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# THE AMERICAN GENERA OF ASILIDAE (DIPTERA): KEYS FOR IDENTIFICATION WITH AN ATLAS OF FEMALE SPERMATHECAE AND OTHER MORPHOLOGICAL DETAILS. IV. KEY TO THE GENERA OF LAPHRIINAE MACQUART (EXCEPT TRIBE ATOMOSIINI HERMANN), WITH THE DESCRIPTIONS OF THREE NEW TRIBES AND FIVE NEW SPECIES[1]

*Jorge N. Artigas*[2]
*Nelson Papavero*[3]
*Terezinha Pimentel*[4]

*ABSTRACT: A key for the identification of the 17 American genera of Laphriinae Macquart (except the genera of the tribe Atomosiini Hermann), with illustrations of spermathecae and other morphological details, is presented. Three new tribes, Dasytrichini, Neophoneini and Dasylechiini, are created. Three new species of* Smeryngolaphria *Hermann* [S. gorayebi, *sp. n. (type-locality: Brazil, Pará, Monte Dourado),* S. gurupi, *sp. n. (type-locality: Brazil, Pará, Rio Gurupi, Aldeia Gurupi) and* S. taperignae, *sp. n. (type-locality: Brazil, Pará, Santarém, Fazenda Taperinha)] and two of* Pilica *Curran* [P. funebris, *sp. n. (type-locality: Brazil, São Paulo, Onda Verde) and* P. zanutoi, *sp. n. (type-locality: Brazil, Mato Grosso, Barra dos Bugres, Reserva Ecológica de Serra das Araras)*] *are described. A key to the species of* Dasyllis *Loew is also furnished.* Alipiolaphria *Carrera, 1951, is proposed as a synonym of* Cryptomerynx *Enderlein, 1914.*

KEY WORDS: Diptera, Asilidae, Laphriinae, Taxonomy, Morphology.

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[2] Universidad de Concepción – Faculdad de Ciencias Biológicas y de Recursos Naturales – Departamento de Zoología – Chile.

[3] Universidade de São Paulo – Museu de Zoologia (Bolsista CNPq)

[4] MCT/CNPq/Museu Paraense Emílio Goeldi – Depto. de Zoologia

*RESUMO – Apresenta-se uma chave para identificação dos 17 gêneros americanos de Laphriinae Macquart (exceto gêneros da tribo Atomosiini Hermann), com ilustrações de espermatecas e outros detalhes morfológicos. São criadas três novas tribos: Dasytrichini, Neophoneini e Dasylechiini. Descrevem-se três espécies de* Smeryngolaphria *Hermann* [S. gorayebi, *sp. n. (localidade-tipo: Brasil, Pará, Monte Dourado),* S. gurupi, *sp. n. (localidade-tipo: Brasil, Pará, Rio Gurupi, Aldeia Gurupi) e* S. taperignae, *sp. n. (localidade-tipo: Brasil, Pará, Santarém, Fazenda Taperinha)] e duas de* Pilica *Curran.* [P. funebris, *sp. n. (localidade-tipo: Brasil, São Paulo, Onda Verde) e* P. zanutoi, *sp. n. (localidade-tipo: Brasil, Mato Grosso, Barra dos Bugres, Reserva Ecológica de Serra das Araras)]. Fornece-se uma chave para a identificação das espécies de* Dasyllis *Loew. Propõe-se a sinonímia de* Alipiolaphria *Carrera, 1951, com* Cryptomerynx *Enderlein, 1914.*

PALAVRAS-CHAVE: Diptera, Asilidae, Laphriinae, Taxonomia, Morfologia.

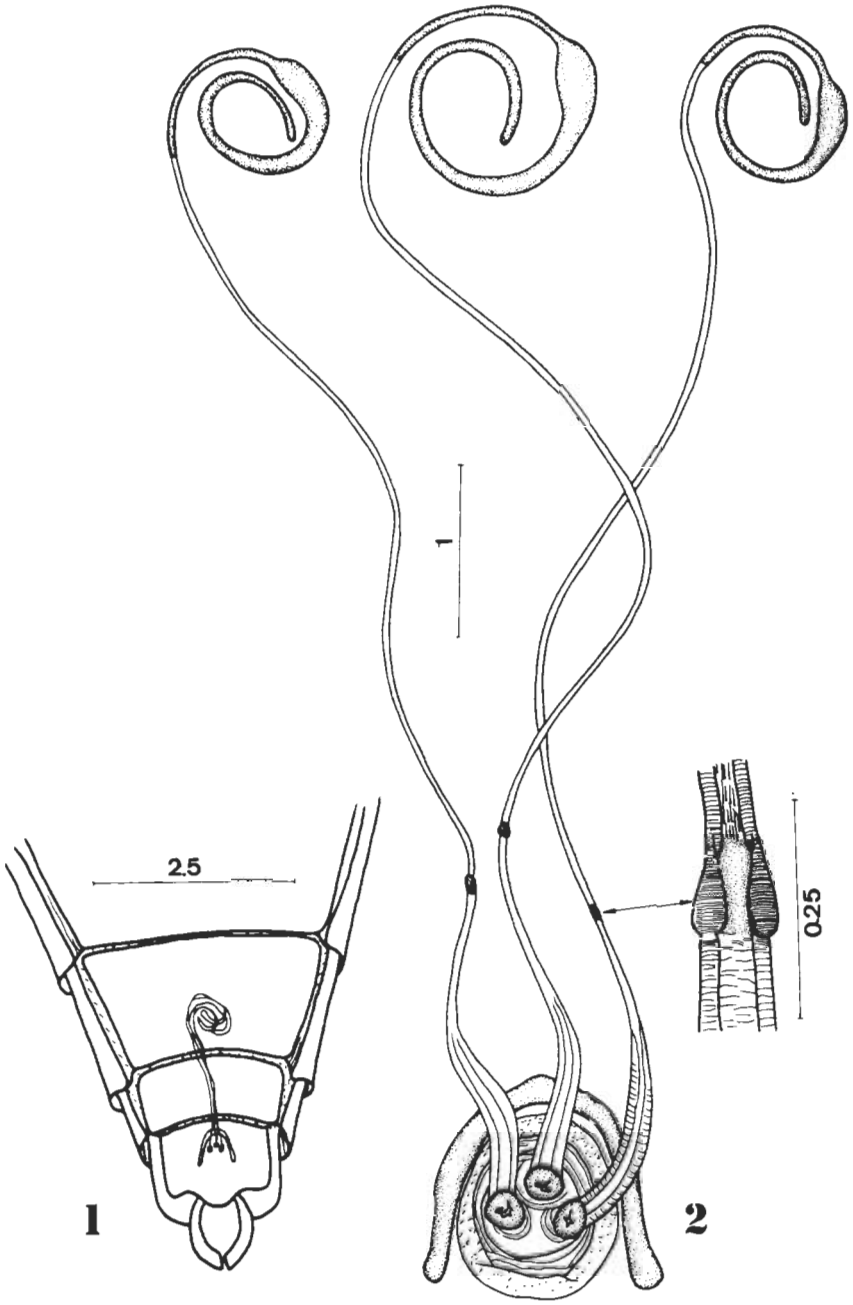
## Subfamily LAPHRIINAE Macquart

Laphritae Macquart, 1838: 56 (1839: 172).

Key to the American tribes and genera (except genera of Atomosiini)

1. Postmetacoxal area membranous ..... 2
   Postmetacoxal area with a transverse sclerotized bridge ..... 17
2(1). Face more or less flat, never excavated or gibbose. Proboscis almost triangular in cross-section. Tribe DASYTRICHINI, new ..... 3
   Face excavated and gibbose. Proboscis either subcylindrical, with tuft of long bristles above, or laterally or dorsoventrally compressed (at least on apical half) ..... 5

3(2). Cell r5 open ..... 4
   Cell r5 closed and petiolate. Antenna with three flagellomeres. Female spermathecae as in Figures 1-2. (Chile, Argentina, Paraguay) ... ..... *Dasythrix* Loew, 1851




*Dasythrix sp.:* 1. Situation of the spermathecae in the abdomen; 2. spermathecae.

4(3). Mystax composed of bristles of uniform length up to the base of antennae. Antenna with two flagellomeres. Predominantly dark-brown to black, somber flies. Female spermathecae as in Figures 3-4. (Colombia, Brazil) ..... *Cryptomerynx* Enderlein, 1914

Upper face with two strongly differentiated, long bristles detached from other bristles of mystax. Antenna with only one flagellomere. Gaudy-colored, yellowish-brown flies with black stripes or markings, especially on abdomen. Male terminalia as in Figures 17-20, 23-42. Female spermathecae as in Figures 21-22. (Central America and South America, but not in Chile) ..... *Smeryngolaphria* Hermann, 1912

5(2). Proboscis subcylindrical, middorsal margin with numerous, long, stout, proclinate bristles. Anatergite with fine hairs. Female spermathecae as in Figures 43-44. (Guianas, Brazil). Tribe NEOPHONEINI, new ..... *Neophoneus* Williston, 1889

Proboscis either laterally or dorsoventrally compressed, without strong bristles on middorsal margin. Anatergite with or without hairs or bristles ..... 6

6(5). Proboscis clearly flattened laterally. Tribe LAPHRIINI Macquart ... 7

Proboscis clearly flattened dorsoventrally, at least on its apical half. Tribe ANDRENOSOMINI Hull ..... 13

7(6). Hind femur thickened, with one or more ventral tubercles which sometimes bear a spine, and femur occasionally with a basal spur-like swelling ..... 8

Hind femur never as above ..... 9

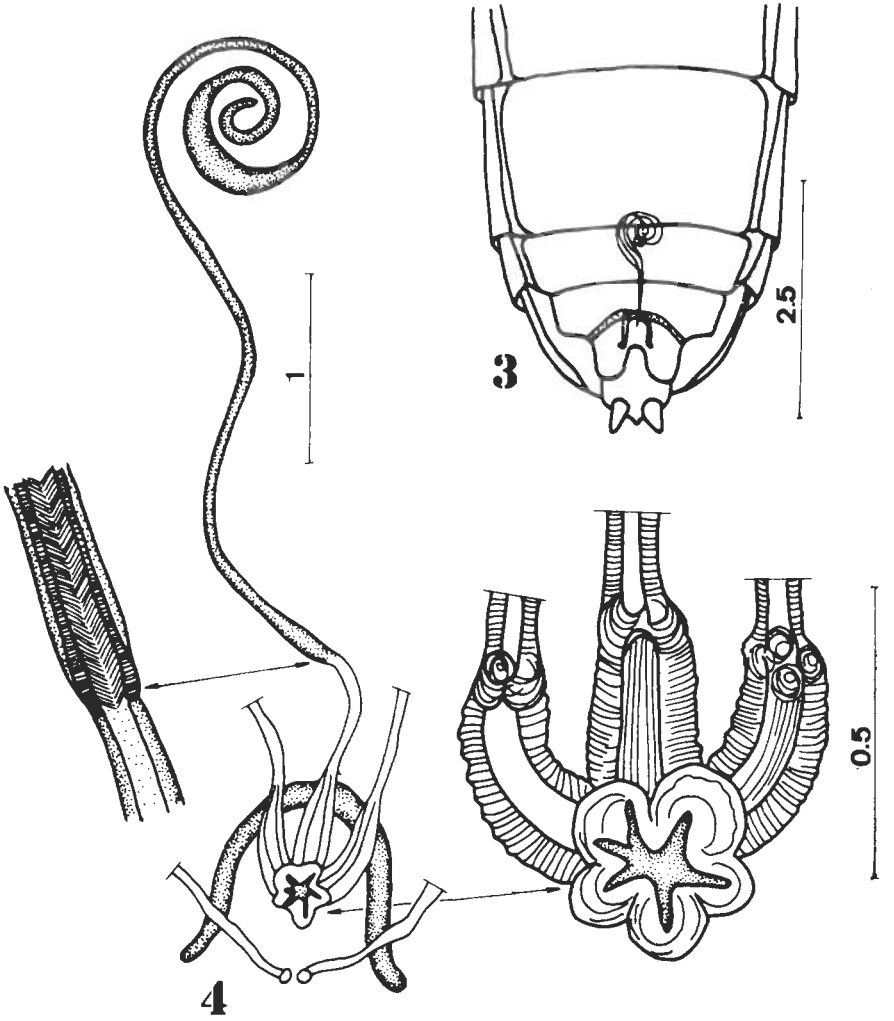
8(7). Anatergite bare. Scutellum with bristles. Female spermathecae as in Figures 45-46. (Neotropical) ..... *Lampria* Macquart, 1838

Anatergite with bristly pile. Scutellum with only short hairs. Spermathecae as in Figures 47-48. (Nearctic) .... *Brychomyia* Hull, 1962

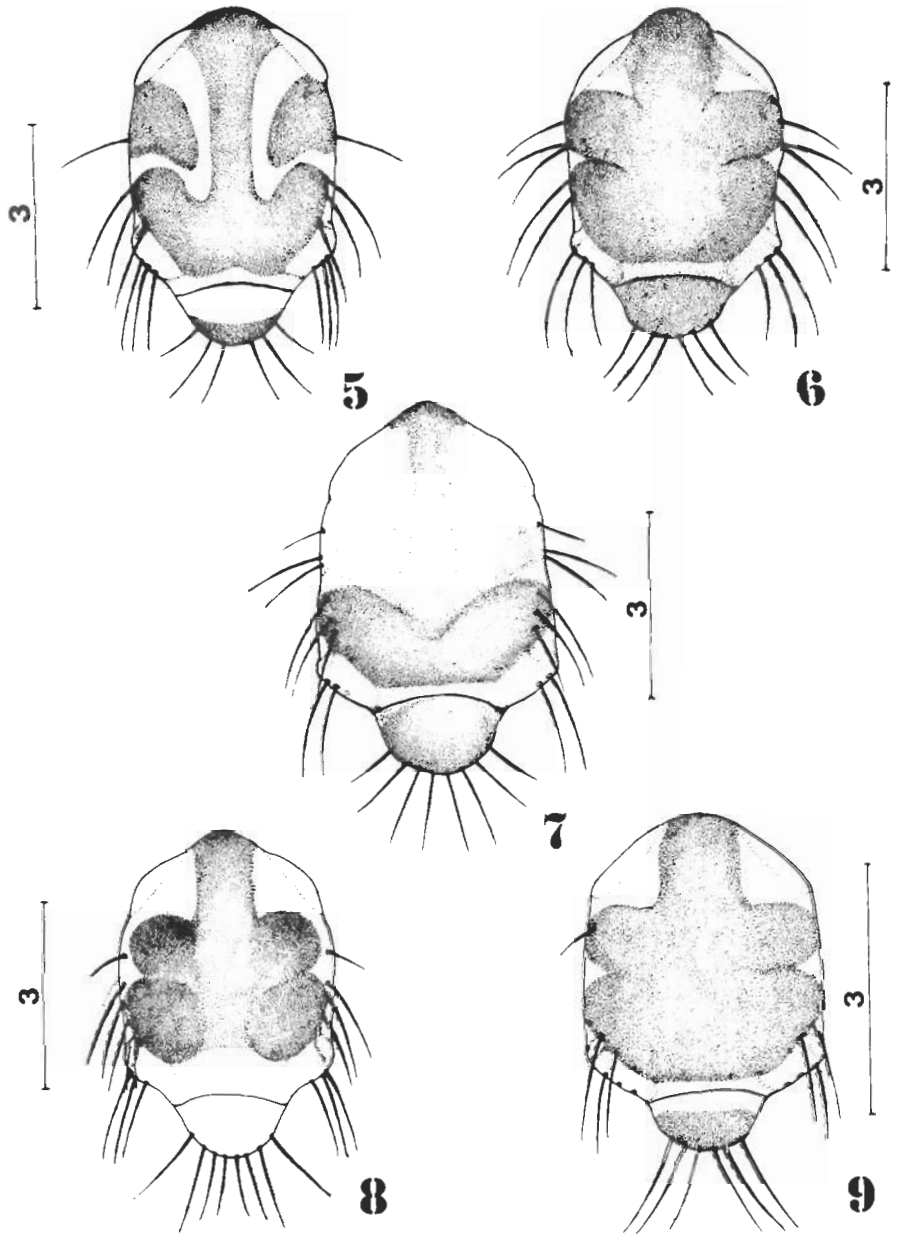
9(7). Cell r5 open ..... 10

Cell r5 closed ..... 11

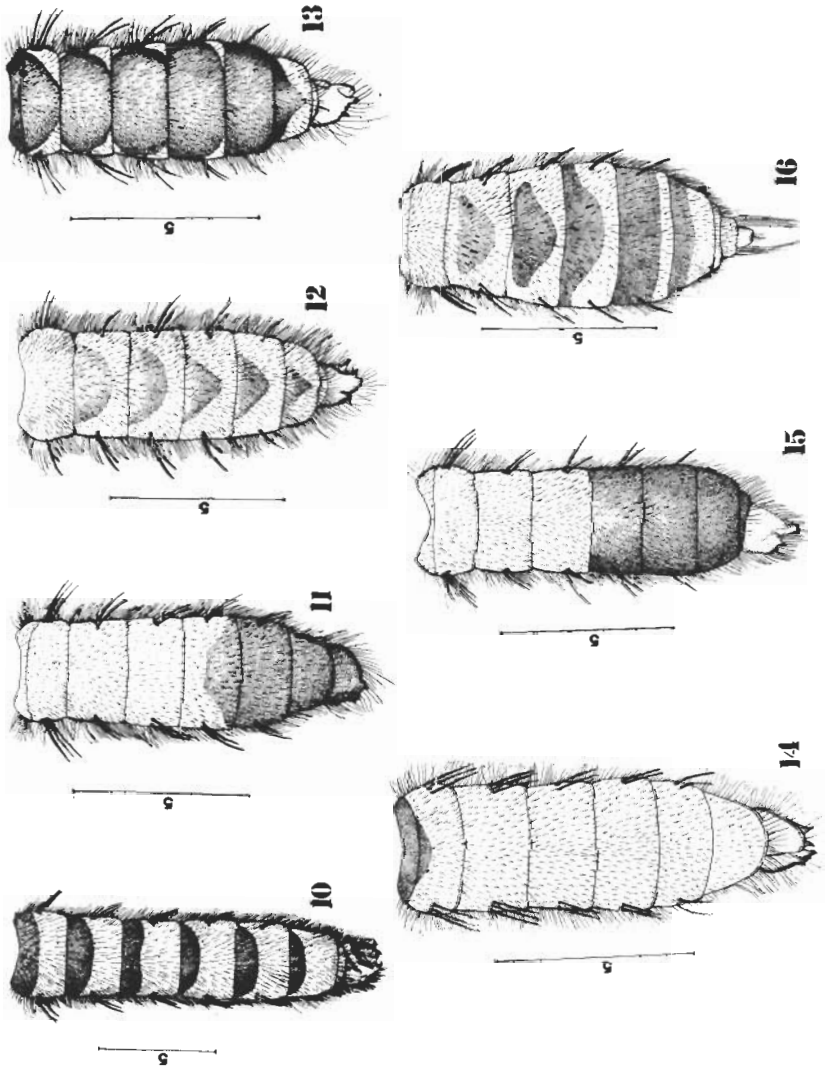
10(9). Face with scale-like hairs in addition to the usual bristles and pile. Head quite short and wide. First flagellomere 2 to 2.5 times combined length of scape and pedicel. Abdomen short, oval, not constricted at base. Mesonotum with scanty, subappressed setae and extensive, lateral, apilose areas. Female spermathecae as in Figures 49-50. (Surinam, Peru, Brazil: Amazonas) ..... *Joartigasia* Martínez & Martínez, 1974



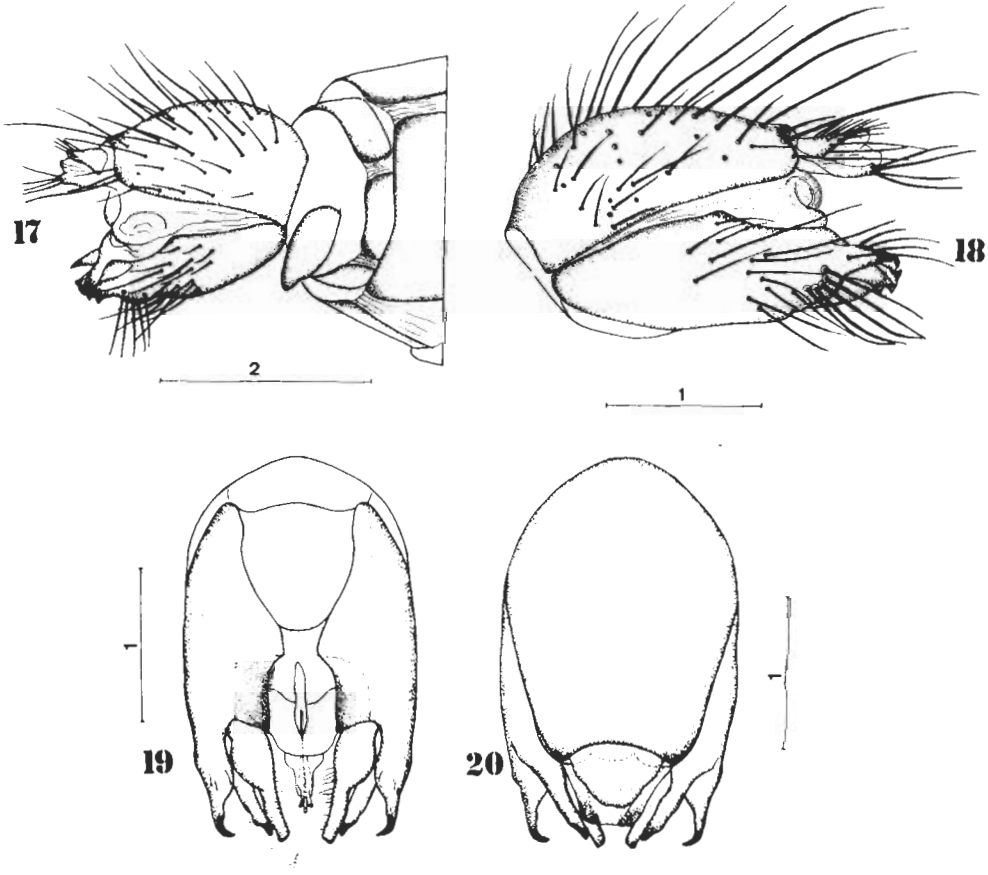

*Cryptomerynx laphriicornis* Enderlein: 3. situation of the spermathecae in the abdomen; 4. spermathecae.



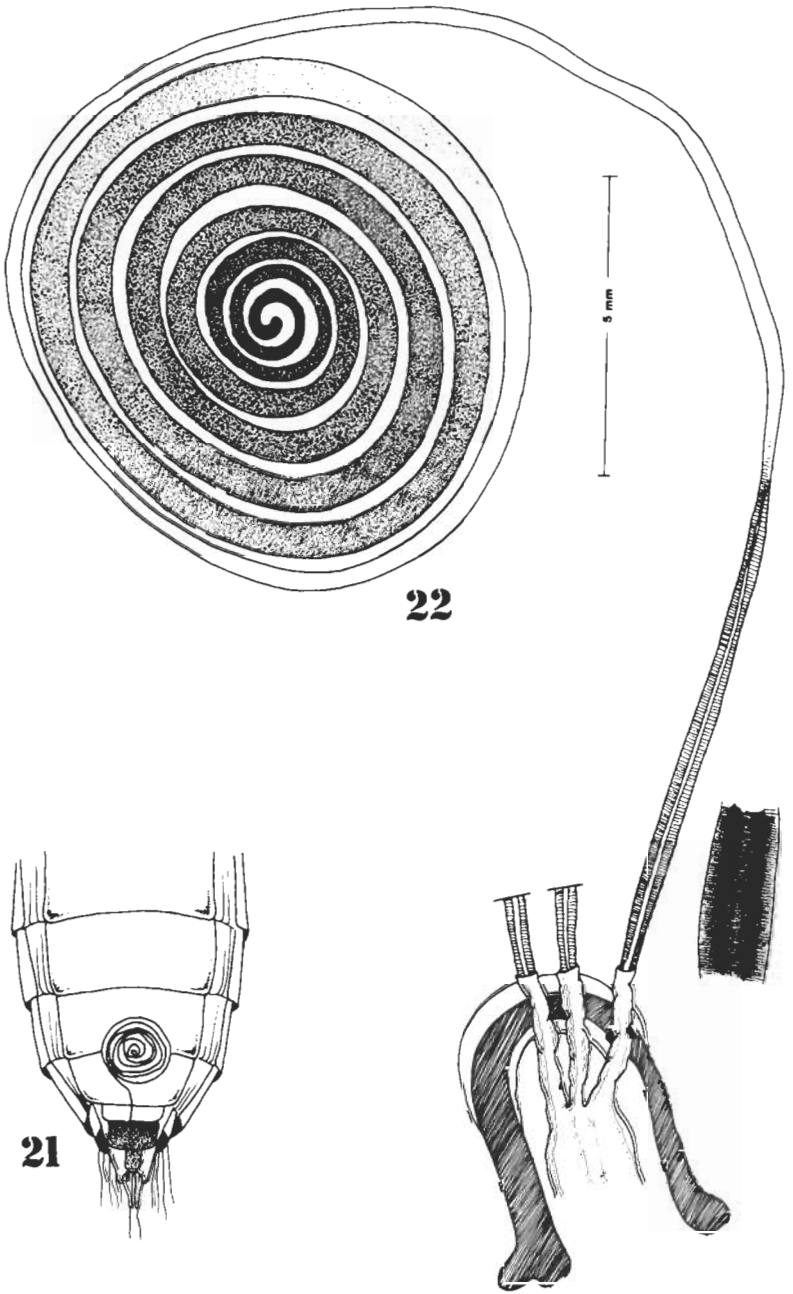

Color pattern of mesonotum in *Smeryngolaphria*; 5. *numitor* (Osten Sacken); 6. *seabrai* Carrera; 7. *gorayebi*, sp. n.; 8. *taperignae*, sp. n.; 9. *gurupi*, sp. n.



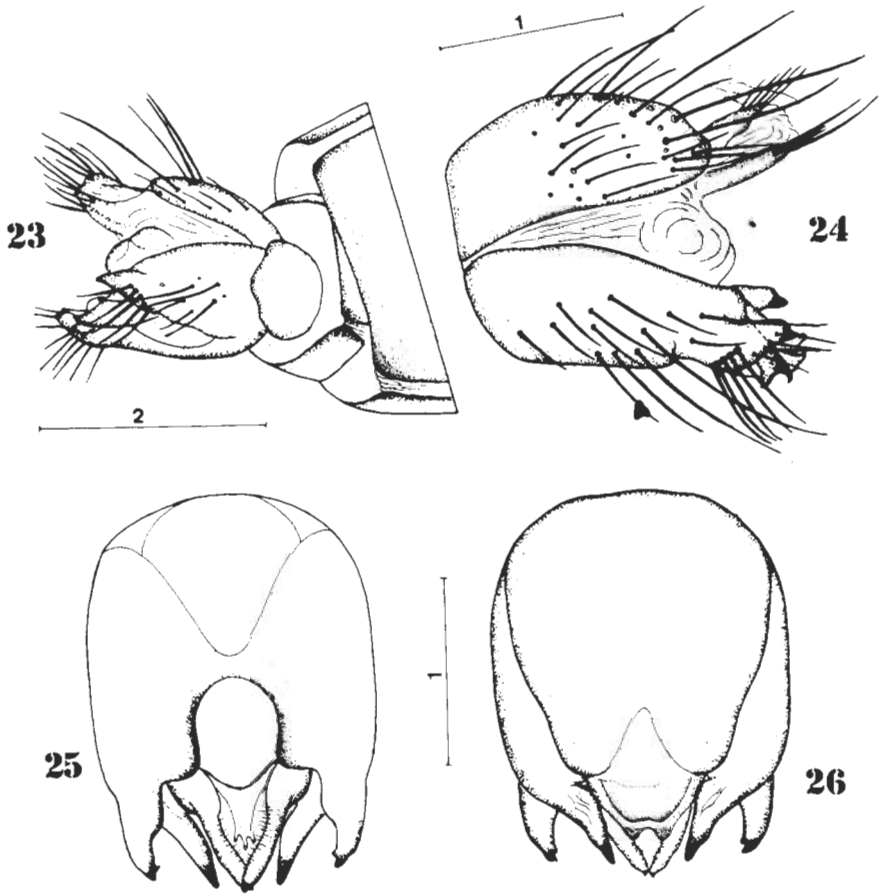

Color patterns of abdomen in *Smeryngolaphria*: *10. numitor* (Osten Sacken); 11. *melanura* (Wiedemann); 12. *maculipennis* (Macquart); 13. *seabrai* Carrera; 14. *goraybi*, sp. n.; 15. *taperignae*, sp. n.; 16. *gurupi*, sp. n.



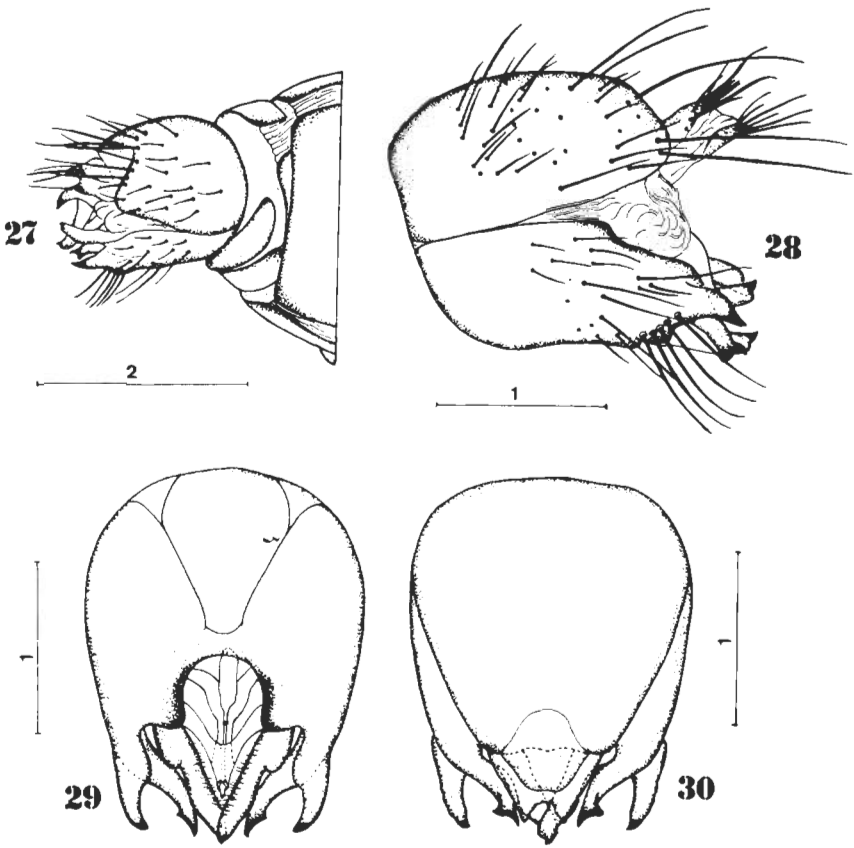

*Smeryngolaphria gorayebi*, sp. n., male terminalia: 17. lateral view, *in situ*; 18. lateral view; 19. ventral view; 20. dorsal view.



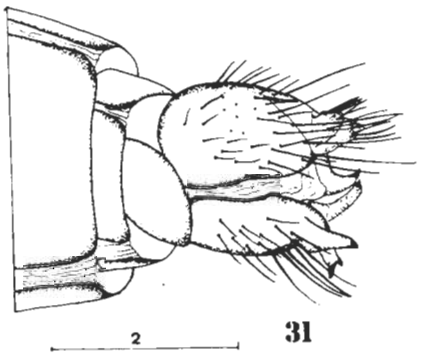

*Smeryngolaphria gorayebi*, sp. n.: 21. situation of the spermathecae in the abdomen; 22. spermathecae.

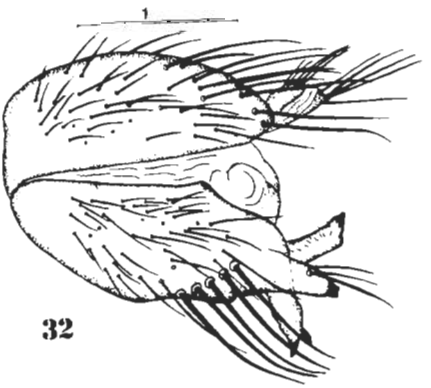


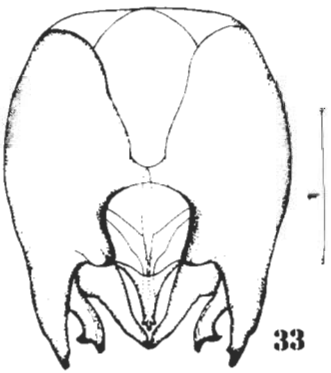

*Smeryngolaphria maculipennis* (Macquart), male terminalia; 23. lateral view, *in situ;* 24.lateral view; 25. ventral view; 26. dorsal view.

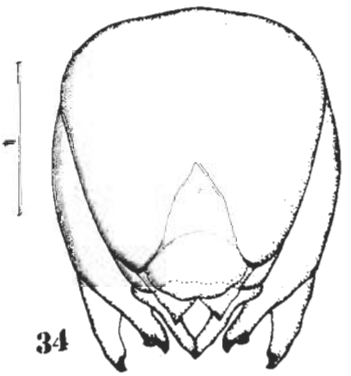



*Smeryngolaphria melanura* (Wiedemann), male terminalia: 27. lateral view, *in situ*; 28. lateral view; 29. ventral view; 30. dorsal view.

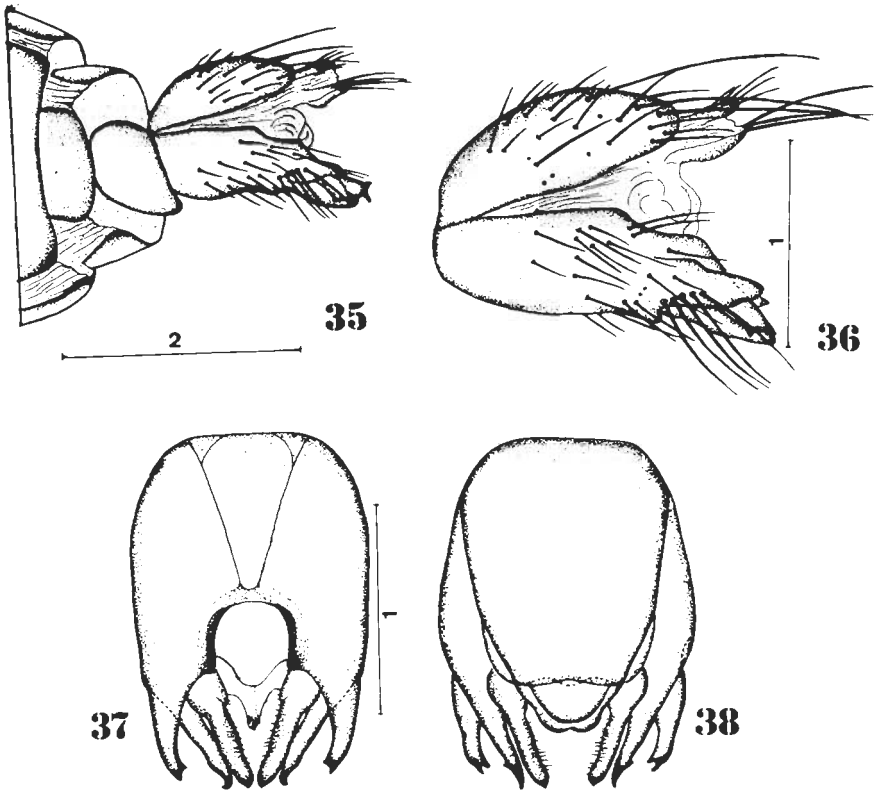


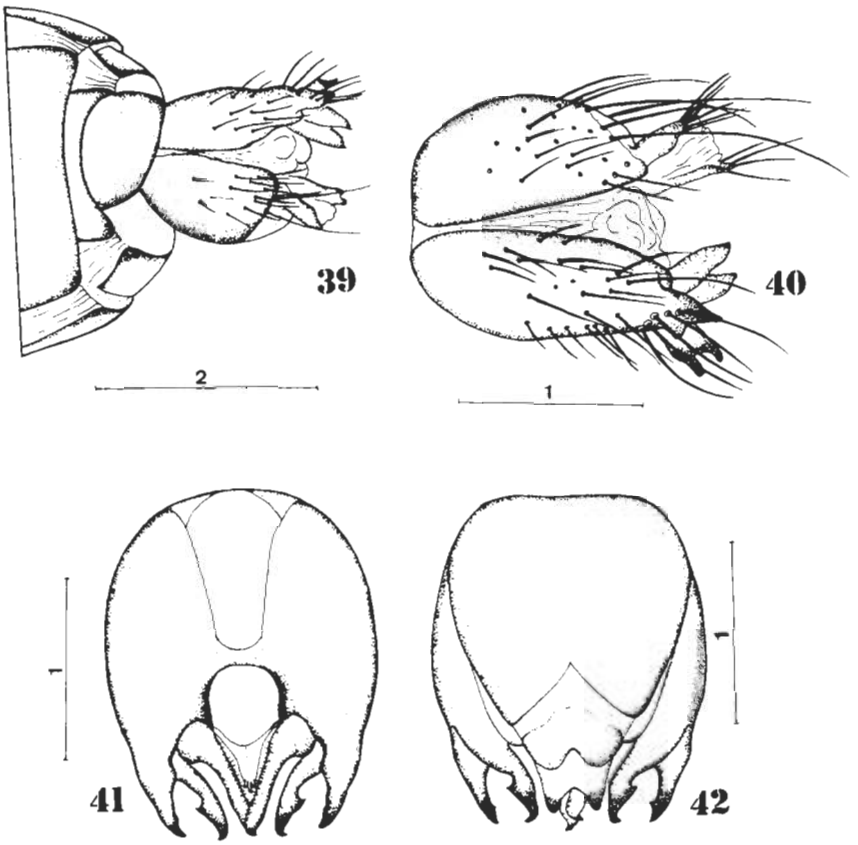



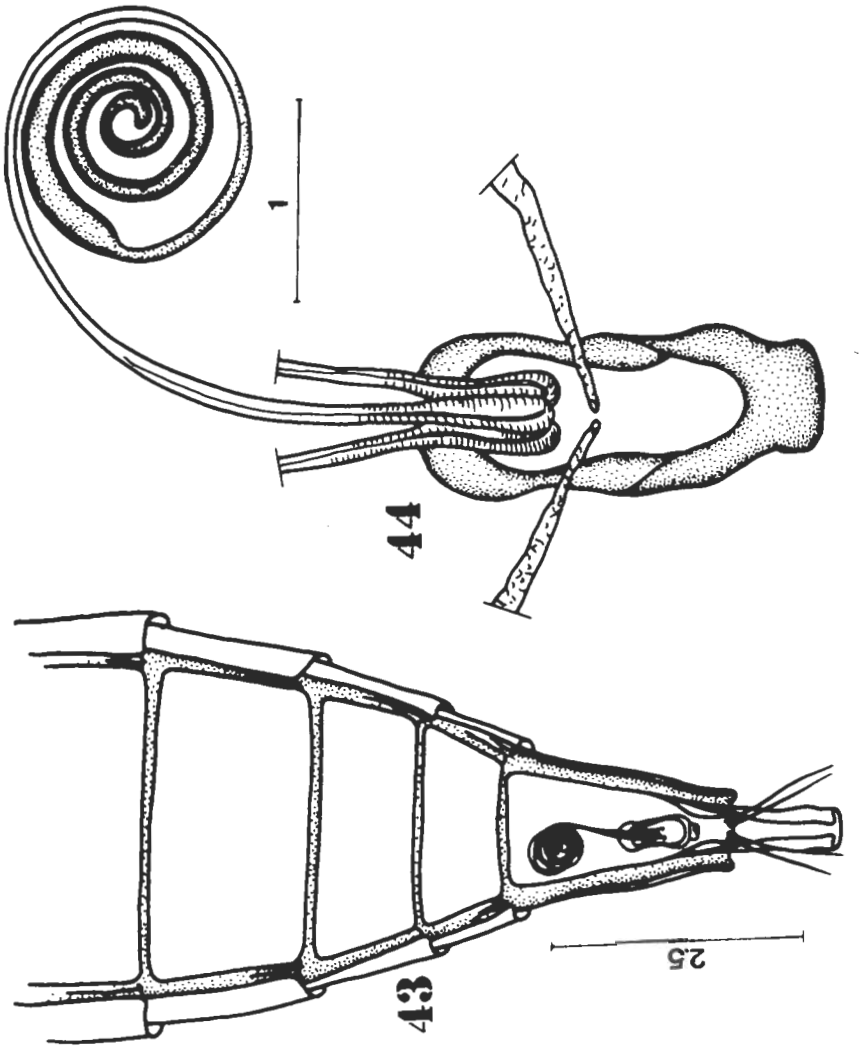

*Smeryngolaphria numitor* (Osten Sacken), male terminalia: 31, lateral view, *in situ*; 32. lateral view; 33. ventral view; 34. dorsal view.



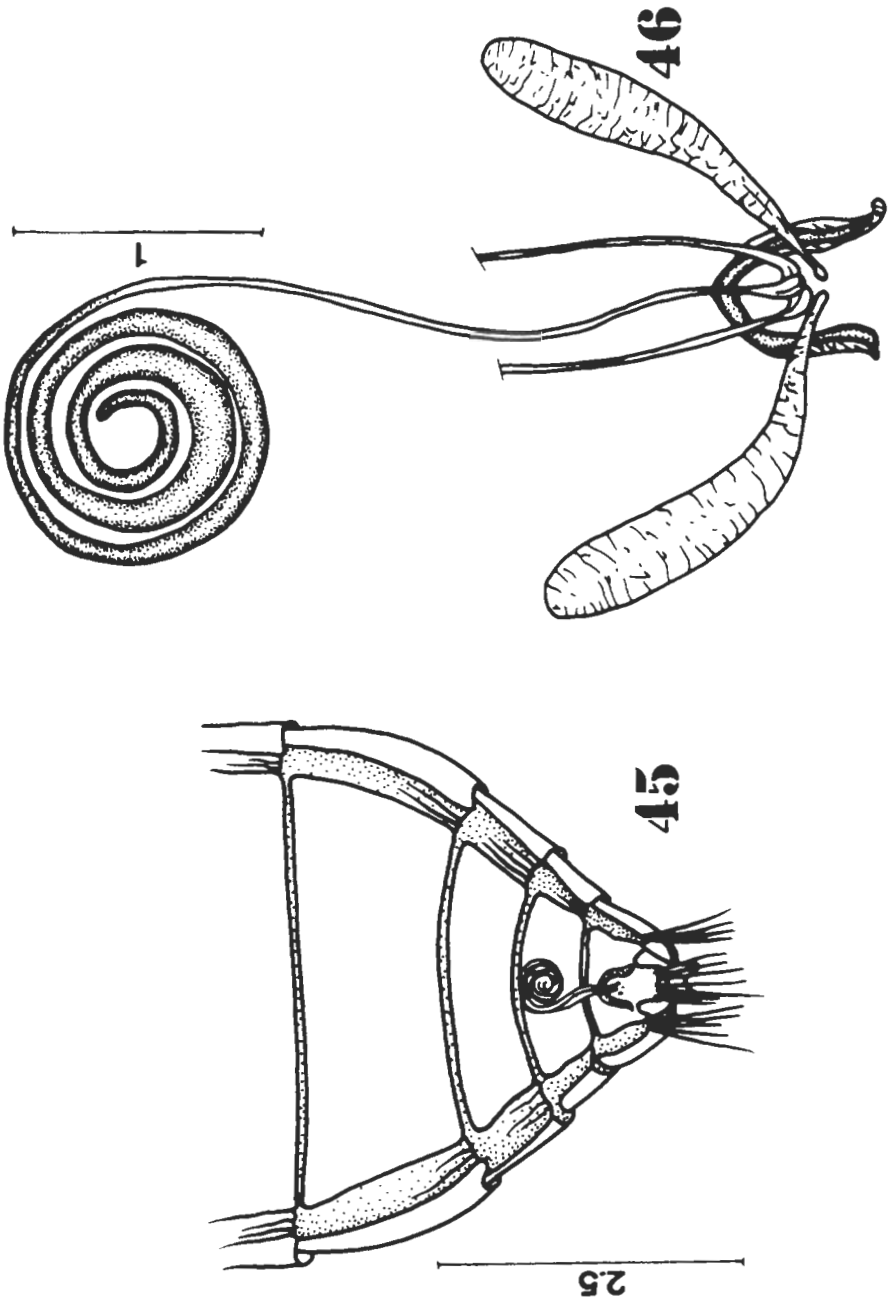

*Smeryngolaphria seabrai* Carrera, male terminalia: 35. lateral view, *in situ;* 36. lateral view; 37. ventral view; 38. dorsal view.



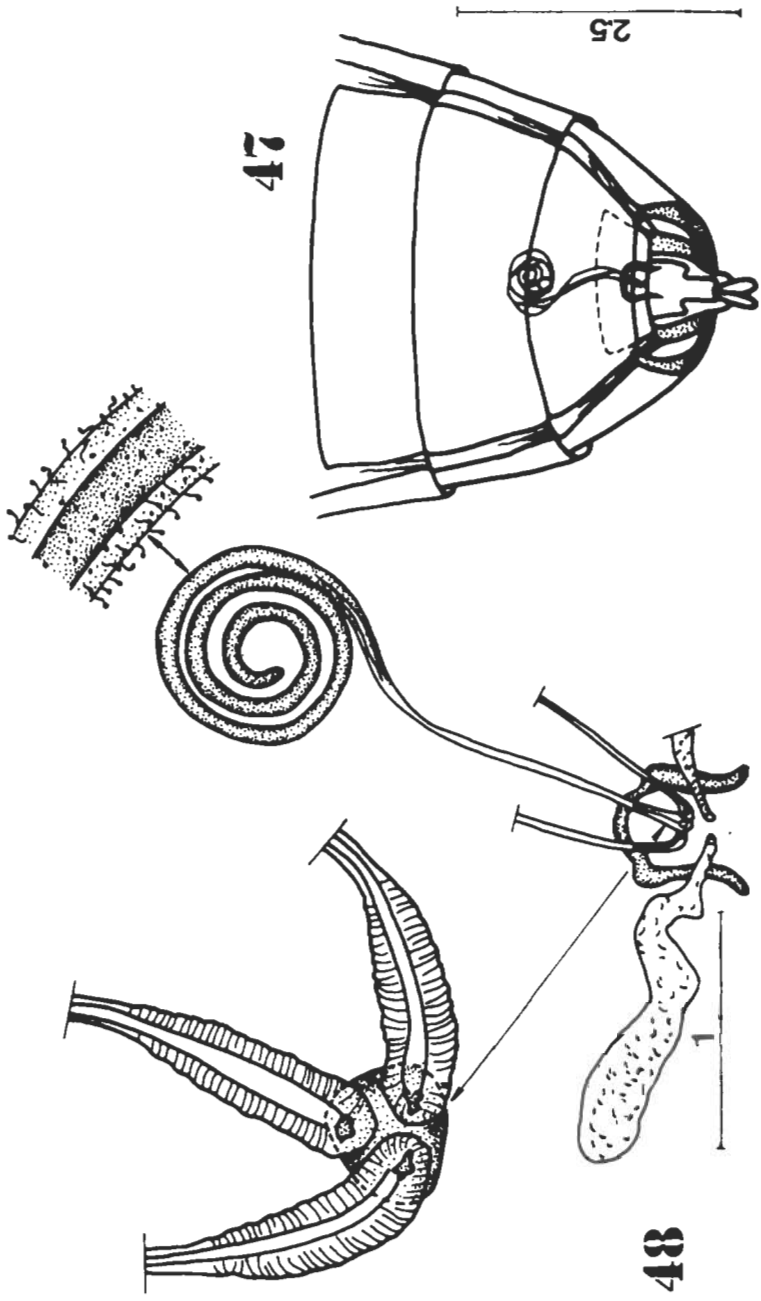

*Smeryngolaphria taperignae*, sp. n., male terminalia: 39. lateral view, *in situ*; 40. lateral view; 41. ventral view; 42. dorsal view.



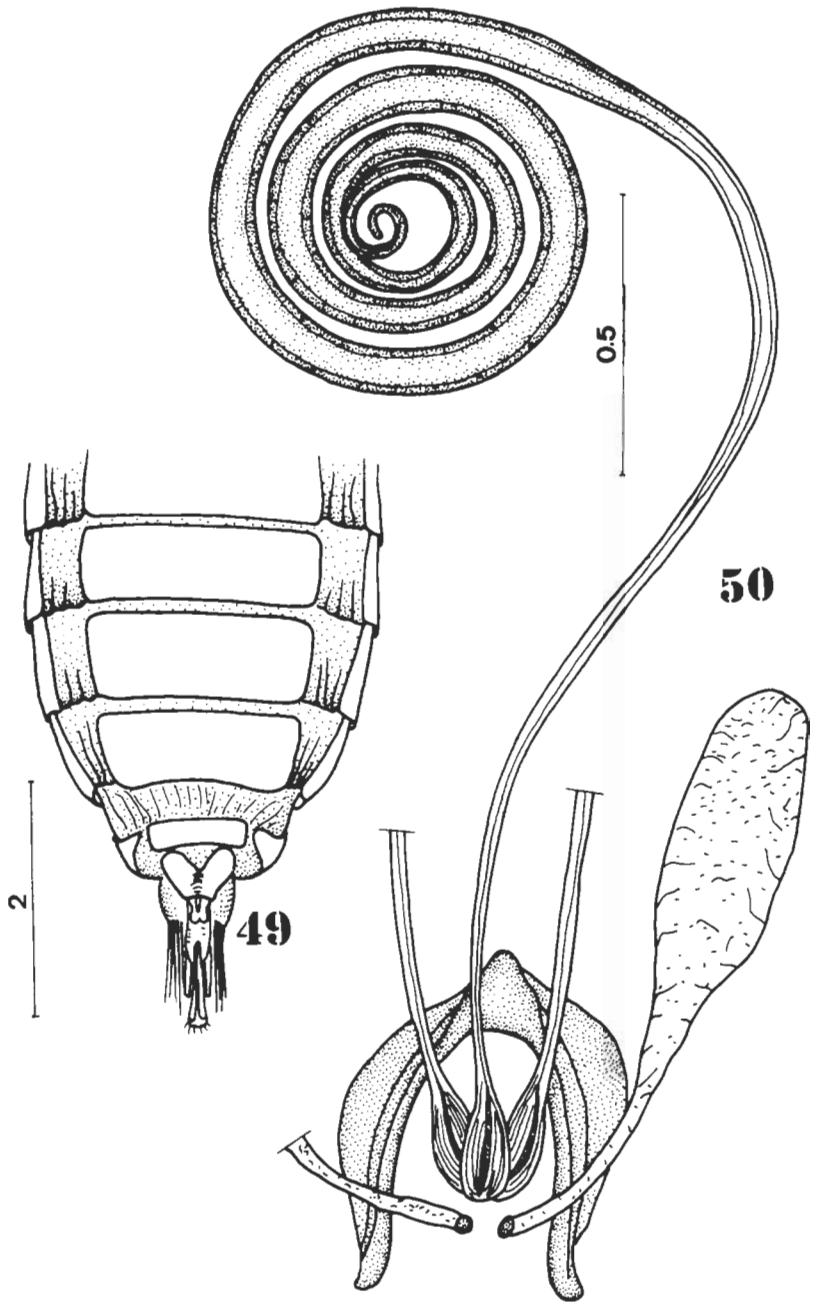

*Neophoneus mustela* Hermann: 43. situation of the spermathecae in the abdomen; 44. spermathecae.




*Lampria sp.*: 45, situation of the spermathecae in the abdomen; 46. spermathecae.




*Brychomyia bicolor* (Wiedemann): 47. situation of the spermathecae in the abdomen; 48. spermathecae.




*Joartigasia sp.*: 49. situation of the spermathecae in the abdomen; 50. spermathecae.

Face without scale-like hairs. Other combinations of characters. Male terminalia and aedeagus as in Figures 51-52, 54-55, 58-59. Female spermathecae as in Figures 53, 56-57, 60. (Holarctic, Afrotropical, Oriental) ..... *Laphria* Meigen, 1803

11(9). Scape short, about as long as wide. Face without scale-like hairs. (Jamaica, Brazil) ..... *Phellopteron* Hull, 1962

Scape elongate, over five times as long as wide. Face with scale-like bristles in addition to normal hairs and bristles ..... 12

12(11). Abdomen clearly pedunculate, wasp-like, the second segment 1/3 to 1/2 width of tergite 4. Female spermathecae as in Figures 61-62. (Cuba, Bolivia, Brazil) ..... *Rhopalogaster* Macquart, 1834

Abdomen not pedunculate. (Brazil) .....
..... *Ichneumolaphria* Carrera, 1951

13(6). $R_2 + 3$ and $R_4$ connected by short extra crossvein (i.e., three submarginal cells present). (Western USA, Mexico) .....
..... *Pogonosoma* Rondani, 1856

$R_2 + 3$ and $R_4$ not connected by a short extra crossvein (i. e., only two submarginal cells present) ..... 14

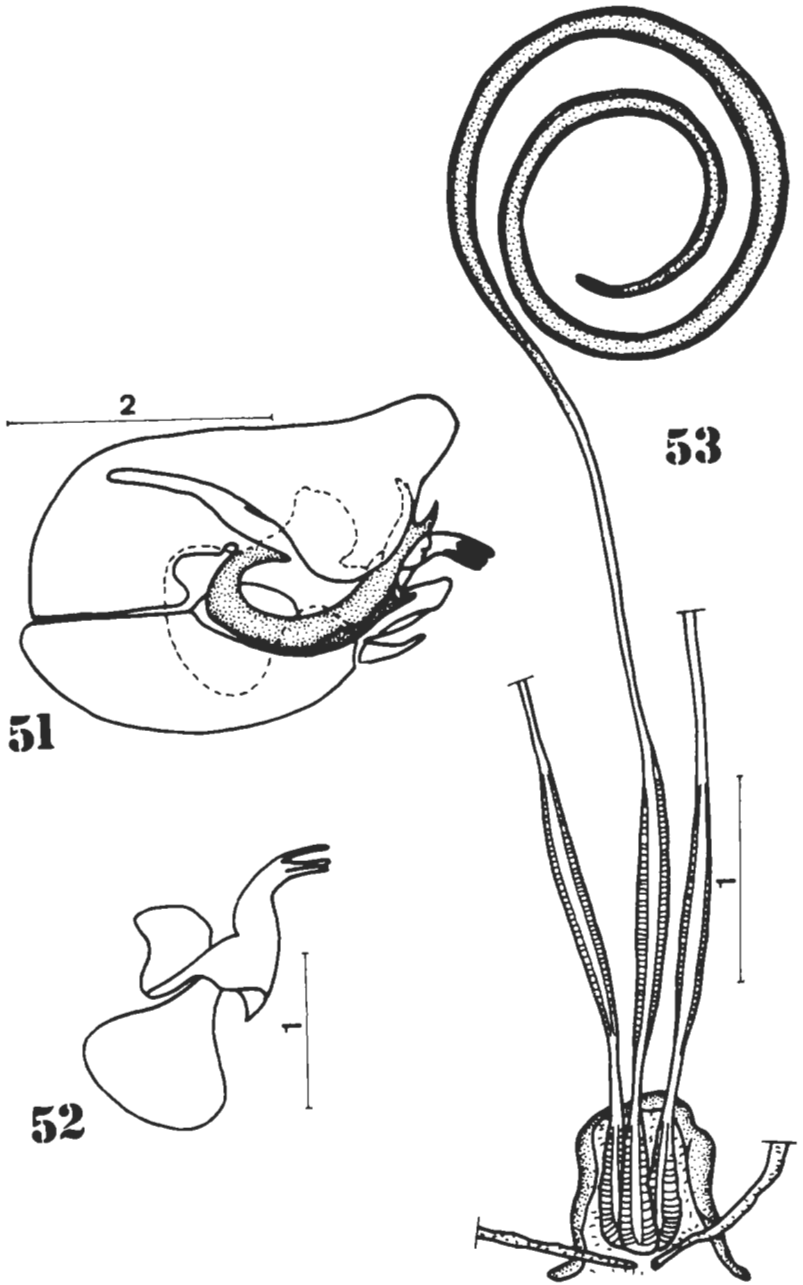
14(13). Apex of proboscis greatly thinned dorsoventrally and pointed in lateral view, but comparatively wide and shovel-like in dorsal view. Anatergite with bristles. Cell $r_5$ open or closed. Female spermathecae as in Figures 63-64. (Neotropical)..... *Pilica* Curran, 1931

Apex of proboscis as greatly narrowed laterally as dorsoventrally. Anatergite bare or pilose ..... 15

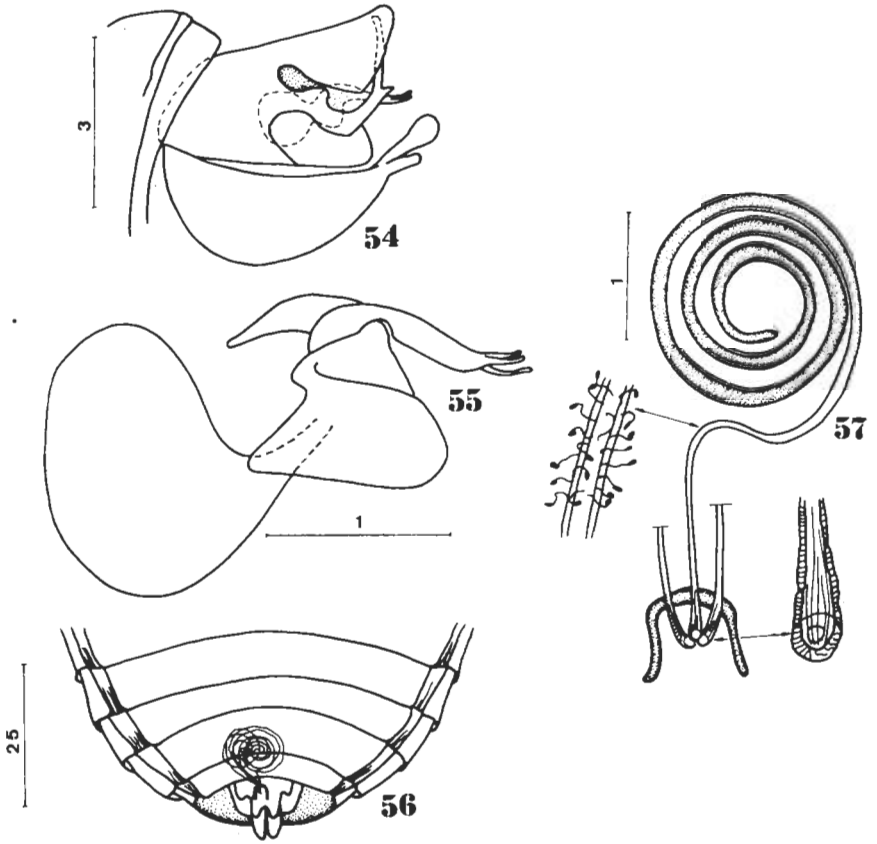
15(14). Ambient vein absent or evanescent. Mystax tectiform, decumbent, extending nearly to base of antennae. Hind femur swollen distally. Pile reduced on thorax and abdomen. Cell $r_5$ closed, with a long stalk (USA) ..... *Cerotainiops* Curran, 1930

Ambient vein normally developed ..... 16

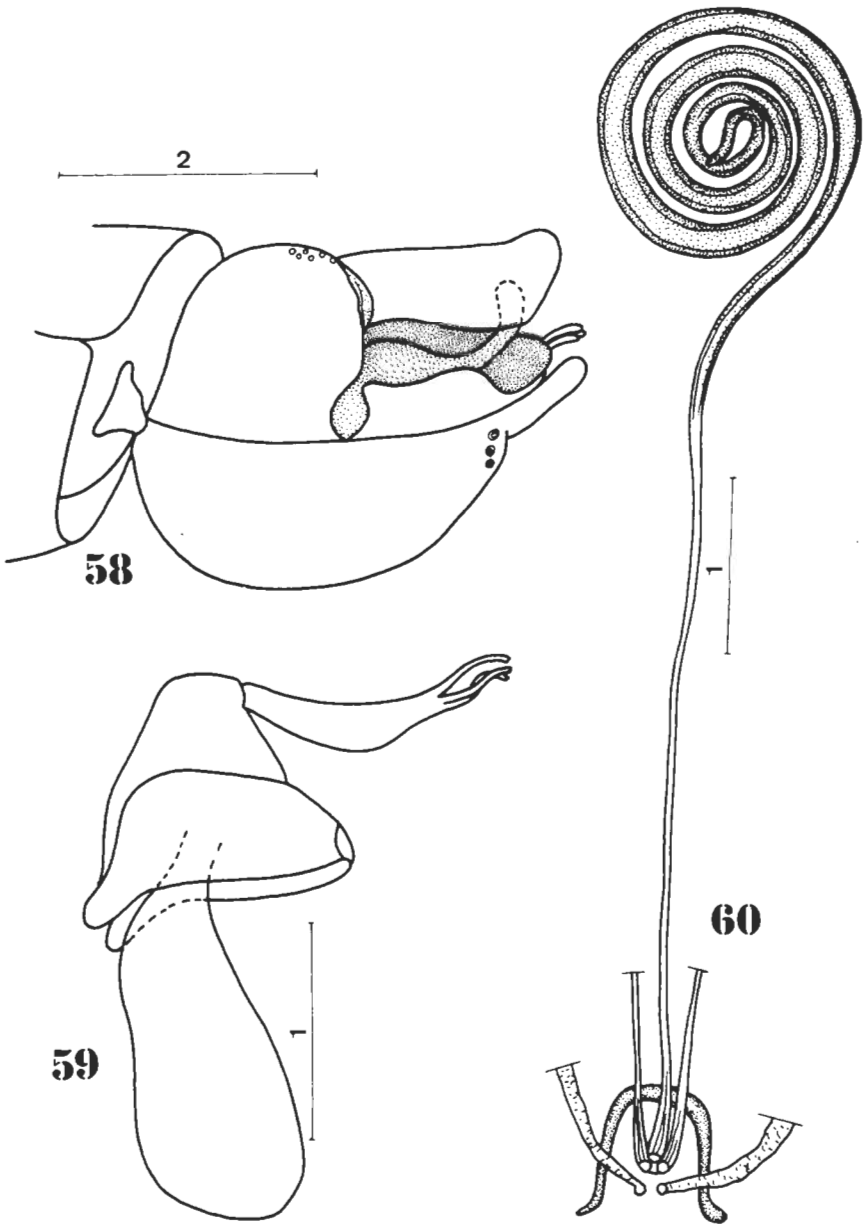
16(15). Mystax dense, flattened, tectiform, directed downwards and forward, beyond and enclosing proboscis. Large flies with broad, rather flattened abdomen and bright colored pile in part. Wing often banded. Mimics of *Eulaema* bees. Anatergite pilose (except in *D. croceiventris*). Female spermathecae as in Figures 69-70. (South America) ...
..... *Dasyllis* Loew, 1851



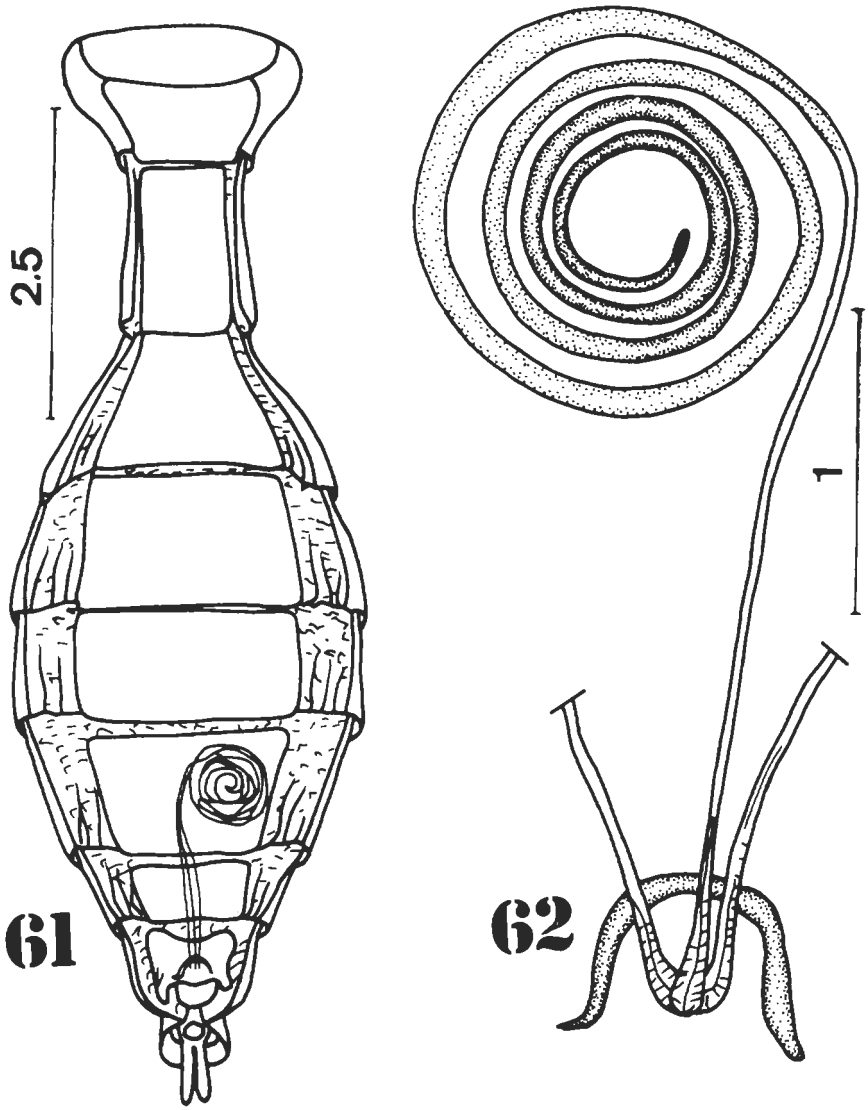

*Laphria flava* (Linnaeus): 51.male terminalia, lateral view; 52. aedeagus, lateral view; 53. spermathecae.



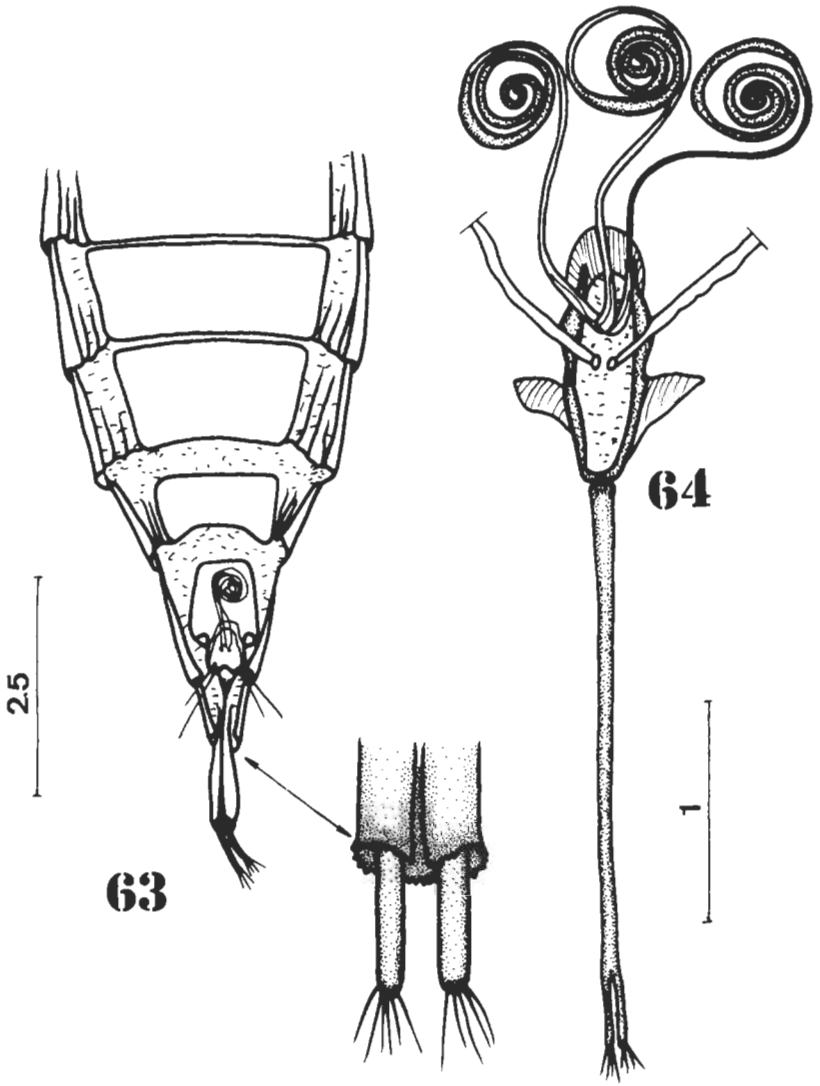

*Laphria flavicollis* (Say): 54. male terminalia, lateral view; 55. aedeagus, lateral view; 56. situation of the spermathecae in the abdomen; 57. spermathecae.



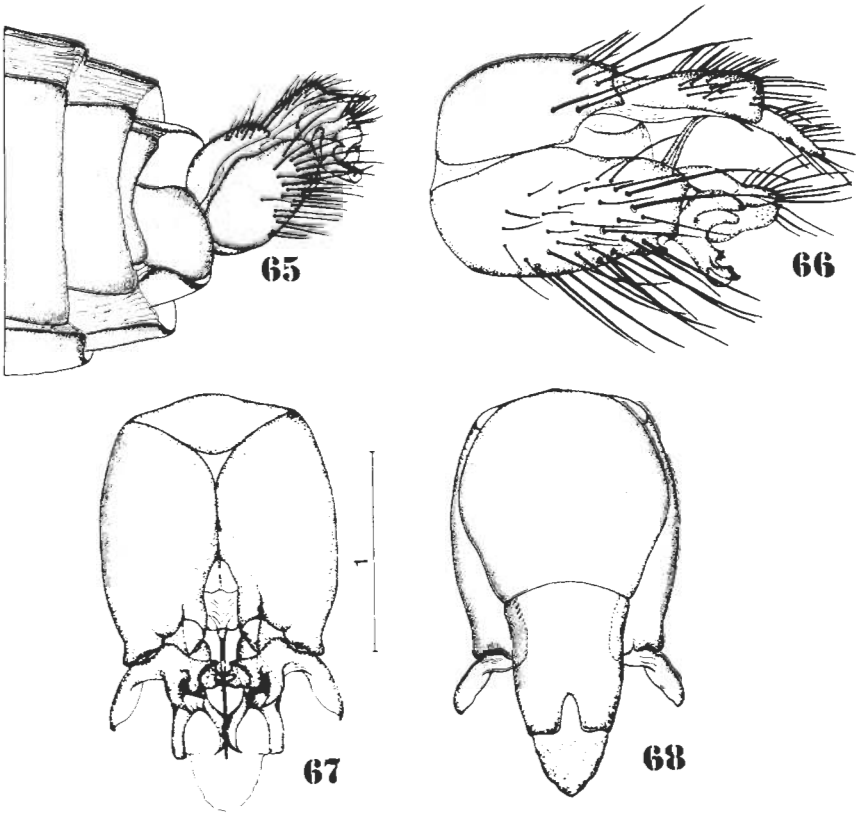

*Laphria ignea* (Macquart): 58. male terminalia, lateral view; 59. aedeagus, lateral view; 60. spermathecae.



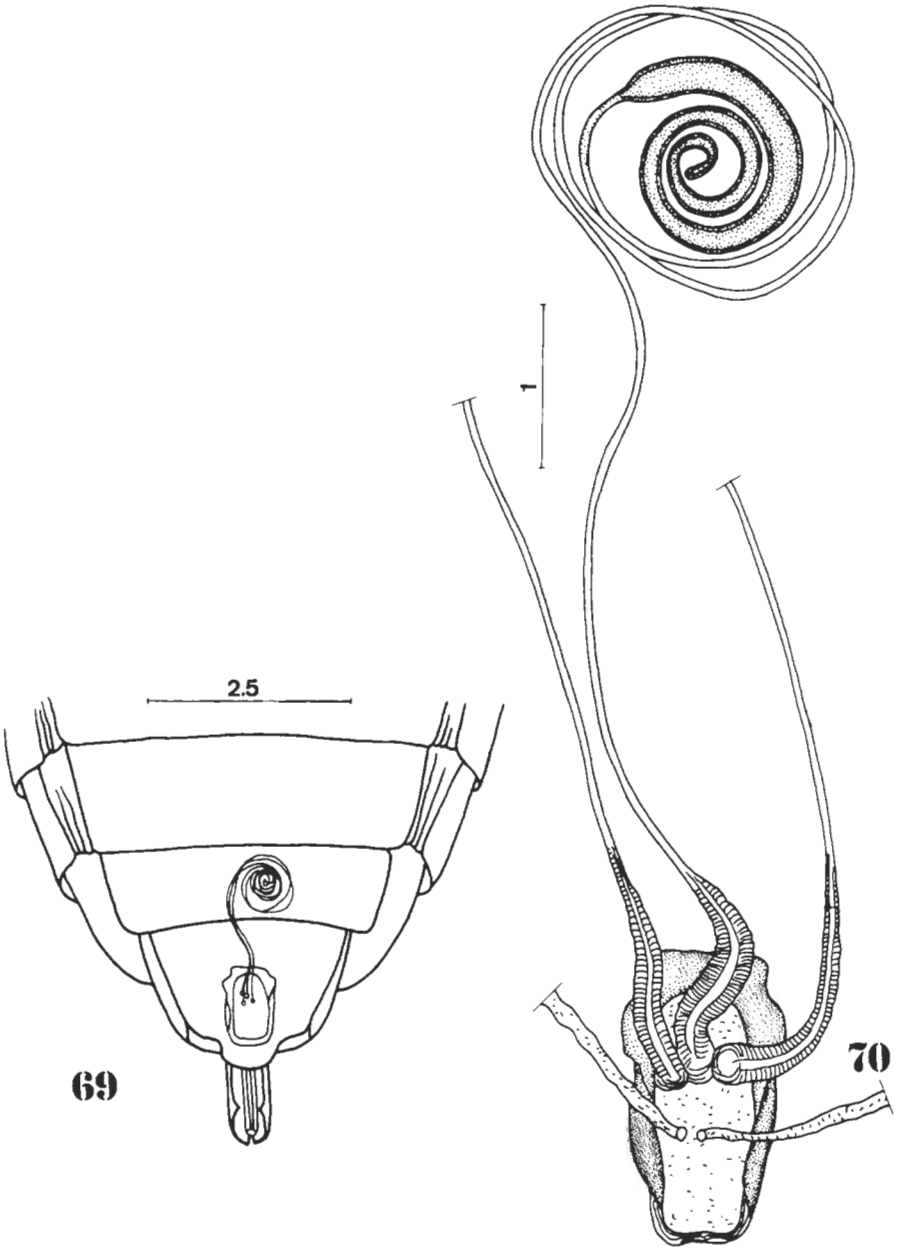

*Rhopalogaster sp.*: 61. situation of the spermathecae in the abdomen; 62. spermathecae.




*Pilica erythrogaster* (Wiedemann): 63. situation of the spermathecae in the abdomen; 64. spermathecae.




*Pilica zanutoi*, sp. n., male terminalia: 65. lateral view, *in situ*; 66. lateral view; 67. ventral view; 68. dorsal view.




*Dasyllis croceiventris* (Wiedemann): 69. situation of the spermathecae in the abdomen; 70. spermathecae.

Mystax hirsute, directed upward and then forward. Small to medium-sized flies. Abdomen elongate, cylindroid, never as above. Pile everywhere more or less reduced and usually moderate in quantity. Anatergite bare. Female spermathecae as in Figures 71-72. (Worldwide) ..... ..... *Andrenosoma* Rondani, 1856

17(1). Large (over 2.5 cm long) fuzzy flies, resembling bumblebees. Entire body densely haired. Second palpal segment enormously swollen and clavate. Proboscis very short and swollen. Second flagellomere stout, cylindrical, apically truncate, twice as long as wide. (Eastern USA, Utah). Tribe DASYLECHIINI, new ..... ..... *Dasylechia* Williston, 1907

Small, relatively bare, generally black flies. Other combinations of characters. Tribe ATOMOSIINI Hermann.

## TRIBE DASYTRICHINI, new

Laphriinae with more or less flat face, never excavated or gibbose. Proboscis almost triangular in cross-section. Postmetacoxal area membranous.

### Genus *Cryptomerynx* Enderlein

*Cryptomerynx* Enderlein, 1914: 254. Type-species, *laphriicornis* Enderlein (orig. des.).

*Alipiolaphria* Carrera, 1951: 116. Type-species, *mirandai* Carrera (orig. des.). *N. Syn.*

*laphriicornis* Enderlein, 1914: 254, Figures 1-2. Type-locality: "Colombia". HT female CRAC.

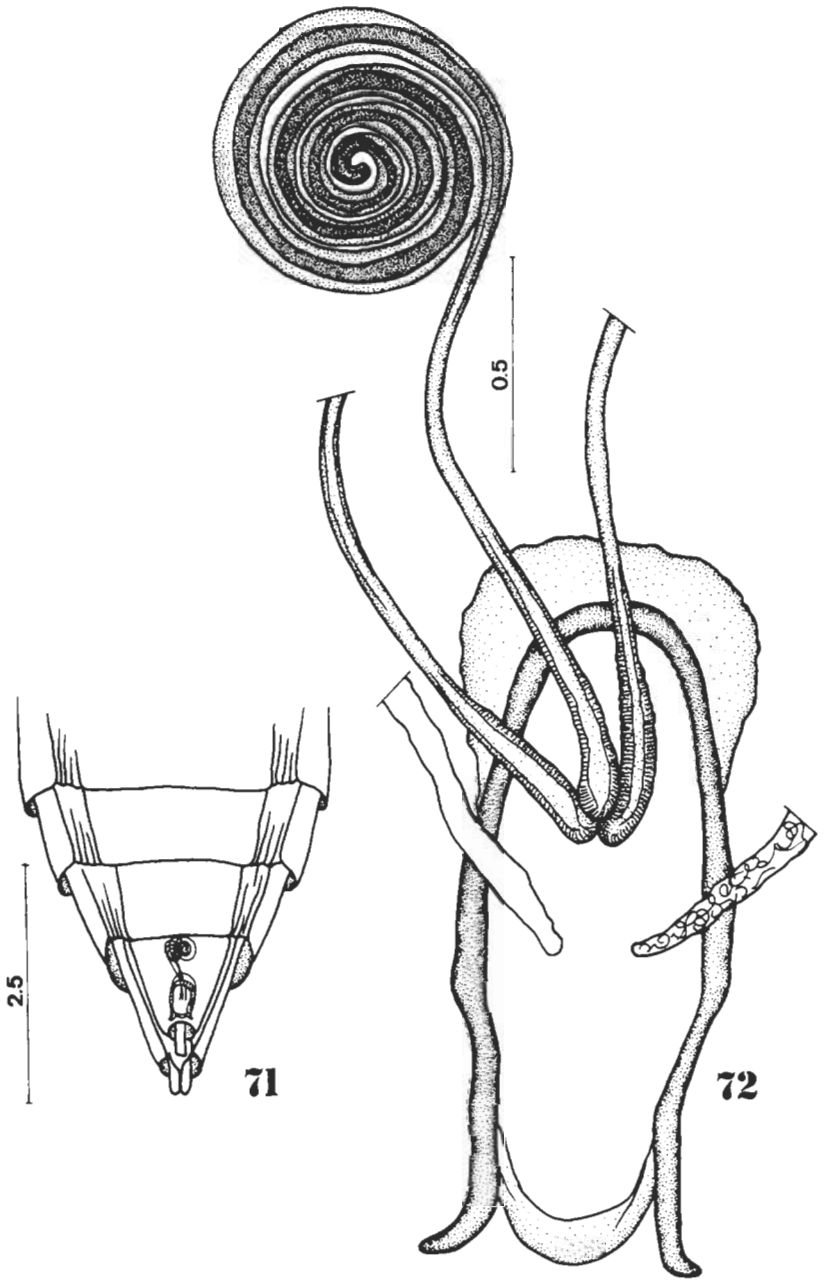
*mirandai* (Carrera), 1951: 117, Figures 4-6, 11-14 (*Alipiolaphria*). Type-locality: Brazíl, Paraná, Curitiba. HT female MZUSP. *N. Comb.*

### Genus *Dasythrix* Loew

*Laphria*, subg. *Dasythrix* Loew, 1851: 21. Type-species, *inornata* Loew (orig. des.).

*inornata* (Loew), 1851: 21 (*Laphria*), Type-locality: "South America". TP BZM.

*leucophaea* Lynch Arribálzaga, 1880: 55. Type-locality: Argentina, Buenos Aires. TP MACN.




*Andrenosoma xanthocnema* (Wiedemann): 71. situation of the spermathecae in the abdomen; 72. spermathecae.

## Genus *Smeryngolaphria* Hermann

*Smeryngolaphria* Hermann, 1912: 226. Type-species, *Laphria melanura* Wiedemann (orig. des.).

*Panamasilus* Curran, 1930: 20. Type-species, *xylota* Curran (orig. des.) = *numitor* (Osten Sacken).

Key to the species

1. Hind femur approximately seven times as long as wide. Thorax black in ground color, without yellowish-red area behind humeral callus, but the latter, the postalar callus and the posterior margin of mesonotum yellowish-red: these areas, plus two dorsocentral stripes largely connected with the humeral calli, a stripe over the transverse suture and an extensive stripe at base of scutellum, all with golden pollinosity (Figure 5). Wing uniformly yellow. Abdomen yellowish-red, with black transversal spots on anterior margins of tergites (Figure 10). Male terminalia as in Figures 31-34. (Central America: Nicaragua, to Colombia) ..... *numitor* (Osten Sacken).

   Hind femur approximately 5 times as long as wide. Mesonotum either uniformly yellowish-red or predominantly black with an yellowish-red area of variable extension behind the humeral calli. (South American species) ..... 2

2(1). Mesonotum entirely unicolorous, yellowish-red ..... 3
   Mesonotum either totally black, with an yellowish-red area more or less extensive behind humeral calli or largely yellowish-red anteriorly and black posteriorly ..... 4

3(2). Upper half of face black, lower half yellow. Antennal flagellomere black. First three abdominal tergites yellowish-red, the fourth with a black triangle on the posterior margin, the following tergites entirely black (Figure 11). Legs yellow, only apex of hind femur and tibia, and all tarsi, black. Wing yellow on basal half, blackish on apical half. Male terminalia as in Figures 27-30. (Brazil: Espírito Santo and Rio de Janeiro) ..... *melanura* (Wiedemann)
   Face entirely yellow. Antennal flagellomere yellowish-red. Abdominal tergites yellowish-red, with dark spots variable in color and extension, transversally on the posterior margin (Figure 12). Legs yellow; sometimes apex of hind femur darkened; apical tarsomere of all legs

black. Wing yellow basally, cinereous on the remainder, with a small dark spot at apex of discoidal cell, which extends itself to cell cua1 and vein $CuA_2$, and another large spot on the apical 4/5. Male terminalia as in Figures 23-26. (Amazonia, Bolivia) ..... ..... *maculipennis* (Macquart)

4(2). Antennal flagellomere black. Wing without dark spots: only microvillose along veins and interior of cells, especially around apex and hind margin. Coxae and trochanters of middle and hind legs, and all tarsomeres (apically) black. Abdominal tergites largely black, laterally yellowish-red (also sometimes posteriorly) (Figure 13). Male terminalia as in Figures 35-38. (Brazil: Rio de Janeiro) ... ..... *seabrai* Carrera

Antennal flagellomere yellowish-red. Wing with a large apical spot, at least, well developed. Other combinations of characters (Amazonian species) ..... 5

5(4). Pleura and legs entirely yellowish. Abdominal tergites with more or less extense black spots. An evident black spot posterior to apex of discoidal cell, in addition to a great dark apical spot ..... 6

Pleura with several black spots upon yellow ground color. Anterior femur totally yellow, or (in only one female) with a little dark spot on dorsal surface, behind middle, or (males) with a large black spot on ventral surface, near apex; apex of middle femora, middle coxae and trochanter, apex of hind femora and hind tibiae, and apical tarsomeres of all legs, black. Abdomen, except for the black base, unicolorous yellowish-red (Figure 14). Male terminalia as in Figures 17-20. Female spermathecae as in Figures 21-22. (Brazil: Amapá and Pará) ..... *gorayebi*, sp. n.

6(5). Tergites 1-3 yellowish-red and tergites 4-6 black (Figure 15). (Only male known). Male terminalia as in Figures 39-42. (Brazil: Pará). ..... *taperignae*, sp. n.

Tergites with a large black stripe anteriorly, which extends (except on tergites 2 and 3) from side to side (Figure 16). (Only female known). (Brazil: Pará) ..... *gurupi*, sp.n.

*Smeryngolaphria gorayebi*, sp. n.

(Figures 7, 14, 17-20, 21-22)

Body length, 18-20 mm; wing length, 15 mm.

Face entirely golden-yellow tomentose, mystax occupying its entire length, golden-yellowish. Frons black, very sparsely golden-yellow and silvery-white pollinose on anterior half, more densely silvery-white pollinose on posterior half, the pollinosity extending throughout occiput. Lateral short hairs of frons and the strong pair of ocellar bristles golden-yellow. Antenna reddish-brown, with golden-yellow bristles ventrally and short black hairs dorsally on scape and pedicel. Palpus and proboscis black, with yellowish-white hairs. Beard white. Occipital bristles and hairs black.

Thorax reddish-brown to yellowish-red in ground color, with distinctive black markings (Figure 7) on pronotum, on an indistinct dorsocentral stripe running along anterior margin of mesonotum, and on entire posterior 1/3 of mesonotum, leaving however postalar calli and a narrow transversal band just in front of scutellum with the reddish-brown ground color. Scutellum black. Hairs on humeri reddish, and one red bristle on postalar callus; all remaining hairs short, semi erect, black. Postscutellar slope black at middle. Pleura with black markings above mid and hind coxae, the latter spot extending to base of abdomen, a spot in front of wing insertion, and another in front of katatergite. Katatergite reddish, with reddish hairs.

Wing yellowish, fumose apically (beyond m-m crossvein); veins yellowish-brown, darker posteriorly in males, and interior of cells, apically and posteriorly, microvillose. Halter yellow.

Legs: Anterior femur totally yellow, or (in only one female) with a small dark spot on dorsal surface, beyond middle of femur, or (in males) with a large black spot on ventral surface, near apex; apex of middle femur, middle coxa and trochanter, apex of hind femur and tibia and apical tarsomeres of all legs, black. Claws reddish at immediate base, black on remainder. Pulvilli yellowish-brown. Vestiture of legs entirely golden-yellow, some bristles at apex of hind femur red.

Abdomen, except for the blackish base, unicolorous reddish-yellow, with concolorous hairs (Figure 14). Male terminalia as in Figures 17-20. Female spermathecae as in Figures 21-22.

Holotype male, BRAZIL, *Pará*: Monte Dourado, 2.XI.1974 (I. S. Gorayeb), in MPEG.

Paratypes: BRAZIL, *Amapá*: Porto Platon, 18. IX.1957 (K. Lenko), 1 female, in MZUSP: *Pará*: Belém, Floresta da APEG, 30.IX-4.X.1983 (I. S. Gorayeb), 1 female, in MPEG; *Pará*: Serra Norte, 10.VIII.1984 (M. F. Torres), 1 female, in MPEG; do., 25-29.X.1983 (I. S. Gorayeb), 1 female, in MZUSP.

This species is dedicated to Dr. Inocêncio S. Gorayeb (MPEG), who collected most of the specimens of this beautiful fly.

*Smeryngolaphria gurupi*, sp. n.

(Figures, 9, 16)

Body length, 16 mm; wing length, 12 mm.

Face reddish-yellow, mystax golden-yellow. Frons black, hairs and ocellar bristles golden-yellow. Occiput black, golden-yellow pollinose, with concolorous bristles and hairs. Palpus and base of proboscis reddish-yellow, remainder of proboscis black, both with yellow hairs. Beard yellowish-white.

Thorax entirely reddish-yellow in ground color, black on pronotum, a well-defined dorsocentral stripe on anterior slope of mesonotum and a large spot on posterior 2/3 of mesonotum, this large spot interrupted at transverse suture and not covering postalar calli and a transverse stripe at posterior slope of mesonotum, in front of scutellum (Figure 9). Hairs and bristles of mesonotum reddish-yellow, the larger mesonotal bristles black. Postscutellar slope black on middle, golden-yellow pollinose. Pleura uniformly reddish-yellow, with yellowish vestiture.

Wing yellowish, with yellow microvillosity on basal 2/3 (up to r-m crossvein), and distinctly fumose and blackish microvillose on apical 1/3. Halter yellow.

Legs uniformly reddish, with yellowish-red vestiture. Claws yellow at base, black on apical 1/3 or more. Pulvilli yellowish-brown.

Abdomen reddish-yellow, with a more or less large black stripe anteriorly on tergites, which, excepting tergites 2-3, extends from side to side (Figure 16). Vestiture golden-yellow.

Male unknown.

Holotype female, BRAZIL, *Pará*: Rio Gurupi, Aldeia Gurupi, 4.V.1963 (B. Malkin), in MZUSP.

*Smeryngolaphria maculipennis* (Macquart)

(Figures 12, 23-26)

*Laphria maculipennis* Macquart, 1846:201 (1846:73), pl. 7, Figure 14. Type-locality: "Guyana". ST, Oxf (1 male, 1 female, 1 spec. without tip of abdomen).

*?Smeryngolaphria pictipennis* Hermann, 1912: 227. Type-locality: Bolivia, Mapiri, San Ernesto, 300 m.

*Laphria aurata* Enderlein, 1914: 252. Type-locality: Brazil, Pará, Óbidos (as Amazonas, in error).

Material examined. BRAZIL. *Amapá*: Serra do Navio, 25.IX.1957, 14.X.1957, 21.X.1957 (J. Lane), 2 females, 1 male; do., 13.X.1957, 30.X.1957, (K. Lenko), 2 males, in MZUSP; Mazagão, do Jari a V. Nova, 1958 (Damasceno), 2 females, in MPEG.

*Pará*: Santarém, Fazenda Taperinha, 29.XII.1967 – 9.I.1968 (N. Papavero), 1 female, MZUSP; Óbidos, VII. 1985 (J. Oliveira), 2 males, MPEG; Cachoeira do Breu, R. Cuminá, 21.IX.1963 (Almeida), 1 female, MPEG; Oriximiná, boca do Cuminá-Miri, IX. 1969 (N. Papavero), 1 male, MZUSP; Belém (Mocambo), 17.VII.1971 (T. Pimentel), 1 male, MPEG.

*Amazonas:* Tefé, XII.1939 (R. Carvalho), 1 male, 1 female, MPEG; Rio Negro, S. Gabriel, 7.IX.1927 (J. F. Zikán), 1 male, MZUSP.

*Smeryngolaphria melanura* (Wiedemann)

(Figures 11, 27-30)

*Laphria melanura* Wiedemann, 1828: 508. Type-locality: "Brazil" (Freyreiss). Type male, FRAN (face eaten away by dermestids).

Material examined. BRAZIL. *Espírito Santo:* Fazenda Jerusalém, 17.II.1914 (J. F. Zikán), 1 male, MZUSP.

*Smeryngolaphria numitor* (Osten Sacken)

(Figures 5, 10, 31-34)

*Laphria numitor* Osten Sacken, 1887: 185. Type-locality: Nicaragua, Chontales. Type female, BMNH.

*Panamasilus xylota* Curran, 1930: 20, Figure 3. Type-locality: Panama, Canal Zone, Barro Colorado I. Type, AMNH.

*Panamasilus panamensis* Curran, 1942: 57. Type-locality: "Panama". No type designated (maybe a *lapsus calami* for *P. xylota*).

Material examined. PANAMA: France Field, 19.VI.1930, 1 male, MZUSP; Barro Colorado I., 7.II.1936 (F. E.Lutz), 1 female, MPEG; do., XII.1928 (paratype of *Panamasilus xylota* Curran), MZUSP.

*Smeryngolaphria seabrai* Carrera

(Figures 6, 13, 35-38)

*Smeryngolaphria seabrai* Carrera, 1960: 153, Figure 6. Type-locality: Brazil, Rio de Janeiro, Rio de Janeiro (Tijuca). Type, MZUSP.

Material examined. BRAZIL. *Rio de Janeiro*: Rio de Janeiro (Corcovado), no date (L. Travassos), 1 male, MZUSP; do. (Alto da Boa Vista, Tijuca), 27.XII.1950 (C. A. C. Seabra), 1 female, paratype, MZUSP.

*Smeryngolaphria taperignae*, sp. n.

(Figures 8, 15, 39-42)

Body length, 20 mm; wing length, 15 mm.

Face golden-yellow, mystax of same color. Frons black, hairs and ocellar bristles golden-yellow. Occiput black, silvery-yellow pollinose, bristles and hairs golden-yellow. Palpus and base of proboscis yellow, apex of proboscis black, hairs and bristles of both yellow. Beard yellow.

Trorax yellowish-red, black markings as in Figure 8. Pleura unicolorous yellowish-red. Vestiture of thorax reddish-yellow, some hairs on mesonotum and disc of scutellum black. Scutellum reddish-yellow. Postscutellar slope reddish-yellow.

Wing yellow, transparent at base (up to or slightly beyond fork of $R_5$); then a black, elongated, cloud around apex of discoidal cell extending posteriorly to apex of cubital; follows an area of yellow microvillosity, very evident, and finally at apex (after level of r-m crossvein) an area of blackish microvillosity. Halter yellow.

Legs uniformly yellowish, only apex of hind tibiae and posterior tarsi blackened; vestiture golden-yellow.

Abdomen reddish-yellow, tergites 4-6 black (Figure 15). Male terminalia as in Figures 39-42.

Female unknown.

Holotype male, BRAZIL, *Pará:* Santarém, Fazenda Taperinha, 1-11.II.1968 (N. Papavero), in MZUSP.

Paratype male, BRAZIL, *Pará*: Jacareacanga, X.1919 (M. Alvarenga), in MPEG.

## Tribe NEOPHONEINI, new

Proboscis subcylindrical, its middorsal margin with numerous, long, stout, proclinate bristles. Anatergite with fine hairs. Postmetacoxal area membranous.

### Genus *Neophoneus* Williston

*Phoneus* Macquart, 1838: 79 (1839: 195) (preocc. Kaup, 1829). Type-species, *servillei* Macquart (mon.)

*Neophoneus* Williston, 1889: 255. Type-species, *Phoneus servillei* Macquart (aut.). (Nom. nov. for *Phoneus* Macquart).

*amandus* (Walker), 1849: 373 (*Laphria*). Type-locality: "Brazil". TP BMNH (abdmen lacking).

*servillei* (Macquart), 1838: 79 (1839:195), pl. 7, Figures 5-5a (*Ploneus*). Type-locality: "Brazil". Syntypes male and female lost.

*?mustela* Hermann, 1912: 269, Figure 86. "Surinam" (female), "Brazil: Rio Grande do Sul" (male). Syntypes male and female. MUN.

Tribe ANDRENOSOMINI HULL

Genus *Dasyllis* Loew

*Laphria*, subg. *Dasyllis* Loew, 1851: 20. Type-species, *haemorrhoa* Wiedemann (orig. des.).

Key to species

1. Abdomen with abundant yellow pilosity covering almost entire surface of tergites, or disposed in alternate bands of yellow and black hairs ..... 2
Abdomen with predominantly black pilosity, a few yellow or red hairs in the last segments and terminalia ..... 4

2(1). Wing fumose all over the surface, with only a few paler areas in the interior of cells. Anatergite bare. (Brazil: Amazonia, Rio de Janeiro, São Paulo) ..... *croceiventris* (Wiedemann).
Central part of wing fumose with a well defined tranverse pale stripe, rarely indistinct. Anatergite with hairs ..... 3

3(2). All abdominal tergites yellow with golden-yellow hairs. (French Guiana, Brazil: Amapá, Pará, Mato Grosso) .... *fascipennis* (Macquart)
Tergites black, with black hairs, except on posterior margin, which is yellow with yellow hairs; apical two tergites reddish-yellow, with reddish hairs. (Central America to se. Brasil) ..... ..... *haermorrhoa* (Wiedemann)

4(1). Mystax and hairs of head entirely black (Paraguay) ..... ..... *erythrura* Hermann
Mystax white above, black below; hairs of head white (Paraguay) ..... ..... *albicollis* Bigot

*Dasyllis albicollis* Bigot

*Dasyllis albicollis* Bigot, 1878: 229. Type-locality: "South America". HT female OXF.

Material examined. PARAGUAY: Sapucay, 1904-251 (W. Foster), 1 male, BMNH.

*Dasyllis croceiventris* (Wiedemann)

*Laphria croceiventris* Wiedemann, 1821: 234. Type-locality: "Brazil". HT?

Material examined. BRAZIL. *Amazonas*: Manaus, 1933-189 (Le Moult), 1 male, BMNH; *Amapá*: Mazagão, 1958 (Damasceno), 2 males, 1 female,

MZUSP; *Pará*: Óbidos, 1915-425 (M. de Mathan), 2 males, BMNH; *Rio de Janeiro*: Rio de Janeiro, X. 1906 (von Bönningshausen), 1 female, USNM; *São Paulo*: Mogi das Cruzes, I.1939 (Carrera), 1 male, USNM; do., 1 specimen without terminalia, MZUSP; do., II.1939 (Carrera), 1 female, MZUSP; Itaquaquecetuba, II.? (Townsend), 1 female, USNM; Barueri, 22.II.1956 (Lenko), 1 male, MZUSP.

*Dasyllis erythrura* Hermann

*Dasyllis erythrura* Hermann, 1912: 238. Type-locality: "Paraguay". ST male, female MUN.

Material examined. Syntypes of Hermann in MUN.

*Dasyllis fascipennis* (Macquart)

*Laphria fascipennis* Macquart, 1834: 284. Type-locality: "Cayenne". HT lost.

Material examined. FRENCH GUIANA: Maroni, no other data (Coll. Séguy, 1919), 1 female, MNHN.

BRAZIL. *Pará*: Óbidos, IX. 1954 (J. Brazilino), 1 male, MZUSP. *Mato Grosso:* Cuiabá, II. 1955 (Camargo Fº), 1 female, MZUSP.

*Dasyllis haemorrhoa* (Wiedemann)

*Laphria haemorrhoa* Wiedemann, 1830: 645. Type-locality: Brazil, Bahia, HT?

*Laphria preaepotens* Macquart, 1846: 202 (1846: 74), pl. 7, Figure 17. Type-locality: French Guiana, Cayenne. Type lost.

Material examined. COSTA RICA: Higuito, San Mateo, XII.1916 (Schild), 1 female, USNM.

PANAMA: Canal Zone (Zetek), 1 female; Empire, no other data, 1 male, both in USNM.

PERU: Lima, IX. 1935 (Woytkowski), 1 male, USNM; do., X.1935, VIII.1935 (Woytkowski), 2 females, USNM; Rioja, San Martín, XI.1936 (Woytkowski), 1 female, USNM; Satipo, X.1942, VI.1942 (Paprzicki), 2 females, USNM; Iquitos, VI.1931 (no coll.), 1 female, USNM; Jumbatis, r. Huallaga, 350 m, X.1932 (Klug), 1 male, USNM; "Upper Amazons" (Mounsey), 1 female, BMNH; Previsto, 260 m, VI.1965 (Schunke), 1 male, BMNH.

BRAZIL. *Amazonas*: Tefé (no other data), 1 male, MUN; do. (as Ega), 57-20 (H. W. Bates), 2 females, BMNH; do., 1933-189 (Le Moult), 1 male, BMNH: *Espírito Santo*: Conceição da Barra, I.1970 (C. Elias), 1 female, MZUSP; *Rio de Janeiro:* Angra dos Reis, III. 1934 (L. Travassos Fº), 1 female, MZUSP.

BOLIVIA: no other data (Coll. Hermann), 1 male, MUN; Mapiri, San Carlos, 800 m, IV. 1903 (Schnuse), 1 female, MUN.

## Genus *Pilica* Curran

*Pilica* Curran, 1931: 20. Type-species, *Laphria formidolosa* Walker (orig. des.).

Key to South American species

1. Cell r5 closed or closed and petiolate ..... 2
   Cell r5 open ..... 3

2(1). Gonostylus bearing on its apex a group of golden-yellow bristly hairs (Brazil: Minas Gerais) ..... *cyrtophora* (Hermann)
   Gonostylus bearing on its apex a group of black, strongly chitinized, spine-like bristles (Amazonia, ne. and se. Brazil) ..... *erythrogaster* (Wiedemann)

3(1). Bristles of thorax and scutellum entirely black ..... 6
   Bristles of thorax and scutellum yellowish-red ..... 4

4(3). Legs predominantly red, only basal anterior half of fore and middle femora, and tarsi, black; all femora strongly incrassate (Brazil: Mato Grosso, w. São Paulo) ..... *zanutoi*, sp. n.
   Legs black. Femora not so incrassate ..... 5

5(4). Abdomen predominantly brownish-black, at most sides of tergites 1-2 reddish. Wing except for the dark apical 1/4, yellowish with yellowish veins (Amazonia, se. Brazil) ... *rufipennis* (Wiedemann)
   Abdomen entirely red, with yellow vestiture. Wing with clouds of brown and entirely brownish-black veins (Bolivia) ..... *phoenicogaster* (Hermann)

6(3). Abdomen and legs shining blue ..... 7
   Abdomen never as above ..... 8

7(5). Larger species (23-25 mm). Scutellum, abdomen and legs entirely shining blue. Tarsi with reddish-brown, dense pubescence beneath. Wing very dark (Central America, Guyana, Venezuela, Peru, Bolivia) ..... *minos* (Bromley)
   Smaller species (11-14 mm). Abdominal tergite 7 red; sides of tergites 1-4 with a grey pollinose triangle. Mesonotum with evident greyish pollinose stripes. Wing clearer (Colombia to Guianas) ..... *rubidapex* (Hermann)

8(6). Entirely black species with fumose wing (Brazil: Amazonas and Pará, south to Santa Catarina) ..... *funebris*, sp. n.
At least terminalia red. Wing with pale basal portion ..... 9

9(8). Larger species (25 mm). Tergites 1-6 black, remaining ones red (Amazonia) ..... *lupus* (Bromley)
Smaller species (14-18 mm). Tergites 1-5 black, remainder red (Venela, Guianas, Amazonia, se. and s. Brazil) ..... *pyrrhopyga* (Wiedemann)

*Pilica erythrogaster* (Wiedemann)

*Laphria erythrogaster* Wiedemann, 1828: 523. Type-locality: "Brazil". ST males FRAN.
*Laphria contusa* Wiedemann, 1828: 587. Type-locality: "Brazil". HT male FRAN. *N. Syn.*
*Laphria clausicella* Macquart, 1850: 378 (1850: 74), pl. 7, Figure 6. Type-locality: "Guiana". HT female OXF.
*Laphria laticornis* Walker, 1855: 535. Type-locality: Brazil, Pará (i. e., Belém). HT BMNH.

Material examined. BRAZIL. *Amapá: Serra do Navio*, X. 1957 (Lane), 8 males and 4 females; Santana, X.1957 (Lane), 2 males and 1 female; Porto Platon, IX.1957 (Lane), 2 males. Rondônia: Vilhena, XI.1960 (Alvarenga), 1 male; Porto Velho, XI.1954 (Pereira, Werner, Dente & Alvarenga), 2 males. *Amazonas*: Serra da Neblina, 230 m, Rio Tucano, XII.1965 (Dente), 2 males; Manaus, VI. 1959 (Elias), 41 males (some with stump of "$R_3$" on wing) and 21 females; do., Igarapé do Francês, XI.1935 (Elias & Roppa), 11 males, 4 females; do., Igarapé da Jibóia, V. 1955 (Elias), 1 female; Estrada BR-17, km 23, X.1955 (Elias & Roppa), 2 males, 1 female; do., XI.1957 (Elias & Roppa), 9 males, 6 females; Manaus, IV.1959 (Elias), 7 males. *Pará*: Barreirinhas, Rio Tapajós, X-XI.1970 (Expd. Perm. Amaz.), 5 males, 2 females; Belém, XII. 1962 (Bechyné), 1 male; Jacareacanga, X. 1959 (Alvarenga), 1 female; Óbidos, VII.1959, VII.1956, XI.1956 (Oliveira), 2 males, 1 female; Cachimbo, X. 1955 (Pereira), 1 male; Mangabeira, Mocajuba, X. 1913 (Rego), 1 male; Belém (Utinga), VIII.1936 (Almeida), 1 female. *Maranhão:* São Luís, no other data, 1 male. *Pernambuco:* Água Azul, Vicência, VI.1971 (Exp. Acad. Bras. Ciências/MZUSP), 1 male. *Espírito Santo:* Itaguaçu, X.1970 (Elias), 1 male; Baixo Guandu, X.1970 (Elias), 5 males, 1 female; Parque Sooretama, Cupido, II-III.1948 (Freitas & Travassos), male and female *in copula*; Córrego do Itá, XI-XII.1956 (Zikán), 1 female. *Rio de Janeiro*: Floresta da Tijuca (Seabra), 3 males; Japuíba, Angra dos Reis, I. 1935 (Mendes), 1 male. All in MZUSP.

*Pilica funebris*, sp. n.

Body length, 18 mm; wing length, 13 mm.

An entirely black species, with fumose wings.

Head black. Mystax mixed white and black, hairs above mystax white. Broad sides of face silvery-white tomentose. Hairs and bristles on frons black. Occiput white pollinose, with black hairs and bristles. Beard white. Hairs on palpus and proboscis white.

Thorax uniformly black, sparsely brown pollinose on mesonotum, with additional silvery-white sparse pollen on two longitudinal median stripes and pleura. Hairs and bristles black. Postalar calli dark reddish-brown.

Wing brownish fumose, paler apically and posteriorly. Halter dark yellow.

Legs black, with white and black bristles and long white hairs. Claws black, pulvilli yellowish-brown.

Abdomen totally black, with black hairs and bristles. Terminalia of male partly shining red-brown.

Holotype male, BRAZIL, *São Paulo*: Onda Verde (Fazenda São João), I.1946 (F. Lane), in MZUSP.

Paratypes. BRAZIL, *Amazonas:* Serra da Neblina, 230 m, Rio Tucano, 4.XII.1965 (Dente), 1 female. *Pará*: Cachimbo, X.1955 (Pereira), 1 male. *Mato Grosso*: Barra do Tapirapé, 1940 (Carvalho), 1 male. *Mato Grosso do Sul*: Maracaju, V.1937 (Serviço de Febre Amarela), 1 specimen without terminalia. *Goiás*: Goiânia, Campinas, I.1936 (Spitz), 1 male. *Pernambuco*: Dois Irmãos, 10. IX.1941 (Carvalho), 1 female. *Minas Gerais*: Araguari, XII.1931 (Spitz), 1 female. *São Paulo*: Araçatuba (Córrego Azul), II.1946 (Barretto), 1 male. *Santa Catarina*: Nova Teutônia, no date (Plaumann), 1 male. All in MZUSP.

*Pilica lupus* (Bromley)

*Andrenosoma lupus* Bromley, 1931: 130. Type-locality: Brazil, Amazonas, Tefé (as Ega). HT male BMNH.

Material examined. BRAZIL, *Pará*: Óbidos (Colônia Rio Branco), V.1953 (J. Brazilino), 1 male and 1 female, in MZUSP.

*Pilica minos* (Bromley)

*Andrenosoma minos* Bromley, 1931: 130. Type-locality: Brazil, "Amazon River", HT BMNH.

*Andrenosoma cyaniventris* Bromley, 1934: 344, Figure 23. Type-locality: Guyana, Tukeit. HT male AMNH. *N. Syn.*

Material examined. VENEZUELA, *Bolívar*. Sierra de Lema, Km 122 Carretera El Dorado-Santa Elena, 1000 m, 14.IV.1957 (Fernandez Y. & Rosales), 1 male and 1 female.

ECUADOR: Jarugui (Staundiger & Bang-Haas vend. V.1937), 1 female.

BRAZIL, *Amazonas*: Maués, XII.1936 (no coll.), 2 females; São Gabriel, Rio Negro, 1935 (Worontzov), 1 spec. without terminalia; Tabatinga, several dates (Oliveira), 2 males, 2 females. All in MZUSP.

*Pilica phoenicogaster* (Hermann)

*Nusa phoenicogaster* Hermann, 1912: 248. Type-locality: Bolivia, Mapiri, Sarampiuní, 700 m; San Ernesto; San Carlos, 800 m; "Bolivia". ST MUN, BMNH, AMNH, WIEN.

Material examined. Hermann's syntypes, plus 1 male e 1 female from Peru, Iquitos and Rio Morona, in AMNH.

BRAZIL, *Amazonas*: Manaus, Lagoa de Marajó, 23.I.1956 (Elias), 1 female. *Pará*: Mangabeira, Mocajuba, IX.1952 (Rego), 1 male; Canindé, Rio Gurupi, IV.1963 (Malkin & Pinheiros), 1 female. In MZUSP.

*Pilica pyrrhopyga* (Wiedemann)

*Laphria pyrrhopyga* Wiedemann, 1828: 515. Type-locality: "Brazil". HT FRAN.

*Andrenosoma punctata* Bromley, 1934: 394. Type-locality: Guyana, Bartica, Kartabo, HT female AMNH. *N. Syn.*

Material examined. VENEZUELA. *Bolívar*: Guayaraca, Auyantepui, 1110 m, IV.1956 (Fernandes Y. & Rosales), 1 male.

BRAZIL, *Amapá:* Serra do Navio, X.1957 (Lenko), 7 males; do., X.1957 (Lane), 12 males, 3 females; VIII.1959 (Bicelli), 1 male; Porto Platon, IX.1957 (Lane), 2 females, 1 male. *Amazonas*: Serra da Neblina, 230 m, R. Tucano, XII.1965 (Dente), 1 female; Manaus (Igarapé da Água Branca), XII.1955 (Elias & Roppa), 1 female; Manaus, VI.1959 (Elias), 1 female; do., IX.1962 (Lenko), 1 female; do., X.1957 (Elias & Roppa), 1 male. *Pará:* Guamá, V.1956 (Lobato), 1 female; Óbidos, XI. 1953, XII.1955 (Brazilino), 1 male and 1 female; Santarém, Fazenda Taperinha, 1-11.II.1968, XI.1969, X-XI.1970 (N. Papavero), 3 males and 2 females. *Mato Grosso:* Utiariti, Rio Papagaio, XI.1966 (Lenko & Pereira), 1 female; Maracaju, II. 1937, 1 female. *Rio de Janeiro:* several dates and collectors, 4 females and 4 males. *São Paulo:* Anhembi, XI.1954 (Travassos Fº), 1 female; Guarujá, I.1942 (Carrera), 1 female; Alto da Serra, III.1957 (Bokermann), 1 male; São Paulo (Horto da Cantareira), IV.1936 (Travassos & Travassos Fº), 1 male; Araçatuba (Córrego Azul), IV.1947 (Barretto), 1 female. *Paraná:* El Dorado, I.1945 (Hatschbach), 1 female; Curitiba, I.1943 (Claretiano), 1 male.

PARAGUAY: Colonia Independencia, XII.1951 (Foerster), 1 male.

All in MZUSP.

*Pilica rubidapex* (Hermann)

*Nusa rubidapex* Hermann, 1912: 247. Type-locality: "Venezuela". HT male MUN.
*Andrenosoma elegans* Bromley, 1934:343. Type-locality: Guyana, Kamakusa, HT USNM.

Material examined. BRAZIL, *Amapá:* Serra do Navio, X.1957 (Lenko), 1 male, in MZUSP.

*Pilica rufipennis* (Wiedemann)

*Laphria rufipennis* Wiedemann, 1828: 522. Type-locality: "Brazil". HT female FRAN.
*Andrenosoma flamipennis* Bromley, 1931: 133. Type-locality: Guyana, Bartica. HT ANSP.

Material examined. BRAZIL, *Amazonas:* Manaus, X.1957 (Elias & Roppa), 2 females; Maués, II.1937 (no coll.), 1 female. *Minas Gerais*: Arceburgo (Fazenda Fortaleza), XII.1946 (Barretto), 1 male; Calado, Rio Doce, II.1939 (Martins & Lopes), 1 female. *Rio de Janeiro:* Itatiaia, 700 m, II.1942 (Zikán), 1 female; Rio de Janeiro (Tijuca), sev. dates, 3 males, 2 females. *São Paulo:* São Paulo III. 1944 (Ramalho), V. 1939 (Mazza), 2 males. All in MZUSP.

*Pilica zanutoi,* sp.n.

(Figures 65-68)

Body length, 18 mm; wing length, 12 mm.

Head entirely black. Broad sides of face densely silvery-white tomentose. Mystax with reddish-yellow bristles; pile above mystax yellowish-white. Hairs of frons white. Ocellar bristles yellowish-red. Antennae black, white hairs on venter of scape and pedicel, black bristles above. Occiput white pollinose, with yellowish-red bristles and white hairs. Beard white. Palpus and proboscis black, with white hairs.

Thorax black. Silvery-white pollinosity on pronotum, on area behind humeri, on three narrow longitudinal bands along mesonotum (along acrostichal and dorsocentral rows), on transverse suture, on posterior margin of mesonotum and on postalar calli and base of scutellum. Bristles of mesonotum and scutellum reddish-yellow, hairs yellowish. Pleura entirely covered by silvery pollinosity, sometimes with yellowish shine, hairs white, brisyles reddish-yellow.

Wing yellowish, microvillose in interior of cells. Halter yellow, knob black.

Legs shining reddish, except for ovoid black spot on anteroproximal half of fore and middle femora and the blackish tarsi of all legs. Vestiture yellow. Claws

dark reddish-brown at base, black on remainder. Pulvilli ochre-yellow. All femora strongly incrassate – fore pair 1.8, middle pair 3.5 and hind pair 2.6 times as long as wide.

Abdomen, except for tergite I which is entirely black, reddish, golden-yellow hairs all over surface. Laterotergal bristles reddish-brown. Terminalia of male reddish-brown (Figures 65-68).

Female unknown.

Holotype male, BRAZIL, *Mato Grosso:* Barra dos Bugres, Reserva Ecológica de Serra das Araras, 16-17.I.1986 (M. Zanuto), in MPEG.

Paratypes. 2 males, BRAZIL, *São Paulo:* Porto Cabral, Rio Paraná, 20-31.III.1948 (Travassos Fº, Carrera & Dente), in MZUSP.

This species is dedicated to Mr. Márcio Zanuto, from MPEG, who collected the holotype of this remarkable species.

## Tribe DASYLECHIINI, new

Shares with the Atomosiini the transverse sclerotized bridge in the postmetacoxal area. Differs from all other Laphriinae as shown in the key (Couplet 17).

### Genus *Dasylechia* Williston

*Dasylechia* Williston, 1907: 1. Type-species, *Hyperechia atrox* Williston (mon.).

*atrox* (Williston), 1883: 28 (*Hyperechia*). Type-locality: USA, Pennsylvania. Distr. – USA (Utah to Michigan, s. to New Jersey). HT ?

### List of abbreviations

| | |
|---|---|
| AMNH | American Museum of Natural History, New York |
| ANSP | Academy of Natural Sciences of Philadelphia |
| BMNH | British Museum (Natural History), London |
| BZM | Berliner Zoologische Museum, Humboldt-University, Berlin |
| CRAC | University of Cracovia, Poland |
| FRAN | Natur-Museum und Forschungs-Institut (Senckenberg), Frankfurt a. M. |
| HT | Holotype |
| MACN | Museu Argentino de Ciencias Naturales Bernardino Rivadavia, Buenos Aires |
| MNHN | Muséum National d'Histoire Naturelle, Paris |
| MPEG | Museu Paraense Emílio Goeldi, Belém |
| MUN | Zoologische Sammlung des Bayerischen Staates, Munich |

| | |
|---|---|
| MZUSP | Museu de Zoologia, Universidade de São Paulo |
| OXF | Hope Department of Entomology, Oxford University |
| ST | Syntypes |
| TP | Type |
| USNM | United States National Museum of Natural History, Washington, D.C. |
| WIEN | Naturhistorisches Museum, Vienna |

## INDEX

(Synonyms in italics)

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