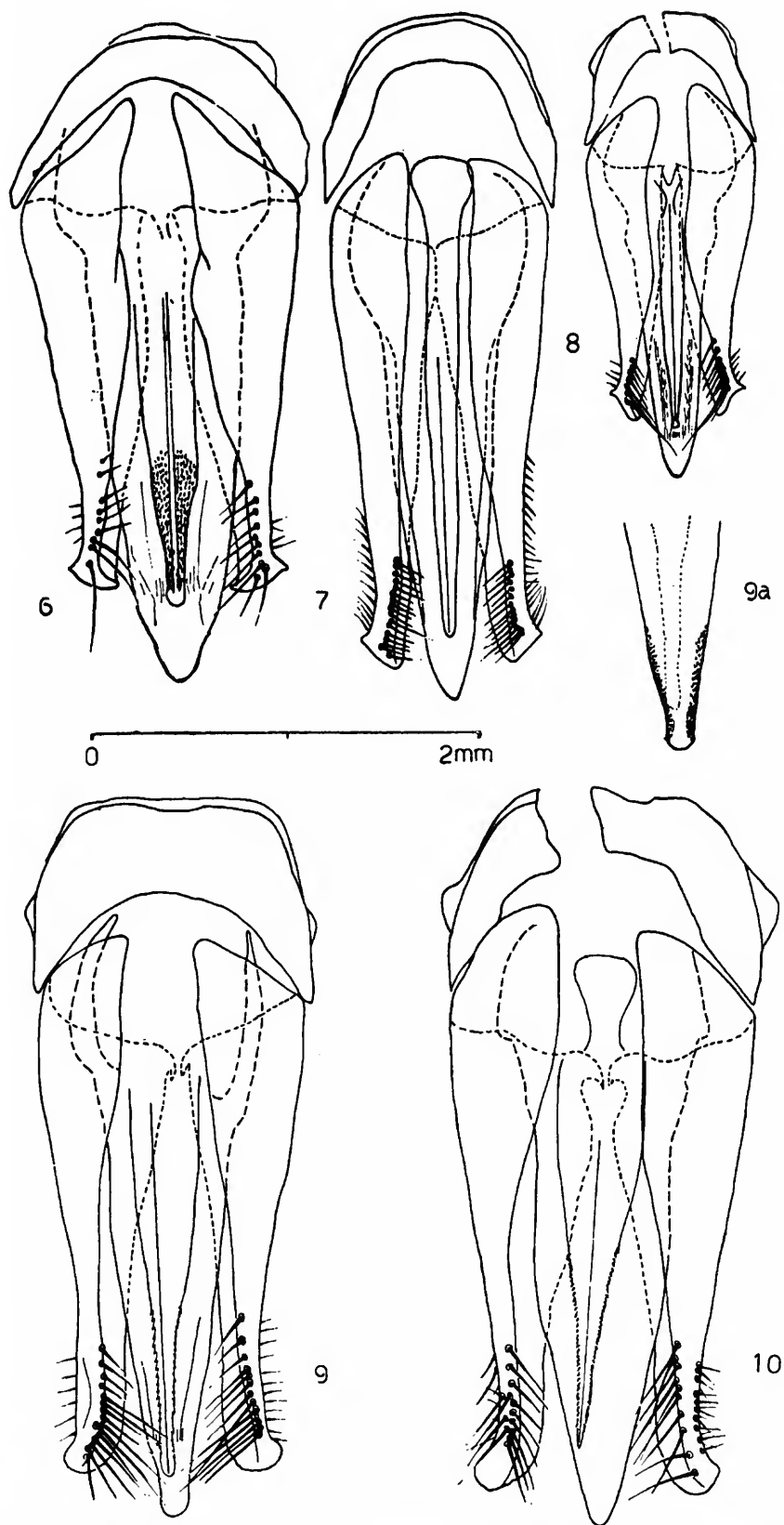
COSTA RICA. 1 ex., (BCA) (BM); de Sabanilla a Boca Culebra, 1 ex., Coll. H. Pittier (1900-261 BM).

PANAMÁ. *Canal Zone*: Barro Colorado, 1 ex., 15.V.1929, Darlington col. (MCZ).

GUIANA FRANCÊSA. Cayenne, 1 ex., Coll. Janson ex-Candèze (1903-130 BM); 2 exs., Coll. Janson ex-Dejean (1903-130 BM); 1 ex., Coll. F. C. Bowditch (MCZ). St. Laurent, 5 exs., Coll. H. C. Fall (MCZ).

GUIANA. Rio Essequibo (Moraballi-Creek), 9 exs., Oxf. Univ. Exp. col., 19.VIII.1929 a 27.IX.1929 (1929-485 BM). Rio Yawakavi, 1 ex., Coll. A. A. Abraham, VII.1919 (BM).

BRASIL. *Amazonas*: 1 ex., Bates col., Coll. Janson (1903-130 BM). Benjamin Constant (colônia), 2 exs., A. Parko col., VII.1942, (CCS). Borba (lago Acará), 8 exs., A. Parko col., IX-X.1943 (MNRJ); 2 exs., J. Guérin F.º col., VII.1943, (IBSP); 2 exs., Coll. J. Guérin (n.º 15293 e 1560), VII.1943, (IBSP); 4 exs., A. Parko col., VII.1943



Genitália do macho (ventral): 6, *Pyrophorus clarus*; 7, *P. punctatissimus*; 8, *P. indistinctus*; 9, *P. strabus*; 10, *P. plagiophthalmus*. Fig. 9a: Genitália do macho, extremidade do lobo médio (dorsal) de *Pyrophorus strabus*.

(CCS). Rio Coary-Uaupés, 1 ex., H. Smidt col., IX.1906, (AMNH). Guajará (rio Madeira), 1 ex., A. Parko col., VI.1943 (CCS). Pará: 1 ex., (Acc. 2966 CM). Rodovia Belém-Brasília Km 86, 20 exs., E. Dente col., VII.1960 (DZSP). Igarapé Uruaim (40 Km rio Gurupi), 2 exs., J. Carvalho col., 2.V.1963 (DZSP). Santarém, 2 exs., S. M. Klages col., V.1919 (6324 CM); 4 exs., (Acc. 2966 CM). Mangabeira (Mocajuba), 4 exs., O. Rego col., IV.1953 (CCS). Tape-
rinha, 2 exs., (Acc. 2966 CM). Amapá: Rio Felício, 2 exs., J. Lane col., 6.VIII.1959 (IBSP). Rio Regina (Serra Lombarda), 3 exs., J. Bechyné col., 5.IX.1961 (DZSP). Rio Cassiporé, 1 ex., J. & B. Bechyné col., 8.IX.1961, (MPEG). Azémar, 1 ex., H. Diniz, 8.IX.1961 (MPEG). Rio Jari (cachoeira do Itapacará), 2 exs., W. Egler col., 4.VIII.1961 (MPEG). E 2 exs. sem localização precisa.

TIPOS

Lectótipo (designação presente): 1 exemplar de Cayenne, Coll. Schaum ex-Buquet (n.º 43381 MB).

Paralectótipos: Guiana Francêsa. Cayenne, 1 ex., Coll. Buquet (n.º 17122 MB); 1 ex., Coll. Schaum ex-Buquet (MB).

DISTRIBUIÇÃO GEOGRÁFICA (fig. 11)

México, América Central, Guianas e Brasil.

DISCUSSÃO TAXONÔMICA

Distingue-se de tôdas as outras espécies por ser de tamanho pequeno, pelas antenas um pouco mais curtas e pela forma da genitália do macho.

***Pyrophorus plagiophthalmus* Germar, 1841**

(Figs. 3, 10, 11, 13)

Pyrophorus plagiophthalmus Germar, 1841: 14-15 (localidade-tipo: Jamaica).

REDESCRIÇÃO

Coloração castanho-avermelhada com o pronoto um pouco mais escuro; pilosidade amarelada.

Cabeça e olhos normais, fronte muito elevada anteriormente, densamente pontuada-umbilicada; clipeo em semi-circunferência convexo e fortemente pontuado. Antenas (em repouso), ultrapassando o bordo anterior do protórax depois do 3.º artículo; os três primeiros artículos e uma faixa longitudinal dos demais são de coloração mais escura.

Protórax um pouco mais largo do que longo, convexo, bifoveolado; ângulos anteriores pequenos, de lado externo arredondado; bordas laterais com arredondamento maior na frente (visto de cima) e bisinuado (visto de perfil); ângulos posteriores curtos, pouco projetados, carenados e divergentes; borda posterior sem tubérculo

mediano. Vesículas luminescentes laterais, elípticas, com seu eixo maior paralelo ao bordo lateral, pouco salientes e visíveis somente em cima do pronoto. Protórax emarginado a partir da região mediana até os ângulos anteriores; pontuação forte, mais densa na região látero-anterior.

Prosterno finamente pontuado, com processo prosternal praticamente liso e mentoneira com pontos esparsos e menores do que os da região mediana. Pró-episternos densamente pontuado-umbilicados, sendo que os pontos diminuem de tamanho para as margens.

Metasterno com pontuação heterogênea, os pontos maiores localizam-se anteriormente. Abdômen finamente pontuado, com os pontos um pouco maiores nas regiões látero-anteriores de cada segmento.

Élitros pontuado-estriados, com os pontos muitos juntos formando linhas finas quase contínuas, com exceção das três últimas que na região látero-anterior possuem os pontos individualizados; interestrias microesculturadas.

Genitália do macho (fig. 6).

Dimensões, em mm	♂	♀
Comprimento total	34,0 — 25,0	35,0 — 28,0
Comprimento pronoto	7,0 — 6,0	7,5 — 6,0
Comprimento élitros	25,0 — 18,0	25,0 — 20,0
Largura pronoto	9,0 — 7,0	9,0 — 8,0
Largura umeral	10,0 — 8,0	10,0 — 8,0

MATERIAL EXAMINADO

JAMAICA. 8 exs., F. Klages col., Coll. Holland (CM); 4 exs., F. Klages Coll. (Acc. 349 CM); 1 ex., A. S. Packard col. (AMNH); 4 exs., Coll. F. Klages (2275 CM); 2 exs., VII.1895 (2522 CM); 2 exs., Coll. F. Blanchard (1895) (MCZ); 1 ex., Coll. Janson (1903-130 BM); 1 ex., J. E. Teede col. (1928-311 BM); 2 exs., Coll. L. W. Wilmer (1920-81 BM); 2 exs., Coll. A. T. Slosson (26226 AMNH); 1 ex., Coll. F. W. Jackson (1913-208 BM). Balaclava, 2 exs., Chapin & Blackwelder col., 13.IV.1937 (IBSP). Bath, 1 ex., W. Robinson col., 5.VII.1902 (MCZ); (St. Thomaz), 1 ex., A. Avinoff & N. Shoumatoff col., 12.VII.1933 (CM). Blue Mts. (Whitfield Hall), 4500 pés, 2 exs., Darlington col., 13-26.VIII.1934 (MCZ). Castletown (Bot. Garden), 5 exs., Petrunkevitch col. (MCZ). Christiana, 1 ex., VIII.1931 (9251 CM). Falmouth, 1 ex., C. & P. Vaurie col., 19.VII.1960 (AMNH). Hermitage Res., 1 ex., C. & P. Vaurie col., 24.VII.1960 (AMNH). Hope, 1 ex., C. Gowdey col., 14.IX.1920 (1920-474 BM). Jacksontown, 1 ex., L. Perkins col., ex-Coll. L. Lacey, V.1930 (AMNH). Kingstown, 1 ex., Coll. L. B. Woodruff, 1.IV.1912 (26824 AMNH). Mandeville, 11 exs., T. Barbour col. (MCZ); 12 exs., A. E. Wight col., (MCZ); 1 ex. (IBSP). Pt. Antonio, 5 exs., A. E. Wight col. (MCZ); 1 ex. (IBSP); (runaway bay), 1 ex., IV.1905 (1907-299 BM). West Islands, 5 exs., M. Cameron col. (1936-555 BM); 1 ex. (BM). E 8 exs. sem localidade precisa.

TIPOS

Lectótipo (designação presente): exemplar da Jamaica (n.º 43374 MB).

Paralectótipos: Jamaica, 2 exs., (MB), um dos quais de n.º 17115.

DISTRIBUIÇÃO GEOGRÁFICA (fig. 11)

Jamaica.

DISCUSSÃO TAXONÔMICA

Diferencia-se das demais espécies pela forma do protórax e pela posição e forma das vesículas luminescentes.

***Pyrophorus punctatissimus* Blanchard, 1843**

(Figs. 2, 4, 11, 14)

Pyrophorus punctatissimus Blanchard, 1843: 138 (localidade-tipo: Corrientes).

REDESCRIÇÃO

Coloração castanho-avermelhada, vesículas amareladas e pilosidade castanho-amarelada.

Cabeça pequena, olhos normais, fronte levemente côncava na frente, com pontuação forte e umbilicada; antenas em repouso ultrapassando o bordo anterior do protórax depois do 3.º segmento, os três primeiros artículos e uma linha longitudinal dos demais de coloração um pouco mais clara.

Protórax quadrangular, bem convexo, bifoveolado, com tubérculo posterior-mediano; ângulos anteriores arredondados, terminando no ápice em forma reta; lateralmente muito pouco emarginado; ângulos posteriores fortes, divergentes e carenados. Vesículas luminescentes salientes, arredondadas, localizando-se obliquamente ao bordo lateral, visíveis apenas em cima do protórax. Pontuação do pronoto forte e homogênea, com exceção junto ao bordo posterior onde os pontos são um pouco menores. Pontuação dos pro-episternos forte, decrescendo de tamanho a partir do centro para as extremidades.

Prosterno inteiramente pontuado, com pontos bem grandes na região mediana.

Metasterno fortemente pontuado com os pontos decrescendo de tamanho da parte anterior à posterior. Abdômen fina e densamente pontuado, com uma zona de pontos maiores na região látero-anterior de cada segmento, sendo que o tamanho desta diminui no sentido da extremidade posterior.

Élitros fortemente pontuado-estriados, apenas os pontos das duas primeiras estrias dorsais e o 1/3 apical das outras são um pouco menores.

Genitália do macho (fig. 7).

Dimensões, em mm	♂	♀
Comprimento total	35,0 — 23,0	32,0
Comprimento pronoto	7,5 — 6,0	7,5
Comprimento élitros	26,0 — 16,0	22,5
Largura pronoto	8,0 — 6,0	9,0
Largura umeral	10,0 — 7,0	9,0

MATERIAL EXAMINADO

BOLÍVIA. Tatarenda, 2 exs., G. L. Harrington col., IX.1923 (CAS). Santa Cruz: Província del Sara, 11 exs., Coll. Steinbach, XII.1911 (5043 CM); (450 m), 1 ex., XII.1909 (4552 CM); (Buena-Vista), 3 exs., Coll. Steinbach (5572 CM); (Nueva Moka), 3 exs., A. Martinez col., II.1950 (DZSP). Laguna Gaiba (fronteira Brasil-Bolívia), 2 exs., P. R. San Martin col., 22.X.1955 (FHC). Rio Jacapani, 1 ex. Coll. J. Steinbach (5572 CM). Chuquisaca: Vale do Ingre, 1 ex., W. C. Harrington col., X.1932 (CAS).

BRASIL. Minas Gerais: Barra do Paraopeba, 2 exs., Vital R. de Souza col. (MNRJ). Cachoeira do Marimbondo, 1 ex., L. D. Vizotto col., 29.X.1964 (DZSP). Monte Alegre, 1 ex., K. Lenko col., 23.X.1962 (DZSP). São Paulo: Batatais, 6 exs., Pe. Pereira col., X.1946 (DZSP). Pirassununga (Cachoeira de Emas), 1 ex., H. Reichardt col., 1-3.XI.1962 (DZSP). Ribeirão Preto, 2 exs., M. D. Oliveira col., XII.1964 (DZSP). Salto de Itapura, 1 ex., Rabello col., 15.XI.1961 (DZSP). Paraná: Foz do Iguassú, 5 exs., H. Nomura col., 13.XII.1961 (DZSP). Rio Grande do Sul: 1 ex., (MCZ). Guarani, 1 ex., C. Biezanko col., 7.I.1954 (1954-210 BM). Pôrto Alegre, 1 ex., J. H. Carvalho col., 1945 (MNRJ). Cerro Azul, 2 exs., (DZSP). Mato Grosso: Barra do Tapirapé, 1 ex., B. Malkin col., XI.1964 (DZSP). Bodoquena, 3 exs., XI.1941 (IOC); 2 exs., (MNRJ). Campo Grande, 1 ex., Coll. A. Maller ex-F. J. Donor, XII.1947 (AMNH). Correntes, 2 exs. (DZSP). Mato Verde (rio Araguaia), 1 ex., B. Malkin col., 6-10.XI.1960 (CNHM). Pôrto Velho (rio Tapirapé), 1 ex., D. Pinheiros col., X.1962 (CAS). Salôbra (Zona da N.O.B.), 13 exs., 18-29.X.1938 (DZSP). Serra do Urucum, 5 exs., K. Lenko col., 25-27.XI e 4.XII.1960 (DZSP). Três Lagoas (Faz. Floresta), 2 exs., Exp. Dep. Zool. col., 13-20.IX.1964 (DZSP); (Faz. Canaã, rio Sucuriú), 1 ex., F. Lane col., X.1966 (DZSP). Goiás: 1 ex., J. S. Melo col., 1944 (IEEA). Anápolis, 1 ex., G. Fairchild col. (MCZ). Cabeceiras (lagoa Formosa), 1 ex., Exp. Dep. Zool. col., 24-27.X.1964 (DZSP). Brasília, 1 ex., A. B. Guimarães col., XI.1960 (IOC). Sta. Leopoldina, 4 exs., Alemães(?), VI.1942 (ENA).

PARAGUAI. 1 ex., H. C. Fall coll., (MCZ); 1 ex., XI.1956 (CDA); 1 ex., Coll. K. Brancsik ex-E. Knirsh, 1955 (CNHM); 1 ex., Coll. Fry (1905-100 BM). Pôrto Gil (Est. La Belém), 1 ex., Mis. Cient. Bras. col., I.1944 (IOC). Primavera (alto Paraguai), 1 ex., E. J. Phillips col., 19.VII.1955 (1956-460 BM). Santa Maria, 1 ex., Coll. K. Brancsik ex-E. Knirsch 1955 (CNHM). Concepción: Horqueta, 1 ex., Coll. H. C. Fall, 6.XI.1932 (MCZ). La Cordillera, Aregua, 1 ex., A. Schulze col., ex-L. Lacey, 18.X.1939 (AMNH). Central: Asunción, 3 exs., Mis. Cient. Bras. col., I.1945 (IOC); 5 exs., Anisits col., Coll. K. Brancsik ex-E. Knirsch, 1955 (CNHM). Alto Paraná: Hohenau, 2 exs., H. Jacob col. (1954-814 BM). Itapúa: Coronel Bogado, 4 exs., Mis. Cient. Bras. col., I.1944 (IOC).

URUGUAI. 1 ex., Coll. Janson (1903-130 BM). Salto: Salto Grande, 4 exs., F. Azambuja col., 25.XII.1956 (FHC). Paysandu: Paysandu (cidade), 7 exs., P. R. San Martin col., 20.XII.1948 (FHC); Puerto Pepe (Azi), 6 exs., Carbonell & Monné col., 18-19.I.1965 (FHC); 18 exs., 18-20.I.1962, Monné col., (FHC). Montevideo: Carrasco, 4 exs., P. R. San Martin col., 10.XII.1948 (FHC).

ARGENTINA. 1 ex., 7.1934 (IEEA); 2 exs., (AMNH). El Quenada, 1 ex., G. L. Harrington col., IV.1926 (CAS). Rosario, 1 ex. (MZH).

Salta: Aguaray, 2 exs., Mesa & Sandulski col., 1.II.1965 (FHC); 1 ex., A. Martinez col., XII.1959 (DZSP). Aguas Blancas (Orán), 1 ex., A. Martinez col., XII.1959 (DZSP). Guachipas, 1 ex., A. Martinez col., I.1951 (DZSP). La Candelaria, 2 exs., Mesa & Sandulski col., 15.I.1965 (FHC). La Plata, 1 ex. (BM). Pocitos, 2 exs., A. Martinez col., I.1960 (DZSP); Tablillas, 12 exs., W. C. Harrington col., IX.1933 e II.1934 (CAS). *Misiones*: 2 exs., (DZSP); 6 exs., XII.1957 (CDA). Pindapoy, 1 ex., M. M. Reed col., 1931 (CDA). *Chaco*: 1 ex., J. Hayward col. (AMNH); 1 ex., Coll. C. E. Tottenham

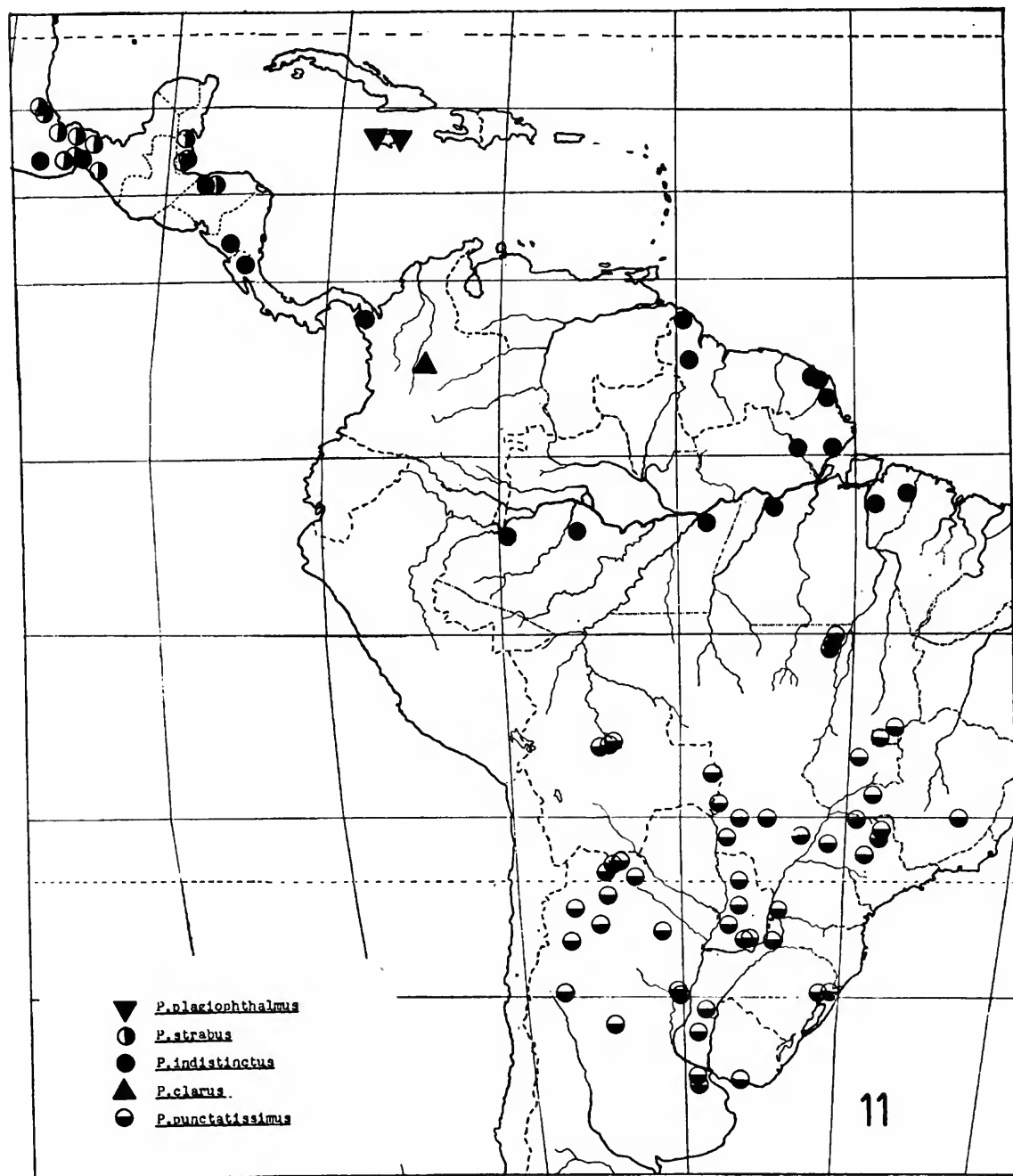


Fig. 11: distribuição geográfica.

(1963-414 BM). Roque, 8 exs., K. J. Hayward col., 1932 (1933-58 BM). Santa Fé, 1 ex., C. Bruch col., Coll. H. C. Fall (MCZ). *Tucumán*: 1 ex., Barber & Rosenfeld col., Coll. Van Dyke, 17.XI.1913 (CAS). *Tucumán* (cidade), 1 ex., A. Martinez col., XII.1948 (DZSP). *Catamarca*: 1 ex., 1.1942 (FHC). *La Rioja*: 3 exs., E. Giacomelli col. (1907-259 BM). *Córdoba*: 1 ex., Stempelmann col. (IBSP); 7 exs., Davis col. (MCZ); 1 ex., Coll. C. Seabra (CCS); 1 ex. (IBSP); 1 ex., Coll. G. Lewis (1915-38 BM); 2 exs., Davis col., Coll. K. Brancsik ex-E. Knirsch, 1955 (CNHM); 1 ex. (78-13 BM). *Santa Fé*: La Gallaretta, 1 ex., K. J. Hayward col., XII.1924 (BM). Rio San Javier (est. La Noria), 6 exs., Coll. G. E. Bryant, 10-21.XII.1911 (BM). Vila Ana, 2 exs., K. J. Hayward col., II.XII.1924 (BM); 2 exs., I.1925 (BM); 1 ex., 10-30.I.1927 (BM); 1 ex., XII.1923 (BM); 1 ex., I.1926 (BM); 1 ex., 14.II.1928 (BM). *Entre Rios*: Concordia, 1 ex., Coll. M. A. Cazier (38903 AMNH). Lazo, 4 exs., Coll. E. P. Reed, XII.1940 (CAS). *Buenos Aires*: Buenos Aires, 1 ex., W. C. Harrington col., 1931 (CAS); 1 ex., (IEEA). San Isidro, 20 exs., A. Martinez col., XII.1961 (DZSP); e 14 exs., sem localidade precisa.

TIPOS

Lectótipo (designação presente). Exemplar de Corrientes, D'Orbigny col., 1834; n.º 5733, Muséum Natural d'Histoire Naturelle de Paris.

DISTRIBUIÇÃO GEOGRÁFICA (fig. 11)

Bolívia, Brasil, Paraguai, Uruguai e Argentina.

DISCUSSÃO TAXONÔMICA

Diferencia-se das demais espécies por sua pontuação mais forte, principalmente nos élitros; aproxima-se de *P. strabus* pela posição oblíqua das vesículas luminescentes, desta diferenciando-se entre outros caracteres pela coloração geral que é castanho-avermelhada.

***Pyrophorus strabus* Germar, 1841**

(Figs. 1, 9, 9a, 11, 15)

Pyrophorus strabus Germar, 1841: 15 [localidade-tipo: México (Sturm. Gory)].

REDESCRIÇÃO

Coloração castanho-escuro, pêlos amarelo-acinzentados dando ao conjunto um aspecto oliváceo.

Cabeça pequena, olhos normais, fronte retangular, oblíqua, com pontuação umbilicada, porém não muito profunda, concavidade mediana anterior bem marcada; clipeo em forma de semi-circunferência, bastante convexo, fortemente pontuado, com alguns pontos formando pequenos sulcos verticais; antenas em repouso ultrapassando o bordo anterior do protórax depois do 3.º artículo, os três primeiros artículos são de coloração mais escura que os demais.

Protórax um pouco mais largo do que longo, com as bordas laterais arredondadas (visto de cima) e bisinuadas (visto de perfil);

ângulos anteriores pequenos, convergentes, de lado externo arredondado; ângulos posteriores fortes, pouco divergentes, carenados e com a extremidade levemente torcida; borda posterior com tubérculo mediano. Vesículas luminescentes grandes, ovais, mais próximas do bordo lateral, porém seu eixo maior é oblíquo a este, pouco convexas e visíveis apenas em cima do protórax. Protórax levemente emarginado lateralmente, com pontuação fina, porém densa, sendo mais densa na região látero-anterior, o intervalo entre os pontos é micro-pontuado.

Prosterno finamente pontuado, sendo os pontos mais densos junto à mentoneira. Proepisterno densamente pontuado, com os pontos diminuindo de tamanho para as bordas.

Metasterno e abdômen fina e heterogêneamente pontuado.

Élitros finamente pontuado-estriados; os pontos são apenas um pouco maiores na região látero-anterior; interestrias micro-pontuadas.

Genitália do macho (figs. 9, 9a) com lobos laterais arredondados, lobo central afinando-se gradualmente até o ápice; formações cuticulares nas duas peças do lobo médio.

Dimensões, em mm	♂	♀
Comprimento total	35,0 — 23,0	37,0 — 28,0
Comprimento pronoto	8,5 — 6,0	9,0 — 6,0
Comprimento élitros	25,0 — 16,0	26,0 — 19,0
Largura pronoto	10,0 — 6,0	10,0 — 8,0
Largura umeral	11,0 — 7,0	11,0 — 7,5

MATERIAL EXAMINADO

MÉXICO. 1 ex., Coll. F. A. Eddy (MCZ); 1 ex., Boucard col., Coll. Mannerh. (MZH); 1 ex., Coll. K. Brancsik ex-E. Knirsch, 1955 (CNHM); 1 ex., Coll. Janson ex-Candèze (1903-130 BM); 1 ex. (AMNH). Jalapa, 4 exs., W. Schaus col. (AMNH). *Veracruz*: Coatzacoalcas, 3 exs., C. F. Smith col., 20-30.V.1905 (CNHM). Córdoba, 1 ex., C. F. Smith col., 2.VII.1905 (CNHM). Cosamaloapan, 1 ex., Coll. Sallé (BCA) (BM). Sontecomapan, 1 ex., Coll. Sallé (BCA) (BM). Misantla, 1 ex., Hoege col. (BCA) (BM). *Oaxaca*: 1 ex., Coll. Sallé (BCA) (BM). Donaji, 13 exs., R. C. Bechtel & E. I. Schlinger col., 17.IV.1953 (CIS). Tehuantepec, 2 exs., F. B. Stone col., 14.VI.1902 (CNHM). Palomares, 1 ex., C. Bolivar col., 25.V.1959 (DZSP); (finca San Carlos), 1 ex., G. & V. Halfter col., V.1959 (DZSP); 2 exs., 29.V.1959 (IBSP). *Chiapas*: Santa Rosa, 1 ex., G. Halfter col., 22.IV.1962 (DZSP).

HONDURAS BRITÂNICA. Duck Run, 2 exs., 15.IV.1926 (7830-CM). *Belize*: Rio Mana Tee, 12 exs., 18.IV.1906 (MCZ). *Cayo*: Benque Viejo, 10 exs., F. Stanton col. (MCZ). Blancaneaux, 1 ex. (BCA) (BM). *Toledo*: Punta Gorda (Columbia), 9 exs., J. J. White col., ex-L. Lacey, II.VII.1932 (AMNH); 6 exs., III.XI.1934 (AMNH). Rio Temash, 10 exs., J. J. White col., IV.1937 (1937-423 BM).

HONDURAS. *Cortés*: San Pedro Sula, 2 exs., F. Mus. Exp. col., 20.IV.1923 (CNHM).

TIPOS

Lectótipo (designação presente). Exemplar do México, n.º 43376 (MB).

Paralectótipo. México, 1 ex. (BM).

DISTRIBUIÇÃO GEOGRÁFICA (fig. 11)

México, Honduras Britânica e Honduras.

DISCUSSÃO TAXONÔMICA

Diferencia-se das outras espécies aqui tratadas pelo tamanho e posição das vesículas luminescentes, pelo tipo de genitália do macho e pela coloração geral que é olivácea.

REFERÊNCIAS

BLANCHARD, E.

1837-1843: *Voyage dans l'Amérique Méridionale*. Insectes Coléoptères. 222 pp., 32 pls. Paris.

CANDÈZE, E.

1863: Monographie des Elatérides. Tome quatrième. *Mém. Soc. Sci. Liège* 17: 534 pp., 6 pls.

COSTA, C.

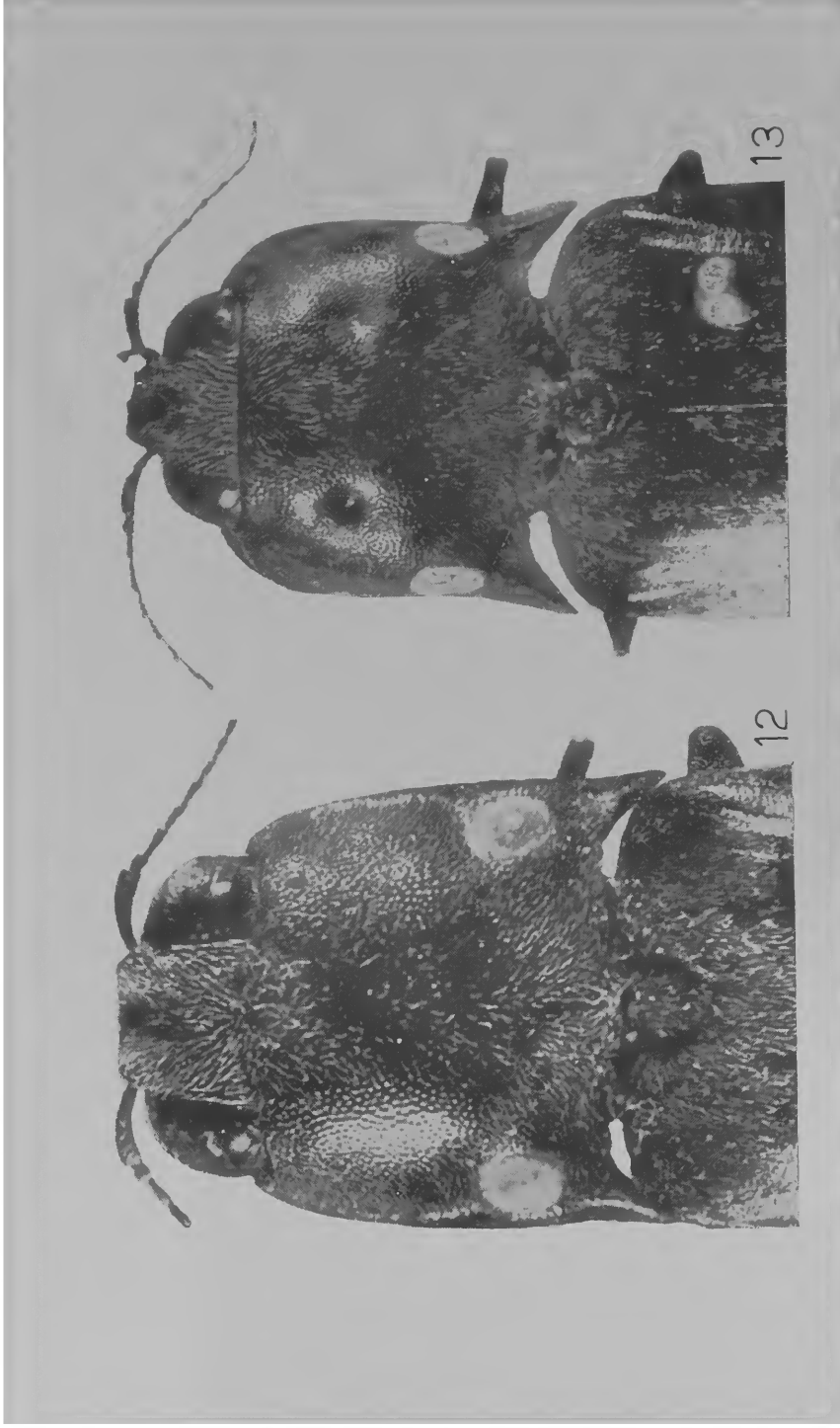
1968: Gênero *Pyrophorus*. 1. Espécies com antenas curtas e vesículas luminescentes laterais (Col. Elateridae). *Papéis Avulsos Zool. São Paulo* 22 (8): 61-81, 22 figs., est. 1.

GERMAR, E. F.

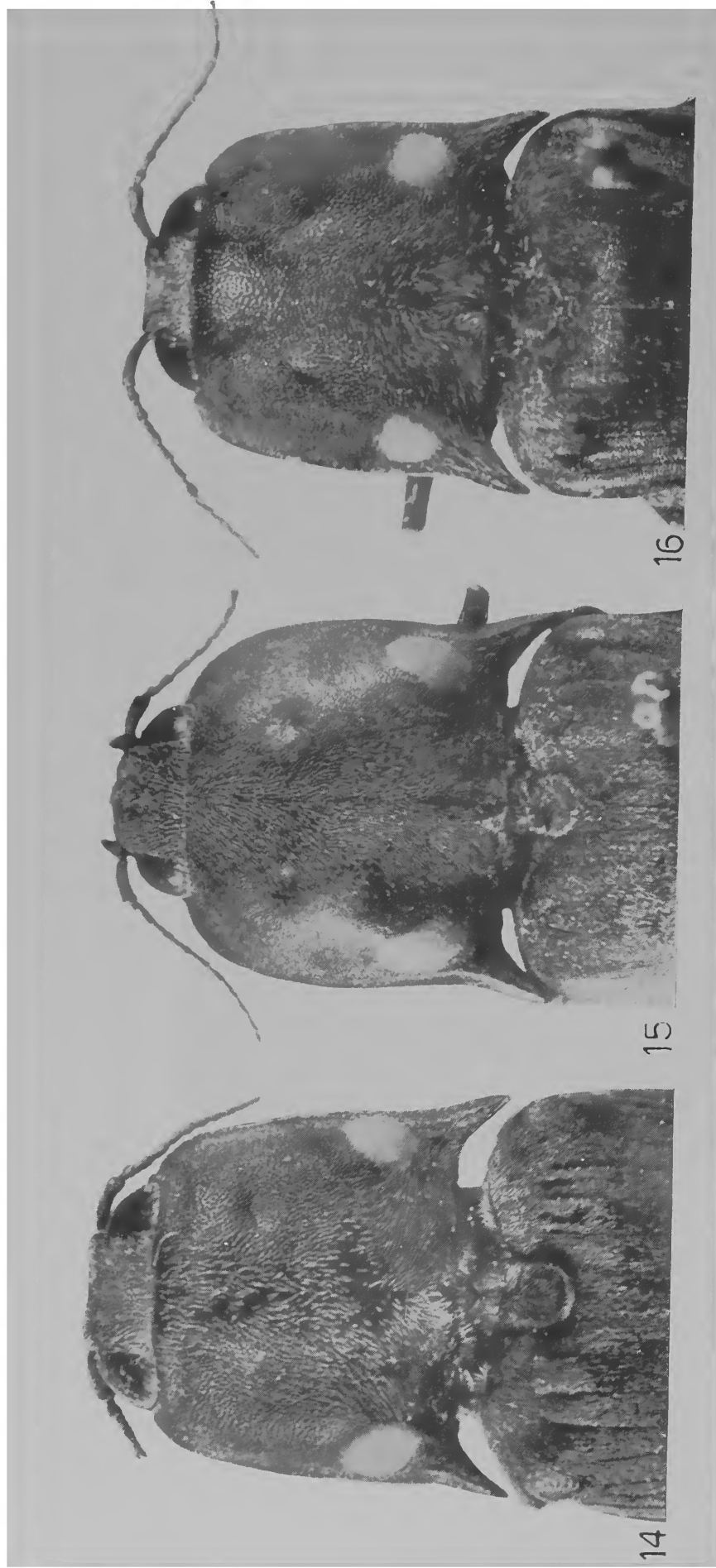
1841: Beiträge zu einer Monographie der Gattung *Pyrophorus*. *Z. Ent.* 3: 76 pp.

HORN, W. & I. KAHLE

1935-1937: Über Entomologische Sammlungen, Entomologen und Entomo-Museologie. *Ent. Beihefte* 2: 1-160 (1935); 3: 161-296 (1936); 4: 297-536 (1937); 38 pls., 3 figs.



Estampa 1. Vista dorsal: 12, *Pyrophorus indistinctus*; 13, *P. plagio-
phthalmus* (fotos de G. Pastore).



Estampa 2. Vista dorsal: 14, *P. punctatissimus*; 15, *strabus*; 16, *P. clarus*
(fotos de G. Pastore).

CHELODESMID STUDIES. IV.

A SUMMARY OF THE TRIBE BATODESMINI, WITH THE DESCRIPTION OF A NEW SPECIES OF *BIPORODESMUS* FROM NORTHWESTERN BRASIL¹

RICHARD L. HOFFMAN ²

ABSTRACT

The group name Batodesmini of O. F. Cook (1896) is revived as a tribal designation for some chelodesmoid genera of northwestern South America that collectively correspond to the genus *Alocodesmus* in the sense of Attems, 1938, or the "Alocodesmus-Gruppe" of Verhoeff, 1938. The following genera are included: *Alocodesmus* Silvestri (with the synonyms *Dromodesmus* Chamberlin and *Maracayopus* Verhoeff), *Carlopeltis* Verhoeff, *Heteropeltis* Carl, *Dyoparyphe* (new name for *Amphipeltis* Carl, preoccupied), *Batodesmus* Cook, *Cordilleronomus* Attems, *Plusioporodesmus* Silvestri, and *Biporodesmus* Attems (synonyms, *Melanodesmus* Carl, *Ecuadopeltis* Verhoeff).

A key is given for the better-known genera, a catalog of the referred species — with synonymic and taxonomic notes in many cases, and a list of inadequately described generic names considered as also batodesmines (*Alassodesmus* Chamberlin, *Centrogaster* Attems, *Colombodesmus* Chamberlin, and *Cormodesmus* Chamberlin). Five species from southeastern Brasil, which have in the past been referred to *Alocodesmus*, are excluded from the genus and tribe, which reaches Brasil only in the extreme northwest. *Biporodesmus austrocrucis*, sp. n., is described from specimens taken at Cruzeiro do Sul, Acre, and notes and drawings are given for the curious species *Plusioporodesmus bellicosus*.

Members of the Batodesmini are regarded as the most specialized and divergent species of Chelodesmidae, and seem to have little affinity with typical members of the family in Brasil, Paraguay, and Argentina.

The chelodesmid fauna of Brasil and South America generally is composed largely of rather similar species that in previous years have been collectively referred to the old genus *Leptodesmus*. But in the Andean region (and northward into Central America) occur chelodesmids of quite distinctive facies which appear to be distinguishable as a separate taxonomic category within the family if in

1. A contribution from studies supported by grants G-21519 and GB-3098, from the National Science Foundation, Washington, D.C.

2. Radford College, Radford, Virginia, U.S.A.

fact not as a separate family-group. For many years I have been accumulating data on these divergent forms, and with the receipt of the first Brazilian member of the group — among material sent for identification by the Departamento de Zoologia — I am now encouraged to present an initial synoptic treatment of the various genera.

The Brazilian species at hand is represented by a long series of specimens from Cruzeiro do Sul, and was for some time regarded as the type of a hitherto unrecognized genus. Further reflection has convinced me, however, that it is in fact referable to an interesting genus of rather specialized forms, for which the oldest available name appears to be *Biporodesmus*, proposed by Graf Attems in 1898 for a single species from Ecuador.

A considerable number of monotypic genera were later based upon closely related species by J. Carl in his well-known monograph on Colombian diplopods (1914); still others were added by Chamberlin (1923) and by Verhoeff (1938). Practically all of these generic names were combined by the archconservative Attems under the generic name *Alocodesmus*.

There exists among many systematists a curious antipathy toward monotypic or small genera. Such people wish to apply to all kinds of organisms an arbitrary standard based on certain well-known groups (*e.g.*, birds and mammals), so that a genus must have so many species to be considered as valid. To my view there is something unscientific about the application of any such principle on a universal basis. Perhaps those who wish to employ such a Procrustean principle do not reflect that evolutionary mechanisms may produce quite different affects among different groups, and that the size of a genus may well fluctuate during its evolutionary history(*). Another important factor apparently disregarded by the opponents of small or monotypic genera is that in certain groups of organisms we are still in the earliest stages of discovery, and it so often happens that the first species to be described from a given area may in fact represent previously unknown generic groups, all the more so in the case of soil animals with limited ranges. *Biporodesmus* itself is a good example of this: monotypic when proposed in 1898, it now contains at least nine species and undoubtedly will continue to grow as northern South America becomes better explored.

I now wish to revive an old Cook group name proposed more than 70 years ago and completely neglected since then. In his important but exasperatingly succinct paper "On the Xyodesmidae, a new family" (Cook, 1896) Cook united under the name Xyodesmidae a number of genera from West Africa and northern South America. The Neotropical members included *Batodesmus* (the type of a new subfamily), *Trachelodesmus*, and *Hypodesmus* (the last two making up a second new subfamily Trachelodesmini). I now strongly suspect that Cook's arrangement may be vindicated in toto, although perhaps with the reduction of his subfamilies to the rank of tribes. At any rate, *Trachelodesmus* is quite divergent

(*) Curiously enough, systematic botanists are not especially afflicted with numerical thinking, and do not seem to insist that because many genera of Compositae contain hundreds of species, the genera of more primitive plants must likewise be big in order to be "natural".

from other chelodesmoids, and has little to do with the various genera to be considered in the following pages under the group name

Tribe Batodesmini Cook

Batodesmini (as subfamily) Cook, 1896: 17.

"Alocodesmus-Gruppe" Verhoeff, 1938: 3.

Specialized chelodesmids endemic to the northern Andean region, characterized by a combination of the following features: segments 1-4 usually smaller than the 5th but not strikingly so, paranota well developed but without sharply defined peritrematic swellings, pores in normal sequence or in various stages of reduction; metaterga usually coriaceous or granular, often heavily tuberculate; epiproct broadened and with prominent conical tubercles, the paramedian tubercles of the basal series usually displaced posteriorly; tubercles of the distal series often projecting to or beyond level of epiproctal apex; hypoproct tuberculate or granular, broadened, with projecting paramedian tubercles, its outer end overlapped by conical basal lobes of the paraprocts, latter usually flattened with convex median area, mesal edges compressed and set off by a groove. Sterna normally as wide as length of femora, often with acute projecting sternal spurs near base of legs (but not subcoxal spines such as occur in xystodesmids and other polydesmoids). Legs long and slender, sparsely setose, the tarsus longest, fusiform, tarsal claws short and obscure. Stigmata dissimilar, the anterior stigmata distinctly the larger. Head heavily setose, antennal sockets with elevated rims, genae convex, laterally margined. Antennae long, slender, the 6th article largest and often somewhat incrassate, with a terminal sensory area on the outer side; 7th article globosely cylindrical, with a small outer sensory spot and the distal edge slightly inturned on two sides to separate the sensory cones into two diads.

Male characters: anterior legs with femora and often post-femora enlarged and glandular, at least the 3rd pair of legs with ventral adenostyles and sometimes the 2nd-6th legs are so modified; coxae, prefemora, and often femora provided dorsally with conspicuous, conical, setiferous tubercles; subtarsal pads occur sporadically; sterna of anterior segments unmodified.

Gonopods relatively small, projecting from a small transversely oval aperture contained entirely within the metazonite; central sternal element small or absent; coxa without dorsal apophysis and usually only two macrosetae; telopodite attached at a right angle and consisting of an elongated setiferous prefemur with large, dorsally located prefemoral process (simple or multiply branched), and a short acropodite made up basically of a solenomerite and adjacent tibial process (or parasolenomerite); this region of the gonopod is invariably provided on the outer side with a small cluster (2-6) of large and prominent macrosetae well separated from the much smaller setae of the prefemur.

As defined by the preceding characteristics taken collectively or in various combinations (few if any of the species demonstrate all of the stipulated features), the Batodesmini consists of an ensemble of easily recognizable species apparently confined to

extreme northwestern South America, from western Brasil and northern Peru to the vicinity of Caracas, Venezuela, and the Panama Canal Zone. The majority of named forms occur in Colombia.

Although considerable further investigation must precede a satisfactory treatment of the group, some preliminary notes and arrangements seem entirely desirable at this time to provide a taxonomic framework into which the new Brazilian *Biporodesmus* can be placed. As will be shown in a later paragraph, several species from São Paulo and adjoining states that were originally placed in *Alocodesmus* really do not belong in that genus, which is now known from Panama, Colombia, and Venezuela. The usual difficulties of poorly-described old species, and generic names based upon female specimens, afflict the batodesmines, and some time may pass before the group can be put into complete order.

The taxonomic histories of the various forms that make up this group have been somewhat checkered owing to the reaction of three quite different approaches to milliped classification. J. Carl, who initiated many of the generic names in his 1914 paper, based them largely upon modifications of body form in the type species. Count Attems, notably conservative as already mentioned, saw only general similarities in the gonopod structure and combined Carl's genera under the older name *Alocodesmus*. K. W. Verhoeff combined both genitalic and external characters to define genera and thus recognized about twice as many as did Carl.

My personal opinion is that Verhoeff came closest to the correct arrangement even though he worked largely from the literature and made some errors of commission as well as of omission! Attems was curiously inconsistent as regards his emphasis on various systematic characters, assigning great importance to variations in the pore distribution while tending to disregard other external modifications that would appear to have at least equivalent standing.

It appears to me that the distribution of ozopores is liable to extensive variation in certain groups of obviously related species while remaining quite stable in others, and for this reason we cannot adopt a universal criterion regarding this particular character: each group must be judged on its particular circumstances. In the more specialized batodesmine genera, I think that pore formula is at most a specific character.

The older practice of basing "genera" upon conspicuous and easy key-characters must now in my opinion be abandoned, and suprageneric groupings made on the basis of numerous characters in common rather than single features. As a result much of the published literature becomes useless and requires the re-examination of material, a procedure that has so far rarely engaged the attention of diplopodologists.

KEY TO THE GENERA OF BATODESMINI

(omits several inadequately described generic names)

1. Gonopod coxa with a field of numerous long setae on the dorsal side; pore formula normal; paranota not incised, denticulate, or otherwise modified; anterior legs of males unmodified or with some of the femora slightly enlarged. 2
- Gonopod coxa without a field of numerous long setae; pore formula variable, the pores often missing; paranota fre-

quently modified from the normal polydesmoid outline; normally some of the anterior male legs with enlarged or otherwise modified coxae, prefemora, femora, and postfemora, the latter two podomeres with internal glands. 4

2. Solenomerite and tibiotarsus of gonopod set off by a prominent and conspicuous cingulum; prefemoral process trifid. *Alocodesmus*
Solenomerite and tibiotarsus not conspicuously set off from femur. 3
3. Gonopod lacking a tibiotarsal branch; prefemur short, its dorsal process widely separated from the acropodite. *Carlopeltis*
Tibiotarsal branch present; prefemur of gonopod longer, its process originating near base of acropodite. (*Dyoparyphe*, see page 268, will probably key out here also) *Heteropeltis*
4. Gonopod coxae with two conspicuous dorsal macrosetae. 5
Gonopod coxae without setae. 6
5. Sternum of 19th segment with two greatly elongated paramedian spines that extend beyond hypoproct; paranota small, immarginate; tibiae without ventrodistad pads subtending base of tarsi; segment 7 without ozopores. *Batodesmus*
Sterna without elongated spines; paranota wide, laterally with at least some indication of margination; tibial pads present; pore formula normal. *Cordilleronomus*
6. Both sexes with a large, median, peltate epicranial process; pores on segments 5, 7-19; postfemoral element of gonopod strongly reduced. *Plusioporodesmus*
Neither sex with epicranial process; pore formula normal or reduced; postfemoral element of gonopod of normal size for the tribe. *Biporodesmus*

***Alocodesmus* Silvestri**

- Alocodesmus* Silvestri, 1896: 5. Type species: *A. angustatus* Silvestri, by monotypy. Jeekel, 1952: 73.
- Dromodesmus* Chamberlin, 1923: 51. Type species: *D. longipes* Chamberlin, by original designation and monotypy.
- Maracayopus* Verhoeff, 1938: 4. Type species: *M. venezuelanus* Verhoeff, by original designation and monotypy.

***Alocodesmus angustatus* Silvestri**

- Alocodesmus angustatus* Silvestri, 1896: 5. Holotype, ♂, Zool. Mus. Torino, from Punta Sabana, Panama. Carl, 1914: 897, fig. 123. Attems, 1938: 128.
- Alocodesmus dromeus* Chamberlin, 1922: 48, figs. 4-7. Holotype, ♂, U.S.Nat. Mus., from Culebra, Canal Zone, Panama.

Alocodesmus gracilicornis (Brölemann)

Leptodesmus gracilicornis Brölemann, 1898: 292, figs. 114-126. Holotype, ♂, Mus. nat. hist. natur. (Paris), from San Esteban, Venezuela.

Leptodesmus (Desmoleptus) gracilicornis; Attems, 1938: 31.

Maracayopus venezuelanus Verhoeff, 1938: 4, figs. 1-4. Holotype, ♂, Zool. Staatss. München, from Maracay, Venezuela.

Dromodesmus celer Chamberlin, 1950: 142, fig. 17. Holotype, ♂, Amer. Mus. Nat. Hist., from Rancho Grande, near Valencia, Venezuela.

Alocodesmus gracilicornis; Jeekel, 1952: 73.

Alocodesmus intermedius Carl

Alocodesmus intermedius Carl, 1914: 899, figs. 127-129. Syntypes, ♂ ♀, Mus. Genève, from Guadua, Magdalena, and Buenavista, Colombia.

Alocodesmus longipes (Carl), comb. n.

Dromodesmus longipes Chamberlin, 1923: 52, figs. 128-135. Holotype, ♂, Mus. Comp. Zool., from Fundacion, Colombia.

Carlopeltis Verhoeff

Carlopeltis Verhoeff, 1938: 3. Type species: *Alocodesmus alatus* Carl, 1914, by original designation and monotypy.

Carlopeltis alatus (Carl)

Alocodesmus alatus Carl, 1914: 900, fig. 130. Holotype, ♂, Mus. Genève, from "below Bodega central", Colombia.

Carlopeltis alatus; Verhoeff, 1938: 3.

Heteropeltis Carl

Heteropeltis Carl, 1914: 901. Type species: *H. luctuosus* Carl, by monotypy. Verhoeff, 1939: 3.

Heteropeltis luctuosus Carl

Heteropeltis luctuosus Carl, 1914: 902, figs. 131-133. Holotype, ♂, Mus. Genève, from coffee plantation at La Camelia, Colombia.

? Heteropeltis serenus (Silvestri), comb. n.

Alocodesmus serenus Silvestri, 1898: 57. Holotype, ♂, from Orocué, Colombia. Carl, 1914: 898, figs. 124-125.

Dyoparyphe, nom. n.

Amphipeltis Carl, 1914: 903. Type species: *Polydesmus nodosus* Peters, 1864, by monotypy and original designation.

Preoccupied by *Amphipeltis* Salter, 1863 (Crustacea). Verhoeff, 1938: 3.

Dyoparyphe nodosa (Peters), comb. n.

Polydesmus (*Rhachidomorpha*) *nodosus* Peters, 1864: 536. Holotype, ♂, Zool. Mus. Berlin, from "Neu Granada" (= Colombia), without more precise data.

Amphipeltis nodosus; Carl, 1914: 904, figs. 134-139. Redescription of holotype.

Alocodesmus nodosus; Attems, 1938: 135, figs. 159-160.

The exact status of this genus remains to be settled since the coxal setation of the gonopod is not known. On the basis of Carl's redescription of the type of *nodosa*, I am inclined to place it near *Alocodesmus* and *Heteropeltis*, perhaps closest to the former. The pore formula is normal, the anterior male legs scarcely modified, and postfemoral elements of the gonopods are set off by a prominent cingulum. In fact, it appears from Carl's drawings that there is a prominent flexion in the area between femur and postfemur, so that the seminal groove follows a sigmoid path instead of proceeding more or less directly up the median face of the telopodite as in all other known members of this tribe.

Batodesmus Cook

Batodesmus Cook, 1896: 16. Type species: *Rhachidomorpha alutacea* Peters, 1864, by original designation and monotypy. Carl, 1914: 906.

Batodesmus acceptus Carl

Batodesmus acceptus Carl, 1914: 907, fig. 143. Holotype, Mus. Genève, from Guaduas, Colombia.

Batodesmus alutaceus (Peters)

Rhachidomorpha alutacea Peters, 1864: 620. Holotype, ♀, Zool. Mus. Berlin, from Bogota, Colombia.

Batodesmus alutaceus; Cook, 1896: 16. Carl, 1914: 906, figs. 140-142.

Cordilleronomus Attems

Cordilleronomus Attems, 1931: 61. Type species: *C. pulvillatus* Attems, by monotypy and original designation.

Cordilleronomus pulvillatus Attems

Cordilleronomus pulvillatus Attems, 1931: 61, figs. 93-97. Holotype, ♂, Zool. Mus. Hamburg, from Paca, Ecuador.

Cordilleronomus ortonadae (Silvestri), comb. n.

Odontopeltis Ortonadae Silvestri, 1897: 12, fig. 36. Holotype, ♂, Zool. Mus. Torino, from Guayaquil, Ecuador.

Trienchodesmus ortoneda; Attems, 1938: 101, fig. 118.

A comparison of Silvestri's description and drawing with those published by Attems for his *C. pulvillatus* leaves little doubt that *ortoneda* is not only a batodesmine, but in all probability congeneric with *pulvillatus*.

Plusioporodesmus Silvestri

Plusioporodesmus Silvestri, 1898: 64. Type species: *P. bellicosus* Silvestri, by monotypy. Carl, 1914: 942.

This remarkable genus, known so far only from its type species, is one of the most specialized of American polydesmoids. The original description of *P. bellicosus* did not include illustrations, and Attems (1899: 354) concluded from the verbal account that the genus was related to *Platyrhacus*. Carl examined fresh material from Colombia and concurred in Attems' opinion although remarking some chelodesmoid characters in the anterior male legs and the gonopods.

In 1938, however, Attems relocated the genus to his family "Leptodesmidae" without comment, and a recent personal examination of material convinces me that *Plusioporodesmus* is in fact a highly modified batodesmine. The gonopods are similar to those of *Biporodesmus* except that the prefemoral process is much larger than the acropodite.

Probably the most remarkable single feature about *bellicosus* is the presence in both sexes of a large, subpeltate epicranial process that is reminiscent of those found in the males of certain scarab beetles. Carl postulated that the structure might be useful in the construction of an earthen egg capsule. I provide herewith a drawing made from one of Carl's specimens to show the size and form of the process, heretofore never illustrated.

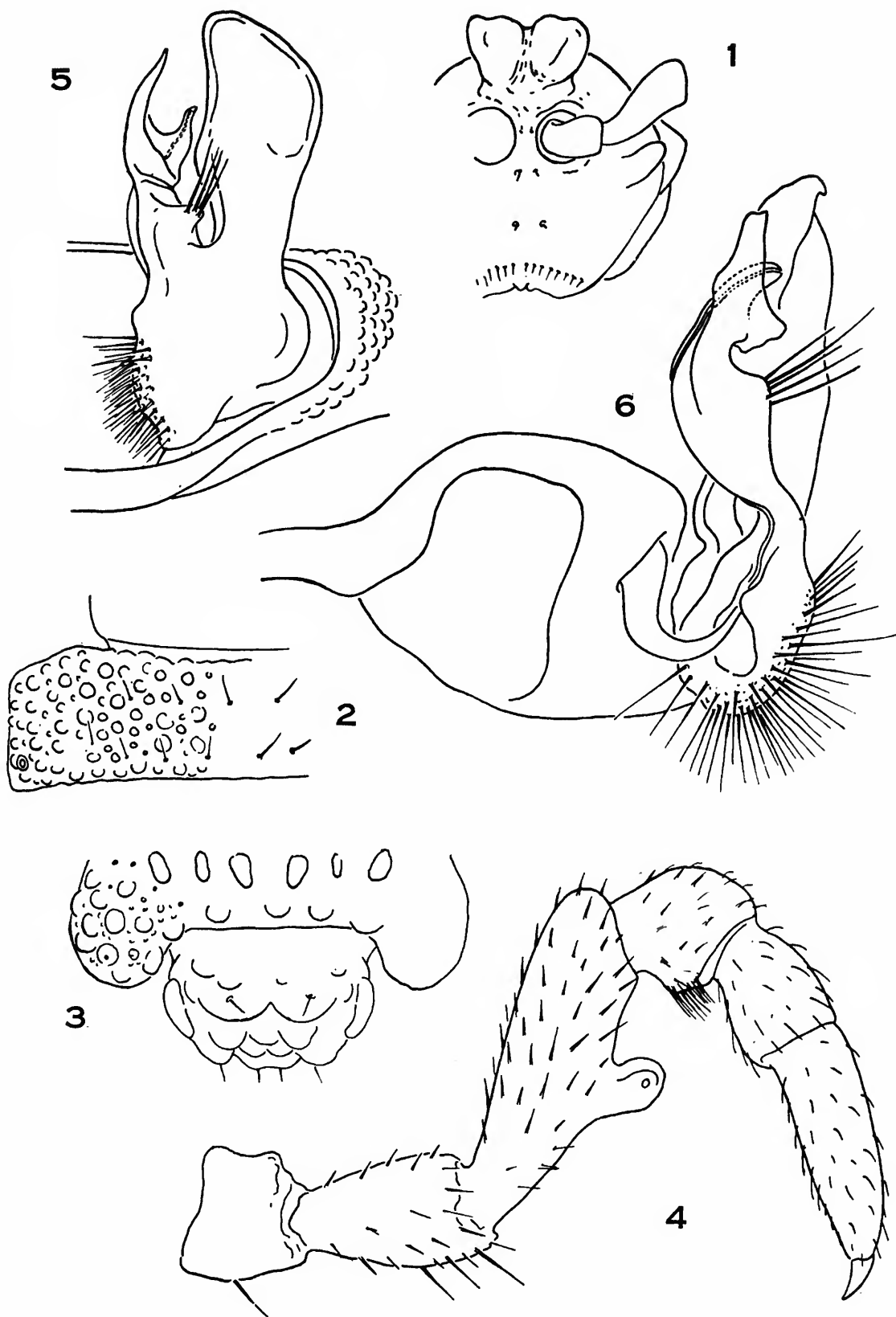
Plusioporodesmus bellicosus Silvestri

(Figs. 1-6)

Plusioporodesmus bellicosus Silvestri, 1898: 64. Carl, 1914: 942, figs. 205-206.

The British Museum (Nat. Hist.) contains the adult male from Buenavista reported by Carl; in April of 1960 I made some drawings and descriptive notes which are given here to supplement those published by that author in 1914.

Adult male, ca. 26 mm. in length; segment widths as follows: collum, 3.0 mm., 2nd, 4.0 mm.; 3rd, 3.8 mm.; 4th, 3.7 mm.; 6th, 3.5 mm.; 7th, 3.6 mm.; 15th, 3.5 mm.; 18th, 3.0 mm. Body long and slender (W/L ratio = 14.6%), narrowing from head down to 6th segment, thence broader and nearly parallel-sided back to 15th, gradually tapering back to epiproct. Paranota mostly transverse and rectangular, those of segments 2-4 bent slightly forward. Surface of metazonites roughly granular-tuberculate with three transverse rows of larger tubercles and two series of prominent setae (fig. 2). Paranota not margined, the pores opening through a small polished disc similar to that found in the *Platyrhacidae*, on segments 5 and 7-19.



Plusioporodesmus bellicosus Silvestri, specimen from Buenavista, Colombia: 1, front of head to show close-set antennae and prominent epicranial median process; 2, left side of midbody metazonite, dorsal aspect; 3, segments 19 and 20, dorsal aspect, only the most prominent tubercles shown; 4, leg of the 3rd pair, anterior aspect, setation diagrammatic; 5, left gonopod in situ, ventral aspect; 6, left gonopod, mesal aspect.

Paranota of segment 19 broadly rounded lobes set with prominent oval to rounded granules. Segment 20 (fig. 3) constricted at base, its sides convex, the setiferous tubercles hypertrophied and difficult to identify as to their series.

Legs relatively long and slender, the femora of legs 2-4 slightly incrassate, with prominent ventral process carrying a gland opening (fig. 4).

Head (fig. 1) with antennae set high and close together, the interantennal isthmus considerably narrower than diameter of an antennal socket. Genae with prominent laterally directed subpiniform process. Epicranium with large, flattened, distally bilobed process originating just above level of antennae.

Gonopod aperture small, transversely oval, lateral and posterior margins strongly elevated and heavily granulose. Gonopods small, not extending beyond front of 7th segment, basically similar to those of other batodesmines (including the presence of a cluster of ventrolateral macrosetae on the acropodite) but prefemoral process larger than usual and set laterad to the reduced acropodite instead of dorsad to it. See figures 5 and 6.

Biporodesmus Attems (*)

Biporodesmus Attems, 1898: 411. Type species: *B. platynotus* Attems, by monotypy.

Melanodesmus Carl, 1914: 908. Type species: *Polydesmus planus* Gervais, 1847, by monotypy. *Syn. n.*

Ecuadopeltis Verhoeff, 1938: 3. Type species: *Alocodesmus dentatus* Attems, 1931, by original designation and monotypy. *Syn. n.*

Diagnosis: Moderate to large-sized batodesmines characterized primarily by gonopod details: coxa without any macrosetae; prefemur longer than usual, without a cingulum setting off the postfemoral region; prefemoral process long and simply acuminate or subspatulate distally, no branches or other modification. Anterior legs of males with femora (and often postfemora) enlarged and with ventral adenostyles; coxae of 3rd pair of legs often globosely enlarged ventrally; basal podomeres usually with acutely conical macrotubercles on the dorsal side. Paranota set high on sides, horizontal or prominently elevated, dorsum granular, paranota entire or variously modified but without lateral peritrematic enlargement; pore formula highly variable, pores in normal sequence, the series increased, reduced, or absent in closely related species.

Distribution: Colombia (2), Ecuador (3), northern Peru (3), and extreme northwestern Brasil (1).

Remarks: It is regrettable to revive an old generic name which is based upon the characters of only one of the nine presently-included species, but the great similarity of gonopod and other male characters enforces the conclusion that *B. platynotus* is indeed congeneric with various other species previously described chiefly in *Alocodesmus*. Within this group slight differences in paranotal

(*) *Dromodesmus homalus* Chamberlin (1941: 489) from northeastern Peru, is very likely a species of *Biporodesmus*, but the description of the female holotype is inadequate for making any kind of placement at this time.

shape and variations in the pore formula appear to be the only important species characters, and if the old tradition of basing generic names upon such details were continued, it would become necessary to recognize no less than four genera (with virtually identical gonopod structure) for the nine species here referred to *Biporodesmus*.

In my view, the ozopore formula of 5, 7, 9, 10, 12, 13, 15, 16, 17, 18, 19 must be regarded as primitive for the entire order Polydesmida, as this distribution occurs in more than 95% of the known species. Any departures, either toward reduction or loss of the pores or toward an increase in their number, appear to be associated with species that are manifestly specialized in other ways and should be regarded as concomittant specializations. It would therefore be incorrect to assume that the formula 5, 7-19 of *Plusioporodesmus* is a primitive retention (or atavism) by analogy with the continuous pore series that occur in other orders. Presumably in any sort of homonomously metameric arthropod, a mutation producing the increase in number of a repeated structure would be no more remarkable than one causing a reduction.

ARTIFICIAL KEY TO THE KNOWN SPECIES OF BIPORODESMUS

(based upon external characters)

1. Pore formula normal (pores on segments 5, 7, 9, 10, 12, 13, 15-19). 2
 Pore formula reduced, the pores on less than 11 segments. 7
2. Sterna, at least on posterior of body, with paramedian spines. *dentatus*
 Sterna without or with at most minute subcoxal spiniform tubercles. 3
3. Prefemora with acute ventrodiscal spine(s). 4
 Prefemora without ventrodiscal armature. 6
4. Paranota directed upwards on most body segments; the middorsum appearing concave. *austrocrucis*
 Paranota at most horizontal or only a few on anterior segments slightly elevated; middorsum appearing flat. 5
5. Paranota of midbody segments nearly quadrate in outline, the anterior corner rounded, the posterior subrectangular. *planus*
 Paranota of midbody segments without anterior corner, the lateral edge forming a continuous broad arc from anterior paranotal base to the acutely produced caudal edge; posterior edge concave. *pseudolivaceus*
6. Length of male about 40 mm. dorsum uniformly dark. *armatus*
 Length of male 24 mm. dorsum dark with posterior corners of paranota whitish. *olivaceus*

7. Pores absent; paranota relatively small and on midbody segments directed obliquely caudal, with denticulate anterior and posterior edges, length of male about 24 mm. *aporus*
Pores present on at least one segment; paranota large, transverse on midbody segments, the edges smooth or minutely denticulate; size 40 mm or greater. 8
8. Pores on one segment (5th) only. *platynotus*
Pores on five segments (exact distribution unknown as the only specimen was dried and disarticulated, but perhaps 5, 9, 12, 15, 17). *gualianus*

***Biporodesmus aporus* (Kraus), comb. n.**

Alocodesmus aporus Kraus, 1954: 32, figs. 36-43. Holotype, ♂, Mus. Senckenberg, from Km 42, road from Olmos to Jaen, Prov. Lambayeque, Peru.

***Biporodesmus armatus* (Verhoeff), comb. n.**

Melanodesmus armatus Verhoeff, 1941: 16, figs. 10-13. Holotype, Zool. Mus. München, from "Batatalthal", Colombia [location unverified and the spelling is perhaps the German rendition of "Batatal Valley"?].

***Biporodesmus austrocrucis*, sp. n.**

(Figs. 7-16)

Type specimens: Male holotype and paratypes of both sexes (DZSP 1041), from Cruzeiro do Sul, Acre, Brasil; collected in February, 1963, by M. Alvarenga; additional topoparatypes (RLH).

Diagnosis: Easily distinguished from other members of the genus by the characters stipulated in the foregoing key; the strongly elevated paranota and shortened gonopods are especially diagnostic.

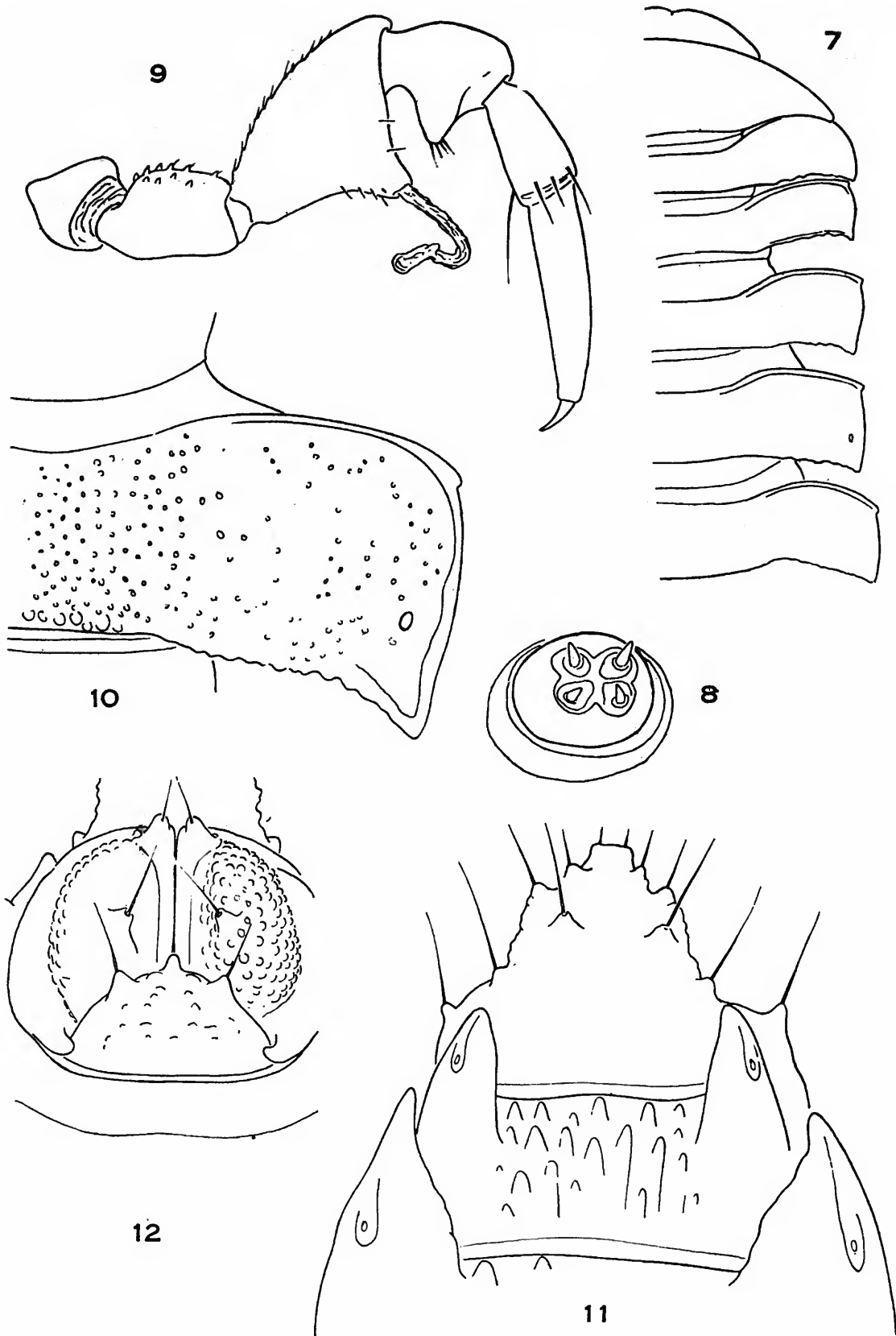
Description of holotype: Adult male, ca. 29.5 mm. in length (broken); width of selected segments across paranota as follows:

Segment	1	3.7 mm	Segment	10	4.3 mm
	2	4.0 mm		12	4.3 mm
	4	4.0 mm		14	4.2 mm
	6	4.1 mm		16	3.8 mm
	8	4.2 mm		18	2.6 mm

Width/length ratio at segment 10: 14.8%. Depth of segment 12, 2.5 mm, depth/width ratio at this segment: 58%.

Coloration considerably altered by alcohol, at present light brown dorsally with concealed parts of prozonites, legs, and sternal areas much paler brown; the animal probably dark brown in life. Paranota laterally margined with whitish.

Body relatively slender, the stricture deep and setting off the prozonite as a subglobose area less than half of which is telescoped into the proceeding metazonite. Paranota set high on body and on most segments elevated above the horizontal, imparting a curiously concave appearance to the dorsal surface.



Biporodesmus austrocrucis, sp. n., male holotype: 7, right side of first six body segments, dorsal aspect, surface texture not indicated; 8, apex of antenna showing 7th article and sensory cones, greatly enlarged; 9, leg of 3rd pair, anterior aspect, setation largely omitted, secretion shown emerging from adenostyle of the femur; 10, right paranotum of segment 10, enlarged, granulation approximately accurate; 11, posterior end of body, dorsal aspect; 12, hypoproct and paraprocts, ventral aspect. Figures 9-12 drawn to same scale (x 45), figure 7 much reduced (x 15), figure 8 enlarged (x 90).

Head prominently convex, mostly smooth except for the occipital region dorsally which is finely but distinctly striate; epicranial suture distinct, forked between the antennae, but not punctate. Genae convex below antennae, with relatively broad and flattened lateral margins; front of head evenly convex down to labral margins. Facial setae obscured by profuse secondary pilosity. Epicranial apparently 2-2, the two pairs set close together and the four setae forming a straight transverse series; supra-antennal 1-1, interantennal 1-1, genal about 3-3, the series essentially continuous with the clypeals but details impossible to make out with certainty; labral 7-7, the labrum not set off from clypeal region. Antennae set above middle of head and moderately separated (0.5 mm across interantennal isthmus), each antennal socket with an elevated, colorless, marginal flange, highest medially and dorsally.

Antennae moderately long (6.3 mm) and slender, extending back to middle of 4th paranota, considerably longer than greatest body width. Basal article with 10-15 scattered setae on the dorsal and anterior sides, articles 2-5 somewhat more setose, article 6 invested with numerous pale, procumbent setae and provided with a poorly defined apical transverse area composed of numerous parallel rows of microsensillae. Article 7 short, cylindrical, slightly constricted at base, densely setose, with colorless, hemispherical sensory area at midlength on outer side; distal edge slightly inturned on two sides, partly separating the four sensory cones into two diads. Lengths of antennomeres: 1st, 0.5 mm, 2nd, 1.25 mm, 3rd, 1.20 mm, 4th, 1.0 mm, 5th, 1.0 mm, 6th, 1.15 mm, 7th, 0.60 mm.

Collum nearly flat, its lateral ends horizontal and strongly curved caudad; anterior and posterior edges virtually parallel middorsally, in going laterad the anterior edge describes an even arc around to the subacute apex, posterior edge concave laterally and thus accentuating the caudal production of the apex. Dorsal surface minutely coriaceous with scattered microtubercles; mid-dorsal area distinctly depressed; upper side of lateral ends slightly convex with more prominent tuberculation. Anterior marginal ridge distinct medially nearly to the middorsal line; laterally not quite attaining the produced apex. Entire posterior edge with small but distinct elevated rim which is laterally modified into three subterminal marginal tubercles on each side.

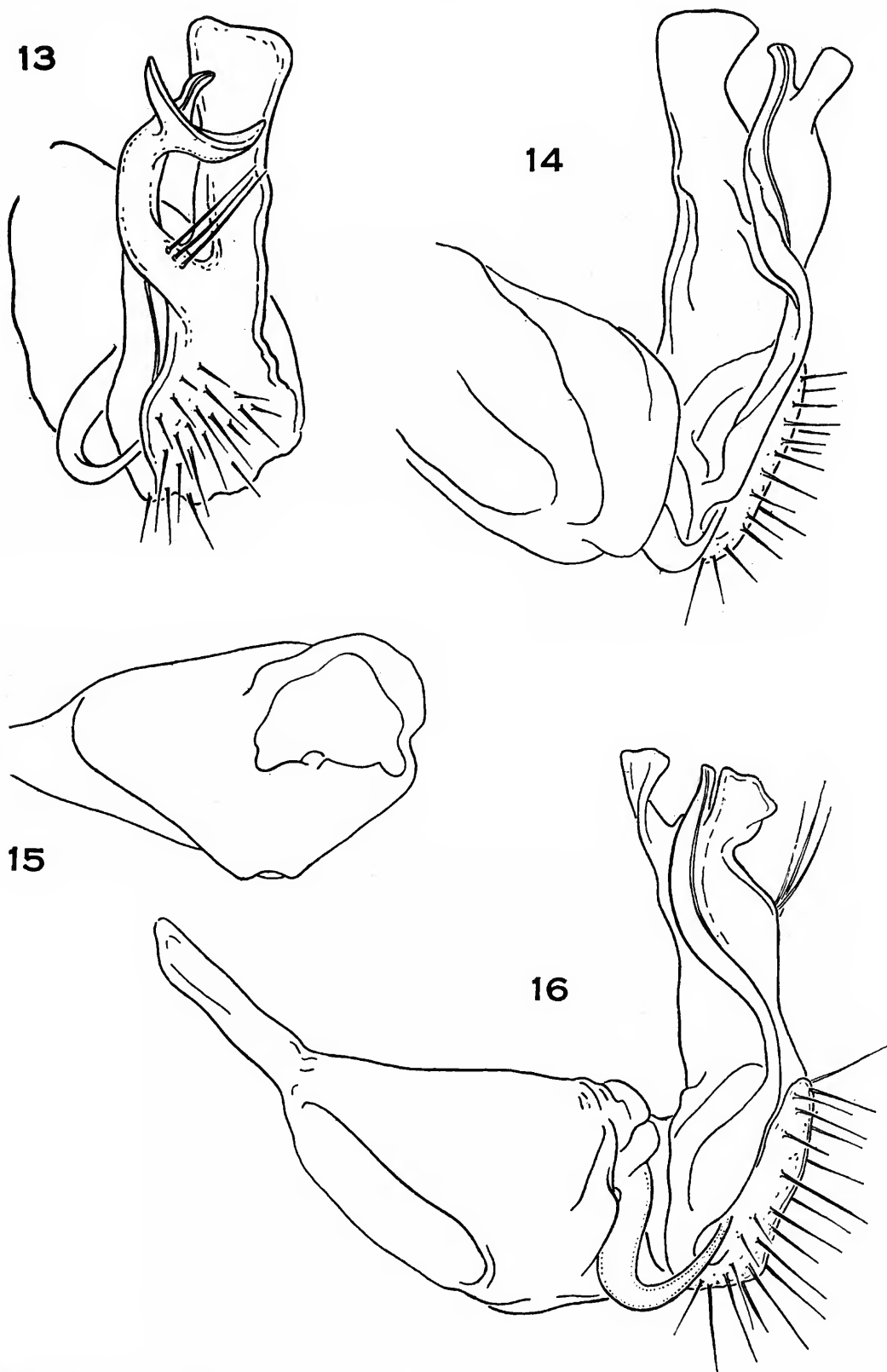
Segments 2-18 basically similar in structure, divided into two prominent subsegments by an unusually well-developed stricture, only about half of the prozonites is telescoped into the preceding metazonites. Surface of prozonites appearing smooth, microscopically chagreened in texture. Paranota relatively large and elevated above the horizontal to nearly 30° on some anterior segments. Paranota of segments 2-4 distinctly shorter than the following although fully as broad, essentially transverse and much longer laterally than at the base (fig. 7). Upper surface of metaterga coriaceous-granular in texture with scattered larger tubercles. Entire posterior edge of paranota tuberculate or denticulate, lateral edges nearly straight and smooth except for small but distinct tooth at anterior corner (fig. 10); scapulae entirely marginal, the rim strongly turned upward and anterior side set with numerous microtubercles in one or two series (strigilate), this rim followed by a deep anterior depression of the paranotal dorsal surface which is elsewhere dominantly convex. Paranota of segments 5-17 similar

in shape and size, posterior edge of segment nearly straight as far back as 10th segment, thereafter posterior edge of paranota becoming increasingly oblique caudally; the anterior edge is convexly transverse back to 10th segment beyond which it becomes obliquely slanted caudally and nearly parallel to posterior edge. Dorsum of paranota more tuberculate on posterior segments and the posterior edge more prominently incised into irregular complex marginal lobes, about 6-10 on each side of body. A distinct peritreme not developed, ozopores opening on a flat, polished area in posterior half of the paranota and well removed from lateral edge; pores large and distinct, the formula normal. Dorsal surface of segments 18 and 19 with prominent irregular transverse series of elongated tubercles which on segment 19 are produced distally into sub-conical projections.

Telson large and robust, setae originating from hypertrophied tubercles in two transverse series of 3-3 and 2-2 (= the usual apical group of 4 setae), the paramedian tubercles of the basal series displaced posteriorly to the base of the corresponding tubercles of the distal series (figure 11). Paraprocts strongly convex medially, this discal elevation minutely but densely tuberculate with a prominent conical basal setiferous tubercle; distal edges of paraprocts strongly compressed and elevated, set off by a distinct basal groove, their surface densely punctate, each with a setiferous tubercle near the upper end. Hypoproct large, transversely ellipsoid with a small median tubercle and two large conical paramedian tubercles, surface very finely textured and sparsely tuberculate, the outermost ends overlapped by conically projecting lobes from outer basal corners of the paraprocts (fig. 12).

Legs long and slender, distal third of femora visible from above when extended laterally, attached to moderately elevated, smooth, nearly glabrous podosterna which are unusually broad for a chelodesmid (intercoxal width = length of femora). No transverse or median impressions and no trace of subcoxal lobation; a single row of 6-8 brown setae extending across between the coxae of the two pairs of legs. Podosterna medially indented posteriorly, leaving a small median ventral tuberculate area on each segment, anteriorly podosterna slightly convex and overhanging stricture, these areas with a small field of scattered short setae. Coxae short and unmodified, each with an unusually long macroseta at its base on the ventral side; dorsal surface with 3 or 4 acutely conical tubercles, each with a seta on the outer side at base. Prefemora cylindrical with a short, acute, curved spine at the ventrodistal end; dorsal surface with 8-12 conical tubercles as on the coxae. Femora long and slender, gradually enlarged distally with scattered sparse short setae. Postfemora and tibiae cylindrical, about twice as long as wide, sparsely setose. Tarsi long and fusiform, widest near midlength, more profusely setose than preceeding segments, with 6-8 greatly elongated pale setae originating above base of tarsal claw and extending far beyond it as a kind of loose silky brush. Tarsal claw short, straight, and unmodified, about 1/8th as long as tarsus. Relative length of podomeres: $3 = 6 > 2 > 5 = 4 > 1$.

Sides of metazonites unmodified, sparsely tuberculate, the texture more prominent near bases of legs. Stigmata dissimilar in appearance, the anterior 50% larger than posterior, both with slightly elevated rims, the dorsal angles of which produced late-



Biporodesmus austrocrucis, sp. n., male holotype: 13, left gonopod in situ, slightly oblique ventromedial aspect; 14, the same gonopod, dorso-medial aspect; 15, the same gonopod, isolated coxa, ventromedial aspect; 16, the same gonopod, medial aspect.

rally into prominent acute spines similar in size and appearance to the projecting coxal condyles, giving the effect under low magnification of a series of four conical spines in a row above coxal bases. Stricture becoming increasingly deep down sides and across ventrum, partly overhung by anterior base of podosterna (including the anterior stigmata).

Anterior legs virtually unmodified. 1st pair strongly reduced in size and about half as large as 2nd. Sternum of 2nd pair loosely attached to pleurotergum of 3rd segment; the coxae with low and indistinct lobes containing the gonopores. 3rd pair of legs set moderately close together, the sternal width of segment 4 approximately 0.4 mm. Sternum of segment 5 and those following abruptly wider, about 1.0 mm between the coxae, but no sternal lobes or other processes are developed. Coxae of 3rd legs with low rounded basal lobe only; femora of these legs greatly enlarged and granular, of the form shown in figure 9, postfemora with prominent ventral lobes. Remaining legs unmodified, no special lobes or processes or tibial pads evident; tarsal claws small and simple.

Gonopod aperture small (about 0.6×1.0 mm.), transversely oval, contained entirely within the metazonite and scarcely displacing the stricture anteriorly; lateral ends with high flanges, posterior edge slightly elevated, sternum between 8th pair of legs flat and with a transverse row of setae. Gonopods short, not extending to sternum of 6th segment, of the form shown in figures 13-16. Tracheosternal apodemes moderately long, no trace of central sternal remnant. Coxae subcylindrical, about as large as telopodite, apparently lacking dorsal macrosetae. Cannula narrow basally, thickest near the first basal curve, thence tapering gradually to its minute lanceolate tip, originating from an obtuse shallow notch on distal edge of the coxa on the medial side (fig. 15); basal condyle small, hemispherical, the opposed side of coxal edge expanded and laminate.

Telopodite short, not attaining anterior edge of 7th segment, the abbreviation chiefly localized in the distal half as the prefemur appears to be of normal proportion for the Batodesmini generally. Prefemoral process broad, spatulate, distally truncate, slightly longer than the acropodite elements. Latter composed of a short, digitiform solenomerite and a much broader, subcalyciform tibio-tarsal rudiment placed ventrad to it; the acropodite best seen in ventral aspect (fig. 13) where distinguishable as an isolated curved branch with the characteristic long macrosetae on ventral side at base.

Female structurally similar to male except for the usual sexual differences: legs much more slender and sterna broader, their width exceeding length of prefemora. Cyphopods small, composed of two short valves and a minute cupulate receptacle. Sympleuron of 3rd segment narrow, simple, not modified into any type of distinct epigynal structure.

***Biporodesmus dentatus* (Attems), comb. n.**

Alocodesmus dentatus Attems, 1931: 59, figs. 83-92. Holotype, ♂, Zool. Mus. Hamburg, from the Loja Valley, Ecuador.
Ecuadopeltis dentatus; Verhoeff, 1938: 3.

Biporodesmus gualianus (Brölemann), comb. n.

Batodesmus gualianus Brölemann, 1919: 272, figs. 40-42, 52-53. Holotype, ♂, Mus. Nat. hist. natur. Paris, presumably from Ecuador but no locality stipulated in the original description aside from that implicit in the specific name.

Biporodesmus olivaceus (Kraus), comb. n.

Alocodesmus olivaceus Kraus, 1954: 31, figs. 26-31. Holotype, ♂, Mus. Senckenberg, from Hacienda Taulis, Dept. Lambayeque, Peru (6.50 S, 79.10 W).

Biporodesmus planus (Gervais), comb. n.

Polydesmus planus Gervais, 1847: 111. Holotype, ♀, Mus. Nat. hist. natur. Paris, from Colombia, without precise locality.

Melanodesmus planus; Carl, 1914: 909, figs. 144-151. Recorded from Buenavista and Guaduas, in the central part of the country. Verhoeff, 1941: 16.

Alocodesmus planus; Attems, 1931: 57; 1938: 132, figs. 153-54. Kraus, 1954: 31-33.

Biporodesmus platynotus Attems

Biporodesmus platynotus Attems, 1898: 412, figs. 342. Holotype, ♂, Naturh. Mus. Wien, from Ecuador ("Cordillera"). 1931: 42, fig. 64; 1938: 64.

Biporodesmus pseudolivaceus (Kraus), comb. n.

Alocodesmus pseudolivaceus Kraus, 1954: 31, figs. 32-35. Holotype, ♂, Mus. Senckenberg, from Km 42 on the road from Olmos to Jaen, Dept. Lambayeque, Peru.

BATODESMID GENERA OF UNCERTAIN POSITION

Centrogaster Attems, 1898: 409. Type species: *Polydesmus (Oxyurus) sanctus* Karsch, 1881. Known so far only from the type species, a large batodesmid from Santa Marta, Colombia. Unfortunately, *C. sanctus* is based upon a female specimen, and will certainly remain in doubt until topotypic material can be obtained. It appears to be distinct, however, and probably not be found to conflict with any of the various genera later based upon Colombian species.

Colombodesmus Chamberlin, 1923: 53. Type species: *C. catharus* Chamberlin, by original designation. This generic name was based upon two new Colombian species, *catharus* and *lygrus*, both known only from female specimens. Both forms are from San Lorenzo, and eventually the discovery of topotypic males will make possible a resolution of the status of this genus.

Cormodesmus Chamberlin, 1923: 57. Type species: *C. hirsutellus* Chamberlin, by original designation. Although known from the

male sex, this species remains in some doubt until a re-examination of the type can be made; some of the characters suggest it may be more closely related to the typical trachelodesmines. There is, however, no doubt that *Cormodesmus* is a valid and easily recognizable genus.

Alassodesmus Chamberlin, 1923: 59. Type species: *A. reductus* Chamberlin, by original designation. Known only from the defective type specimen which lacks the head and first seven segments. Possibly a trachelodesmine rather than a batodesmine, but the exact status of the name cannot be determined from the published information.

SPECIES INCORRECTLY REFERRED TO THE BATODESMINI

The following taxa have been in one way or another either directly or by implication referred to the group of genera here regarded as the Tribe Batodesmini. Although their correct generic and tribal status cannot be fully established at the present in all cases, it does seem desirable to document their exclusion from the group under discussion.

Rhachidomorpha brasiliae Brölemann, 1902: 95. Originally referred to *Rhachidomorpha* solely because of the subspiniiform and elevated paranota, this species was subsequently moved to *Alocodesmus* by Attems (1938: 133). In 1955 *brasiliae* was made the type of a new genus, *Obiricodesmus*, by Schubart. Perhaps this genus is related to *Gonioleptodesmus*; in any event it has nothing to do with the batodesmines.

Rhachidomorpha bicolor Brölemann, 1902: 98. Known only from the female holotype, and regarded by Schubart as probably the female sex of the preceding species. It was tentatively included in *Alocodesmus* by Attems in 1938.

Leptodesmus (*Rhachidomorpha*) *corniger* Brölemann, 1904: 87. Described from São Paulo. First referred by Attems (1931: 57) to *Alocodesmus*, later (1938: 35) to *Leptodesmus*. Aside from paranotal shape, this species appears to be a typical chelodesmine, although its generic position remains to be established.

Alocodesmus nitidus Attems, 1931: 58. Described from Guayaquil and subsequently made the type of a new genus, *Guayapeltis*, by Verhoeff (1938: 3). The status of this species has already been noted by me (1959: 230), it is a typical chelodesmine and has no batodesmine characters. Whether *Guayapeltis* is a valid genus must be established by further studies; it seems related to *Inconus* of Chamberlin (1941) from Peru.

Alocodesmus mammatus Attems, 1943: 442. Based on specimens from Teresópolis, Rio de Janeiro. A restudy of the types in the Senckenberg Museum confirms that the species is not an alocodesmid, but probably referable to *Obiricodesmus*.

Alocodesmus yporangae Schubart, 1946: 308. Based on specimens from the Iporanga Caverns, in the southeastern part of São Paulo. This species is clearly not a batodesmine, and should be referred to the vicinity of *Obiricodesmus* if in fact not actually placed within that genus.

The reallocation of the five preceeding Brazilian "Alocodesmus" species not only clarifies the taxonomy within the Chelodesmidae, but also disposes of a zoogeographic anomaly of a typically north-Andean group having representatives in southeastern Brasil. At the present, the only batodesmine known to occur in Brasil is the new *Biporodesmus* described in this paper from Acre, in the extreme northwestern part of the country.

REFERENCES

ATTEMS, C.

- 1898: System der Polydesmiden. I Teil. *Denkschr. Akad. Wiss. Wien* (Math.-naturwiss. Classe) 67: 221-482, pls. 1-11.
- 1931: Die Familie Leptodesmidae und andere Polydesmiden. *Zoologica* (Stuttgart) 30 (79): 1-149, figs. 1-245.
- 1938: Fam. Leptodesmidae, Platyrrhachidae, Oxydesmidae, Gomphodesmidae, in *Das Tierreich* 69: 1-487, figs. 1-509.
- 1943: Myriopoden von Brasilien, gesammelt von E. Bresslau in den Jahren 1913/1914. *Senckenbergiana* 26: 434-458, figs. 1-51.

BRÜLEMANN, H.-W.

- 1898: Voyage de M. E. Simon au Venezuela (decembre 1887-aout 1888). 27^e memoire. Myriapodes. *Ann. Soc. Ent. France* 67: 241-313, pls. 20-27.
- 1902: Myriapodes du Musée de São Paulo. *Rev. Mus. Paulista* 5: 35-237, figs. 1-271.
- 1903: Myriapodes du Museu Paulista, II^e memoire: Manaos. *Ibidem* 6: 63-96, pls. I-II, figs. 1-22.
- 1919: Myriapodes, in *Miss. Arc Meridionale* 10: 235-275, pls. 18-22.

CARL, J.

- 1914: Die Diplopoden von Columbien, nebst Beiträgen zur Morphologie der Stemmatoiuuliden. *Mem. Soc. neuchâteloise Sci. natur.* 5: 821-993, figs. 1-262.

CHAMBERLIN, R. V.

- 1922: The millipeds of Central America. *Proc. U. S. Nat. Mus.* 60 (8): 1-71, pls. 1-25.
- 1923: Results of the Bryant Walker Expeditions of the University of Michigan to Colombia, 1913, and British Guiana, 1914. The Diplopoda. *Occ. Pap. Mus. Zool. Univ. Michigan* 113: 1-143, figs. 1-217.
- 1941: On a collection of millipedes and centipedes from northeastern Peru. *Bull. American Mus. Nat. Hist.* 78: 473-535, figs. 1-230.
- 1950: Neotropical Chilopods and diplopods in the collections of the Department of Tropical Research, New York Zoological Society. *Zoologica* (New York) 35: 133-144, figs. 1-23.

COOK, O. F.

- 1896: On the Xyodesmidae, a new family. *Brandtia* 4: 15-17.

GERVAIS, P.

- 1847: Myriapodes, in Walckenaer & Gervais, *Histoire naturelle des insectes Aptères* 4: 1-333, 577-595. Librairie encyclopedique de Roret, Paris.

HOFFMAN, R. L.

- 1959: The status of *Leptodesmus ortonadae* Silvestri, a poorly known Ecuadorian diplopod. *Proc. Ent. Soc. Washington* 61: 229-233.

JEEKEL, C. A. W.

- 1952: Milliped miscellany. *Entom. Bericht.* 14: 71-77, figs. 1-8.

KRAUS, O.

- 1954: Myriapoden aus Peru, II. *Senckenbergiana biol.* 35: 17-55, figs. 1-93.

PETERS, W. C. H.

- 1864: Übersicht der im Königl. zoologischen Museum befindlich Myriapoden aus der Familie der polydesmi, so wie Beschreibungen einer neuen Gattung, *Trachyiulus*, der Juli, und neuer Arten der Gattung *Siphonophora*. *Monatsb. Preuss. Akad. Wiss. Berlin* 1864: 529-551, 617-627.

SCHUBART, O.

- 1946: Primeira contribuição sobre os diplopodos cavernícolas do Brasil. *Livro homen. R. F. d'Almeida* (37): 307-314, figs. 1-3.

SILVESTRI, F.

- 1896: Chilopodi e diplopodi raccolti dal Dott. E. Festa a la Guayra, nel Darien e a Cuenza. *Boll. Mus. zool. ed anat. comp. univ. Torino* 11 (254): 1-6, figs. 1-5.
- 1897: Viaggio del Dr. Enrico Festa nell'Ecuador e regione vicine. *Ibidem* 12 (305): 1-18, figs. 1-44.
- 1898: Diagnosticos de nuevos Diplopodos Sudamericanos. *An. Mus. Nac. Buenos-Aires* 6: 53-79.

VERHOEFF, K. W.

- 1938: Über Diplopoden des Zoologischen Museums in München. *Zool. Jahrb. Abt. Syst.* 71: 1-54, pls. 1-4.
- 1941: Zur Kenntnis Australischer Strongylosomiden und einiger andere Diplopoden. *Lunds Univ. Arsskr.* 36 (17): 1-24, figs. 1-16.

