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ON THE GENERA OF CIXIIDÆ, MEENOPLIDÆ AND KINNARIDÆ (FULGOROIDÆ, HOMOPTERA)

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There are between ten and eleven hundred genera of Homoptera which are grouped together by most Homopterists as a single family, the Fulgoridæ. In a recent publication¹ the writer tried to show good reasons for regarding the genera of this group as consisting of fifteen families, which can be divided into two groups according to the types of male genitalia. Both the Tettigometridæ and the Cixiidæ were shown to contain genera belonging to both of these groups, and it was suggested that the two subfamilies of the Cixiidæ may have arisen separately from tettigometrid forms, and that the Tettigometridæ may be the modern specialized representatives of the primitive fulgorids. Since then the writer has had the opportunity to examine more genera of Tettigometridæ, and he has become more strongly convinced that this interesting group is of prime importance for understanding the relationship of the various families of fulgorids. While the Tettigometridæ are very similar in external appearances, they have very diverse forms of male genitalia, which, to the writer, indicates considerable antiquity. Mr. E. P. Van Duzee has expressed the opinion that the family is more distinctly separated from the rest of the fulgorids than are the other families from one another. This opinion the writer shares, and he has indicated it in the paper above mentioned, especially in the diagram of the affinities of the families. But he would not, on this account, sink the other families into one family, but rather consider the Tettigometridæ as a superfamily, if it be necessary to establish a distinction. If this should be done it could then be divided into two families, one in which the periandrium is large and the penis passes through

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it (*Tettigometra*), and the other in which the perianthrium is basad and the penis is distad (*Egropa*). The latter would then divide into two groups, one in which the genital styles are distinct and movable (*Egropa*), and the other in which they are missing or only represented by fixed processes (*Nototettigometra*). Until the male genitalia of more genera have been examined, it is not possible to say into which of the groups the other genera should be placed.

This conclusion naturally affects the classification of the Cixiidæ because the Meenoplinæ would be descended from a tettigometrid stock and the Cixiinæ from an egropid stock, and it would, therefore, be illogical to keep them in one family. Apart from this theoretical line of reasoning, there are very strong reasons for dividing Cixiinæ from the Meenoplinæ. The two groups are so very distinct that, were it not for the presence of the median ocellus, very few workers would place them together. As it is, the Meenoplinæ have been placed in the Derbidæ, Achilidæ, and Cixiidæ by different workers, which in itself is enough to indicate their distinctiveness.

The decision to regard the Cixiidæ and Meenoplidæ as two families raises the question as to the status of the genus *Kinnara*. This genus has the meenoplid type of male genitalia and so cannot go into the Cixiidæ, except as a matter of expediency to dispose of an inconvenient genus; its relationship to the Meenoplidæ is not close, and to place it in that family would be to break down the chief characters upon which that family is recognized. It holds the same position in the meenoplid group of families as *Achilixius* does in the cixiid group, and it appears to the writer that the best way to deal with it would be to place it in a family by itself, the *Kinnaridæ*. That this decision will meet with opposition from those who regard the whole of the fulgorids as only constituting one family is natural, but to those who consider them as constituting a number of families this decision will appear logical.

While the writer considers that the Cixiidæ (sens. lat.) should be divided into three families, in the present list and table he has dealt with them together, as most workers will expect to find them so, and the chief object of this paper is for convenience.

The list contains 120 generic and 2 subgeneric names, of which 88 are treated as good genera, 28 as direct synonymies,

3 as preoccupied, and 1 (*Bordicea* Walker) discarded for the present.

Most of the synonymies have been accepted by several workers and are, most probably, correct; some of the new synonymies may also be correct, but others may be open to doubt, and only represent the writer's present knowledge. The genus *Ptoleria* Stål, as recognized by the writer, is a large group, and it is hoped that future study will lead to the resurrection of some of the synonymized genera, but from his present knowledge the writer cannot uphold them.

LIST OF GENERA OF CIXIIDÆ (sens. lat.)

(|| = direct synonymies; § = preoccupied)

1. *ACHÆMENES* Stål 1866, Hem. Afr. IV, pp. 165, 170. Type *A. notatineris* Stål.
|| *Adana* Stål 1856, Of. Vet. Ak. Fordh. XIII, p. 16. Type *A. westwoodi* Stål = *Bothriocera tinealis* Burm.
2. *ADOLENDA* Distant 1911, Ann. Mag. Nat. Hist. (8) VIII, p. 740. Type *A. typica* Dist.
3. *ADOLENDANA* Distant 1917, Trans. Linn. Soc. Lond. XVII, p. 278. Type *A. typica* Dist.
|| *Adzapala* Distant 1911, Ann. Mag. Nat. Hist. (8) VIII, p. 739. Type *A. greeni* Dist. = *Oliarus* Stål.
4. *AKA* White 1879, Ent. Mo. Mag. XV, p. 216. Type *Cixius fnitimus* Walker.
|| *Amabalangoda* Distant 1912, Ann. Mag. Nat. Hist. (8) IX, p. 187. Type *A. insignis* Dist. = *Ptoleria* Stål.
5. *ANDES* Stål 1866, Hem. Afr. IV, p. 166. No species mentioned. Type *A. undulata* Stål 1871, Of. Vet. Ak. Forh., p. 747. This genus will date from the latter date. Syn. *Leirioëssa* Kirk.
6. *ANIGRUS* Stål 1866, Hem. Afr. IV, p. 172. Type *A. sordidus* Stål.
7. *ANILA* Distant 1906, Faun. Brit. Ind. Rhyn. III, p. 260. Type *A. fuliginosa* Distant.
8. *AULOCORYPHA* Berg 1879, Hem. Arg., p. 221. Type *A. punctulata* Berg.
|| *Australoma* Kirkaldy 1907, Haw. Sugar Pltrs. Ent. Bull. III, p. 114. Type *A. austrina* Kirk. = *Ptoleria* Stål.
|| *Bajauana* Distant 1907, Ann. Mag. Nat. Hist. (7) XIX, p. 277. Type *Brixia rufula* Walk.
- || *Barma* Distant 1906, Faun. Brit. Ind. Rhyn. III, p. 266. Type *B. diversa* Dist. = *Borysthenes* Stål.
- || *Bathymeria* Muir 1922, Journ. Linn. Soc. N. S. W., p. 65. Type *B. helmsi* Muir = *Cajeta* Stål.
9. *BENNA* Walker 1857, Journ. Linn. Soc. Lond. I, p. 90. Type *B. capitulata* Walker.

10. BENNARIA Melichar 1914, Philip. Journ. Sci. D. IX, p. 175. Type *B. bimaculata* Mel.
11. BETACIXIUS Matsumura 1914, Annotat. Zoolog. Japan, VIII, 3-4, p. 412. Type *B. ocellatus* Mats.
- , BODECIA Walker 1868, Pro. Linn. Soc. Lond. Zool., X, p. 117. Type *B. varipes* Walk.
12. BORYSTHENES Stål 1866, Hem. Afr. IV, p. 165, no species mentioned; 1866, Berl. Ent. Zeit., p. 165, *Cixius finitus* Walker selected as type. Syn. *Barma* Dist.; *Vademela* Melichar.
13. BOTHRIOCERA Burmeister 1835, Handb. Ent. II, p. 156. Type *B. tinealis* Burm. Syn. *Adana* Stål.
14. BOTHRIOCERODES Fowler 1904, Bio. Cent. Amer. Hom. I, p. 80. Type *B. variegatus* Fowler.
15. BRIXIA Stål 1856, Of. Vet. Ak. Forh. XIII, p. 162. Type *Derbe natalicola* Stål. Syn. *Triopsis* Sign; *Curiatius* Dist.
16. BRIXIDIA Haglund 1899, Of. Vet. Ak. Forh. LVI, p. 60. Type *B. nebulosa* Hagl. (The type specimen is labeled *Brixiola nebulosa* Hagl.)
17. CAJETA Stål 1866, Hem. Afr. IV, p. 150, no species mentioned; 1866, Berlin Ent. Zeit. X, p. 391. *C. singularis*, type described. Syn. *Bathyeria helmsi* Muir.
18. CALAMISTER Kirkaldy 1906, Haw. Sugar Pltrs. Ent. Bull. I, p. 396. Type *C. obscurus* Kirk.
19. CALERDA Signoret 1863, Ann. Soc. Ent. France (4), III, p. 583. Type *C. biocellata* Sign.
|| *Caneirona* Distant 1916, Faun. Brit. Ind. Rhyn. VI, p. 38. Type *C. indica* Dist. = *Ptoleria* Stål.
20. CAROLUS Kirkaldy 1906, Haw. Sugar Pltrs. Ent. Bull. I (9), p. 401. Type *C. crispus* Kirk.
|| *Ciocixius* Metcalf 1923, Jour. Elisha Mitchell Scien. Soc., p. 183. Type *Cixius dorsivittatus* Van Duzee = *Pintalia*.
21. CIXIOSOMA Berg. 1879, Hem. Argen., p. 220. Type *C. platensis* Berg.
22. CIXIUS Latreille 1804, Hist. Nat. Crust. Ins. XII, p. 310. Type *Cicada nervosa* L. Syn. *Vincentia*.
23. COLVANALIA Muir. n. g.
|| *Commolenda* Distant 1911, Ann. Mag. Nat. Hist. (8) VIII, p. 741. Type *C. deusta* Dist. = *Ptoleria* Stål.
|| *Cotyleceps* Uhler 1895, Pro. Zoo. Soc. Lond., p. 63. Type *C. decorata* Uhler = *Pintalia* Stål.
24. CUBANA Uhler 1895, Pro. Zoo. Soc. Lond., p. 62. Type *C. tortrix* Uhler.
|| *Curiatius* Distant 1917, Trans. Linn. Soc. Lond. XVII, p. 285. Type *C. insignis* Distant = *Brixia* Stål.
25. DIACIRA Stål. 1860, K. Sven. Vet. Ak. Hand. III, No. 6, p. 3. Type *D. moerens* Stål.
26. DULIUS Stål 1858, Of. Vet. Ak. Forh. XV, p. 319. Type *D. tenuis* Stål.

27. DYSTHEATIAS Kirkaldy 1907, Haw. Sugar Pltrs. Ent. Bull. II p. 113. Type *D. beecheyi* Kirk. Syn. *Quirosia* Kirk.; *Sacchari*, Kirk.
|| *Entithena* Fieber 1866, Verh. z. b. Ges. Wien. XVI, p. 499. Type *Flata musiva* Germ. = *Myndus* Stål.
28. EPARMENE Fowler 1904, Bio. Cent. Amer. Hom. I, p. 81. Type *E. pulchella* Fowler.
29. EPOLIARUS Matsumura 1910, Jour. Coll. Sci. Tokyo, XXVII, p. 1. Type *E. politus* Mats.
30. EPNISIA Matsumura 1914, Ann. Mus. Nat. Hung. XII, p. 285. Type *E. guttula* Mats.
31. EUCARPIA Walker 1856, Jour. Linn. Soc. Lond. Zoo. I, p. 159. Type *E. univitta* Walk.
32. EURYPHEPSIA Muir 1922, Philip. Jour. Sci. XX, p. 114. Type *E. amboinensis* Muir.
33. GELASTOCEPHALUS Kirkaldy 1906, Haw. Sugar Pltrs. Ent. Bull. I, p. 396. Type *G. ornithoides* Kirk.
|| *Haplacha* Lethierry 1874, Pet. Nouv. Ent. I, p. 444. Type *H. seticulosa* Leth. = *Hemitropis* Fieb.
34. *Haplaxius* Fowler 1904, Bio. Cent. Amer. Hom. I, p. 80. Type *H. levis* Fowler.
35. HEMITROPIS Fieber 1866, Ver. z. b. Ges. Wien. XVI, p. 499. Type *H. bipunctata* Fieber. Syn. *Haplacha* Leth.
36. HUTTIA Myers 1924, Trans. New Zealand Inst. LV, p. 321. Type *H. nigrifrons* Myers.
37. HYALESTHES Signoret 1865, Ann. Soc. Ent. France (4), V, p. 128. Type *H. obsoletus* Sign. Syn. *Liorhinus* Kirschb.
38. INXWALA Distant 1907, Ins. Transval., p. 197. Type *I. modesta* Distant.
39. IOLANIA Kirkaldy 1902, Faun. Haw. III, p. 118. Type *I. perkinsi* Kirk.
40. IPSNOLA Signoret 1885, Ann. Soc. Ent. France (6), V, p. 69. Type *I. sextuberculata* Sign.
41. KERMESIA Melichar 1903, Hom. Faun. Ceylon, p. 52. Type *K. al-bida* Mel.
42. KINNARA Distant 1906, Faun. Brit. Ind. Rhyn. III, p. 289. Type *Pleroma ceylonica* Melichar. New name for *Pleroma* Melichar, preoccupied.
§ *Kirbya* Melichar 1903, Hom. Faun. Ceylon, p. 37. Type *K. pagana* Mel.; preoccupied = *Kirbyana* Dist.
43. KIRBYANA Distant 1906, Faun. Brit. Ind. Rhyn. III, p. 262. New name for *Kirbya* Mel. Syn. *Kirbyella* Kirk.
|| *Kirbyella* Kirkaldy 1906, Entomologist, p. 248. New name for *Kirbya* Melichar = *Kirbyana* Dist.
44. KOROANA Myers 1924, Trans. New Zealand Inst. LV, p. 319. Type *K. helena* Myers.

45. KUVERA Distant 1906, Faun. Brit. Ind. Rhyn. III, pp. 255, 261.
Type *K. semihyalina* Dist.
|| *Leirioëssa* Kirkaldy 1907, Haw. Sugar Pltrs. Ent. Bull. III,
p. 112. Type *L. tortricomorpha* Kirk. = *Andes* Stål.
46. LEPTOCHLAMYS Kirkaldy 1908, Haw. Sugar Pltrs. Ent. Bull. III,
p. 113. Type *L. compressa* Kirk.
|| *Liorhinus* Kirschbaum 1868, Jb. Nass. Ver. Nat. XXI-XXII,
p. 12. Type *L. albolimbatus* Kirsch. = *Hyalesthes obsoletus* Sign.
47. MACROCIXIUS Matsumura 1914, Annotat. Zoolog. Japan, VIII,
p. 394. Type *M. giganteus* Mats.
48. MALPHA Myers 1924, Trans. New Zealand Inst. LV, p. 322. Type
M. muiri Myers.
49. MEENOPUS Fieber 1866, Ver. z. b. Ges. Wien, XVI, p. 498. Type
M. albosignatus Fieber.
50. MELANDEVA Distant 1906, Faun. Brit. Ind. Rhyn. III, p. 268. Type
M. ocellata Dist.
51. MESOLIARUS Matsumura 1910, Jour. Coll. Sci. Tokyo, XXVII,
p. 9. Type *M. malagensis* Mats.
|| *Metabrixia* Fowler 1904, Bio. Cent. Amer. Hom. I, p. 80. Type
M. delicata Fowler = *Pintalia* Stål.
52. MICRIXIA Fowler 1904, Bio. Cent. Amer. Hom. I, p. 80. Type *M.*
concinna Fowler.
53. MICROLEDRIIDA Fowler 1904, Bio. Cent. Amer. Hom. I, p. 81. Type
M. asperata Fowler.
54. MNEMOSYNE Stål 1866, Hem. Afr. IV, p. 150. No species men-
tioned. Type *M. cubana* Stål 1866, Berl. Ent. Zeit. X, p. 391.
55. MONORACHIS Uhler 1901, Pro. Ent. Soc. Washington IV (4), p. 509.
Type *M. sordulentus* Uhler.
56. MOYSELLA Horvath 1913, Ann. Mus. Nat. Hungary, XI, p. 398.
Type *M. sinaitica* Horv.
57. MUNDOPA Distant 1906, Faun. Brit. Ind. Rhyn. III, p. 263. Type
M. cingulensis Dist.
58. MYNDUS Stål 1862, Berl. Ent. Zeit. VI, p. 307. Type *M. pictifrons*
Stål. Syn. *Entithena* Fieber.
59. NESOCHARIS Kirkaldy 1907, Haw. Sugar Pltrs. Ent. Bull. III, p. 110.
Type *N. kalypto* Kirk. Syn. *Nesochlamys* Kirk.
|| *Nesochlamys* Kirkaldy 1907, Haw. Sugar Pltrs. Ent. Bull. III,
p. 115. Type *N. vitiensis* Kirk. = *Nesocharis* Kirk.
60. NESOLIARUS Kirkaldy 1909, Pro. Haw. Ent. Soc. II (2), p. 76.
Type *N. tamehameha* Kirk. Subgenus of *Oliarus* Stål.
61. NESOMYNDUS Jacobi 1917, Voeltzkow Reise in Ostafrika, III, p. 529.
Type *M. australis* Jacobi.
62. NESOPOMPE Kirkaldy 1907, Haw. Sugar Pltrs. Ent. Bull. III, p. 107.
Type *N. felis* Kirk. Subgenus of *Oliarus* Stål.
63. NISIA Melichar 1903, Hom. Faun. Ceylon, p. 53. Type *Meenoplus*
atrovenosus Leth.
64. NOTHOCHARIS Muir. n. g.

65. NYMPHOCIXIA Van Duzee 1923, Pro. Cal. Acad. Sci. (4) XII,
p. 189. Type *N. unipunctata* Van Duzee.
66. ŒCLEUS Stål 1862, Berl. Ent. Zeit. VI, p. 306. Type *O. seminiger*
Stål.
67. ŒCLIDIUS Van Duzee 1914, Trans. San Diego Soc. Nat. Hist. II,
No. 1, p. 40. Type *O. nanus* Van Duzee.
68. OLONIA Muir. n. g.
69. OLIARUS Stål 1862, Berl. Ent. Zeit. VI, 306. Type *Cixius walkeri*
Stål. Subgenera *Nesoliarus* Kirk.; *Nesopompe* Kirk. Syns. *Pen-*
tastira Kirschb.; *Pentastiridius* Kirschb.; *Urvillia* Kirk.; *Adza-*
pala Distant; *Prosops* Buckton.
70. PACHYNTHEISA Fowler 1904, Bio. Cent. Amer. Hom. I, p. 81. Type
P. concinna Fowler.
71. PARAMICRIXIA Distant 1911, Ann. Mag. Nat. Hist. (8) VIII, p. 742.
Type *P. diaphana* Distant.
72. PARANDES Muir Philip. Jour. Sci. in press. Type *P. simplex* Muir.
73. PARANIGRUS Bergroth 1920, Ark. Zool. XII, No. 17, p. 18. Type
P. muiri Bergroth.
74. PARANISIA Matsumura 1914, Ann. Mus. Nat. Hungary, XII, p. 283.
Type *P. formosana* Mats.
§ *Paulia* Stål 1869, Svensk. Vet. Akad. Handl. VIII, No. 1, p. 94.
Type *Delphax opposita* Fabr. Name preoccupied = *Southia*
Kirk. n. n.
|| *Pentastira* Kirschbaum 1868, Jb. Nass. Ver. XXI-XXII, p. 11.
Type *P. major* Kirschb. = *Oliarus* Stål.
|| *Pentastiridius* Kirschbaum 1868, Jb. Nass. Ver. XXI-XXII, p. 11.
Type *Flata pallens* Germar = *Oliarus* Stål.
75. PHACONEURA Kirkaldy 1906, Haw. Sugar Pltrs. Ent. Bull. I (9),
p. 427. Type *P. froggatti* Kirk.
76. PINTALIA Stål 1862, Svensk. Vet. Akad. Handl. III, No. 6, p. 4.
Type *P. lateralis* Stål. Syns. *Cotyleceps* Uhler; *Metabrixia* Fow-
ler; *Cicocixius* Metcalf.
77. PLATYCIXIUS Van Duzee 1914, Trans. San Diego Soc. Nat. Hist. II,
No. 1, p. 37. Type *P. calvus* Van Duzee.
§ *Pleroma* Melichar 1903, Hom. Faun. Ceylon, p. 41. Type *P. cey-*
lonica Mel.; preoccupied = *Kinnara* Distant n. n.
|| *Prosops* Buckton 1893, Vict. Naturalist, X, p. 49. Type *P. pedi-*
sequus Buckton = *Oliarus* Stål.
78. PROSOTROPIS Uhler 1895, Pro. Zoo. Soc. Lond., p. 70. Type *P. deco-*
rata Uhler.
79. PTOLERIA Stål 1859, Berl. Ent. Zeit. III, p. 321. Type *P. arcui-*
gera Stål. Syns. *Australoma* Kirk.; *Bajauana* Dist.; *Caneirona*
Dist.; *Commolenda* Dist.; *Ambalangoda* Dist.
|| *Quirosia* Kirkaldy 1907, Haw. Sugar Pltrs. Ent. Bull. III, p. 114.
Type *Q. vitiensis* Kirk. = *Dystheatias* Kirk.
80. RHAMPHIXIUS Fowler 1904, Bio. Cent. Amer. Hom. I, p. 81. Type
R. championi Fowler.

81. ROBIGALIA Distant 1916, Faun. Brit. India, Rhyn. VI, p. 56. Type *R. butleri* Distant.
|| *Saccharias* Kirkaldy 1907, Ann. Soc. Ent. Belg. LI, p. 125. Type *S. deventeri* Kirk. = *Dystheatias* Kirk.
82. SEMO White 1879, Ent. Mo. Mag. XV, p. 217. Type *S. clypeatus* White.
83. SALONAIMA Kirkaldy 1906, Haw. Sugar Pltrs. Ent. Bull. I, p. 396. Type *S. solonaima* Kirkaldy. Syn. *Talaloo* Distant.
84. SOUTHIA Kirkaldy 1904, Entomologist, XXXVII, p. 279. New name for *Paulia* Stål preoccupied. Type *Delphax opposita* Fabr.
85. STENOPHLEPSIA Muir 1922, Philip. Jour. Sci. XX, No. 1, p. 117. Type *S. flava* Muir.
86. SUVA Kirkaldy 1906, Haw. Sugar Pltrs. Ent. Bull. I (9), p. 428. Type *S. koebelei* Kirk.
|| *Talaloo* Distant 1907, Ann. Mag. Nat. Hist. (7) XIX, p. 295. Type *T. pallescens* Dist. = *Solonaima* Kirk.
87. TIRITEANA Myers 1924, Trans. New Zealand Inst. LV, p. 325. Type *T. clarkiei*.
88. TRIGONOCRANUS Fieber 1876, Rev. Zool. (3) III, p. 349. Type *T. emmea* Fieb.
|| *Triopsis* Signoret 1860, Ann. Soc. Ent. France (3) VIII, p. 187. Type *T. fasciata* Sign. = *Brixia* Stål.
88. TRIRHACUS Fieber 1876, Rev. Zool. (3) III, p. 354. Type *T. setulosus* Fieber.
|| *Urvillea* Kirkaldy 1907, Haw. Sugar Pltrs. Ent. Bull. III, p. 110. Type *U. melanesica* Kirk. = *Oliarus*.
|| *Vademela* Melichar 1914, Notes Leiden Mus. XXXVI, p. 100. Type *V. fusconotata* Mel. = *Borysthenes* Stål.
|| *Vincentia* Uhler 1895, Pro. Zool. Soc. Lond., p. 67. Type *V. interrupta* Uhler = *Cixius*.
90. VOLCANALIA Distant 1917, Trans. Linn. Soc. Lond. XVII, p. 279. Type *V. typica* Dist.

DICHOTOMOUS TABLE OF THE GENERA OF CIXIIDÆ
(sens. lat.)

1. (142) Clavus not granulate.
CIXIIDÆ, sens. stric.
2. (133) No subantennal process and antennæ not sunk into a pit.
CIXIINI
3. (6) Sc, R and M all arising from basal cell and not forming a stalk; body laterally compressed; tegmina steeply tectiform.
4. (5) Front coxæ not produced, straight on outer margin, *Andes*.
5. (4) Front coxæ considerably produced and rounded on outer margin, *Parandes*.
6. (3) Sc, R and M not all arising from basal cell, two or more forming a stalk.

7. (100) Sc + R forming a stalk, M arising from basal cell, or from the base of Sc + R but not forming a common stalk with them.
8. (11) Base of abdomen with a pair of long, slender processes; abdomen laterally compressed, tegmina steeply tectiform.
9. (10) Median frontal carina distinct, *Benna*.
10. (9) Median frontal carina absent or indistinct, *Bennaria*.
11. (8) Base of abdomen without processes.
12. (37) Body considerably compressed laterally; tegmina steeply tectiform, apical margins coming together when at rest. Ovipositor generally complete, female pygofer generally longer than wide, sometimes with a longitudinal depression in which the ovipositor reposes.
13. (20) Vertex conical or the length in middle twice or more the width at apex; vertex generally produced considerably in front of eyes.
14. (15) Clypeus without lateral carinæ; no median frontal carina or only on apical half, *Gelastocephalus*.
15. (14) Lateral carinæ on clypeus and median carina on frons distinct.
16. (19) Length of vertex in middle considerably greater than width at base.
17. (18) Vertex narrow, base acutely angularly emarginate, apical transverse carina acutely angular, *Nesocharis*.
18. (17) Vertex broader, base roundly emarginate, apex truncate with the median carina of frons projecting in middle, apex but slightly narrower than base, *Adolendana*.
19. (16) Length of vertex less than the width at base, *Nothocharis*.
20. (13) Length of vertex in middle less than twice the width at apex.
21. (22) Seven apical Rs and seven apical Ms (1, a, b, 2, 3, 4, a), *Melandewa*.
22. (21) Four or less apical Rs and seldom more than five apical Ms.
23. (32) A distinct transverse carina across vertex, curved, angular or straight, apart from a carina more or less distinct dividing frons from vertex, which it oftentimes touches in the middle.
24. (27) Base of vertex acutely angularly, or deeply roundly emarginate.
25. (26) Apex of vertex angularly emarginate; apex of tegmina broad, subtruncate; forking of M3—4 near to Mf, M4a present. Second segment of antenna longer than wide, *Brixidia*.
26. (25) Apex of vertex not emarginate. Fork of M1-2 near to Mf; apex of tegmina round, *Cubana*.

27. (24) Base of vertex not angularly emarginate, straight or shallowly rounded.
28. (29) Face considerably wider than long, *Leptochlamys*.
29. (28) Face not wider than long, or but very slightly.
30. (31) Apex of vertex subequal in width to base, length subequal to width, sides slightly arcuate, median frontal carina projecting in front, *Achamenes*.
31. (30) Vertex broader at base than at apex, *Pintalia*.
32. (23) No median transverse carina on vertex (not counting apical carina dividing vertex from frons).
33. (34) Vertex distinctly angularly emarginate at apex, *Kirbyana*.
34. (33) Vertex truncate at apex or very slightly produced or emarginate.
35. (36) Vertex rather long, length in middle equal to or greater than the width at apex, *Dystheatis*.
36. (35) Width at apex greater than the length in middle, *Ptoleria*.
37. (12) Body not considerably compressed laterally, tegmina not so steeply tectiform, apical margins not coming together when at rest. Ovipositor often incomplete, female pygofer often flat, broader than long and secreting long wax filaments.
38. (39) M3 and M4 forking close to Mf; M1 and M2 forking much farther away from Mf, *Mnemosyne*.
39. (38) The fork of M1 and M2 nearer to Mf than the fork of M3 and M4.
40. (53) Mesonotum with five carinae.
41. (42) Face without a median longitudinal carina, *Huttia*.
42. (41) Face with a median longitudinal carina, sometimes imperfect.
43. (44) Median frontal carina forked about middle, obscure over base of frons and apex of vertex; no transverse carina on vertex, *Malpha*.
44. (43) Median frontal carina simple or forked basad of middle.
45. (52) A transverse carina on vertex apart from the apical one.
46. (49) A median longitudinal carina between the transverse carina and base of vertex.
47. (48) Transverse carina forming a single arc, *Mesoliarus*.
48. (47) Transverse carina forming two arcs, *Epolarus*.
49. (46) No median longitudinal carina on vertex, or only on basal portion and not reaching transverse carina.
50. (51) Vertex with an acutely angular transverse carina which joins the apical transverse carina in middle, thus forming two areolets on the apical lateral portions of vertex.
(a) Hawaiian species, *Oliarus* subgenus *Nesoliarus*.
(b) Not Hawaiian species, typical *Oliarus*.

51. (50) Vertex with a straight or nearly straight transverse carina generally near apex, which is not connected with the apical transverse carina.
(a) Hawaiian species, *Oliarus* subgenus *Nesoliarus*.
(b) Not Hawaiian species, *Oliarus* subgenus *Nesopompe*.
52. (45) No transverse carina on vertex (excluding apical transverse carina); Sc—R forking near stigma, Cu forking near apex of clavus, *Hyalesthes*.
53. (40) Mesonotum with less than five carinae.
54. (55) Antennae as long as face, second segment much longer than wide, *Solonaima*.
55. (54) Antennae much shorter than face, second segment as wide as long or but a little longer than wide.
56. (63) Clypeus without median carina, with lateral carinae.
57. (58) Vertex very short, width about eight times the length, *Moysella*.
58. (57) Vertex much longer in proportion.
59. (60) Clypeus convex, swollen, *Semo*.
60. (59) Clypeus flat, not swollen.
61. (62) Apex of vertex truncate, fairly wide. Sc + R forking at stigma, Cu forking at apex of clavus, *Eparmene*.
62. (61) Apex of vertex narrow. Sc + R and Cu forking considerably basad of stigma, *Hemitropis*.
63. (56) Clypeus with a median carina.
64. (65) Carina between vertex and frons obsolete, median frontal carina absent or only present on apical portion, *Kuvera*.
65. (64) Carina between vertex and frons and the median frontal carina distinct.
66. (67) Median frontal carina forking in apical half of frons, *Aka*.
67. (66) Median frontal carina simple or forking before middle or absent.
68. (85) Vertex without a transverse carina.
69. (74) Vertex much wider than long, apex truncate.
70. (71) Basal half of frons slightly convex, apical half concave, no median frontal carina, *Diacira*.
71. (70) Basal half of frons not convex, the whole more or less concave.
72. (73) Tegmina broad, Mf basad of middle, *Mundopa*.
73. (72) Tegmina narrower, Mf distad of middle, *Bothriocerodes*.
74. (69) Vertex as long as, or longer than, wide.
75. (76) Counting along the middle line more than half the vertex projecting beyond the eyes; apex roundly conical, *Carolus*.
76. (75) Counting along the middle line less than half the vertex projecting beyond the eyes; apex generally angular.
77. (82) A distinct median longitudinal carina on vertex.

78. (79) Base of vertex truncate or but slightly emarginate, *Trigonocranus*.
79. (78) Base of vertex distinctly and deeply emarginate.
80. (81) Median vein simple without branches, tegmina narrow beyond clavus, which reaches nearly to the apex, *Trirhacus*.
81. (80) Clavus ending considerably before apex beyond which tegmina is slightly broadened and round; M with 5 apical veins, 1, 1a, 2; 3, 4, *Olonia*.
82. (77) No median longitudinal carina on vertex.
83. (84) Length of vertex about six times the width, very narrow, width at apex subequal to base, *Volcanalia*.
84. (83) Vertex not so narrow, width at base subequal to length in middle, apex much narrower than base, *Colvanalia*.
85. (68) Vertex with a transverse carina apart from the carina between vertex and frons.
86. (87) Pronotum with a distinct shoulder carina behind the eyes to tegula, *Calamister*.
87. (86) Pronotum without shoulder carina; lateral pronotal carinae following hind margin of eyes and approaching the lateral margin.
88. (93) Transverse carina of vertex straight, near the middle of vertex.
89. (90) Front coxae large, front tibiae and femora short and thick, *Cajeta*.
90. (89) Front legs slender, coxae not large.
91. (92) No spines on hind tibiae or very small ones, *Myndus*.
92. (91) Large spines on hind tibiae, *Koroana*.
93. (88) Transverse carina on vertex angular, sometimes joining the apical carina in middle.
94. (99) Hind tibiae with well-developed spines.
95. (96) A transverse vein in middle of costa, *Anila*.
96. (95) No transverse vein in middle of costa.
97. (98) Second segment of antennae small, *Cixius*.
98. (97) Second segment of antennae large, globose, *Cixiosoma*.
99. (94) Hind tibiae without spines or only very small ones, *Iolania*.
100. (7) M arising from the stalk Sc + R some distance from its base, making a distinct, if a short, Sc + R + M stalk.
101. (104) Second segment of antennae longer than broad; body considerably compressed laterally, tegmina steeply tectiform.
102. (103) Mesonotum 3—carinate, pronotum angularly emarginate on hind margin, *Brixia*.
103. (102) Mesonotum 1—carinate, pronotum nearly truncate on hind margin, *Southia*.
104. (101) Second segment of antennae about as long as broad; tegmina not steeply tectiform.
105. (106) Mesonotum with 5 carinae, *Aecleus*.

106. (105) Mesonotum with less than 5 carinae.
107. (108) Vertex as long as, or longer than, pronotum and mesonotum together, produced considerably in front of eyes, *Rhamphixius*.
108. (107) Vertex much shorter, not produced greatly in front of eyes.
109. (110) Frons broader than long, subcircular, no median carina, *Microledrida*.
110. (109) Frons not subcircular, generally longer than wide.
111. (116) With a median frontal carina.
112. (113) Vertex conical in outline, with a short longitudinal carina, *Carolus*.
113. (112) Vertex not conical, apex truncate.
114. (115) With a straight transverse median carina on vertex, *Myndus*.
115. (114) Without a transverse carina on vertex, *Haplaxius*.*
116. (111) Without a median frontal carina.
117. (118) Vertex much broader than long, *Pachyntheisa*.
118. (117) Vertex not broader than long.
119. (120) Vertex conical in outline; no lateral carinae on clypeus, *Gelastocephalus*.
120. (119) Vertex not conical.
121. (122) Vertex very narrow, *Aecleidius*.
122. (121) Vertex much broader.
123. (130) Length of frons subequal to width or not much longer than wide.
124. (127) Vertex with a median longitudinal carina.
125. (126) No carinae on clypeus, *Duilius*.
126. (125) Clypeus carinate at sides; no median frontal carina, *Platycixius*.
127. (124) Vertex without a median longitudinal carina.
128. (129) Sc + R, M and Cu fork near the nodal line, *Micrixia*.
129. (128) Sc + R and Cu fork some considerably distant from nodal line.
130. (123) Frons about twice as long as broad, sides straight, widest at apex.
131. (132) Lateral carinae of frons large, *Adolenda*.
132. (131) Lateral carinae of frons small, *Paramicrixia*.
133. (2) Subantennal process present or antennae sunk into pits.

BOTHRIOCERINI

134. (135) Face broadest at base, in lateral view strongly curved in front of eyes; antennae sunk into pits, no subantennal process, *Bothriocera*.

* *Nymphocixia* Van Duzee runs down to this genus but is easily distinguished by the occiput being arcuate and the base of the vertex overlapping the middle of pronotum; the frons also is longer than wide, narrow at base and gradually increasing to before apex; vertex with subparallel sides and deep keels.

135. (134) Face not broadest at base; with a subantennal process.
 136. (137) Sc and R not forming a stalk or only a very short one, *Borysthene*.
 137. (136) Sc + R forming a long stalk.
 138. (139) M arising from basal cell or from base of Sc + R; R touching M for short distance about level with node; costal cell wide, stigma large; claval fork near apex of clavus and claval vein in cases joining suture (*Kinnaridæ*), *Kinnara*.
 139. (138) M arising from Sc + R stalk some distance from base.
 140. (141) Sc + R forking near stigma, M arising from near middle of Sc + R which is thickened; costal cell large, *Euryphlepsia*.
 141. (140) Sc + R forking considerably before stigma; M arising nearer to base of stalk; Sc + R not thickened, *Stenophlepsia*.
 142. (1) Clavus granulate.

MEENOPLIDÆ

143. (148) With a median frontal carina.
 144. (145) Claval veins united near apex of clavus, *Phaconeura*.
 145. (144) Claval veins united about the middle of clavus.
 146. (147) Mesonotum with one carina, *Anigrus*, *Inxwala*.
 147. (146) Mesonotum with 3 carinæ, *Paranigrus*.
 148. (143) Without a median frontal carina.
 149. (150) M leaving Sc + R stalk considerably beyond base, *Kermesia*, *Eponisia*.
 150. (149) M leaving basal cell or the Sc + R stalk at base.
 151. (154) Claval veins forking near apex of clavus.
 152. (153) Clypeus with lateral carinæ, *Robigalia*, *Suva*.
 153. (152) Clypeus without lateral carinæ, *Nisia*.
 154. (151) Claval veins forking near middle of clavus.
 155. (156) Vertex longer than broad, without a median carina, *Meenoplus*.
 156. (155) Vertex not longer than broad, with a median carina, *Paranisia*.

(To be Continued)

PLEOCOMA BEHRENSI

The first heavy rain of the season at Berkeley fell on October 15. On the two days following, a number of *Pleocoma behrensi* Lec. were taken in Strawberry Cañon near Berkeley. Several males were taken in flight, and a few males and about twenty females were dug from their holes, which showed plainly in the packed earth of the trails.—A. C. Davis.

STUDIES OF WESTERN NORTH AMERICAN CARABINÆ (COLEOPTERA) WITH DESCRIPTIONS OF NEW SPECIES

BY EDWIN C. VAN DYKE

*University of California, Berkeley**Trachypachus slevini* Van Dyke, new species

Robust, elongate, elliptical, piceous, brilliantly bronzed and shining above, less so beneath, antennæ rufo-piceous, legs rufous. Head three-fourths breadth of prothorax, convex, smooth and shining, eyes but slightly convex. Prothorax three-fourths as long as broad, apex emarginate, anterior angles prominent, base bisinuate; sides moderately arcuate in front, almost straight and parallel behind, rather broadly margined; disc convex, smooth and shining, median longitudinal line complete and finely impressed, basal transverse impression deep, ending externally in deep and oblique basal foveæ, the carinæ prominent and extending forwards and inwards from the hind angles. Elytra three-fifths as broad as long, slightly broader at base than prothorax, widest at middle; sides evenly arcuate from base to apex, apical angles quite acute; disc convex, deeply and coarsely punctured, finer at sides and apex, the punctures arranged in rows, the striæ but faintly defined and only near suture. Length, 7 mm.; breadth, 3 mm.

Type, a unique female, No. 1616, Mus. Calif. Acad. Sci., captured at **Olney** (near Astoria), **Oregon**, in July, 1911, by Mr. J. R. Slevin.

This fine species, I take pleasure in naming after its captor. It differs from our other species, *Trachypachus inermis* Mots. and *Trachypachus gibbsi* Lec., by being considerably larger, proportionally more elongate, less robust and convex, by having the eyes less prominent, and the elytra very coarsely punctured.

The tribe to which this insect belongs is a very peculiar one, both because of the physical peculiarities and the distribution. In appearance, the species resemble some of the smaller *Amara* or, even more, certain of the genus *Bembidium* like *Bembidium nitidum* Kirby. They, however, have a character, the extension of the posterior coxæ to the lateral margins, which is to be found in no other Carabidæ, and thus places them in a more or less isolated position. The tribe contains but two genera: *Systolosoma* Sol. with one species, *Systolosoma breve* Sol., restricted to Southern Chili, and *Trachypachus* Mots. with *Trachypachus zetterstedti* Gyll., found in the extreme northern portion of Europe and in Siberia, the two questionable species

ON THE GENERA OF CIXIIDÆ, MEENOPLIDÆ
AND KINNARIDÆ

BY F. MUIR

Honolulu, T. H.

(Continued from Page 110)

The Genera of Cixiidæ

The family Cixiidæ, as above restricted, contains about seventy-four genera at the present time, and as these insects have been given comparatively little attention by collectors in the tropics, where they are most numerous and diverse, the number is likely to be greatly increased. As the least specialized of the five families which appear to be descended from a similar type (Cixiidæ, Delphacidæ, Tropiduchidæ, Derbidæ, and Achilixiidæ), the classification of the genera of this family is of considerable interest, and the recognition of the lines of evolution among them may be of help in understanding the lines of evolution among the genera of allied families. Among these five families we find some male genitalia which approach the meenopolid type, but the difference is generally recognizable and, as a rule, they are specialized representatives of families whose generalized forms have typical cixiid types of male genitalia. As an example, the Delphacinae can be cited; these often have a ring at the base of the ædeagus which may be the perianthrium, but they are descended from the Asiracinae, which have a typical cixiine genitalia.

No attempt has been made to tabulate all the genera of Cixiidæ since 1866, when Stål mentioned most of the then known genera, Fieber's work being confined mainly or entirely to European genera; it is, therefore, apparent that an attempt should be made to list and classify them. Stål's classification has been followed by nearly all subsequent workers. His first division segregates the Meenoplidæ of the present paper; his second and third divisions segregate a few forms without carinae on the clypeus or with longer antennae than normal, and are purely artificial. His fourth division is based upon the presence or absence of spines on the hind tibiae before the apex. It is unfortunate for systematists that these spines are not dependable, as there are too many genera in which they are obscure, and one cannot say whether spines should be consid-

ered as present or absent. Again, the use of these characters bring together forms widely separated on general morphological grounds, and separates others which are closely allied. But until the morphology of the family is much better understood, we find this last disadvantage in any dichotomous table that may be drawn up.

The writer's conception of the most primitive cixiid is one in which the tegmina and wings are fairly large, tectiform when at rest, with C coincident with the costal margin, Sc, R, M, and Cu all arising separately from the basal cell or only touching at their bases and not forming a stalk; the body compressed laterally with a well-developed ovipositor in which the anterior and middle gonopophyses or styles are co-ordinated and work together as a simple organ, the ovipositor, with the posterior styles acting as a sheath for them when at rest; the female pygofer not much longer than wide and not flattened into a large surface bearing wax glands; the median ocellus present. The genus which appears to approach nearest to this theoretical types is *Andes* Stål, and after that *Parandes*, *Melandeva*, *Brixidia*, *Brixia*, *Southia*, *Benna*, and *Bennaria*, with the *Pin-talia* group gradually passing through the *Ptoleria* into the *Cixius* group, in which the body is horizontally flattened, the tegmina but slightly tectiform, the ovipositor incomplete or abortive, the female pygofer flat, wide and secreting long filaments of wax. In the *Andes* group we find three conditions of the Sc, R and M, viz.: (a) All three arising separately from the basal cell, (b) Sc + R forming a stalk, and (c) Sc + R + M forming a stalk; in the *Cixius* group we find only the second and third conditions. It is to be regretted, for taxonomic reasons, that the main dichotomy of the family cannot be made between these two groups, but there are some forms that are intermediates and make it difficult to define. In both these groups the trend of evolution has been towards the joining together of the bases of the veins, Sc, R and M, sometimes accompanied by a slight stenogenesis; in no case is there a great platygenesis, and in no case is there a costal area with transverse veins.

Four genera have been segregated off as a tribe, Bothriocerini, and if *Kinnara* be retained in the Cixiidæ it should be

placed with them. These possess a subantennal plate or the antennæ are sunk into a pit. *Euryphlepsia* and *Stenophlepsia* are closely allied genera; *Bothriocera* and *Borysthenes* are not so closely allied, and both are considerably different from the former two; the tribe may only be one of convenience.

The Genera of Meenoplidae

The eleven genera forming this family are all closely related and form a homogeneous and, evidently, a monophyletic group. They require a careful revision, as the characters upon which they are founded are very slight. At present the writer is unable to separate *Anigrus* and *Inxwala*, *Kermesia* and *Eponisia*, *Robigalia* and *Nisia*.

The species are all fairly thick-set and small, with the tegmina, when at rest, tectiform, the veins fairly thick, the clavus granulate, and very often the Sc + R also granulate. M3 + 4 is often in contact with Cu 1. A median ocellus is nearly always present, or a scar represents its position. The male genitalia have the perianthrium large, more or less funnel-shape, with the penis tubular and passing through the perianthrium, with a large apodeme of the penis. The ovipositor is incomplete, the posterior styles (sheath of ovipositor) short, broad, subquadrate, the median and anterior styles (ovipositor) very small or missing. The pygofer does not secrete wax, but this is done by some of the abdominal tergites, a condition also found in *Kinnara*. This type of female genitalia is very different from the Cixiidae, and is nearer to Flatidae and the other families with the meenoplid type of male genitalia.

Kinnaridae

This family is represented by the one genus, *Kinnara* Distant.

Head distinctly narrower than thorax. Vertex small, about as long as broad, base straight or but slightly emarginate, divided from frons by a straight, transverse carina which is sometimes obscure. Frons longer than broad, sides arcuate, broadest in middle, lateral carinae large, with a small, clear spot (fenestra) in front of antennæ, no median carina, in lateral view edge of frontal lateral carinae slightly sinuous. Clypeus tricarinate, the lateral carinae continuing from the frons; labium reaching nearly to apex of abdomen, apical segment long. Eyes a little wider than deep, antennal sinus small, three distinct ocelli. Antennæ small, globose; subantennal process present in the shape of a strong ridge across the gena, with a smaller one at

right angles to it and between it and the antenna. Pronotum very short, hind margin widely emarginate. The lateral carinae following the hind margin of eyes and reaching the hind margin in front of tegulae; mesonotum wider than long, tricarinate, the carinae sometimes obscure. Legs slender, hind tibiae unarmed.

Tegmina fairly broad, tectiform, the apical margins generally touching when at rest. Sc and R forking near middle of tegmen in most species. R joining M for a short distance before Mf and looking like a part of M system; M arising from basal cell or from base of Sc + R, but does not form a stalk, with three or four apical veins, Cu normal; claval veins joining near apex and entering suture at or near apex, without granulation; costal cell broad, the stigma large.

The male ædeagus consists of an outer tube, the perianthrium, and an inner tube, the penis, which passes through the perianthrium. The female ovipositor is incomplete, the styles being small; the pygofer is small and obscure and appears to bear no wax-secreting gland, but this function is taken on by the sixth, seventh, and eighth tergites, which are large and bear wax-secreting glands.

This is an anomalous genus, and it would be good if it could be placed elsewhere, but no other existing family could contain it. The male and female genitalia place it among the meenoplid group of families. The claval vein joining the suture at apex is a character which should take it from the Cixiidae.

Kinnara albiplaga Dist. does not belong to this genus, but to *Suva* Kirk.

Remarks on Certain Genera

Akotropis Mats. If Matsumura's figure of the tegmen of *Akotropis fumata* be correct, this should not be an Achilid, but more likely a Cixiid.

Aulocorypha Berg. The writer is unable to place this genus in this table. The genus *Cixiosoma* Berg has been placed there with great doubt as to what it really is. The absence of the median ocellus would indicate that they do not belong to the Cixiidae.

Betacixius Matsumura. The writer is not acquainted with this genus, either by specimens or the description.

Bodecia Walker. The type material of this genus is in the British Museum and consists of a single mutilated specimen with the abdomen missing. The head belongs to a Delphacid, evidently *Ugyops*, and has been gummed onto the thorax, which belongs to *Mnemosyne*. Neither the head or tegmina agree with the description. The antennæ are described as very short,

whereas the specimens have long, cylindrical antennæ of *Ugyops*. The description does not allow it to be placed in the table. We must await the finding of locotypes which agree with the description.

Calerda Signoret. The writer is not acquainted with this genus.

Cyphoceratops Uhler. The writer has not seen this genus, and the description leads him to think it is not a Cixiid. The description of the hind tibiæ having "a stout, long spur at tip" would indicate that it is a Delphacid.

Eucarpia Walker. The type of this genus is a damaged specimen in the British Museum. It comes very near to *Ptoleia* Stål, but the writer is loath to sink the latter until it has been shown that it is necessary.

Eudelphax Melichar. An examination of the type *Eudelphax setulosus* shows that it belongs to the Delphacidæ, and is the same as *Eodelphax serendiba* Kirkaldy. The type specimen is damaged, but one hind leg is present and it bears an awl-shaped apical spur that shows it belongs to the subfamily Asiracinæ. The specimen bears Kirkaldy's type label, and also Melichar's label, *Eudelphax setulosus*.

Ipsnola Sign. This genus was placed in "*Achilides* Stål," but was compared with *Cixius*. The description does not allow the writer to place it in either the Achilidæ or Cixiidæ with any certainty. The location of the type specimen is not known to the writer.

Macrocixius Matsumura. The writer is not acquainted with this genus, either by specimens or the description.

Monorachis Uhler. The writer only knows this genus by the original description, Van Duzee's¹ remarks upon it, and Metcalf's² figures of the head and thorax. Not knowing the condition of the tegmina, he is unable to place it in his table. The frons is as broad as long and nearly round.

Nesomyndus Jacobi. The writer is unable to place this genus in his table. It is stated to be near *Myndus*; the base of vertex is more deeply angularly emarginate, and there is no trace of a transverse carina before the apex.

Prosops Buckton. The type of this genus is in the British

Museum, and is mounted on a glass microscope slide. There appear to be no characters to separate it from *Oliarus*.

Prosotropis Uhler. The type specimen of this species could not be traced in the British Museum. It was compared by Uhler to *Cercopis*, and the description does not enable the writer to place it in the table. In the United States National Museum there is a specimen labeled "*Prosotropis decorata* Uhler," evidently in Uhler's handwriting, and it may be a cotype. The specimen is in a bad condition and gummed on a card, and belongs to the Delphacidæ, apparently a *Delphacodes*.

Tiriteana Myers. The writer has no specimens of this genus, and several characters are omitted in the description which prevents him from placing it in his table.

The following genera belong to the Achilidæ: *Chronoba* Distant; *Clusivius* Distant; *Taloka* Distant; *Hamba* Distant; *Amblycratus* Uhler; *Cionoderus* Uhler.

Oliarus Stål. Kirkaldy erected two subgenera in this genus, one, *Nesoliarus*, to contain all the Hawaiian species, and another, *Nesopompe*, to contain one Australian and one Fijian species, *felix* and *saccharicola*. The first is purely a geographical subgenus and is of great convenience, as it segregates a number of species, varieties and forms, which are closely allied and monophylatic; among them we find some forms that could go into the typical subgenus *Oliarus* and others into *Nesopompe*. Kirkaldy erected the genus *Mesopompe* upon the characters found in the spines on the first and second hind tarsal joints (not tibiæ as stated in his table). The writer considers *felix* and *saccharicola* to be the same species; it has an undivided fosette, the transverse carina being curved, and there is no carina joining it to the carina at apex of vertex. The writer would consider this as the better character to erect the subgenus upon. All the New Zealand and some Malayan species would then come into this subgenus.

New Genera and Species

Olonia Muir, gen. nov.

Width between the posterior angles of vertex greater than length along middle line; apex strongly angular and carinate, base angularly emarginate, the angle subequal to apex, width between apical angles of the vertex less than between basal angles, sides nearly straight, diverging posteriorly, a medio-longitudinal carina runs from base to

¹ Proc. Acad. Nat. Soc. Philadelphia, 1907 (published 1908), p. 484.

² Jour. Elisha Mitchell Sci. Soc. (1923), XXXVIII, Pl. 54, figs. 278, 279.

near apex, but does not join apical carina. Clypeal suture obscure, frons and clypeus appearing as a single body, sides arcuate, elevated, especially about level with median ocellus, where frons is widest; median carina simple, distinct, continuing unbroken through frons and clypeus. Antennæ small, second segment about as long as broad; no carina across gena below eyes. Labium reaching slightly beyond hind coxæ, apical segment long. Pronotum nearly perpendicular in the middle, fitting into the base of vertex, very short, mostly covered by head. Mesonotum about as wide as long, tricarinate, outer carinæ straight, slightly diverging posteriorly. Hind tibiæ without spines. Ovipositor complete, long, projecting considerably beyond pygofer, which is a little longer than wide. Tegmina long, about three times the width beyond clavus, where it is widest. Sc + R and Cu forks less than one-third from base, Mf distad of middle, 3 Rs and 5 Ms, M1a present. Claval vein entering commissure a little before apex. The insect is fairly narrow and the tegmina fairly tectiform, the hind margins coming together when at rest.

Type *Bothriocerodes metallicus* Fowler.

Colvanalia Muir, gen. nov.

The type of this genus is a species of Walker's in the British Museum labeled *concinnulla* Walk, Sula, and appears to be *Brixia concinnula* Walk. (Jl. Linn. Soc. Lond. Zool., X, 1868, p. 110.)

Width of vertex at base equal to length, twice the width of apex, slightly arcuately emarginate, apex slightly angular, sides nearly straight, slightly carinate, no longitudinal or transverse median carina; frons about as wide as long, narrowest at base, broadest near apex, ocellus distinct, median carina present, but obscure, sides slightly carinate; clypeus obscurely tricarinate. Sc + R forking about one-third from base, Cuf more distad, but before apex of clavus, Mf about level with node; 2 Rs, M arising from basal cell with five apical veins: M1, 1a, 2; 3, 4.

Nothocharis Muir, gen. nov.

Width between basal angles of vertex considerably greater than length in middle and 2.3 times width at apex, sides nearly straight, deeply carinate, base arcuately emarginate, disc excavate, a distinct medio-longitudinal carina. Frons considerably longer than broad, narrowest at base, gradually increasing to near apex, then decreasing, the sides straight on basal half then arcuate, width at apex slightly more than twice the width at base, carinæ on sides and in middle distinct; median ocellus obscure, only represented by a minute scar. Clypeus tricarinate, continuous with carinæ of frons. No carina across gena below antenna. Eyes with a small antennal sinus. Antenna small, second segment globose. Pronotum short, hind margin deeply and angularly emarginate, tricarinate, the lateral carinæ nearly

straight, diverging posteriorly, reaching hind margin. Mesonotum compressed laterally, tricarinate, about as long as broad. Tegmina fairly tectiform, apices touching or almost touching when at rest; Sc + R forking near to basal cell; M arising from basal cell, Mf slightly basad of apex of clavus; Cuf about middle of clavus; eleven apical veins, Sc 1, 2; R 1, 2; M 1, 1a, 2, 3, 4; Cu 1, 2. Hind tibiæ without spines. Ovipositor complete, pygofer longer than wide.

Type *Nothocharis bakeri*.

Nothocharis bakeri Muir, sp. n.

Female. Length, 2.8 mm.; tegmen, 3.7 mm.

Carinæ of head yellow fuscous brown between carinæ, antennæ light brown, pronotum and mesonotum dark brown or black, carinæ yellow, posterior angle of mesonotum yellowish; legs light, anterior and middle tibiæ banded; abdomen dark brown. Tegmina light at base, fuscous over the rest with nine hyaline marks in apical cells between Sc and M 4; veins same color as membrane, granules small and obscure. Wings hyaline, slightly fuscous, with brown veins.

Described from one female from Baguio, Benguet, Philippine Islands (C. F. Baker). This genus comes into a small group between 13 and 20 in the table. Type, No. 1165.

Nothocharis tayabasensis Muir, sp. n.

Female. Length, 3 mm.; tegmen, 4 mm.

This species differs from the genotype, in having the Sc strongly bent inward at the stigma, and Cu strongly bent towards M 3 + 4, which it touches for a short distance.

Stramineous; slightly fuscous at base of frons and on vertex between carinæ, dark brown between carinæ of mesonotum. Tegmina hyaline, stramineous, dark brown over apex of clavus, apical portion of Cu and M 3 + 4, with four raised, shiny, white spots, one on Cu 2, one on Cu 1, and two on M 3 + 4. Apical cells very slightly fuscous, with lighter areas in apical cells; veins same color as membrane. Wings slightly fuscous, veins brown.

Described from one female from Malinao, Tayabas, Philippine Islands. (C. F. Baker, No. 10,003). Type, No. 1166.