

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

Weston Opitz
 Kansas Wesleyan University
 Department of Biology
 100 East Claflin
 Salina, Kansas 67401

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. *Enoplium 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 Generale 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 paralateral 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) *Pyticerooides* 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 paralateral 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*i, 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*i, 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 Eki 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 1.528mm. 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,