

Classification, natural history, and evolution of the Epiphloeinae (Coleoptera: Cleridae). Part I. The genera of Epiphloeinae.

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Abstract: The subfamily Epiphloeinae is defined to include fourteen genera as follows: *Epiphloeus* Spinola; *Pilosirus*, new genus; *Plocamocera* Spinola; *Iontoclerus*, new genus; *Arenaria*, new genus; *Ichnea* Laporte; *Diapromeces*, new genus; *Pyticeroidea* Kuwert; *Ellipotoma* Spinola; *Katamyurus*, new genus; *Megatrachys*, new genus; *Madoniella* Pic; *Hapsidopteris*, new genus; and *Teutonia*, new genus. The following type-species are described: *Pilosirus brunoi*, new species; *Arenaria chiapas*, new species; *Diapromeces alydis*, new species; *Katamyurus paxillus*, new species; *Megatrachys paniculus*, new species; *Hapsidopteris diastenus*, new species; and *Teutonia nova*, new species. *Enoplum humerale* Klug is designated as the typespecies of *Iontoclerus*. The genus *Madoniella* is removed from the subfamily Korynetinae and is declared a senior synonym of *Phlogistosternus* Wolcott. *Neichnea* is synonymized with *Pyticeroidea*. This treatise includes a key to the genera of Epiphloeinae, descriptions of the genera and new type-species, and distribution map for each genus.

Key words: Cleridae, Checkered Beetles, Epiphloeinae, Generic Synopsis

Introduction

Members of Epiphloeinae have been classified in various subfamilies. Moreover, these beetles have not been studied collectively at any taxonomic level. The purpose of this paper is to begin a series of publications intended to clarify epiphloeine relationships of classification, natural history, and to speculate about their evolution. The study begins with a generic synopsis which will be followed by revisions of the genera. The project will end with a proposed evolutionary history of the subfamily.

Mimicry is extensively ingrained in the structural and behavioral evolution of the Cleridae. This has been indicated by various authors and ably summarized in a recent important work by Mawdsley (1994). The mimetic character of clerids has to some extent influenced the sequence of my revisionary works, in that as I delved into the taxonomic problems of one group, I invariably found a preponderance of mimics of other distantly related genera mistakenly included in my request for unsorted material. This was the circumstance that fueled my interest in the Epiphloeinae beetles some of which are superficially similar to the lampyrid and/or lycid-like members of *Perilypus* of the subfamily Clerinae (Ekis, 1977).

Literature review

The first published account to bring the epiphloeine species to taxonomic order was presented by Spinola (1841), who listed *Ichnea* and *Epiphloeus* under the category Clairiones

Ichnoidea in his Tableau Synoptique des Clairiones. Then, in 1844, in Monographie des Terebrantes, Spinola added *Plocamocera* to the above mentioned genera and classified the three genera under Clerites Hydnoceroides Tableau Generique des Clerites. At first, this classification was adopted by Lacordaire (1857:421) and followed by Desmarest (1860). Subsequently, Lacordaire (1857:422) regrouped the epiphloeine species under *Phyllobenides*, a scheme of classification adopted by Gorham (1860, 1877), Lohde (1900), Schenkling (1903, 1906, 1910), Gahan (1910), and Blackwelder (1945). The more modern concept of epiphloeine classification was first introduced by Kuwert (1893), who aligned the species under genera of "Epiphloinen." This classification scheme was later refined and published by Wolcott (1947), Corporaal (1950), Barr (1950, 1962), Knull (1951), Arnett (1960), Winkler (1961), and Crowson (1964). Today, it is widely accepted that the species under study belong to the subfamily Epiphloeinae.

Material and methods

This study is based on several thousand specimens and involved nearly all the nominal species now assigned to Epiphloeinae. Many beetles of other subfamilies were also examined. The specimens were borrowed from various institutions or personally field collected. Field collected specimens were preserved in Pampel's fluid (Ekis, 1977) for study of internal organs. As has been true of my previous revisionary works,

the results of this study are based in part on an extensive outgroup comparison that served to establish the foundation for assessments of character state phylogeny. Specifically, character state phylogeny was surmised by implementation of the six criteria for character analysis developed by me in an earlier paper (Ekis, 1977:117). Lundberg (1972), Ross (1974), and Watrous and Wheeler (1981) have detailed the methods of outgroup comparisons.

The assessment of a character state discontinuity as being generic in magnitude is a highly subjective matter. It is the character state that makes the genus, not the genus that makes the character state. Mayr (1969) clearly summarized this concept of the genus. Herein, I have attempted to achieve a balance among the character state discontinuities judged to be generic in rank. That is, when a particular characteristic gap (discontinuity) among the species was considered potentially a generic level discontinuity, I compared the magnitude of observed difference with the character state difference among other genera. Specifically, to establish subfamily rank I used the presence of pronotal tactile organs (Figs. 3,6), serrulate protibia (Fig. 5), and geographic distribution. For defining generic rank I relied on structural differences of the metatibia, antenna, and male genitalia.

Number of articles of the antenna is an important diagnostic characteristic for placement of specimens in their appropriate genera. Unfortunately, some of the antennal articles, especially those of the funicle (Fig. 44), are difficult to discern. These articles are usually small and profusely setose in some species to an extent that their anatomical limits are indistinguishable. To solve this problem I subjected an antenna to a hot solution of potassium hydroxide for some 15 minutes, then observed the antenna under tap water. This treatment expands the integument between the antennal articles thus clearly indicating their anatomical limits. In this publication, I have illustrated all the important characteristics that identify the genera of Epiphloeinae. Illustration and dissection techniques, and the use of descriptive terms, essentially follow those used in my earlier work with *Perilypus* (Ekis, 1977).

Most of the borrowed specimens on which this study is based have been returned to their owners identified and labeled as species to be described or as species already described. The few specimens

that I have retained for completion of this part of the study will be deposited in collections indicated in the text by the following abbreviations: AMNH: American Museum of Natural History, Entomology, New York, New York, 10024; BMNH: British Museum (Natural History), Entomology, SW 5BD, London, England; CASC: California Academy of Science, Entomology, San Francisco, California, 94118; CNCI: Canadian National Collection of Insects, Entomology Research Institute, Ottawa, Ontario, Canada; FMNH: Field Museum of Natural History, Entomology, Chicago, Illinois, 60605; JNRC: Jacques Rifkind Collection, 11322 Camarillo St., #304, North Hollywood, California, 91602; MCZC: Museum of Comparative Zoology Harvard University, Entomology, Cambridge, Massachusetts, 02138; MCMC: Museo de Historia Natural de la Ciudad de Mexico, Apartado 18845, Mexico, D.F.; MNHN: Museum National d'Histoire Naturelle, Entomologie, 45 bis, Rue de Buffon, Paris (Ve), France; MZSP: Museu de Zoologia da Universidade de São Paulo, Caixa postal 7172,01.05, São Paulo, Brazil; USNM: National Museum of Natural History, Smithsonian Institution, Entomology, Washington D.C., 20560; OSUC: The Ohio State University, Museum of Biological Diversity, 1315 Kinnear Road, Columbus, Ohio, 43212; WFBC: William F. Barr Collection, 1415 Borah Avenue, Moscow, Idaho, 83843; WFBM: William F. Barr Museum, Department of Entomology, University of Idaho, Moscow, Idaho, 83844; WOPC: Weston Opitz Collection, Kansas Wesleyan University, Department of Biology, 100 East Claflin, Salina, Kansas, 67401. I am indebted to the curators of these collections who entrusted me with material in their charge. I am particularly grateful to William F. Barr and to Charles A. Triplehorn for various courtesies including the review of this manuscript. This research was supported by a National Science Foundation Grant (DEB 7910 962).

Subfamily Diagnosis

Species of Epiphloeinae are readily distinguished from other Cleridae by the presence of 2 discal and 2 paralaral punctiferous and setiferous depressions (Figs. 3, 6) on the pronotum. The anterior margin of the protibia is serrulate (Fig. 5) and the fourth tarsal article of the metatarsus is cryptic (Fig. 129). The members of this subfamily are found only in the New World. Their range extends from the United States to Central Argentina.

Key to the Genera of Epiphloeinae

1. Antenna composed of 11 articles 2
 – Antenna composed of less than 11 articles 3
- 2(1). Antennal funicular articles approximately equal in size (Fig. 7), articles not densely setose; metatarsus with 2 pulvilli (Fig. 4); distal margin of metatibia with one spur (Fig. 10)
 *Epiphloeus* Spinola
 – Antennal funicular articles vary in size (Fig. 19), sixth and eighth articles very small, seventh article very large (Fig. 19); metatarsus with 3 pulvilli; distal margins of metatibia with 2 spurs (Fig. 20) *Pilosirus*, new genus
- 3(1). Proximal article of antennal club as long as or longer than funicle (Fig. 29) 4
 – Proximal article of antennal club shorter than funicle (Fig. 93) 9
- 4(3). Antenna vested with filamentous setae (Fig. 29); pronotum distinctly transverse (Fig. 26)
 *Plocamocera* Spinola
 – Antenna not vested with filamentous setae; pronotum quadrate or oblong 5
- 5(4). Metatarsus with 2 pulvilli (Fig. 4)
 *Iontoclerus*, new genus
 – Metatarsus with one pulvillus (Fig. 58) 6
- 6(5). Antenna composed of 10 articles (Fig. 54) 7
 – Antenna composed of less than 10 articles 8
- 7(6). Cranium and pronotum coarsely granulose; eyes narrower than frons (Fig. 66)
 *Arenaria*, new genus
 – Cranium and pronotum not coarsely granulose; eyes wider than frons (Fig. 52) *Ichnea* Laporte
- 8(6). Pronotum distinctly oblong and notably narrow (Fig. 70); frons very narrow (Fig. 74); antenna composed of 8 articles (Fig. 71)
 *Diapromeces*, new genus
 – Pronotum quadrate (Fig. 80); frons not particularly narrow (Fig. 79); antenna composed of 9 articles (Fig. 83) *Pyticeroidea* Kuwert
- 9(3). Antennal funicle cylindrical (Fig. 93) 10
 – Antennal funicle serrate (Fig. 121) 13
- 10(9). Pronotum conspicuously oblong and cylindrical (Fig. 91) 11
 – Pronotum quadrate (Fig. 80) 12
- 11(10). Pronotal and elytral interpunctate surface smooth and shining *Ellipotoma* Spinola
 – Pronotal and elytral interpunctate surface arenose; elytral surface with tumid pale markings
 *Katamyurus*, new genus

- 12(10). Elytral surface corrugated, densely set with tubercles and setose pencils (Fig. 105)
 *Megatrachys*, new genus
 – Elytral surface not corrugated and not densely set with tubercles or setose pencils *Madoniella* Pic
- 13(9). Antennal article 6 nearly as large as antennal article 8 (Fig. 121) ... *Hapsidopteris*, new genus
 – Antennal article 6 much smaller than article 8 (Fig. 130) *Teutonia*, new genus

Genus *Epiphloeus* Spinola

Figures 1-17, Map 1.

Epiphloeus Spinola, 1841:75. Type species: *Epiphloeus duodecimmaculatus* (Klug). By subsequent designation. Klug, 1842:370. Gemminger and Harold, 1869:1747. Gorham, 1882:166. Guerin, 1874:273. Loehde, 1900:87. Schenkling, 1903:86,87. Gahan, 1910:71. Schenkling, 1910:114. Blackwelder, 1945:388. Corporaal, 1950:253. Winkler, 1961:59. Kolibac, 1987, 1989:38.

Diagnosis: Specimens of *Epiphloeus* have the antenna comprised of 11 articles and have two pulvilli on the metatarsus. This combination of characteristics will distinguish the members of this genus from all other known species of the subfamily except those of *Pilosirus*, new genus, which differs by having three pulvilli on the metatarsus.

Description: Size: Length 48mm; width 1.5 - 2.6mm. Form (Fig. 1): Elongate, about three times longer than wide, pronotum subquadrate, very feebly transverse; elytral outer margin parallel in basal fifth, arcuate, then converging in apical three fifths. Integument: Head, thorax, and abdomen usually concolorous, rarely bicolorous, castaneous or black, usually nitidus; elytron usually variegated, rarely maculate, smooth, rarely tuberculate; antenna usually concolorous, testaceous, flavotestaceous, or stramineous, rarely bicolorous. Vestiture: Integument copiously vested with short setae; pronotum with two discal and two paralaralateral filamentous sensory setae; elytron vestiture varies in direction of setae, setae fasciate or not, rarely penicillate. **Head** (Fig. 2): Cranium finely or coarsely punctate; frons plane to convex; eyes prominently bulging, very deeply incised along frontal margin, incision considerably dorsad to antennal insertion; eye facets very fine, narrower than ocular suture; labrum emarginate to half its depth; mandible subfalciform, prominently visible in repose, anterior dens moderately acuminate; antenna (Fig. 7) composed of 11 articles, loosely clubbed, funicular

articles cylindrical, basal club article shorter than combined length of funicular articles, two basal club articles trigonal, last article ovoid, scape and pedicel equal in length to funicle, antenna longer than pronotum, about as long as pronotum, or shorter than pronotum; gula crescentic. **Thorax:** Pronotum (Fig. 3) feebly transverse, anterior margin arcuately projecting or not, side expanded at middle, lower side with prominent carina, surface evenly rounded or undulated, with two discal and two lateral punctiferous and setiferous depressions (Figs. 3, 6), pronotal disc rarely tuberculate; elytron shallow, rarely deep, usually slightly flared with slope evenly decumbent at middle; surface punctations diminutive from humerus to apex; humeral margin with prominent carina; surface rarely tumescent; mesoscutellum (Fig. 9) trigonal; metathoracic wing as in figure 8; protibia with stout spines on anterior margin; tarsal pulvillus present on second and third article of metatarsus (Fig. 4); one stout spur present on distal margin of metatibia (Fig. 10). **Abdomen:** Six visible sterna, posterior margin of sternum 5 acutely arcuate in females (Fig. 42), moderately arcuate in males (Fig. 43). Male genitalia: Aedeagus as in figure 11, as long as sterna 3-5 combined; interspicular plate of spicular fork (Fig. 12) slender and bifid, parameres highly reduced. Female genitalia: Ovipositor as in figures 13 and 14, as long as abdomen; ventral lamina serrate distally, dorsal lamina bilobed. Alimentary canal (Fig. 15): Esophagus very gradually increasing in diameter posteriorly; proventriculus feebly bulbous; ventriculus with poorly developed papillae, bulbous at middle and tapered at extremities; four cryptonephridial malpighian tubules. Male internal reproductive organs (Fig. 16): Two pairs of accessory glands, medial gland narrow and two-thirds as long as broader lateral gland; testes comprised of 12 follicles. Female internal reproductive organs (Fig. 17): Spermatheca elongate, not visibly sclerotized and with spermathecal gland attached subapically; bursa copulatrix not much longer than spermathecal complex (spermathecal capsule and spermathecal duct).

Distribution (Map 1): The species of this genus range from Central Mexico to Central Brazil where the majority of the species reside. One species has been described from Cuba. Although Corporaal (1950) attributes 37 species to this genus many more species await description.

Genus *Pilosirus*, new genus

Figures 18-23. Map 2.

Type-species: *Pilosirus bruno*, new species. Here designated.

Diagnosis: The most convenient distinguishing characteristic of beetles of this genus is the presence of three metatarsal pulvilli. The large size of funicular articles 5 and 7 (Fig. 19), when compared to funicular articles 6 and 8 are also diagnostic for the members of this genus as is the presence of two spurs on the distal margin of the metatibia (Fig. 20).

Description: Size: Length 8mm; width 2.8mm. Form (Fig. 18): Body elongate and shallow; pronotum quadrate, outer margin feebly expanded post-medially; elytra gradually explanate in basal four-fifths. Vestiture: Integument copiously vested with short reclinate and long vertical setae; antenna and legs particularly pilose. **Head:** Cranium subrugose; frons plane, as wide as eyes; eyes prominently bulging, broadly incised, incision proximal to prominent antennal carina, eye facets very fine; mouthparts moderately prominent, labrum deeply emarginate; mandible not particularly prominent in repose; antenna (Fig. 19) composed of 11 articles, distinctly longer than pronotum, loosely clubbed, serrate articles 5 and 7 vastly larger than remainder of funicular articles, basal club article shorter than combined length of funicular articles; gula trapezoidal. **Thorax:** Pronotal disc shallowly convex, anterior and posterior margins linear, side margins expanded behind middle, lower sides with prominent carina, discal and paralateral setiferous depressions poorly developed; elytron shallow, sides acutely deflected; mesoscutellum trigonal; protibia with seven short stout spines on anterior margin, spines somewhat truncated; tarsal pulvillus present on first, second, and third articles of metatarsus; distal margin of metatibia with two stout spurs; metathoracic wing as in figure 23. Abdomen: Six visible sterna.

Distribution (Map 2): The only available specimen of this genus was collected from Moyabamba, Peru.

Pilosirus bruno, new species

Figures 18-23. Map 2.

Holotype: Male. Peru, Moyabamba. 1888(M. de Mathan)(MNHN).

Paratypes: None

Diagnosis: The presence of three metatarsal pulvilli, two spurs on the distal margin of the metatibia (Fig. 20), and the relative shape and size of the funicular articles of the antenna (Fig. 19) easily distinguish the members of this species within Epiphloeinae.

Description: Size: Length 8mm; width 2.8mm. Integument: Cranium black, clypeus and labrum flavotestaceous, antenna castaneous; pronotum flavotestaceous paraterally, castaneous discally and ventrally; legs castaneous except basal half of femur flavotestaceous; elytra castaneous in basal half and apical third except postmedial flavotestaceous fascia narrowly extended to humeral angle; metathorax and abdomen castaneous. Vestiture: dorsum copiously vested with short reclinate and long vertical setae; venter sparsely setose; antenna and legs particularly setose. **Head:** Antenna more than twice length of pronotum (75-30); funicular articles 6 and 8 relatively small, trigonal, articles 7 and 9 greatly expanded; gula trapezoidal. **Thorax:** Pronotal discal and parateral setiferous depressions feebly developed, pronotal side border carinate, length equals width, surface finely punctate, outer margin feebly expanded behind middle, anterior and posterior margins linear; elytron very gradually expanded to rounded apex, strongly deflexed laterally, epipleural fold conspicuous, humeral margin with conspicuous carina; metathoracic wing as in figure 23; protibia with short stout spines on anterior margin; metatibia with two apical spurs; metatarsus with three pulvilli. **Abdomen:** Posterior margin of sternum 5 acutely arcuate. Male genitalia: Aedeagus as in figure 21, as long as sternum 3-5 combined, phallus prominent, with stoutly developed apex, parameres acuminate and fimbriate, spicular fork (Fig. 22) well sclerotized, interspicular plate not bifid distally.

Distribution (Map 2): The holotype, the only known specimen of this species, was collected from the Northern Andes of Moyabamba, Peru.

Etymology: This species is dedicated to my biologic father. After an extensive study of my family genealogy I have taken the name of my biologic father. I have legally changed my name from Ginter Ekis to Weston Opitz.

Genus *Plocamocera* Spinola

Figures 24-35. Map 1.

Plocamocera Spinola, 1844a:17. Type-species: *Plocamocera sericella* Spinola, 1844a:19. By monotypy. Lacordaire, 1857:468. Desmarest, 1860:265. Gem-

minger and Harold, 1869:110. Guerin, 1874:274. Gorham, 1877:249; 1882:167. Kuwert, 1893:492. Lohde, 1900:88. Schenkling, 1903:86,88. Gahan, 1910:73. Chapin, 1927:5. Blackwelder, 1945:388. Corporaal, 1950:255. Winkler, 1961:59.

Diagnosis: The members of this genus are conveniently identified by the extensive, filament-like setae on the antenna (Fig. 29).

Description: Size: Length 48mm; width 1.52.8mm. Form (Fig. 24): Elongate, somewhat ovate, about three times longer than wide; pronotum (Fig. 26) distinctly transverse (30-20); elytral epipleural margin feebly or strongly arcuate. Integument: head, thorax, and abdomen variously bicolorous, stramineous to castaneous; pronotum usually pale at sides, disc usually infuscated; elytral surface usually variegated, rarely concolorous, stramineous, castaneous or mixture of both, with pale or dark setae aggregated into patches of diverse shapes, patches sometimes fasciate; antennal funicle testaceous, club piceous. Vestiture: Integument copiously vested with short recumbent setae; antenna (Fig. 29) with very long filamentous setae; discal and parateral sensory setae of pronotum (Figs. 26,27) particularly conspicuous; elytra vested with stout reclinate setae, setae particularly robust along humeral, sutural, and epipleural margins, later with three to seven erect filamentous setae (Fig. 30). Head (Fig. 25): Cranium finely punctate; frons plane; eyes prominently bulging, very deeply incised along frontal margin, incision nearly expanded to half width of eye; eye facets very fine, narrower than ocular suture; labrum emarginated to more than half its depth; mandible subfalciform; antenna (Fig. 29) composed of 10 articles, with long filamentous setae, very loosely clubbed, pedicel globose, funicular articles subcylindric, basal club article as long as combined length of funicular articles, club articles elongate and tapered, outline of article ten undulated, antenna distinctly longer than pronotum; gula broadly crescentic. **Thorax:** Pronotum (Fig. 26) conspicuously transverse, anterior margins prominently projecting, posterior margin sinuous, subapical depression prominent, with two small discal elevations, discal and parateral setiferous punctations particularly prominent (Figs. 26, 27); elytron finely punctate, epipleural margin moderately or strongly oval, with three to seven long setae; mesoscutellum (Fig. 32) trapezoidal; metathoracic wing as in figure 31; protibia (Fig. 28) with one to five stout spines; metacoxa and metafemur particularly ro-

bust; tarsal pulvillus present on third article of metatarsus; distal margin of metatibia with one stout spur. **Abdomen:** Six visible sterna. Male genitalia: Aedeagus as in figure 36, as long as sterna 35 combined, base of tegmen angular or not; interspicular plate of spicular fork (Fig. 37) slender and bifid; parameres highly reduced. Alimentary canal (Fig. 35): Proventriculus bulbous; ventriculus slightly expanded anteriorly, then narrowed and expanded in middle third, ventricular papillae feebly developed; four cryptonephridial malpighian tubules. Male internal reproductive organs (Fig. 33): One pair of accessory glands; testis comprised of 12 follicles. Female internal reproductive organs (Fig. 34): Spermatheca not visibly sclerotized, joined with spermathecal gland subapically; bursa copulatrix twice length of spermatheca.

Distribution(Map 1): *Plocamocera* beetles have a distribution that extends from Mexico to the lower latitudes of Paraguay. They are most prominently known to occur throughout the Amazon Basin. To date, there are four valid species names under the genus, however, I have identified several additional species that will need to be described.

Genus *Iontoclerus*, new genus

Figures 38-50. Map 3.

Type-species: *Enoplium humerale* Klug, 1842:373. Here designated. *Iontoclerus humeralis* (Klug). New Combination. *Epiphloeus marginellus* Spinola, 1844:15. New Synonymy. *Ichne humeralis* Spinola, 1844:16 (nec Klug 1842). New Synonymy. *Ichne humeralis* var. *irrita* Wolcott, 1912:76. New Synonymy. *Apolopha vittata* Pic, 1936:127. New Synonymy.

Diagnosis: Among epiphloeine beetles only those belonging to *Iontoclerus* have the following characteristic combination: Antenna composed of 10 articles and metatarsus with two pulvilli.

Description: Size: Length 6.8-8.0mm; width 2.2-2.8mm. Form (Fig. 38): Body elongate with tendency toward rectangulate, about three times longer than wide; pronotum transverse (3525); elytral outer margin parallel in basal three-fourths, then converging in apical fourth, middle half of side margins feebly convex or not. Integument: Cranium concolorous, brown or flavotestaceous and somewhat rufescent; antenna uniformly dark brown; pronotum castaneous or flavotestaceous; pterothorax and abdomen castaneous; elytra uniformly brown, with greenish tinge or castaneous and with pale humeral streak; legs flavotestaceous or castaneous. Vestiture: Integument profusely vested with

decumbent fine setae, latter very notable on elytron, elytral setae appear silky; setae on antennal club (Figs. 41,44) abundant and conspicuously short; discal and paralateral (Figs. 39,40) setiferous punctures well developed. **Head:** Cranium finely punctate; frons plane; eyes bulging and globose, deeply incised along frontal margin, incision considerably dorsad to antennal insertion; eye facets very fine, narrower than ocular suture; vertex narrowed; labrum deeply emarginate; mandible subfalciform; antenna (Fig. 44) composed of 10 articles, loosely clubbed, funicular articles feebly serrate, basal club article longer than combined length of funicular articles, first two club articles trigonal, last article ovoid, scape and pedicel as long as length of funicular articles combined, antenna longer than pronotum; gula trapezoidal. **Thorax:** Pronotum (Fig. 39) transverse, anterior margin feebly sinuous, side margins feebly arcuate in posterior half, posterior margin feebly carinate at middle; subapical depression feebly indicated; disc slightly convex; discal and paralateral setiferous depressions well developed; elytron punctations very fine; epipleural margin very apparent when viewed from side; mesoscutellum (Fig. 50) ovoid; metathoracic wing as in figure 45; protibia with stout spines along entire anterior margin; tarsal pulvillus present on second and third article of metatarsus; metatibia with one stout spur on distal margin. **Abdomen:** With six visible sterna, posterior margin of sternum 5 projecting at middle in female (Fig. 42), evenly rounded in males (Fig. 43). Male genitalia: Aedeagus as in figure 46, as long as sterna 3-5 combined; parameres reduced; interspicular plate slender and feebly bifid; phallobasic apodeme and phallic struts explanate distally. Alimentary canal (Fig. 49): Proventriculus feebly bulbous; ventriculus slender in anterior half, distended in remainder; four cryptonephridial malpighian tubules present. Male internal reproductive organs (Fig. 47): With two pairs of accessory glands, lateral pair three times longer than medial pair; testis comprised of 50 follicles. 48): spermatheca somewhat acuminate, not visibly sclerotized, spermathecal gland attached subapically.

Distribution (Map 3): This genus is widely distributed in South America ranging from French Guiana to Northeastern Argentina. There are two known species.

Genus *Ichne* Laporte

Figures 51-65. Map 4.

Ichne, Laporte, 1836:35. Type-species: *Ichne lycoides* Laporte, 1836:55. By original designation. Spinola, 1841:75, 1844a:20. Le Conte, 1849:31, 1861:197. Le Conte and Horn, 1883:219. Lacordaire, 1857:476. Desmarest, 1860:265. Gemminger and Harold, 1869:1751. Chevrolat, 1876:7. Guerin, 1874:275. Gorham, 1877a:409, 1883:178. Lohde, 1900:100. Schenkling, 1903:98, 101. Gahan, 1910:68. Blackwelder, 1945:389. Corporaal, 1950:270. Winkler, 1961:61. Barr, 1962:123.

Diagnosis: Most of the species of this genus belong to a large mimetic complex involving Lycidae and Lampyridae (and a variety of other clerid genera). Indeed, the genus may be divided into two groups in accordance with the habitus similarities to the above mentioned families. Once identified as an epiphloeine, however, specimens of this genus may be identified by the following combination of characteristics: Antenna comprised of 10 articles, basal article of antennal club as long or longer than funicle, metatarsus with one pulvillus, and eyes always wider than frons.

Description: Size: Length 6.5-11.5mm; width 24mm. Form (Fig. 51): Elongate, with the forebody considerably narrower than the posterior region of the elytra, latter about four times longer than wide; pronotum oblong; elytra contracted at base, expanded in posterior half or more. Integument: Cranium flavous, usually with piceous macula behind eyes; pronotum usually bicolorous, testaceous and piceous, rarely uniformly roseate; elytron usually bicolorous, flavotestaceous and piceous, rarely unicolorous being flavotestaceous or piceous, sometimes with a violaceous tinge if piceous; pterothorax and abdomen piceous; legs unicolorous, piceous or bicolorous, if bicolorous, piceous and flavotestaceous. Vestiture: Integument copiously vested with short and fine setae, particularly cranium, pronotum and elytra; discal and paralaral sensory setae of pronotum pronounced. **Head:** Frons varying in width (Fig. 52, 53), distinctly concave, deeply indented in some species; eyes not particularly bulging, eyes occupy major portion of lateral region of cranium; eyes deeply incised, antennal carina near incision; eye facets fine, same width as width of ocular suture; mandible falciform, prominently visible in repose, anterior dens subacuminate; antenna (Fig. 54) composed of 10 articles, loosely clubbed, funicular articles decreasing in prominence from article 3 to article 7, article 8 as long or

longer than combined length of funicular articles, last article particularly elongated or conspicuously short, antenna longer than pronotum; gula trapezoidal. **Thorax:** Pronotum longer than broad (25-23), constricted in anterior half (Fig. 55) or not constricted (Fig. 56), discal and paralaral setiferous punctures conspicuous, setiferous punctations of disc set in shallow depression; pronotal surface finely punctate; elytron longitudinally carinate or not, elytra narrow at base then broadly expanded in posterior half, elytral surface finely punctate, punctures nearly serially arranged; mesoscutellum (Fig. 65) globose; metathoracic wing as in figure 59; protibia (Fig. 57) with 10 or more spines on anterior margin; metatibia with one apical spur; metatarsus with one pulvillus (Fig. 58). **Abdomen:** Six visible sterna. Male genitalia: Aedeagus as in figure 60, ventral sinus well defined, phallobase expanded at base; interspicular plate of spicular fork (Fig. 63) slender and bifid. Alimentary canal (Fig. 62): Stomodaeum proportionally very short when compared to length of ventriculus, latter slender, slightly swollen posteriorly; four cryptonephridial malpighian tubules. Male internal reproductive organs (Fig. 61): Two pairs of accessory glands, medial gland half length as broader lateral gland; testes comprised of 12 to 30 follicles. Female internal reproductive organs (Fig. 64): Spermatheca not notably sclerotized; spermathecal gland attached to subapex of spermathecal gland; bursa copulatrix bulging.

Distribution (Map 4): This widely distributed genus ranges from the United States to Central Argentina. Currently there are 36 nominal species some of which need to be synonymized. Also, there are several new species that await description.

Genus *Arenaria*, new genus

Figures 66-69. Map 2.

Type-species: *Arenaria chiapas*, new species.

Diagnosis: The members of this genus have the cranium and the pronotum densely arenaeous, the width of the frons is greater than the width of the eyes, the pronotum is quadrate or subquadrate, and the elytra are strongly deflexed along their posthumeral margin, the antenna are as in figure 67.

Description: Size: Length 6.5-10.5mm; width 2-3mm. Form (Fig. 66): Body elongate; pronotum quadrate or transverse, outer margin expanded at middle or posterior to middle; elytra rectangular,

posthumeral margin strongly deflexed and feebly expanded to rounded apex. Vestiture: Integument copiously vested with short reclinate setae; pronotal sensory setae feebly developed; antenna and legs densely pilose. **Head:** Cranium coarsely granulose; frons plane or feebly concave; eyes small, not particularly bulging and not wider than frons, broadly incised with incision distal to prominent antennal carina; eye facets very fine; mouthparts not particularly projecting; labrum deeply emarginate; mandible not prominent in repose; antenna (Fig. 67) composed of 10 articles, distinctly longer than pronotum, loosely clubbed, funicular articles compacted, article 6 sometimes largest article in funicle, article eight as long or longer than combined length of funicular articles; gula trapezoidal. **Thorax:** Pronotal disc coarsely arenaceous, slightly expanded at middle or posterior to middle, anterior margin slightly projecting and carinate, posterior margin linear and carinate; discal and paralateral setiferous depressions poorly developed; elytron shallow, sides acutely deflected; mesoscutellum quadrate or feebly transverse; protibia spinous at anterior margin; metatibia with one spur on distal margin; tarsal pulvillus present on third article of metatarsus. **Abdomen:** Comprised of 6 visible sterna.

Distribution (Map 2): Specimens of this genus have been collected from Southern Mexico.

***Arenaria chiapas*, new species**

Figures 66-69. Map 2.

Holotype: Male. Mexico, Chiapas, 24 miles (39 Kilometers) Northwest Comitán, 31-VII-1974 (2164 meters) (L. and C.W.O'Brien) (MCMC).

Paratypes: None.

Diagnosis: The specimens of this species can be easily distinguished from its congeners by the flavotestaceous coloration of the dorsum. The lower sides of the cranium, pronotum, and deflexed portion of the elytra are piceous. The eyes are particularly small and the frons is not concave.

Description: Size: Length 7.5mm; width 2mm. Integument: Cranium flavotestaceous dorsally, castaneous ventrally; pronotal disc flavotestaceous, with two infuscated regions at sides, lower sides and venter of pronotum castaneous; elytral disc flavotestaceous, castaneous in deflexed portion below posthumeral margin; antenna, legs, pterothorax, and abdomen castaneous. Vestiture: Dorsum copiously vested with short flavous setae, venter, antenna, and legs with castaneous setae. **Head:** Antenna more than twice length of pronotum (175-

72), articles five and seven very narrow and acuminate, basal article of club as long as composite length of funicular articles; gula trapezoidal. **Thorax:** Pronotal discal and paralateral setiferous depressions feebly developed, pronotal side margin expanded at middle, quadrate, surface coarsely punctate, pronotal anterior margin feebly projecting at middle, posterior margin feebly carinate and linear; elytron rectangulate, acutely deflexed behind humeral angle, 14 rows of elytral punctations present, punctures serially distributed; protibia with one large and four small spines on anterior margin; distal margin of metatibia with one spur; pulvillus present on third metatarsus. Male genitalia: Aedeagus as in figure 68. Male internal reproductive organs (Fig. 69): Two pairs of accessory glands, lateral pair twice length of medial pair; testis comprised of 12 follicles.

Distribution: The only known specimen of this species was collected in Southern Mexico.

Etymology: The trivial name, *chiapas*, constitutes a noun in apposition and refers to the type-locality.

Genus *Diapromeces*, new genus

Figures 70-77. Map 2.

Type-species: *Diapromeces aelydis*, new species

Diagnosis: Narrow beetles of Epiphloeinae ranging in size from 5 to 8mm and whose antenna (Fig. 71) are composed of eight articles belong to this genus. Also, these beetles have mandibles that are clearly falciform, eyes that occupy nearly the entire lateral aspects of the cranium, and a pronotum that is narrow, cylindrical, and nearly twice as long as wide.

Description: Size: Length 5-8mm; width 12mm. Form (Fig. 70): Body slender and shallow; pronotum cylindrical, oblong, and feebly expanded to posterior margin; elytron gradually expanded to posterior fifth, then gradually constricted to narrowly rounded apex. Vestiture: Integument vested sparsely with fine setae. **Head:** Cranium subrugose; frons very narrow; eyes occupy major portion of lateral region of cranium, eyes feebly incised anteriorly, eye facets fine; mouthparts very prominent in repose; labrum deeply emarginate; antenna (Fig. 71) with eight articles and longer than pronotum; gula trapezoidal. **Thorax:** Pronotum oblong and rugosely punctate, disc evenly convex; elytra shallow, contracted at the base then gradually expanded to apex; mesoscutellum lobate; protibia spinous on anterior margin; distal margin of metatibia with

one spur; tarsal pulvillus present on third article of metatarsus. **Abdomen:** Six visible sterna.

Distribution (Map 2): The specimens examined were collected from the environs of Nova Teutonia, in Brazil.

***Diapromeces aclydis*, new species**

Figures 70-77. Map 2.

Holotype: Male. Brazil, Santa Catarina, Nova Teutonia, VII-13-1941, 27 degrees 11 inches Latitude, 52 degrees 23 inches Longitude (Fritz Plaumann) (AMNH).

Paratypes: Four specimens. Locality data as in holotype except collection dates X-22-64 (1, WOPC) and XI 1973 at 300 to 500 meters (1, WOPC; 2, WFBC).

Diagnosis: The specimens of this species can be conveniently identified by their form (Fig. 70) and by the reduction of the antenna (Fig. 71) to eight articles. Also, the elytral punctations are arranged into ten seriate rows.

Description: Size: Length 58mm; width 12mm. Integument: Teneral individuals show flavotestaceous and infuscated legs and an oblique pale fascia on the elytron, nonteneral specimens are uniformly piceous. Vestiture: Dorsum and venter not particularly pilose. **Head** (Fig. 74): Antenna (Fig. 71) nearly twice length of pronotum (110-60), funicular articles subcylindric, last article globose; mandibles particularly falciform and conspicuous in repose; eyes feebly incised. **Thorax:** Pronotum cylindrical and only feebly expanded to base, discal and paralateral setiferous depressions (Figs. 75, 77) not conspicuous, side margins sublinear, anterior margin feebly concave; elytral surface with 10 rows of punctations, elytron feebly expanded towards constricted apices; protibia with six distinct spines on anterior margin; metatarsus with pulvillus on third article (Fig. 76); metatibia with one spine on distal margin. Male genitalia: Aedeagus as in figure 72; tegmen well sclerotized; interspicular plate of spicular fork (Fig. 73) slender and bifid distally.

Distribution (Map 2): The beetles available for study were collected from the type-locality.

Etymology: The trivial name is from the Latin *aclys* (= a small javelin). I refer to the lanceolate shape of this beetle.

Genus *Pyticerooides* Kuwert

Figures 78-90. Map 4.

Pyticerooides Kuwert, 1894:7. Type-species: *Pyticerooides arrogans* Kuwert. By original designation. Kuwert, 1894:7, 9. Lohde, 1900:103. Schenkling, 1903:112. Gahan, 1910:73. Chapin, 1927:8. Blackwelder,

1945:388. Corporaal, 1950:253. Winkler, 1961:59. *Neichnea* Wolcott and Chapin, 1918:108. New Synonymy.

Diagnosis: Epiphloeine beetles belong to this genus if they have nine antennal articles and a quadrate pronotum whose disc is pronouncedly indented paralaterally.

Description: Size: Length 4-6mm; width 1.22mm. Form (Fig. 78): Elongate, about three times longer than wide; pronotum quadrate (Fig. 80) feebly expanded in posterior half, elytral outer margin sublinear. Integument: Cranium and thorax usually bicolorous, piceous, and testaceous, rarely unicolorous, if unicolorous, predominantly testaceous; elytra piceous; legs, pterothorax and abdomen usually piceous, rarely testaceous; antenna piceous. Vestiture: Integument copiously vested with depressed short setae; discal and paralateral sensory setae of pronotum very conspicuous. **Head:** Cranium (Fig. 79) finely punctate; frons feebly concave; eyes prominently bulging and deeply incised along frontal margin; eye facets fine; labrum (Fig. 81) deeply incised; mandible falciform and very conspicuous in repose; antenna (Fig. 83) composed of nine articles, loosely clubbed, funicular articles increasing in diameter towards apex; basal club article longer than combined length of funicular articles, antenna longer than pronotum; gula trapezoidal. **Thorax:** Pronotum (Figs. 80, 82) quadrate, slightly constricted anteriorly, with two well-developed broad indentations on the disc paralaterad and behind the middle; discal and paralateral setiferous depressions conspicuous (Figs. 80, 82); elytral outer margin only feebly expanded to rounded apex, surface coarsely punctate with 10 rows of seriate punctations: mesoscutellum (Fig. 88) with sinuous margin; metathoracic wing as in figure 87; protibia (Fig. 84) with five stout spines on anterior margin; pulvillus present on third metatarsal article; one spur on distal margin of metatibia. **Abdomen:** With six visible sterna. Male genitalia: Aedeagus as in figure 85; interspicular plate of spicular fork (Fig. 89) slender and bifid. Alimentary canal (Fig. 86): Ventriculus swollen in middle half, tapered at extremities; four cryptonephridial malpighian tubules. Male internal reproductive organs (Fig. 90): Two pairs of accessory glands, medial pair shorter than lateral pair.

Distribution (Map 4): This widely distributed genus ranges from Northeastern United States to Southern Brazil.

Genus *Ellipotoma* Spinola
 Figures 91-100. Map 5.

Ellipotoma, Spinola, 1844a:36. Type-species: *Ellipotoma tenuiformis* Spinola, 1844a:38. By original designation. Lacordaire, 1857:472. Desmarest, 1860:267. Gemminger and Harold, 1869:1750. Lohde, 1900:96. Gorham, 1877:263. Schenkling, 1903:88,95. Gahan, 1910:73. Wolcott, 1911:124. Blackwelder, 1945:388. Corporaal, 1950:252. Winkler, 1961:59.

Diagnosis: The members of *Ellipotoma* have the antenna comprised of 10 articles, the body form is narrow and cylindrical, and the interpunctural space of the elytra (Fig. 94) is smooth and shiny.

Description: Size: Length 3.5-5mm; width 11.5mm. Form (Fig. 91): Elongate and cylindrical; elytral outer margin feebly expanded behind middle. Integument: Scape, pedicel, and legs flavous, remainder piceous except elytra with postmedial flavous fascia. Vestiture: Frons (Fig. 92) densely vested with depressed setae, remainder of integument sparsely vested with setae, setae on elytron (Fig. 94) are of uniform length. **Head** (Fig. 92): Cranium subrugosely punctate; frons narrow, plane; eyes occupy major portion of lateral region of cranium, eyes not deeply incised along frontal margin, eye facets very fine; mandible falciform, prominently visible in repose; antenna (Fig. 93) composed of 10 articles, loosely clubbed, funicular articles cylindrical, eight article shorter than combined length of funicular articles, antenna not projecting beyond posterior margin of pronotum; gula trapezoidal. **Thorax:** Pronotum longer than broad (65-40), cylindrical, discal, and paralateral sensory setae conspicuous; mesoscutellum lobate; metathoracic wing as in figure 97; protibia (Fig. 95) with stout spines on anterior margin; tarsal pulvillus present on third metatarsal article; one stout spur present on distal margin of metatibia. **Abdomen:** Six visible sterna. Male genitalia: Aedeagus as in figure 100; interspicular plate of spicular fork (Fig. 98) slender and bifid. Male internal reproductive organs (Fig. 99): With two pairs of accessory glands, medial pair half length of lateral pair. Female internal reproductive organs (Fig. 96): Spermathecal gland attached to subapex of spermatheca.

Distribution (Map 5): The species of this genus range from Costa Rica to Brazil. It is likely that the genus will be assessed monotypic in the future, despite the listing of four *Ellipotoma* species in the Corporaal catalogue (Corporaal, 1950).

Genus *Katamyurus*, new genus
 Figures 101-104. Map 2.

Type-species: *Katamyurus paxillus*, new species

Diagnosis: Elongate beetles of Epiphloeinae that are five times longer than wide and that have flavous tumid patches on the elytra (Fig. 101) belong to this genus. Also, these beetles are characterized by a springlike extension attached to the subapex of the phallus (Fig. 102).

Description: Size: Length 5-6mm; width 1.5mm. Form (Fig. 101): Body elongate, about five times longer than wide; pronotum longer than wide, outer margin feebly expanded at middle. Vestiture: Integument copiously vested with piceous and flavous setae. **Head:** Cranium rugose and coarsely punctate; frons plane, as wide as eyes; eyes not particularly bulging, broadly incised, incision distal to well-developed antennal carina, eye facets fine; mouthparts prominently visible in repose, labrum deeply emarginate; antenna with 10 articles; funicular articles subcylindrical, basal article of club shorter than combined length of funicular articles; gula crescentic. **Thorax:** Pronotal disc rugose, coarsely punctate, outer margin feebly expanded at middle, sensory setiferous punctations present; protibia with short stout spines on anterior margin; mesoscutellum transverse; elytron coarsely punctate, with small punctiform tumescent regions; metathoracic wing as in figure 104; anterior margin of protibia serrulated; distal margin of metatibia with one spur; tarsal pulvillus present on third article of metatarsus. **Abdomen:** Six visible sterna. Male genitalia (Fig. 102): Phallus with springlike subapical extension.

Distribution (Map 2): Specimens of this genus have been collected from Mexico and Nicaragua. The beetles from Mexico are members of an undescribed species.

***Katamyurus paxillus*, new species**
 Figures 101-104. Map 2

Holotype: Female. Nicaragua, Cerro Cimbo-razo, 13° 02' North, 85° 56' West, Elevation 1400 m, 20 Nov. 71 (Stockwell) (USNM).

Paratypes: One specimen with locality data same as holotype (WOPC).

Diagnosis: From the other members of this genus, *paxillus* specimens may be distinguished by their elytral markings (Fig. 101).

Description: Size: Length 6mm; width 1.5mm. Integument: Cranium, thorax, elytron, and abdomen predominantly castaneous; elytron with humerus and disc partially flavotestaceous; antennal article 9 and 10 piceous, other articles flavotestaceous; legs flavotestaceous and infuscated. Vestiture: Integument copiously vested with short setae, setae pale on flavotestaceous portions of integument, piceous in remainder. **Head:** Antenna (Fig. 103) slightly longer than pronotum, funicular articles subcylindric, club article eight trigonal, nine transverse, and 10 oval. **Thorax:** Pronotal discal and paralateral setiferous depressions feebly developed; side margins of pronotum feebly expanded at middle, pronotum considerably longer than broad (60-50), surface rugose and coarsely punctate; elytron rectangulate, outer margin linear, disc feebly tumescent proximal to elytral apex. **Abdomen:** Six visible sterna. Male genitalia: Aedeagus (Fig. 102) as long as sternum 3-5 combined; phallus with springlike, acuminate extension near apex.

Distribution (Map 2): The only known specimens of this species were collected from the type-locality.

Etymology: From the Latin *paxillus* (=small stake).

Genus *Megatrachys*, new genus
Figures 105-108. Map 2.

Type-species: *Megatrachys paniculus*, new species

Diagnosis: Beetles of Epiphloeinae that are predominantly dark brown and are about 8mm in length belong to this genus if their pronotal and elytral disc are coarsely corrugated and densely set with tubercles and setose pencils (Fig. 105).

Description: Size: Length 7.5-8mm; width 2.2mm. Form: Body rectangulate, about four times longer than wide; pronotum subquadrate, outer margin distinctly expanded at middle; elytra rectangulate. Vestiture: Integument copiously vested with decumbent setae, with several setose pencils on the cranium, disc of the pronotum, and elytra. **Head:** Cranium coarsely punctate; frons plane, wider than width of eyes, latter not particularly bulging but broadly incised with incision distal to well-developed antennal carina, eye facets fine; mouthparts not particularly prominent in repose, labrum deeply emarginate; antenna with 10 articles, funicular articles subcylindric, basal article of club shorter than combined length of funicular articles: gula crescentic. **Thorax:** Pronotal disc

tuberculate, outer margin conspicuously expanded at middle; sensory setiferous punctations present; mesoscutellum trigonal; elytral disc tuberculate, outer margin parallel; metathoracic wing as in figure 108; protibia with stout spines on anterior margin; tarsal pulvillus present on third article of metatarsus; distal margin of metatibia with one spur. **Abdomen:** With six visible sterna. Male genitalia: Aedeagus as in figure 107.

Distribution (Map 2): This genus is known only from Chiapas, Mexico.

***Megatrachys paniculus*, new species**
Figures 105-108. Map 2.

Holotype: Male, Mexico, Chiapas, 5 miles (8 Kilometers) W. San Cristobal, V-19-1969 (J.M. Campbell) (CNCD).

Paratypes: Seven specimens: Same data as type-locality except 7500' (2286 meters), V-23-1969 (J.M. Campbell) (1, CNCD); Mex., Tinijapa, 8 mi. (12.8 Kilometers) NE San Cristobal, V.26.1969 (J.M. Campbell) (1, CNCD); same data as type locality (1, WOPC); same data as holotype except 11 mi. (17.6 Kilometers) E San Cristobal I.C., V.5.1969 (H.F. Howden) (2, WOPC). Two specimens: Mexico: Chiapas, Jct. Hwys. 199 & 190, 06/22/90 (J. Buether) (1, JNRC); Chiapas, NR San Cristobal, 7800' (2750m), VII.2.1986 (J.E. Wappes) (1, WFBC).

Diagnosis: *Megatrachys paniculus* specimens have the sides of the pronotum densely covered with a mat of white setae, the frons has three setal pencils and the elytra have several tubercles on which setal pencils are also present. The apex of each elytron has a small patch of golden setae.

Description: Size: Length 7.5-8mm; width 2-2.2mm. Integument: Piceous except pronotal disc with paralateral patches of white setae; distal ends of femur and tibia, and tarsus flavotestaceous, and elytral apex with small tuft of golden setae. Vestiture: Integument vested with setae of various lengths and color; most setae are piceous except aforementioned white and golden setae; when viewed from side angle body pubescence casts a golden sheen primarily due to sparsely distributed golden setae on dorsum of body. **Head:** Cranium with three setal pencils; antenna (Fig. 106) longer than pronotum (40-30), funicular article subcylindric, club articles 8 and 9 trigonal, 10 ovoid. **Thorax:** Pronotal disc with two conspicuous tubercles; pronotal discal and paralateral setiferous punctations present but not particularly well developed; side margins of pronotum boldly expanded at middle,

anterior margin convex; elytra rectangulate, disc corrugated, tuberculate, and feebly tumescent proximal to elytral apex. **Abdomen:** Six visible sterna. Male genitalia: Aedeagus (Fig. 107) as long as sternum 3-5 combined.

Distribution (Map 2): Specimens of this species are known only from the environs of San Cristobal de Las Casas, in Chiapas, Mexico.

Etymology: Latin, the noun *paniculus* (= tuft). I refer to the tufts of setae on the body of these beetles.

Genus *Madoniella* Pic

Figures 109-120. Map 6.

Madoniella, Pic, 1935:10. Type species: *Madoniella minor* Pic. By subsequent designation. Lepesme, 1947:169, Corporaal, 1950:306. *Phlogistosternus* Wolcott, 1944:124. New Synonymy. Winkler, 1961:59. (= *Phyllobaenus*) Spinola, 1844a:1. LeConte, 1849:30. Lacordaire, 1857:466. Desmarest, 1860:264. Gemminger and Harold, 1869:1747. Gorham, 1877:246. LeConte and Horn, 1883:219. Kuwert, 1893:492. Lohde, 1900:87. Schenkling, 1903:86, 1910:113. Gahan, 1910:59,73. Boving and Champlain, 1910:609. Bradley, 1930:107).

Diagnosis: Epiphloeine beetles belong to this genus if they range in size from 3 to 6mm in length, have a subquadrate pronotum, antenna comprised of 10 articles, and have the elytral surface indented with 10 rows of punctations or have the elytral surface carinate.

Description: Size: Length 3.5-6mm; width 1-2.3mm. Form (Fig. 109): Elongate, about three times longer than wide, pronotum subquadrate, feebly transverse; elytral outer margin very feebly constricted in basal fourth, linear in remainder to arcuate apex. Integument: Head, thorax, and abdomen usually piceous, head and pronotum rarely flavotestaceous; elytron usually fasciate, rarely black; antenna usually concolorous, flavotestaceous, rarely bicolorous, flavotestaceous or black; legs flavotestaceous or black. Vestiture: Integument copiously vested with setae; pronotum with two discal and two paralaral sensory setae; dorsum rarely vested with white setae. **Head** (Fig. 110): Cranium coarsely punctate; frons plane and wider than width of eyes, latter not particularly bulging, broadly incised along frontal margin, incision considerably dorsad to antennal carina; eye facets very fine; mandible subfalciform, prominently visible in repose; antenna (Fig. 114) composed of 10 articles, funicular articles subcylindric, article 8 and 9 trig-

onal, article 10 ovoid; antenna longer than pronotum; gula crescentic. **Thorax:** Pronotum (Fig. 111) feebly transverse (70-65), anterior margin arcuate, side margin feebly expanded at middle, posterior margin linear, surface evenly rounded, with two discal and two paralaral punctiferous and setiferous depressions; elytron (Fig. 112) set with 10 rows of punctures, epipleural margin feebly serrulate particularly at elytral apex; mesoscutellum trigonal (Fig. 115); metathoracic wing as in figure 116; protibia (Fig. 113) with stout spines on anterior margin; tarsal pulvillus present on third article of metatarsus; distal margin of metatibia with one stout spur. **Abdomen:** With six visible sterna. Male genitalia: Aedeagus as in figure 117; interspicular plate of spicular fork (Fig. 118) slender and bifid. Alimentary canal: As described in Ekiş and Gupta, 1971:61,74,81. Male internal reproductive organs (Fig. 119): Two pairs of accessory glands, lateral pair longer than medial pair; testis comprised of 12 follicles. Female internal reproductive organs (Fig. 120): Spermatheca not notably sclerotized; spermathecal gland attached to subapex of spermatheca; bursa copulatrix short, constricted near base; ovary comprised of 6 ovarioles.

Distribution (Map 6): This widely distributed genus ranges from the United States to Brazil. Several species are known from the West Indies. There are several new species that await description.

Genus *Hapsidopteris*, new genus

Figures 121-122. Map 2.

Type-species: *Hapsidopteris diastenus*, new species

Diagnosis: A beetle of this subfamily that appears to have an antennal club composed of four articles belongs to this genus. The fifth and seventh articles of the antenna are diminutive in the members of this genus.

Description: Size: Length 5mm; width 2mm. Form (Fig. 122) body elongate; pronotum quadrate, outer margin constricted at middle; elytron rectangulate, posthumeral margin strongly deflexed. Vestiture: Integument copiously vested with short and long reclinate setae; pronotal sensory setae feebly developed; antenna and legs densely pilose. **Head:** Cranium coarsely punctate, granulate; frons plane; eyes small, not wider than frons, broadly incised; mandible falciform; labrum deeply emarginate; antenna composed of 10 articles, with articles 5 and 7 diminutive, article 6 particularly robust. **Tho-**

rax: Pronotal disc coarsely punctate, arenose, conspicuously constricted at middle; discal and paralateral setiferous depressions poorly developed; elytron shallow, outer sides acutely deflexed; mesoscutellum lobate; protibia spinous at anterior margin; metatibia with one spur on distal margin; pulvillus on third article of metatarsus. **Abdomen:** With six visible sterna.

Distribution (Map 2): The only available specimen is known from Southern Mexico.

Hapsidopteris diastenus, new species

Figures 121-122. Map 2.

Holotype: Male. Mexico, Jalapa (F. Schneider) (MNHN).

Paratypes: None

Diagnosis: The disproportionate increased size of antennal article 7 and the presence of only two spines on the protibia distinguish the members of this species.

Description: Size: Length 5mm; width 2mm. Integument: Cranium bicolorous, mostly flavotestaceous, with two piceous streaks along the frontal margins of the eyes; pronotal disc predominantly piceous, with two paralateral and one medial flavotestaceous streaks; elytral disc piceous, except posthumeral margin flavotestaceous; legs and abdomen flavotestaceous; gula trapezoidal. **Head:** Antenna (Fig. 121) twice length of pronotum (80-40); articles 5 and 7 diminutive, article 6 very prominent; basal article of club not as long as composite length of funicular articles. **Thorax:** Pronotal discal and paralateral setiferous depressions feebly developed; pronotal margin constricted at middle; elytron rectangulate, acutely deflexed behind humeral angle, epipleural margin well developed, 11 rows of elytral punctations present, punctures serially arranged; protibia with one large and one small spine on anterior margin; distal margin of metatibia with one spur; metatarsus with pulvillus on third article.

Distribution (Map 2): The only known specimen of this species was collected in Jalapa, in Southern Mexico.

Etymology: The trivial name *diastenus* is a Greek adjectival and refers to the comparatively narrow shape of antennal articles five and seven.

Genus *Teutonia*, new genus

Figures 123-135. Map 5.

Type-species: *Teutonia nova*, new species

Diagnosis: These beetles may be identified by the following combination of characteristics: antenna composed of 10 articles, funicular articles serrate; pronotal side margins expanded in posterior half; elytral surface closely and serially punctate.

Description: Size: Length 4-7mm; width 2.3mm. Form (Fig. 123): Body elongate; pronotum quadrate, side margin distinctly expanded in posterior half; elytron rectangulate. Vestiture: Cranium densely vested with vertical setae, rest of body copiously vested with short reclinate setae; pronotal sensory setae well developed. **Head:** Cranium finely punctate; frons plane; eyes wider than frons or as wide as frons; mandible subfalciform; labrum deeply emarginate; antenna composed of 10 articles, funicular articles serrate or subserrate; gula crescentic. **Thorax:** Pronotal disc finely punctate; discal sensory seta set with shallow depression; elytron shallow, sculptured with seriate punctures; mesoscutellum trigonal; metathoracic wing as in figure 131; protibia spinous on anterior margin; metatibia with one spur on distal margin; tarsal pulvillus (Fig. 127) on third article of metatarsus. **Abdomen:** With six visible sterna.

Distribution (Map 5): The geographic range of this genus extends from Panama to Brazil. There are several species that await description.

Teutonia nova, new species

Figures 123-135. Map 5.

Holotype: Male. Brazil, Santa Catarina, Nova Teutonia, 3000-5000m., XI-1-1974 (F. Plaumann) (MZSP).

Paratypes: One hundred and thirty-two specimens. One hundred and eleven specimens from the same locality as the holotype (39, AMNH; 1, BMNH; 1, CASC; 1, CNCC; 6, FMNH; 1, MCZM; 1, MHNP; 1, NMNH; 49, WFBA; 2, WFBM; 9, WOPI). Of the above mentioned 111 specimens, 95 were collected from the same locality as the holotype except collection dates involved the months of I, II, VIII, IX, and X. Twenty specimens (WOPC) from Brazil: Goias, Jatai, XI-1972 (F.M. Oliveira); Sao Paulo, Teodoro Samparo, VIII-1973 (F.M. Oliveira); Guanabara, Rio de Janeiro, II-1970, XII-1970 (M. Alvarenga); and Pernambuco, IV-1972 (M. Alvarenga). One specimen from Brazil: Rondon, 24° N 54° 07' W, 500 m, VII-30-52 (FMNH). Integument: Cranium flavotestaceous; pronotal disc predominantly black, anterior margin narrowly flavotestaceous; elytra piceous, with faintly indi-

cated flavotestaceous fascia behind middle; legs increasingly flavotestaceous from prothoracic to metathoracic legs; abdomen piceous. **Head** (Fig. 124): Antenna (Fig. 130) nearly twice length of pronotum(40-25); funicular articles serrate, basal article of club not as long as composite length of funicular articles; eye facets (Fig. 124) fine, smaller than cranial punctures; frons (Fig. 124) not as wide as width of eyes. **Thorax**: Pronotal discal (Fig. 128) and paralateral setiferous depressions well developed, outer margin of pronotum (Fig. 125) expanded behind middle; elytron (Fig. 126) rectangulate, disc sculptured with seriate punctations; protibia (Fig. 134) with eight spines on anterior margin.

Distribution (Map 5): This species is known only from Southern Brazil.

Etymology: The trivial name, *nova*, constitutes a noun in apposition and refers to the type-locality.

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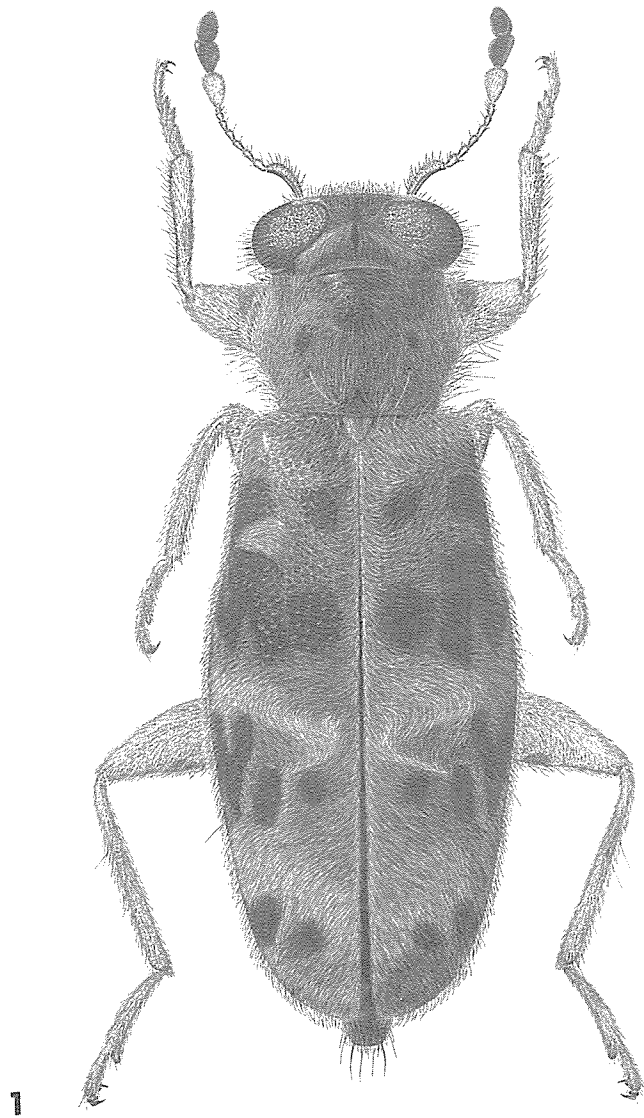
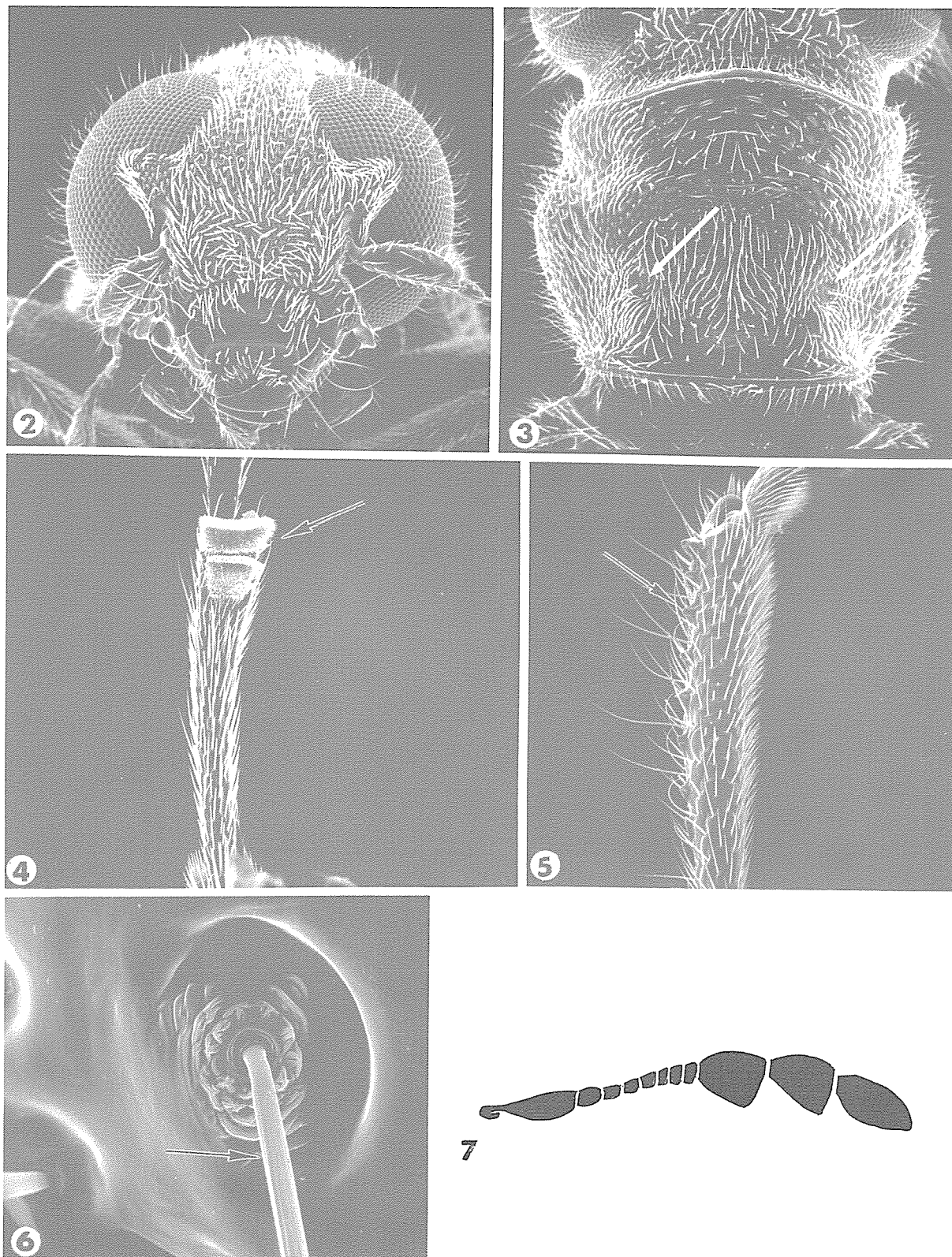
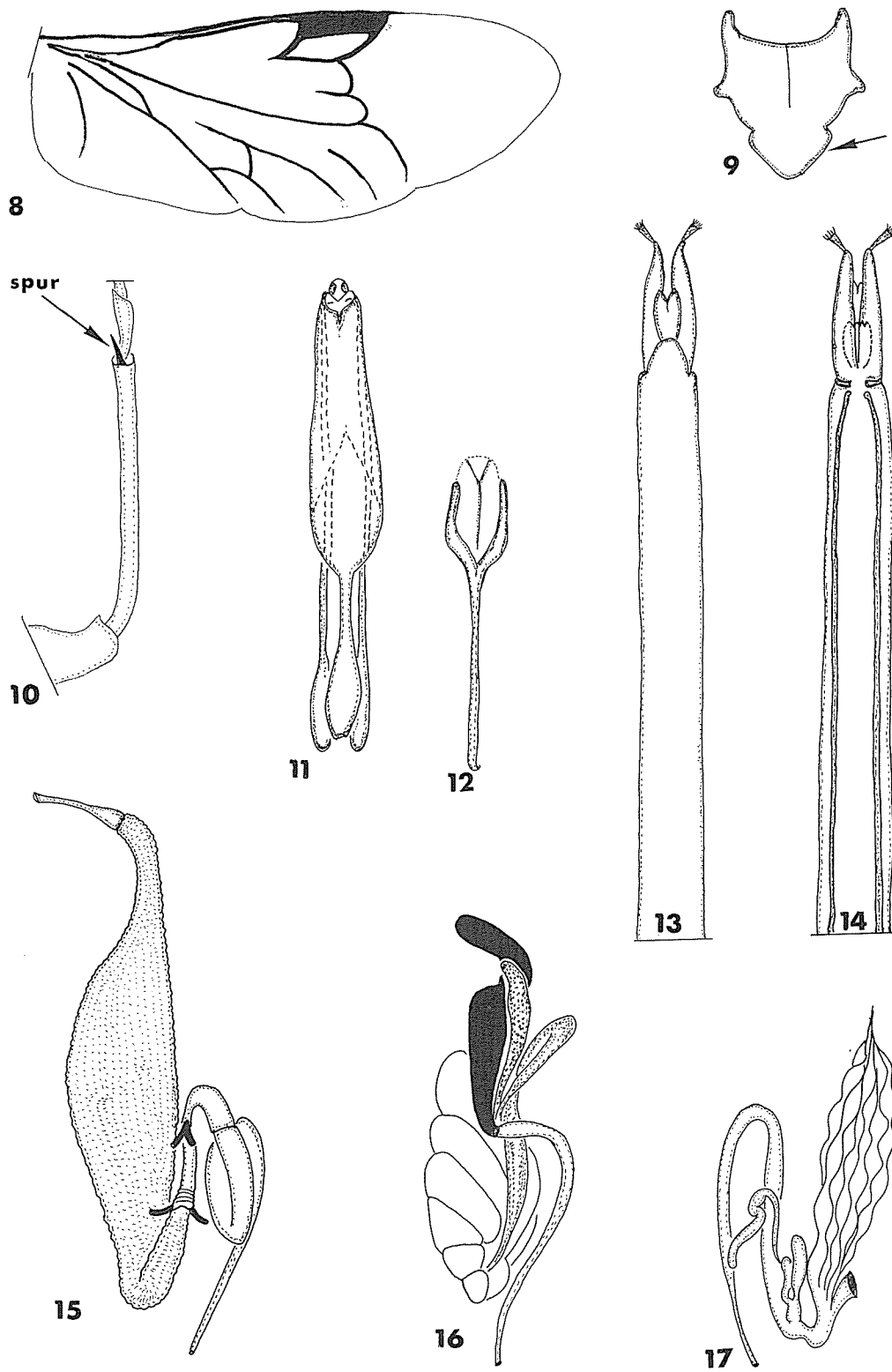


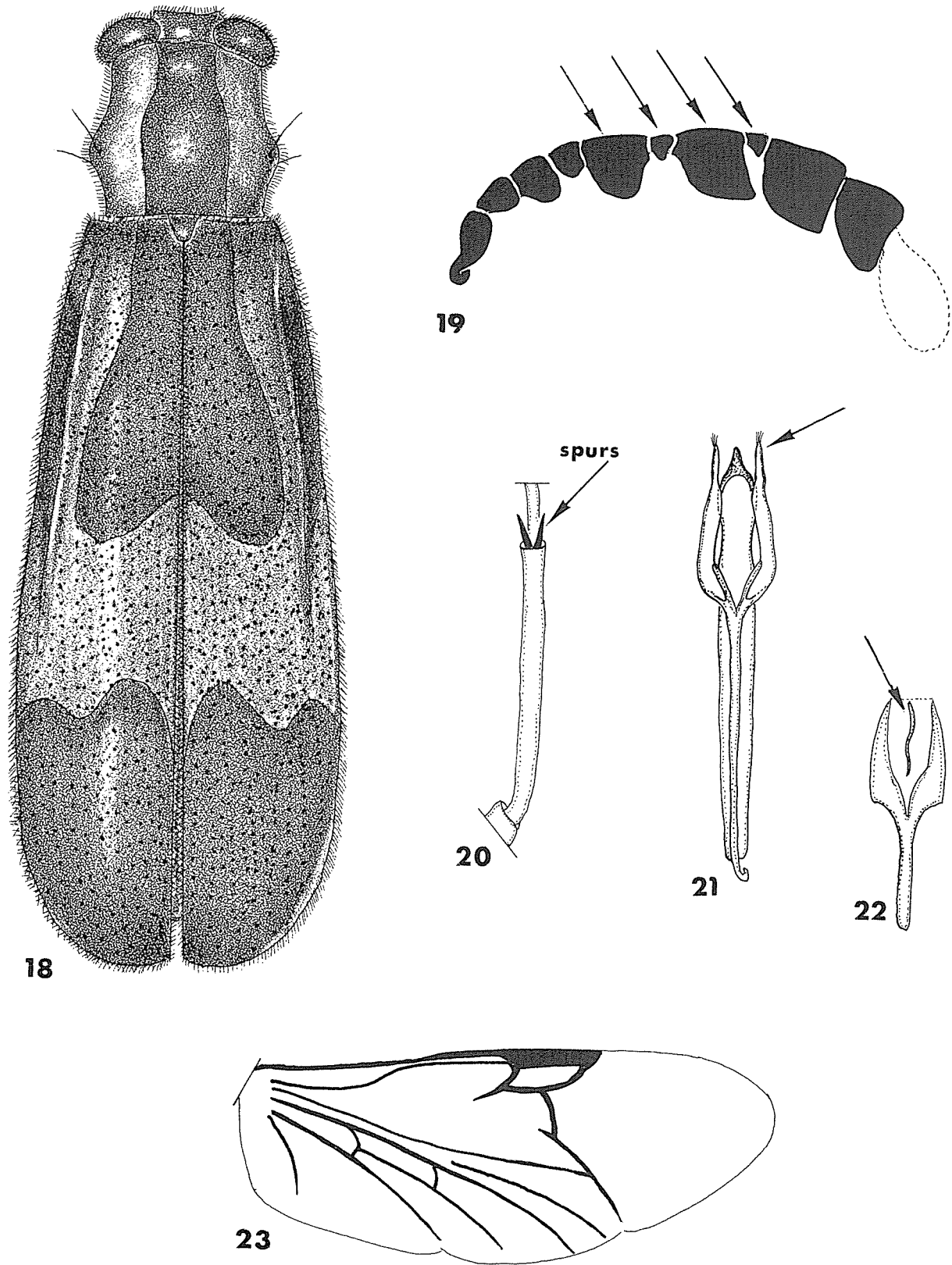
Fig. 1. *Epiphloeus setulosus*: habitus.



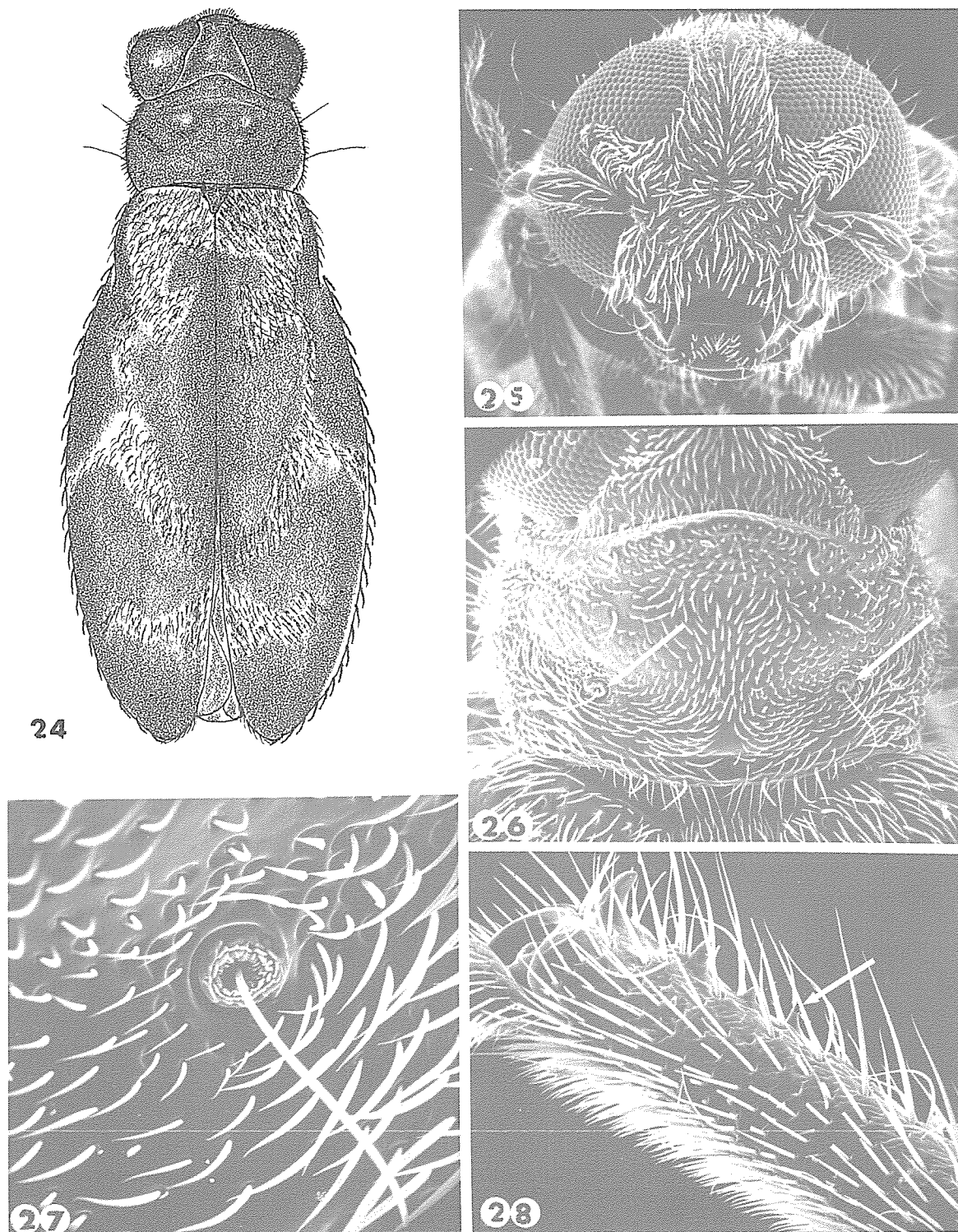
Figs. 2-7. *Ephiphloeus duodecimmaculatus*: 2. Head; 3. Pronotum; 4. Metatibia and metatarsus; 5. Protibia; 6. Filamentous setae of pronotum; 7. Antenna.



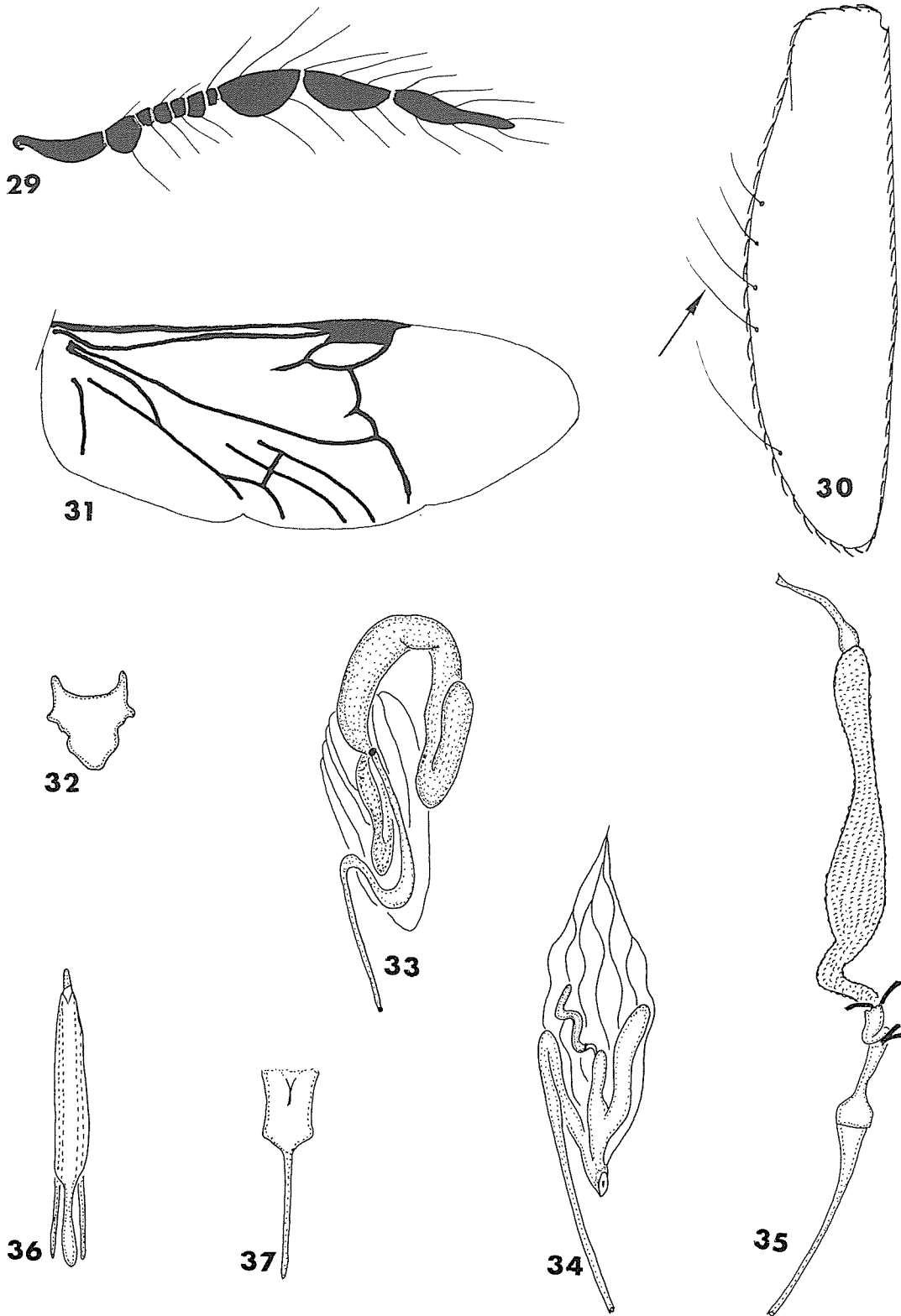
Figs. 8-17. *Epiphloeus mucoreus*: 8. Metathoracic wing; 9. Mesoscutellum; 10. Metatibia; 11. Aedeagus; 12. Spicular fork; 13-14. Ovipositor; 13. Dorsal view; 14. Ventral view; 15. Alimentary canal; 16. Male internal reproductive organs; 17. Female internal reproductive organs.



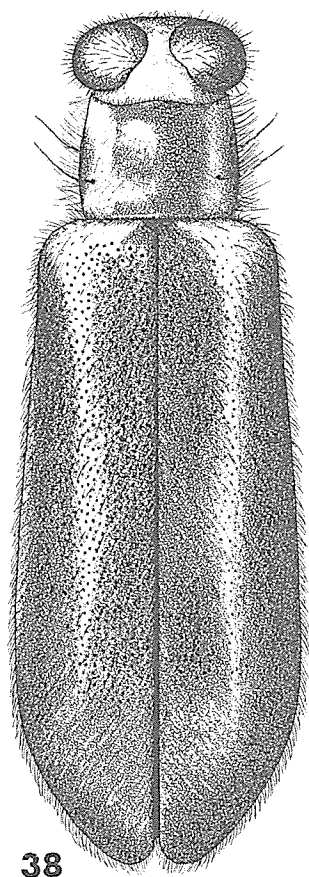
Figs. 18-23. *Pilosirus brunoi*: 18. Habitus; 19. Antenna; 20. Metatibiae; 22. Spicular fork; 23. Metathoracic wing.



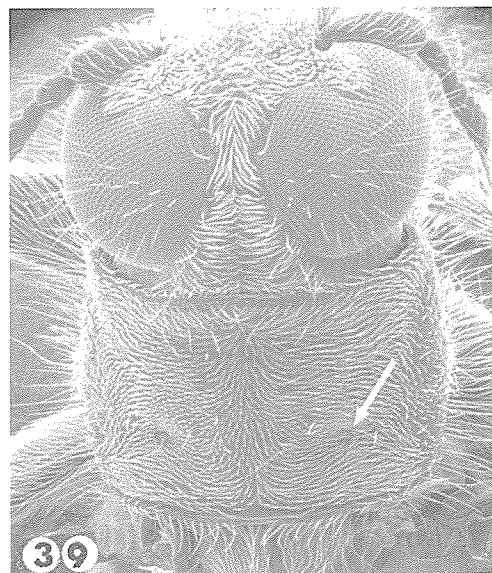
Figs. 24-28.: 24. *Plocamocera confrater* habitus; 25-28. *Plocamocera coactilis*, head; 26. Pronotum; 27. Filamentous seta of pronotum; 28. Protibia.



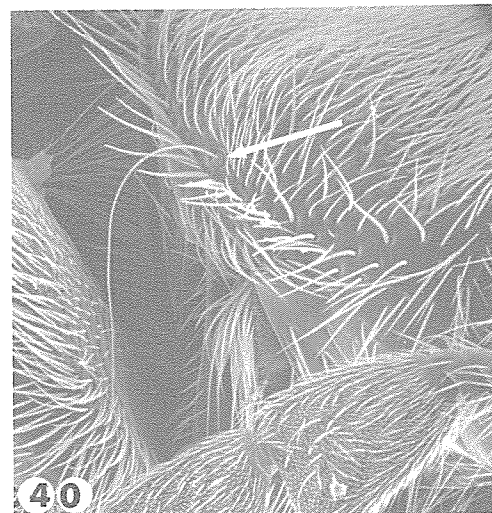
Figs. 29-37. 29. *Plocamocera sericella* antenna; 30. *Plocamocera confrater* elytra; 31. *Plocamocera sericella* metathoracic wing; 32. Mesoscutellum; 33. Male internal reproductive organs; 34. Female internal reproductive organs; 35. Alimentary canal; 36. Aedeagus; 37. *Plocamocera confrater* spicular fork.



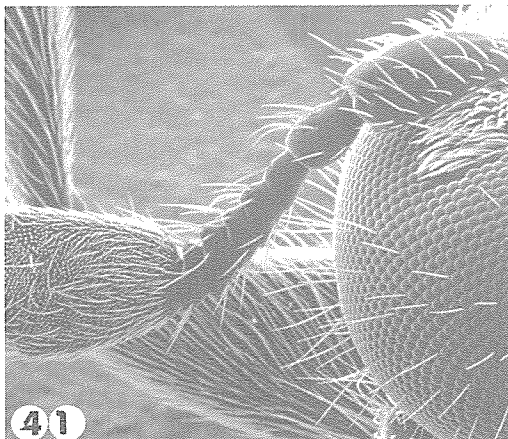
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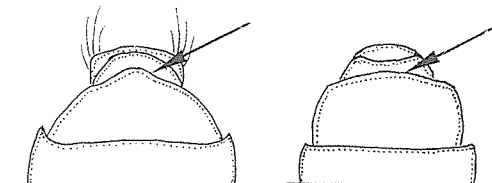
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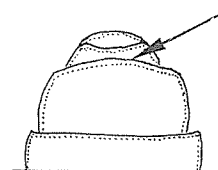
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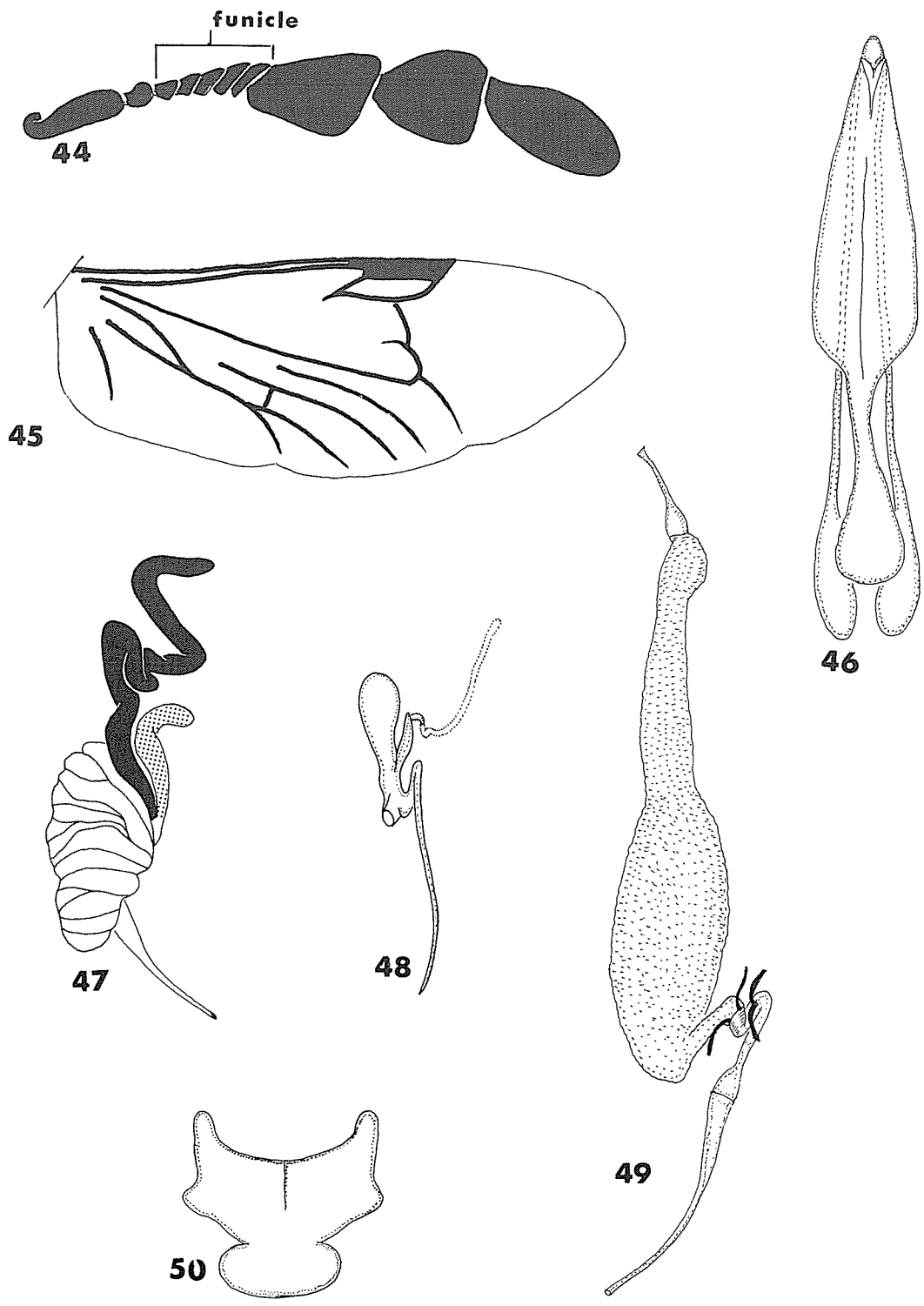


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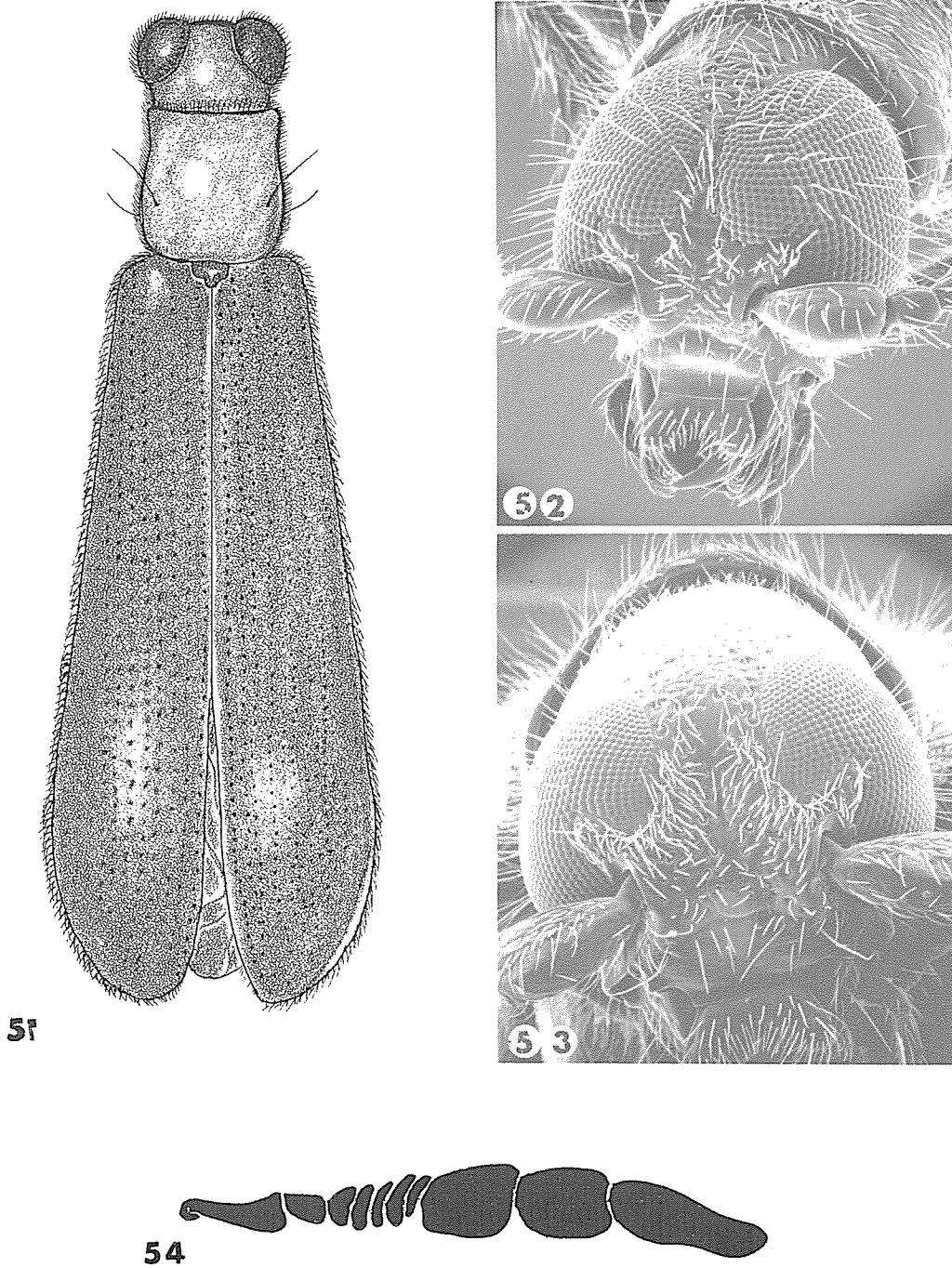


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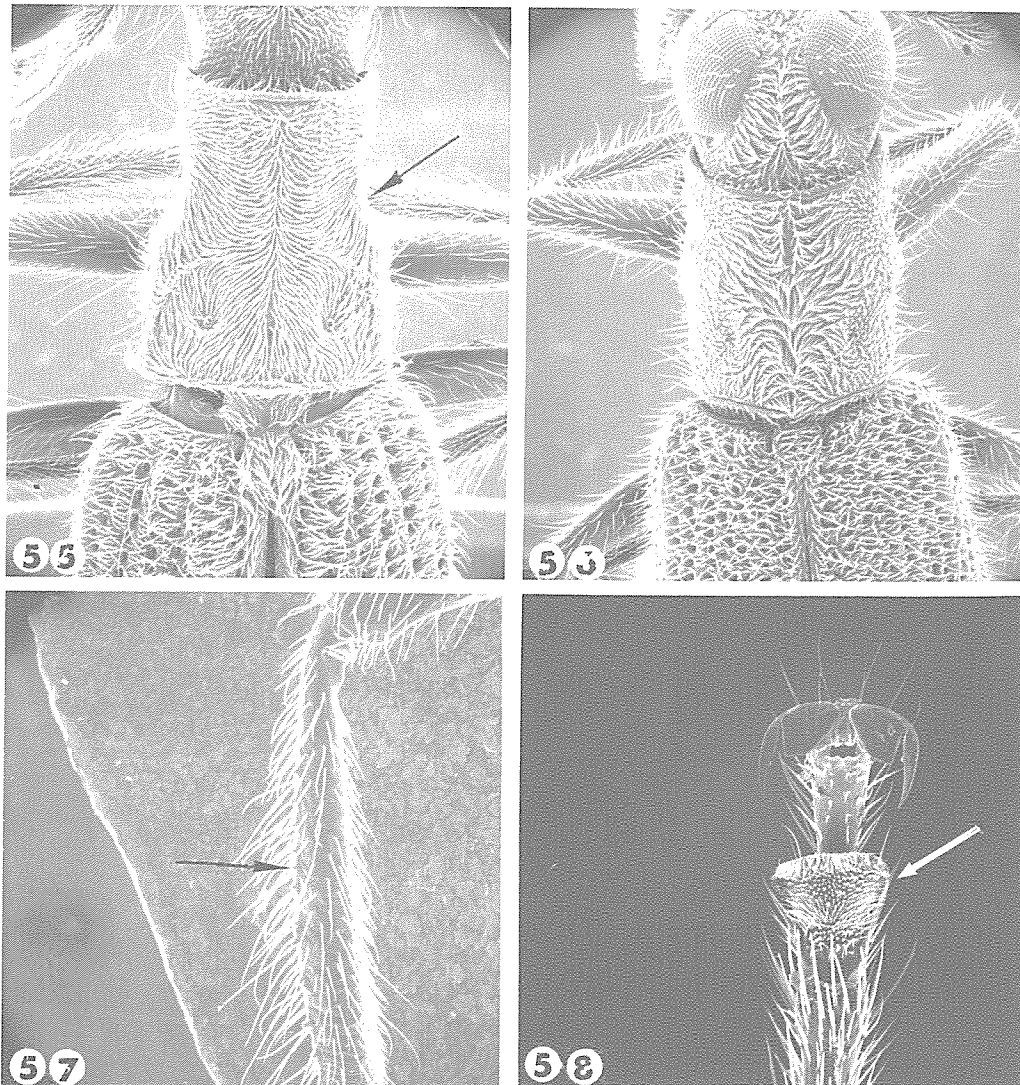
Figs. 38-43. *Iontoclerus humeralis*: 38. Habitus; 39. Forebody; 40. Posterolateral aspect of pronotum; 41. Antenna; 42. Ventral aspect of female abdomen; 43. Ventral aspect of male abdomen.



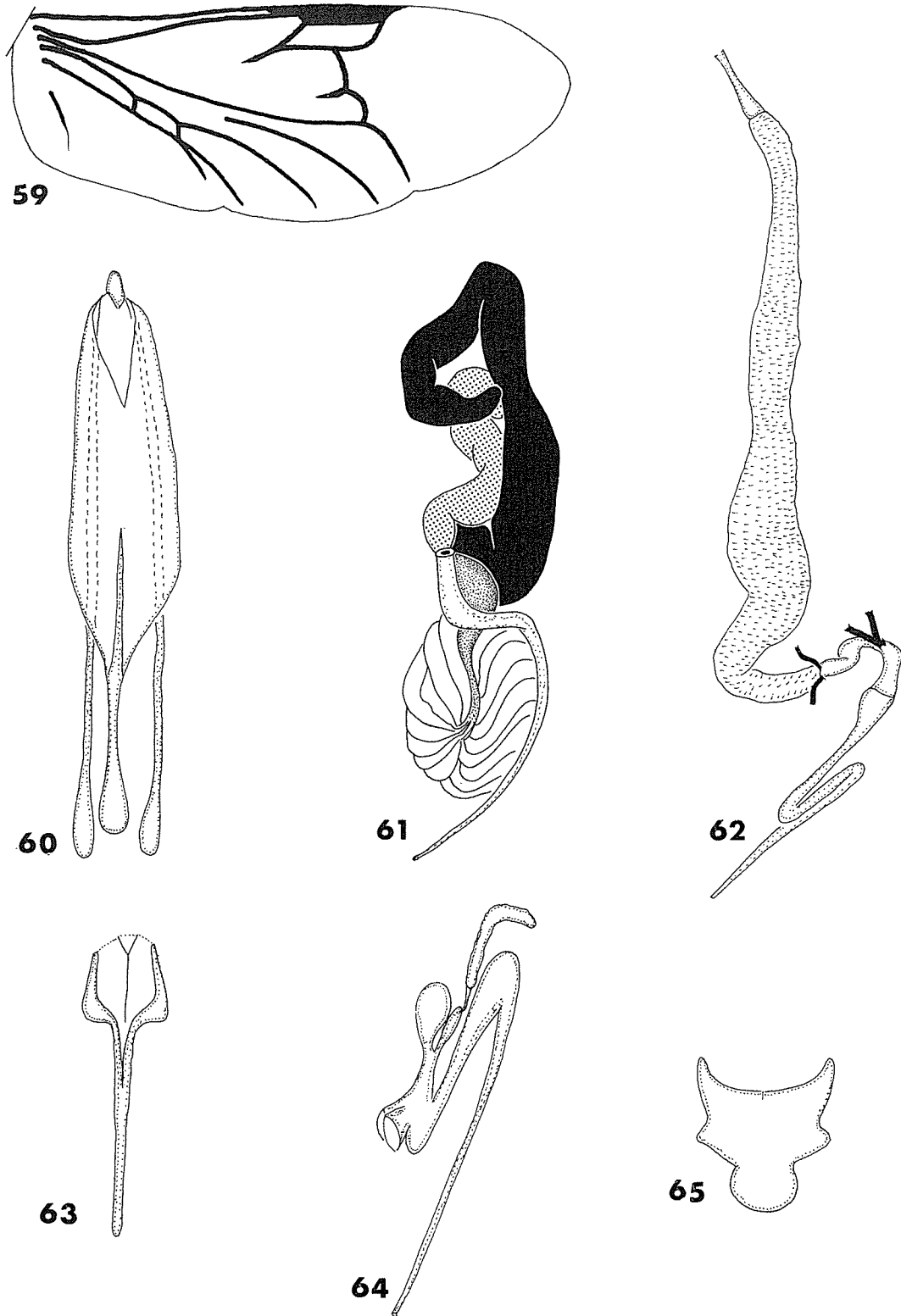
Figs. 44-50. *Iontoclerus humeralis*: 44. Antenna; 45. Metathoracic wing; 46. Aedeagus; 47. Male internal reproductive organs; 48. Female internal reproductive organs; 49. Alimentary canal; 50. mesoscutellum



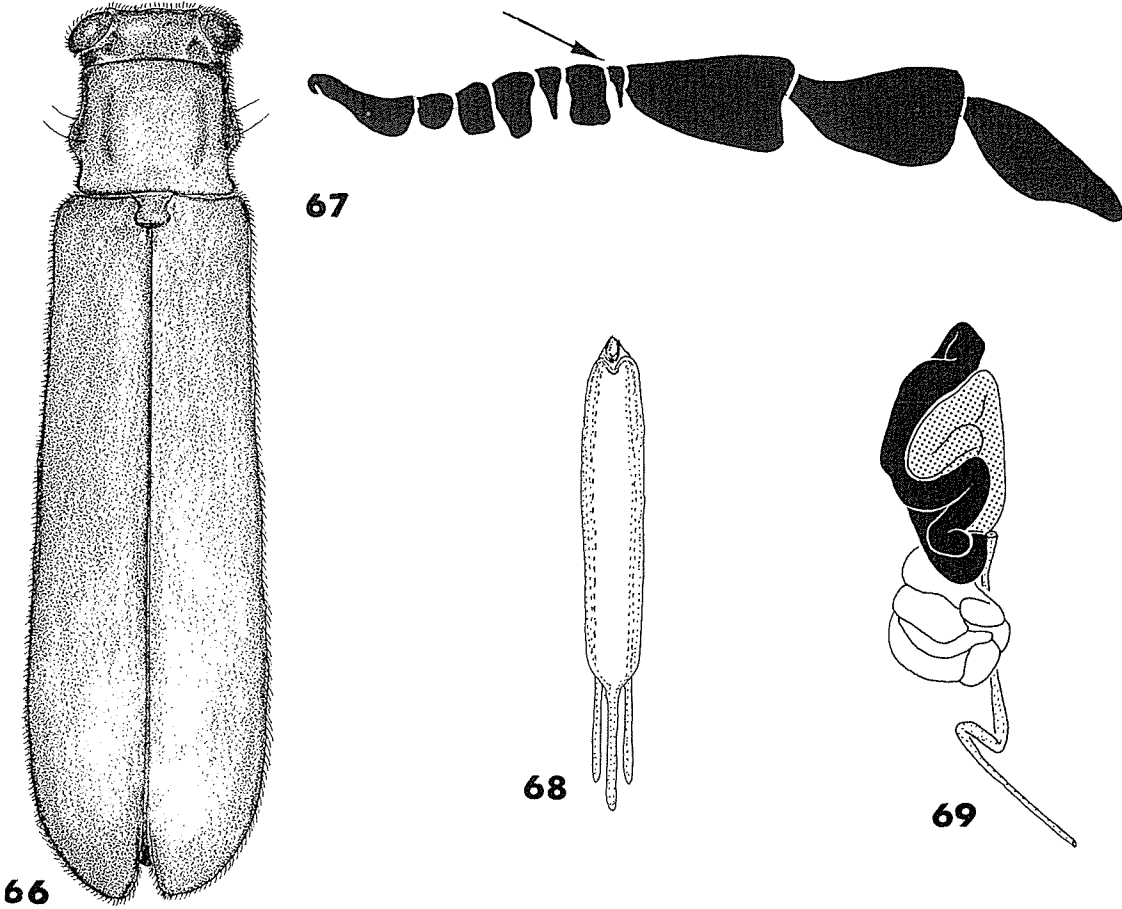
Figs. 51-54. 51. *Ichneia opaca* habitus; 52. *Ichneia praeusta* head; 53. *Ichneia frenata* head. 54. *Ichneia opaca* antenna.



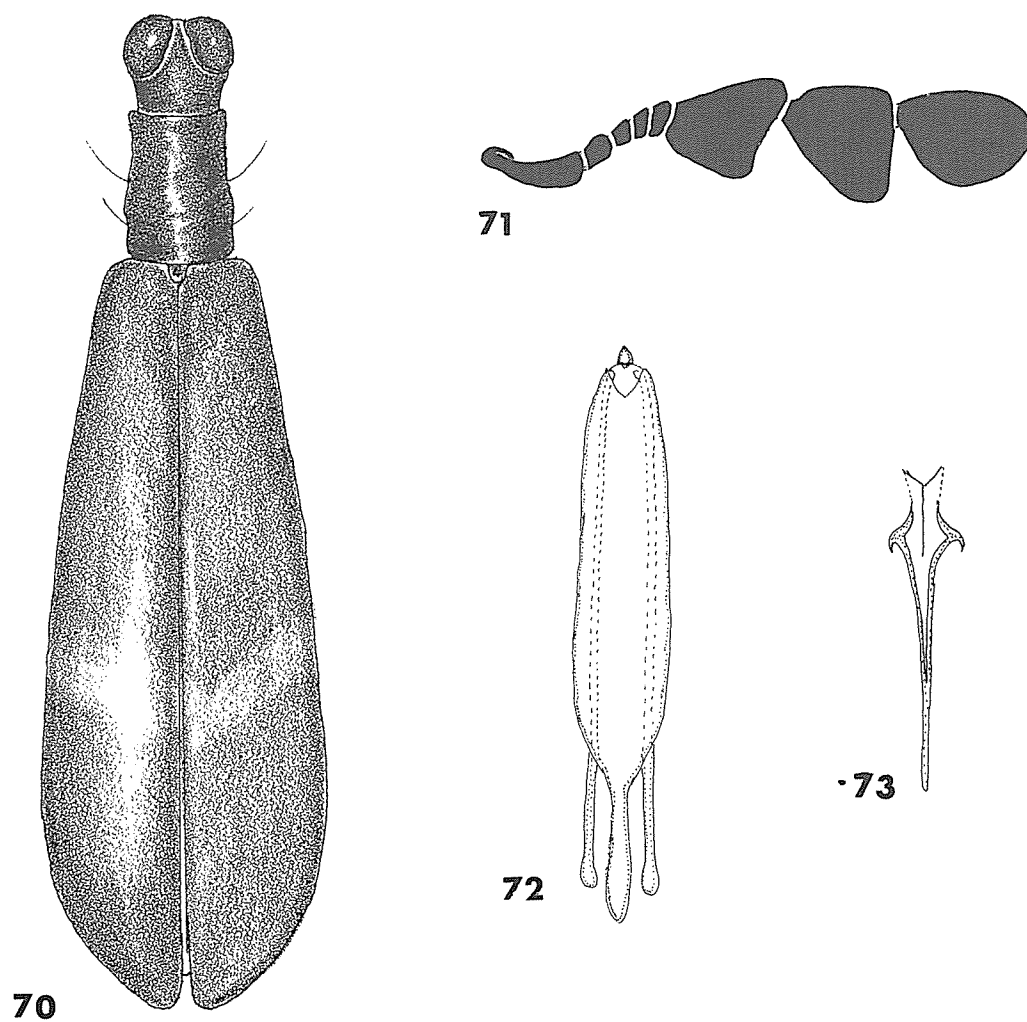
Figs. 55-58.: 55. *Ichneus mexicana* forebody; 56. *Ichneus praeusta* forebody; 57. *Ichneus opaca* protibia; 58. *Ichneus panamensis* metatarsus.



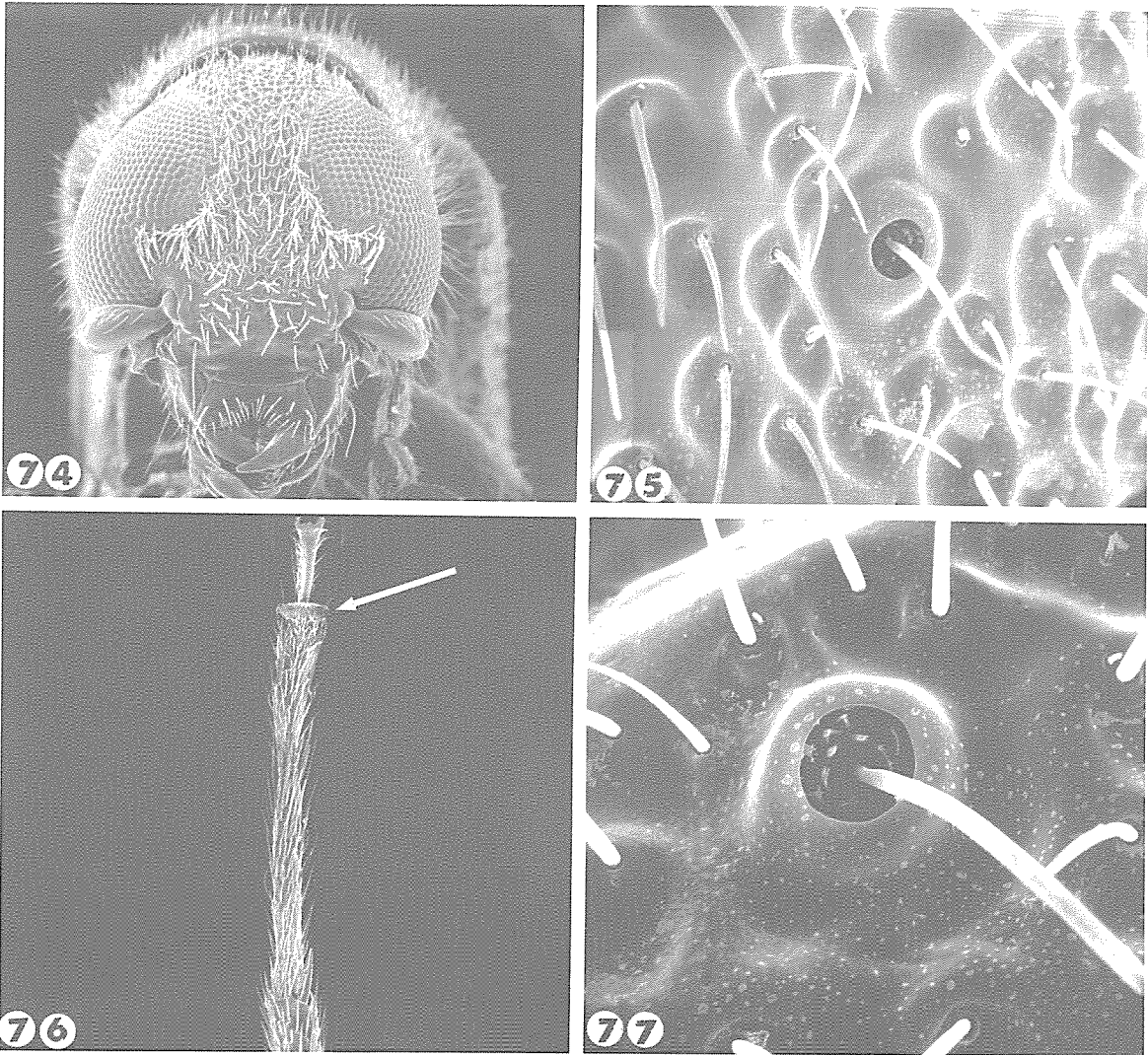
Figs. 59-65. *Ichneia opaca*: 59. Metathoracic wing; 60. Aedeagus; 61. Male internal reproductive organs; 62. Alimentary canal; 63. Spicular fork; 64. Female internal reproductive organs; 65. Mesoscutellum.



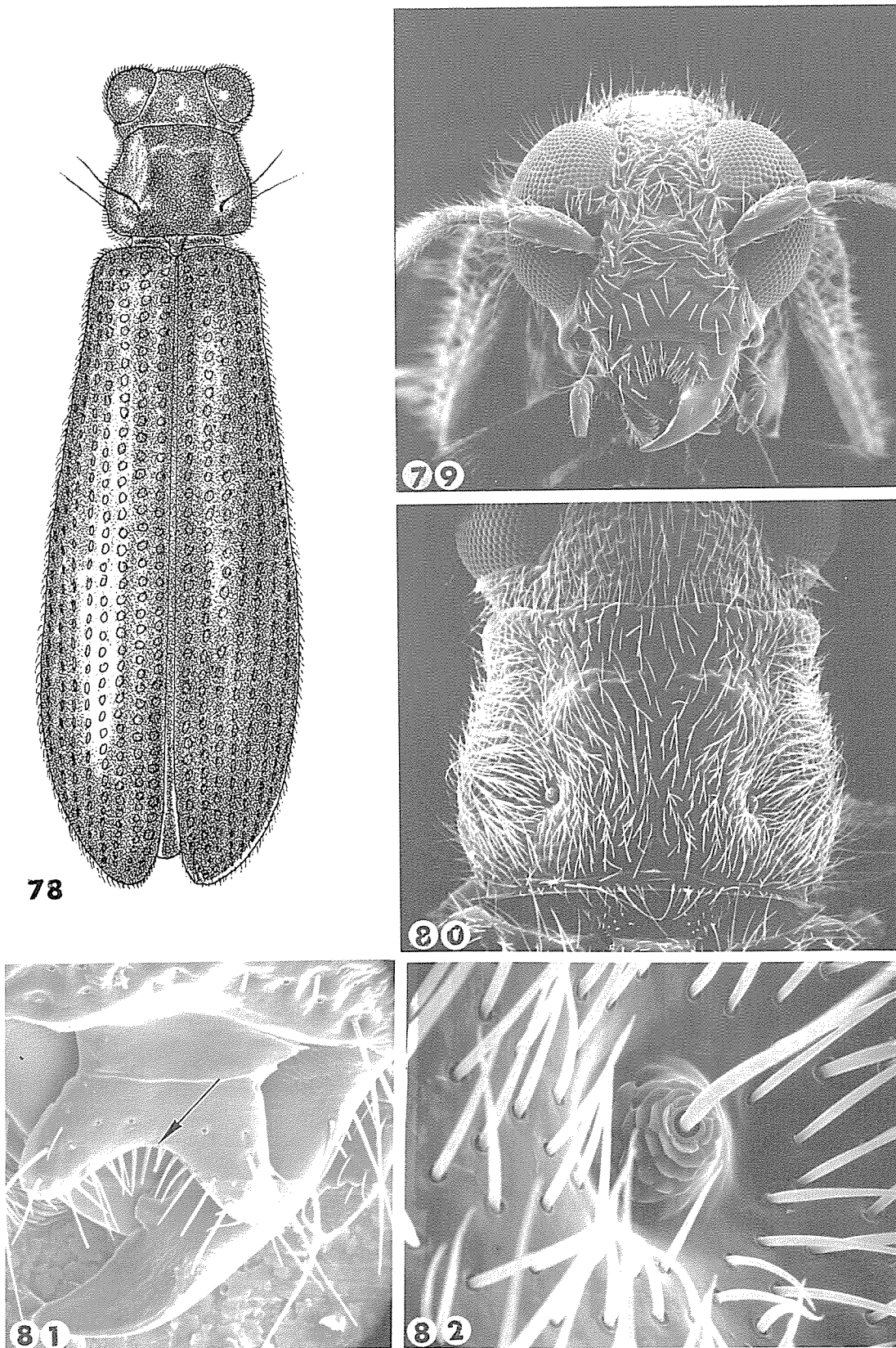
Figs. 66-69. *Arenaria chiapas*: 66. Habitus; 67. Antenna; 68. Aedeagus; 69. Male internal reproductive organs.



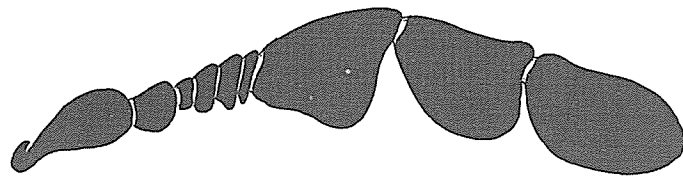
Figs. 70-73. *Diapromeces alydis*: 70. Head; 71. Antenna; 72. Aedeagus; 73. Spicular fork.



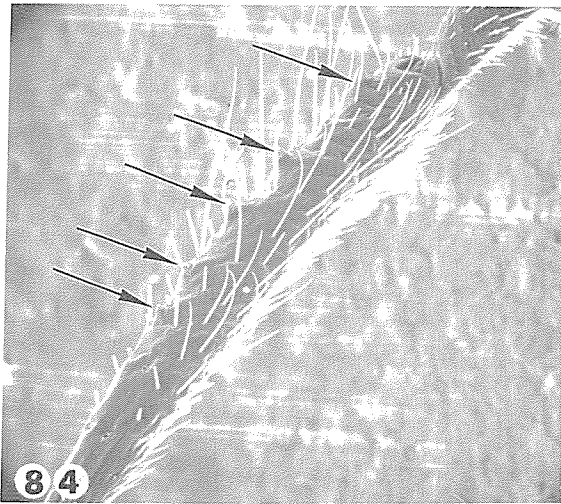
Figs. 74-77. *Diapromeces aclydis*: 74. Head; 75., 77. Filamentous seta of pronotum; 76. Metatibia.



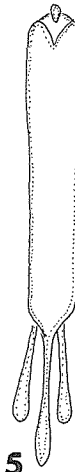
Figs. 78-82. *Pyticeroidea laticornis*: 78. Habitus; 79. Head; 80. Pronotum; 81. Mouthparts; 82. Filamentous seta of pronotum.



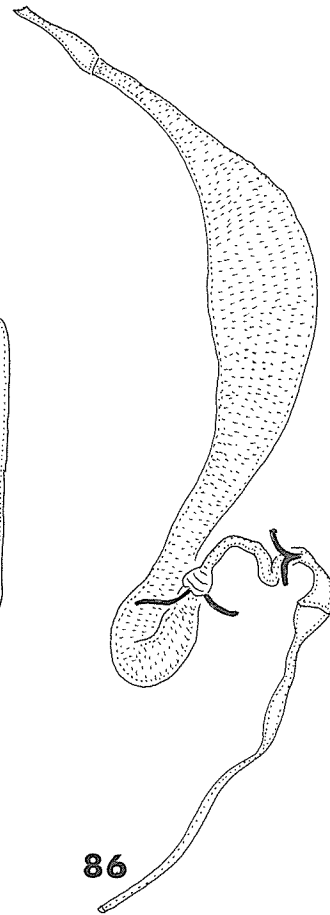
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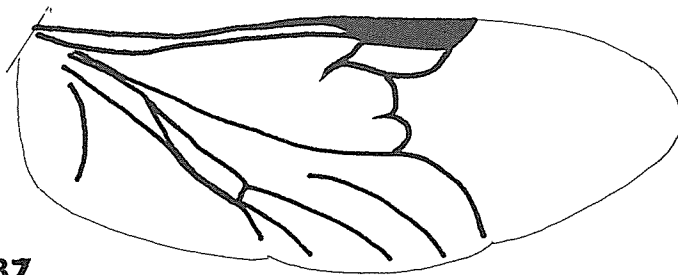
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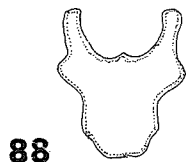
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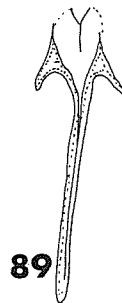
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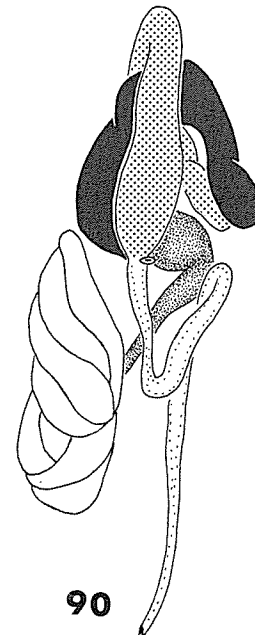
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88

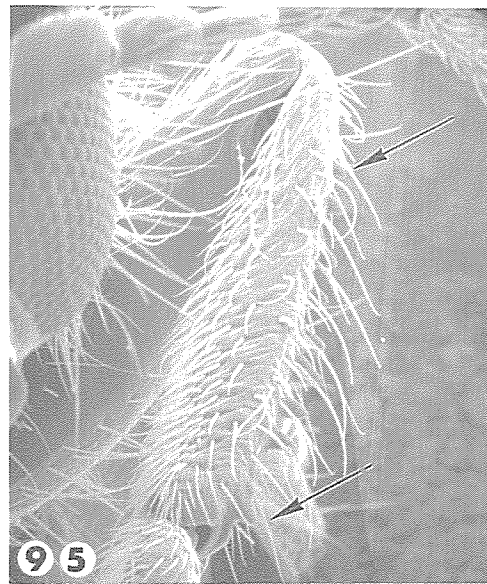
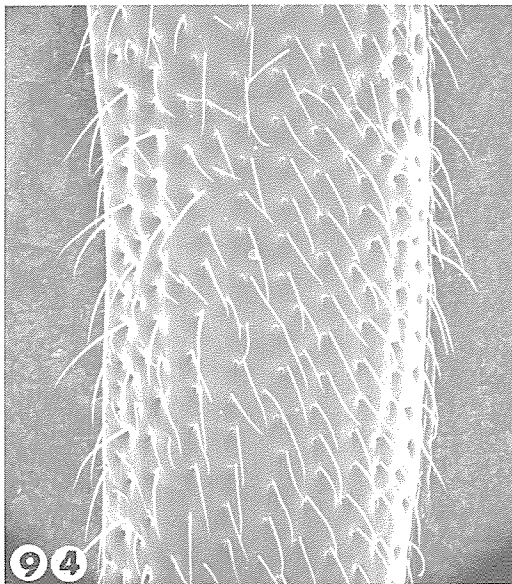
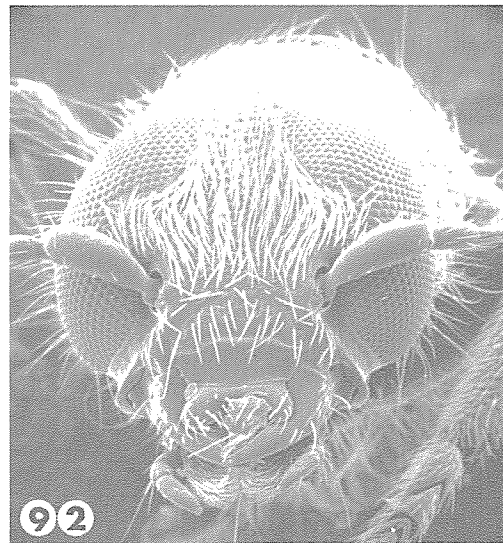
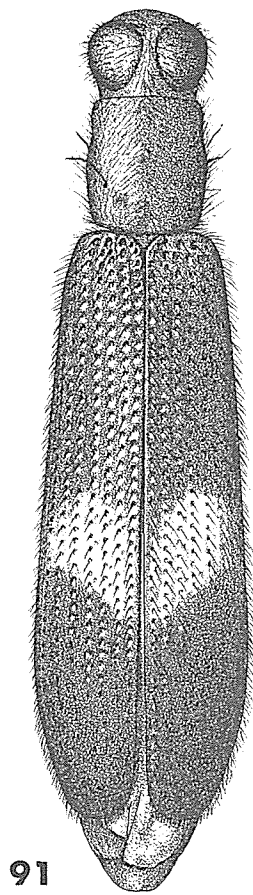


89

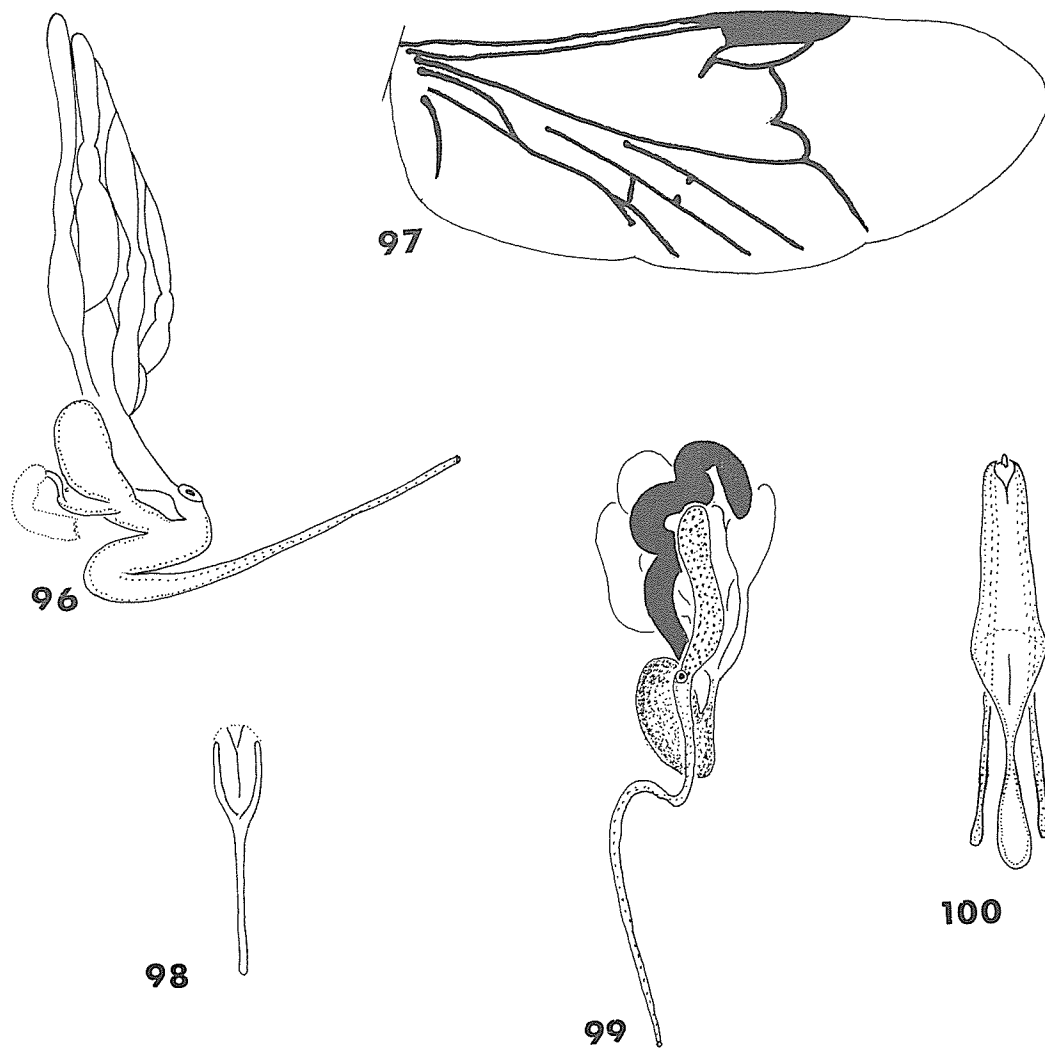


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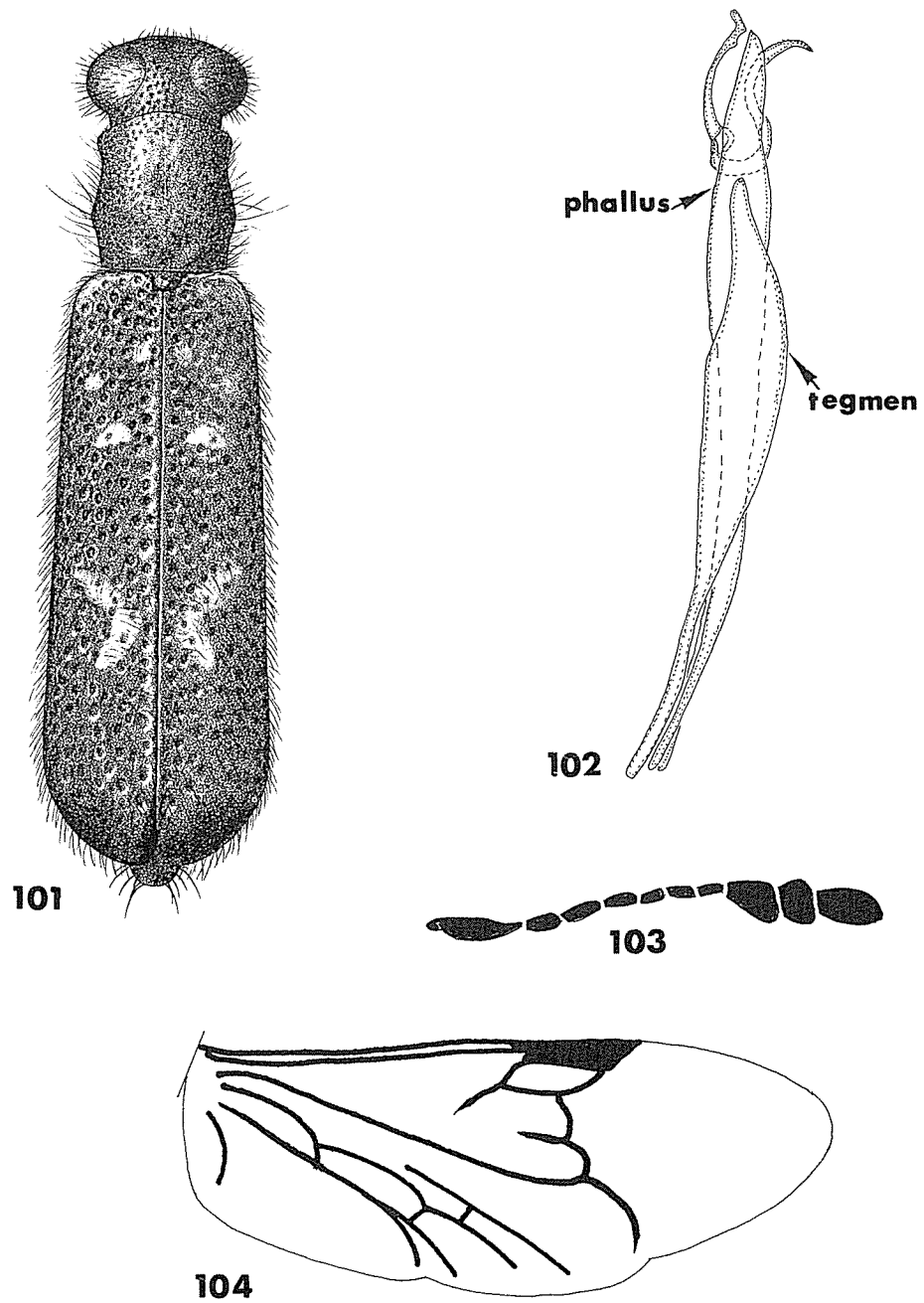
Figs. 83-90. *Pyticerooides laticornis*: 83. Antenna; 84. Protibia; 85. Aedeagus; 86. Alimentary canal; 87. Metathoracic wing; 88. Mesoscutellum; 89. Spicular fork; 90. Male internal reproductive organs.



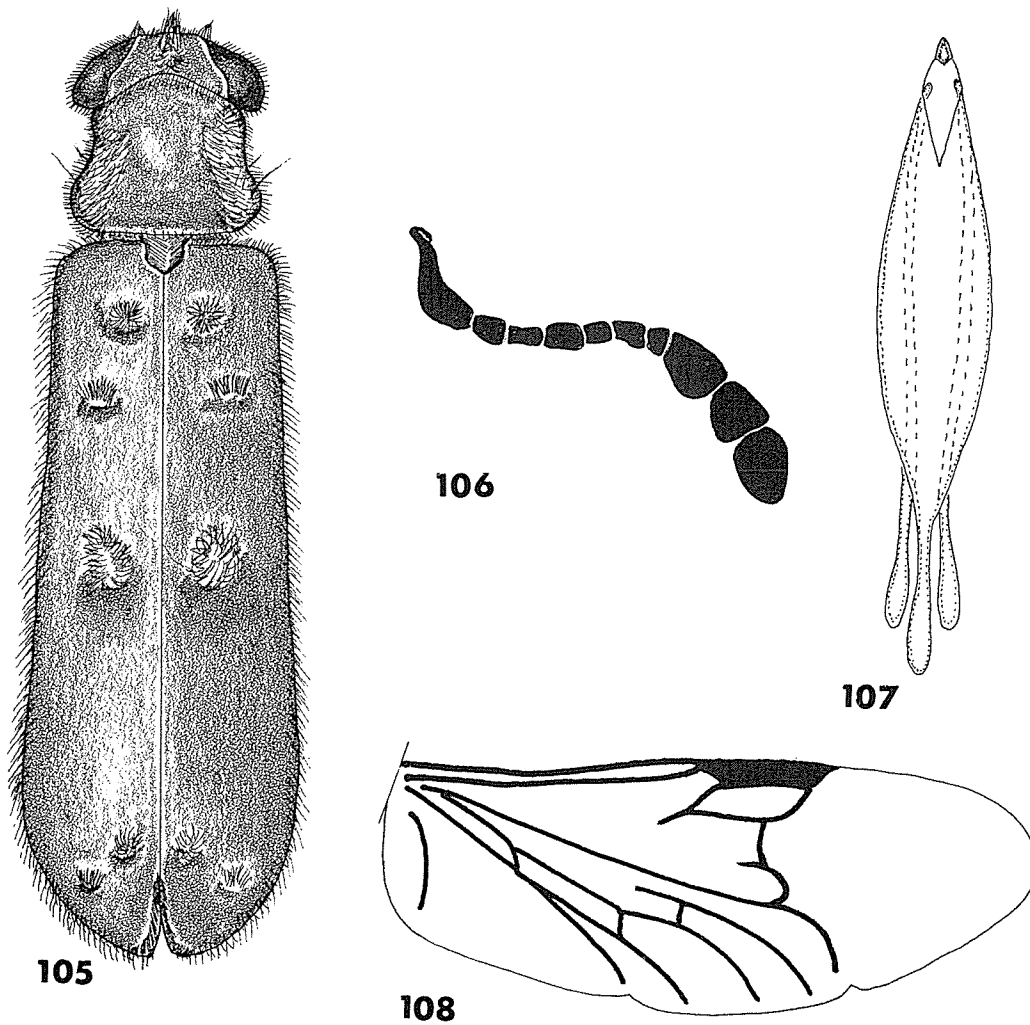
Figs. 91-95. *Ellipotoma tenuiformis*: 91. Habitus; 92. Head; 93. Antenna; 94. Elytron; 95. Protibia.



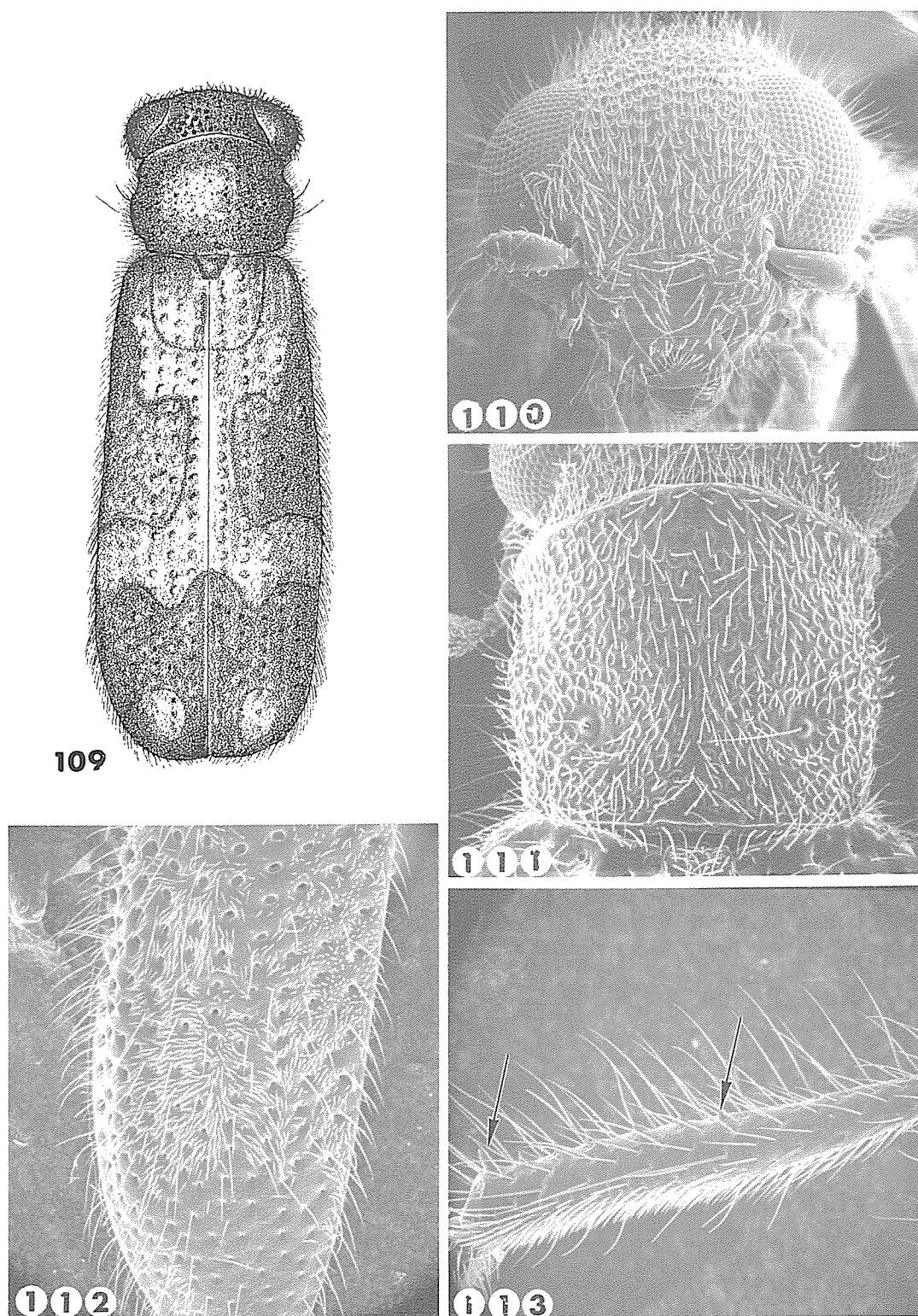
Figs. 96-100. *Ellipotoma tenuiformis*: 96. Female internal reproductive organs; 97. Metathoracic wing; 98. Spicular fork; 99. Male internal reproductive organs; 100. Aedeagus.



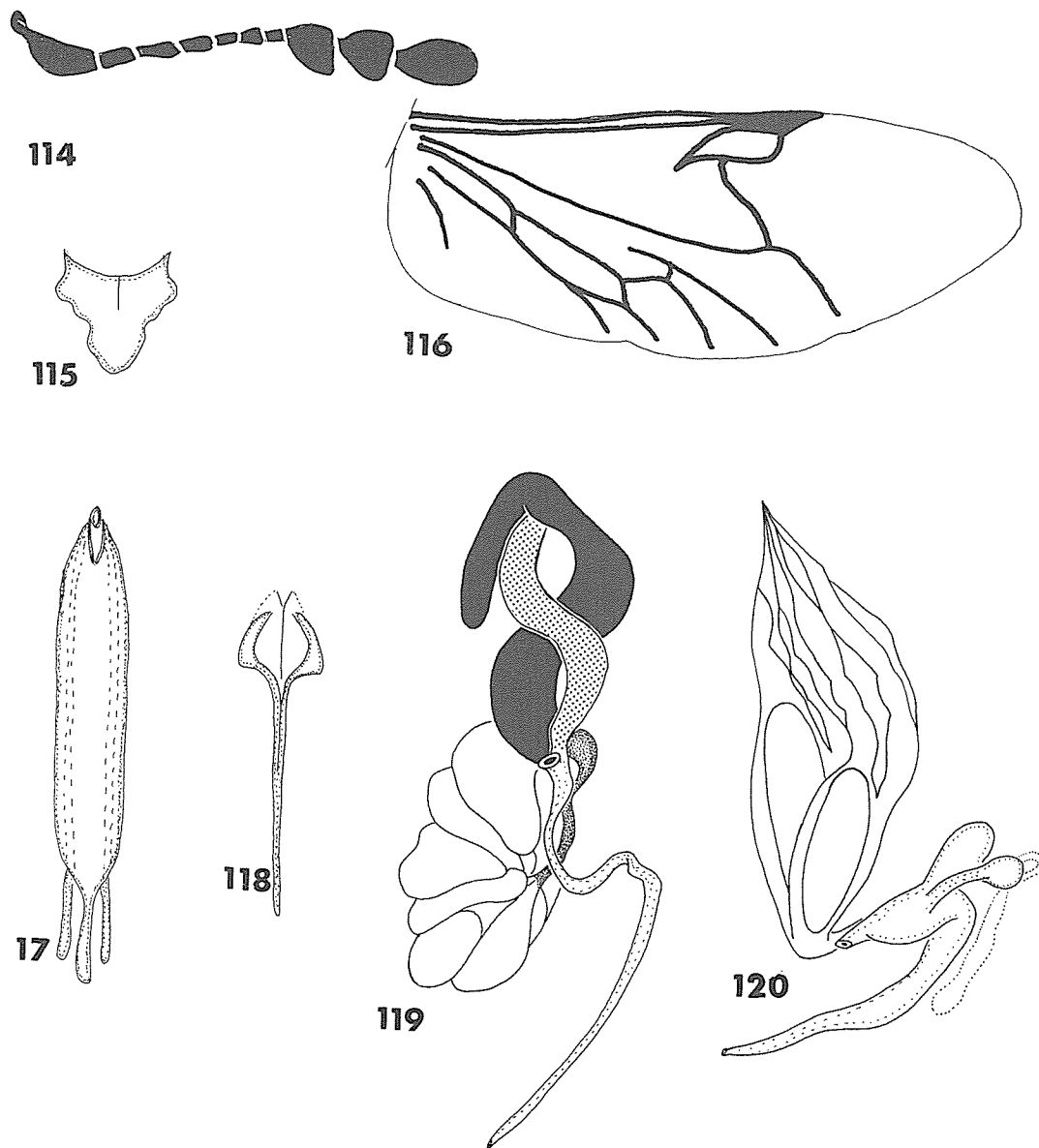
Figs. 101-104. *Katamyurus paxillus*: 101. Habitus; 102. Aedeagus; 103. Antenna; 104. Metathoracic wing.



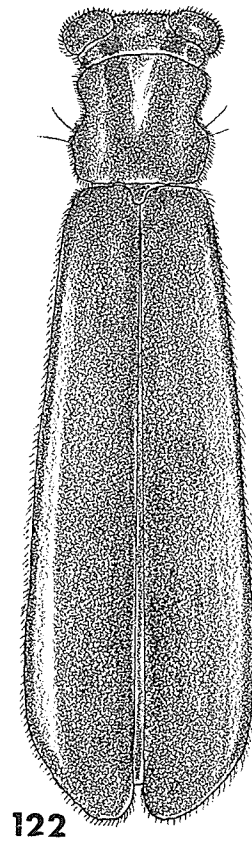
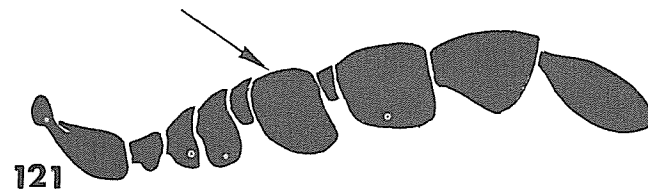
Figs. 105-108. *Megatrachys paniculus*: 105. Habitus; 106. Antenna; 107. Aedeagus; 108. Metathoracic wing.



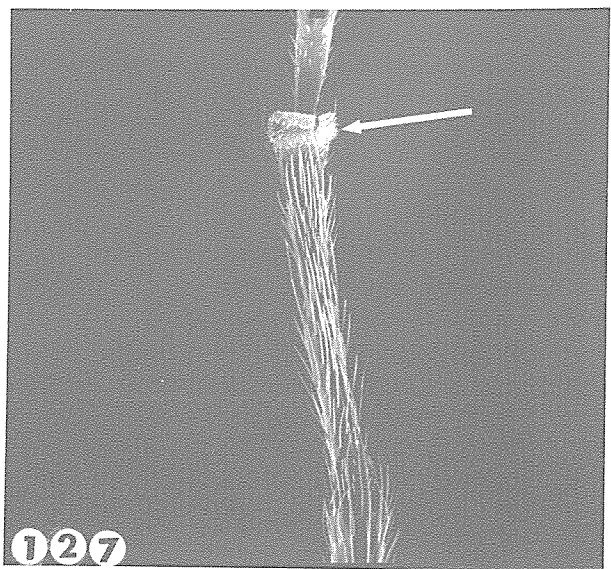
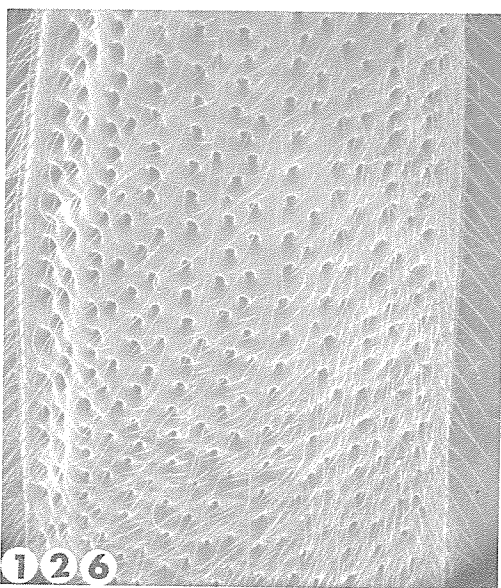
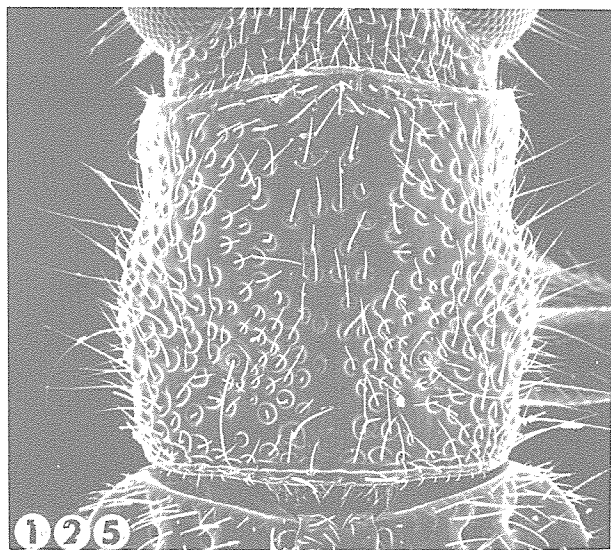
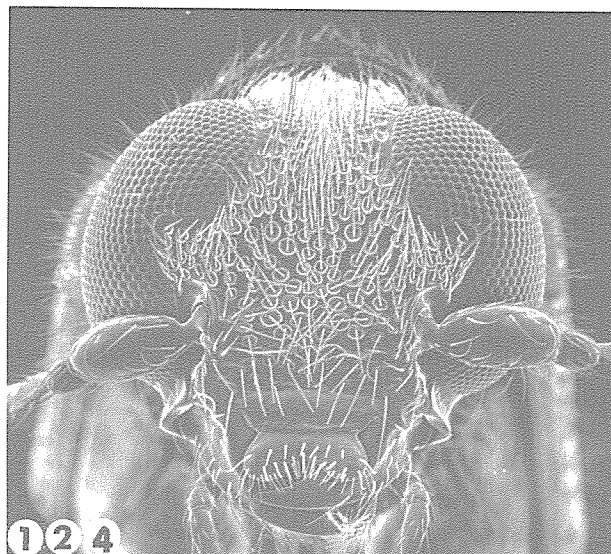
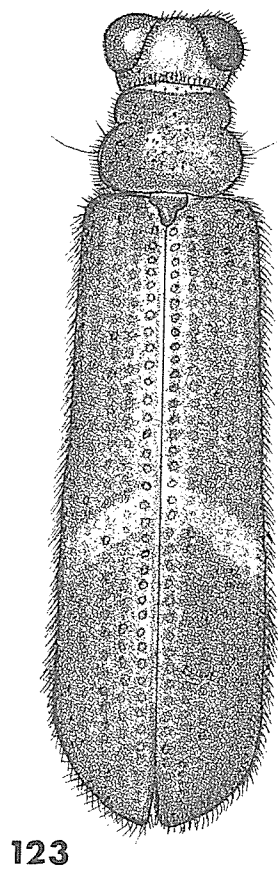
Figs. 109-113. *Phlogistosternus dislocatus*: 109. Habitus; 110. Head; 111. Forebody; 112. Elytra; 113. Protibia.



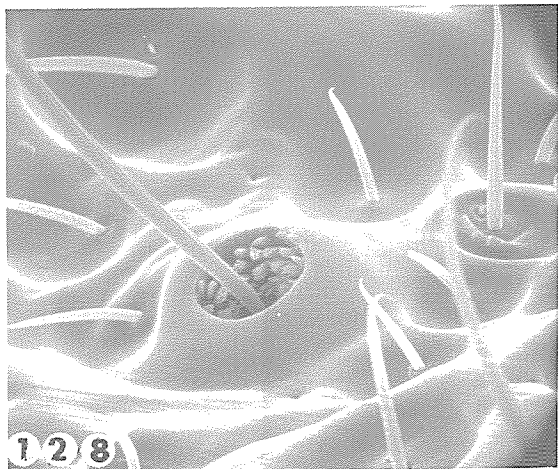
Figs. 114-120. *Phlogistosternus dislocatus*: 114. Antenna; 115. Mesoscutellum; 116. Metathoracic wing; 117. Aedeagus; 118. Spicular fork; 119. Male internal reproductive organs; 120. Female internal reproductive organs.



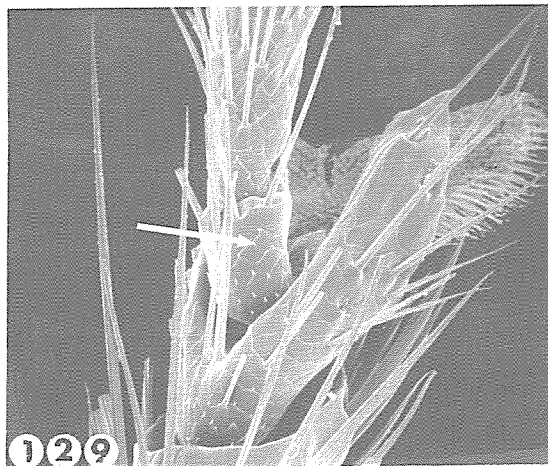
Figs. 121-122. *Hapsidopteris diastenus*: 121. Antenna; 122. Habitus.



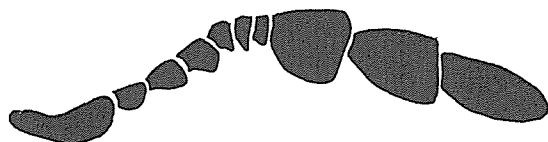
Figs. 123-127. *Teutonia nova*. 123. Habitus; 124. Head; 125. Forebody; 126. Elytra; 127. Metatibia and tarsus.



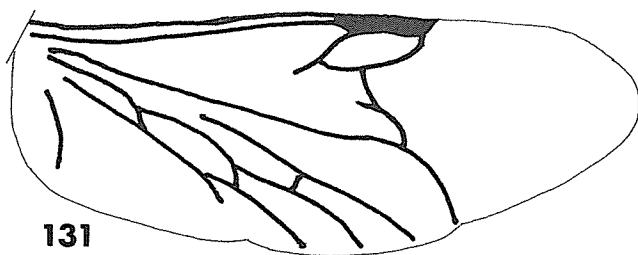
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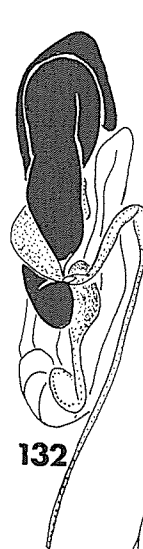
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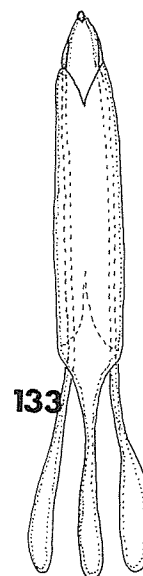
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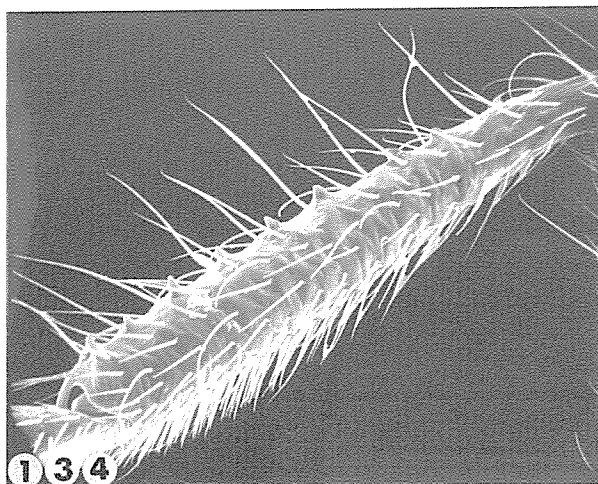
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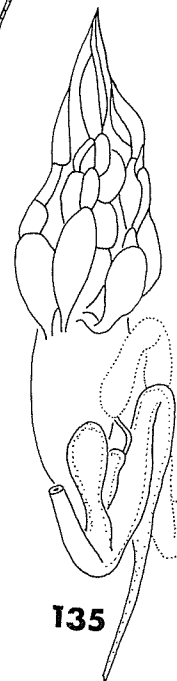
132



133



134



135

Figs. 128-135. *Teutonia nova*: 128. Filamentous setae of pronotum; 129. Metatarsus; 130. Antenna; 131. Metathoracic wing; 132. Male internal reproductive organs; 133. Aedeagus; 134. Protibia; 135. Female internal reproductive organs.



Map 1. Geographic distribution of *Epiphloeus* and *Plocamocera*.



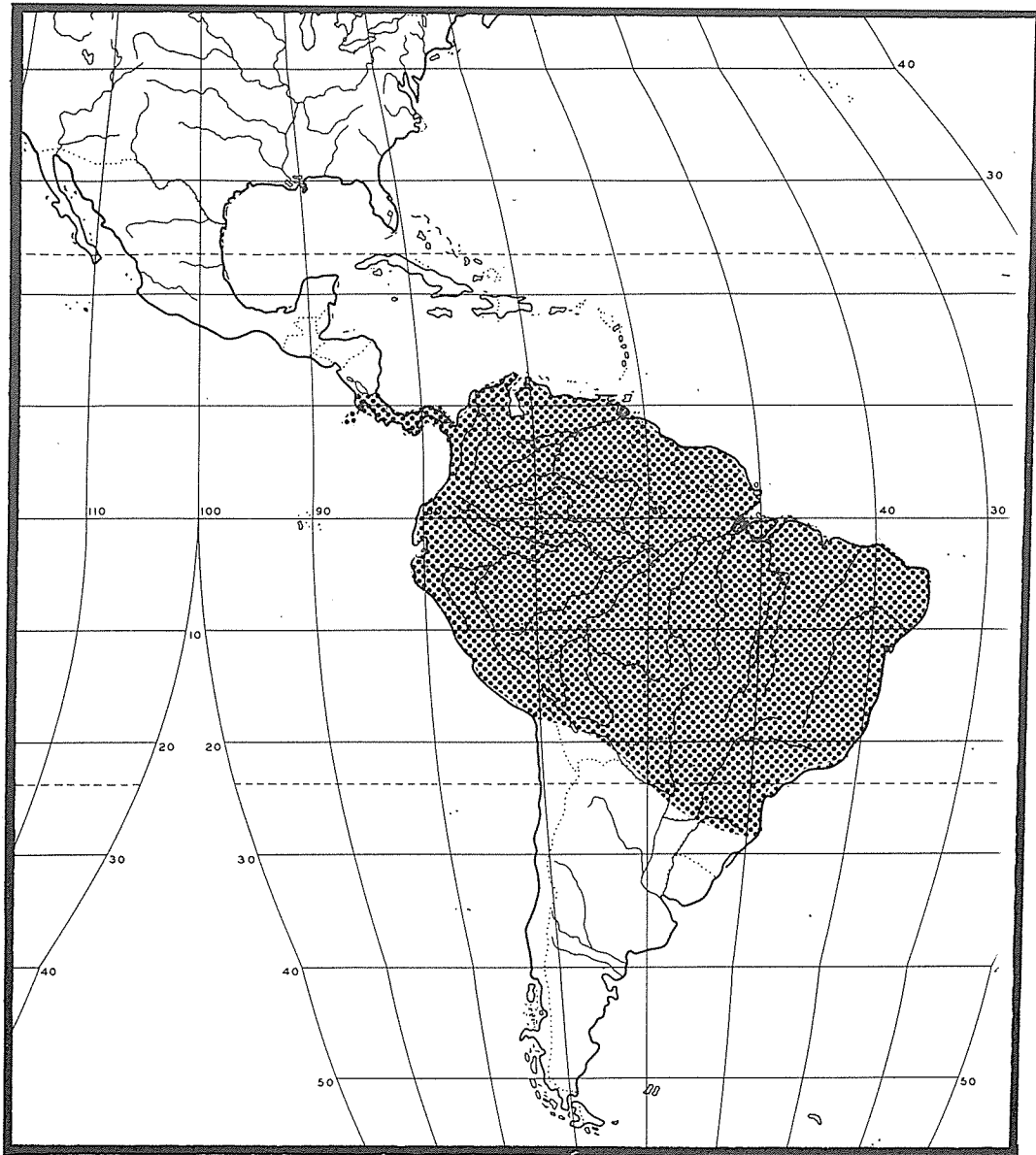
Map 2. Geographic distribution of *Pilosirus*, *Diapromeces*, *Arenaria*, *Katamyurus*, *Megatrachys*, and *Hapsidopteris*.



Map 3. Geographic distribution of *Iontoclerus*.



Map 4. Geographic distribution of *Ichneia* and *Pyticeroidea*.



Map 5. Geographic distribution of *Ellipotoma* and *Teutonia*.



Map 6. Geographic distribution of *Madoniella*.