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ANNALS  
OF THE  
NEW YORK ACADEMY OF SCIENCES,  
VOLUME VII.

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I.—*Catalogue of the described South American Species of  
Calyptrate Muscidæ.*

BY C. H. TYLER TOWNSEND.

Read June 6, 1892.

The present catalogue is offered in the hope that it will materially facilitate the study, in this country, of the South American Calyptrate Muscidæ. Though it doubtless contains much synonymy, which it is impossible to clear up at the present time, it will nevertheless serve as a valuable basis for future study of the group. Much time has been spent in its preparation, and the references have been carefully compared. Most of the synonymy advanced by various authors has been included, so far as met with. With the quite extensive literature which has been at the writer's command, it is hoped that the catalogue will be found almost complete up to the present time. For obvious reasons, most of the new genera of Brauer and von Bergenstamm, belonging to South America, are included and made to embrace the species referred to them, since these authors have critically examined many of the older types and their decisions will have much value in the final placing of the species. So far as possible, a certain natural (?) order has been observed in the sequence of the genera. It is possible, however, that in some cases even the family position of a genus may be misconceived, owing to a more or less incomplete understanding of many of the recent genera.

At the end will be found a list of the titles in full which the writer has personally examined in the preparation of the catalogue, and from which all the specific references herein contained have been gathered.

Fam. OESTRIDÆ.

Gen. **OESTRUS**.

Linn., Faun. Suec. 1730. (1761).

**ovis** L., Fab., Latr., Oliv., et al. Brauer, Mon. Oestr. 151, pl. 3, f. 1, pl. 6, f. 1, pl. 7, f. 10.—Brazil, Chili (Br.).

Gen. **COLAX**.

Wied., Anal. Ent. 17. Aus. Zw. ii, 260. (1824).

**macula** Wd., Analect. Ent. 18, f. 8. Aus. Zw. ii, 261, pl. 9, f. 11. Mcq., Hist. Nat. ii, 52.—Brazil (Wd. Mcq.).

Gen. **CTENOSTYLUM**.

Mcq., Dipt. Ex. Sup. iv, 167. (1850).

**rufum** Mcq., Dipt. Ex. Sup. iv, 168, pl. 25, f. 1. Brauer, Mon. Oestr. 52.—Amazon River (Br. Mcq.).

Gen. **CEPHENOMYIA**.

Latreille, Fam. Natur. (1825).

**grandis** Guér., Icon. An. 547. Brauer, Mon. Oestr. 213.—Patagonia (Br.).

Gen. **CUTEREBRA**.

Clark, Essay on Bots. (1815).

**analis** Mcq., Dipt. Ex. ii, 3, 22, pl. 2, f. 5. Joly, Rech. Oestr. 278, f. Brauer, Mon. Oestr. 237, pl. 4, f. 1, pl. 6, f. 8. v. d. Wulp, Biol. C.-A. Dipt. ii, 2.—Brazil (Br. Mcq.); Mexico (Br.); Costa Rica, Panama (v. d. W.).  
**cayennensis** Mcq., Dipt. Ex. ii, 3, 23. Joly, Rech. Oestr. 289. Brauer, Mon. Oestr. 240.—Cayenne (Br. Mcq.).

**ephippium** Latr., Nouv. Dict. d'Hist. Nat. xxiii, 271. Mcq., Hist. Nat. ii, 48. Joly, Rech. Oestr. 278. Brauer, Mon. Oestr. 235.—Cayenne (Mcq.).

**megastoma** Brauer, Mon. Oestr. 247, pl. 4, f. 5, pl. 6, f. 12.—So. Amer.

**patagona** Guér., Icon. An. 547. Brauer, Mon. Oestr. 246.—Patagonia (Br.).

**rufiventris** Mcq., Dipt. Ex. ii, 3, 21, pl. 2, f. 4. Brauer, Mon. Oestr. 245.—Para (Br. Mcq.).

Gen. **DERMATOBIA**.

Brauer, Verh. Zool. Bot. Ges. Wien. x. (1860).

**cyaneiventris** Mcq., Dipt. Ex. ii, 3, 23 (*Cuterebra*). Brauer, Mon. Oestr. 266. Sch. Novara. 338. Br. Bgst., Musc. Schiz. i, 91.—So. Amer. (Sch.); Brazil (Br. Mcq.).

**noxialis** Goud., Ann. Sc. Nat. 3 ser. iii, 229 (*Cuterebra*). Brauer, Mon. Oestr. 266, pl. 4, f. 7, pl. 6, f. 13, pl. 10, f. 1.—Colombia (Goud. Br.); Bahia (Br.); Centr. Am.

Gen. **ROGENHOFERA.**

Brauer, Verh. Zool. Bot. Ges. Wien. xiii. (1863).

**trigonophora** Brauer, Zool. Bot. Ges. xiii. Mon. Oestr. 217, pl. 4, f. 8, pl. 6, f. 14, pl. 10, f. 5. Br. Bgst., Mus. Sch. i, 91.—Bahia (Br.).

Fam. PHASIIDAE.

Gen. **TRICHOPODA.**

Latr. in Cuvier, Règne Anim. v, 512. (1829).

**apicalis** Wd., Aus. Zw. ii, 271.—Brazil.

**arcuata** Big., An. Soc. Ent. Fr. 1876, 397.—Chili.

**bicolor** Big., An. Soc. Ent. Fr. 1876, 395.—Buenos Ayres.

**ciliata** Fab., Syst. Ant. 315 (*Ocyptera*). Wd., Aus. Zw. ii, 273. Mcq., Dipt. Ex. ii, 3, 77, pl. 9, f. 1.—So. Amer. (Fab. Wd.); Carolina (Mcq.).

Note.—This is supposed to be the ♀ of *T. pennipes*.

**decisa** Wlk., Dipt. Saund. 259.—Amazon River.

**gradata** Wd., Aus. Zw. ii, 275.—Brazil.

**inconstans** Wd., Aus. Zw. ii, 270.—Brazil.

**lateralis** Wlk., List, 697.—Brazil.

**luteipennis** Wd., Aus. Zw. ii, 279.—Brazil.

**melanopus** Rob. Desv., Myod. 284.—Brazil.

**nigripennis** Big., An. Soc. Ent. F. 1876, 396.—Buenos Ayres.

**obscura** Big., An. Soc. Ent. F. 1876, 399.—Buenos Ayres.

**pennipes** Fab., Ent. Syst. iv, 348 (*Musca*). Syst. Ant. 327 (*Dictya*). Wd., Aus. Zw. ii, 274. Br. Bgst., Mus. Sch. i, 79. R. D., Myod. 288. v. d. W., Amer. Dipt. iii, 15. Biol. C.-A. Dipt. ii, 3.—Brazil (B. B., Willist. in litt.); Argentine Rep., Mexico (v. d. W.); U. S.

*Syn. Phasia jugatoria* Say, Jour. Ac. Phil., vi, 172. Compl. Wr. ii, 364.

**pictipennis** Big., An. Soc. Ent. F. 1876, 398.—So. Amer.

**pilipes** Fab., Syst. Ant. 220 (*Thereva*). Wd., Aus. Zw. ii, 272. Perty. Delect. an. Brasil. 186, pl. 37, f. 5.—So. Amer. (Fab. Wd.); Bahia (Pty.).

**pyrrhogaster** Wd., Aus. Zw. ii, 272. v. Röder., Stett. Ent. Zeit. 1885, 344. v. d. Wulp., Biol. C.-A. Dipt. ii, 3.—?So. Amer. (Wd.); Porto Rico (v. Röder.); Guatemala (v. d. W.); Cuba; Texas (H. Lw.).

Note.—*T. haitensis* R. D. is supposed to be a synonym of this species.

**subcillipes** Mcq., Dipt. Ex. ii, 3, 77, pl. 9, f. 2.—Guiana.

**umbra** Wlk., List, 698.—Venezuela.

Gen. **BIBIOMIMA.**

Br. Bgst., Musc. Schiz. i, 80. (1889).

**handlirschi** Br. Bgst., Mus. Sch. i, 80, 103.—Brazil.

Gen. **HYALOMYIA.**

Rob. Desv., Myodaires, 298. (1830).

*chilensis* Meq., Dipt. Ex. Sup. iv, 216, pl. 20, f. 4.—Chili.*freyreisii* Wd., Aus. Zw. ii, 263 (*Phasia*). Meq., Dipt. Ex. ii, 3, 78, pl. 9, f. 4.—Brazil.Gen. **ALOPHORA.**

Rob. Desv., Myodaires, 293. (1830).

*micans* v. d. Wulp., Amerik. Dipt. iii, 14.—Argentine Rep.Fam. **OCYPTERIDAE.**Gen. **ICELIA.**

Rob. Desv., Myod. 224. (1830).

*brasiliensis* R. D., Myod. 224.—Brazil.*flavescens* R. D., Myod. 224.—Brazil.Gen. **OCYPTERA.**

Latr. Hist. Nat. Ins. et Crust. xiv, 378. (1804).

*apicalis* Big., An. Soc. Ent. Fr. 1878, 45.—Chili.*dorsalis* Wd., Aus. Zw. ii, 264.—Brazil.*nigrina* v. d. W., Amerik. Dipt. iii, 15.—Argentine Rep.*obscura* Big., An. Soc. Ent. Fr. 1878, 44.—Brazil.*similis* R. D., Myod. 230.—Brazil.Gen. **HERMYA.**

Rob. Desv., Myod. 226. (1830).

*afra* R. D., Myod. 227.—Brazil.Gen. **GLOSSIDIONOPHORA.**

Bigot, Bull. Soc. Ent. Fr. 1885, 11 Mch. (1885).

*nigra* Big., Bull. Soc. Ent. Fr. 1885, 11 Mch.—Buenos Ayres.Fam. **PHANIIDAE.**Gen. **PHANIA.**

Meigen, Syst. Besch. iv, 218. (1824).

*simillima* Fab., Syst. Ant. 313 (*Ocyptera*). Wd., Aus. Zw. ii, 267.—So. Amer. (Fab. Wd.).



## Fam. TACHINIDÆ.

Gen. **DEJEANIA**.

Rob. Desv., Myodaires, 33. (1830).

**argyropus** Sch., Novara, 337.—So. Amer.**armata** Wd., Aus. Zw. ii, 287 (*Tachina*). Mcq., Dipt. Ex. Sup. iv, 168, pl. 15, f. 7. Sch., Novara, 337. Br. Bgst., Mus. Sch. i, 64, f. 233. v. d. W., Amer. Dipt. iii, 17.—Brazil (Sch. Mcq.); Montevideo (v. d. W.); Cuba (Wd.).**canescens** Mcq., Dipt. Ex. Sup. i, 143, pl. 12, f. 1.—Colombia.**corpulenta** Wd., Aus. Zw. ii, 280 (*Tachina*). v. d. Wulp., Amerik. Dipt. iii, 16. Biol. C.-A. Dipt. ii, 9, pl. 1, f. 4.—Bogota (v. d. W.); Mexico (Wd. Mcq.); Colo. (O. S.); New Mex., Arizona, Costa Rica, Panama (v. d. W.).Syn. *D. rufipalpis* Mcq., Dipt. Ex. ii, 3, 35, pl. 3, f. 1.Syn. *D. venatrix* O. S., West. Dipt. 348.**honesta** Rdi., Dipt. Am. Æq. Osculati (Nu. An. Sc. Nat. Bolog. 1850), 6.—Rio Napo.**pallida** R. D., Dipt. env. Paris, i, 653. Sch., Novara, 337.—So. Amer. (Sch.).**pallipes** Mcq., Dipt. Ex. ii, 3, 34, pl. 2, f. 9, Sup. i, 143. Sch., Novara, 337. v. d. Wulp., Amerik. Dipt. iii, 16. Biol. C.-A. Dipt. ii, 8, pl. 1, ff. 1, 1a, 1b.—So. Amer. (Sch.); Bogota (Mcq., v. d. W.); Costa Rica; Panama (v. d. W.).**plumitarsis** v. d. W., Amerik. Dipt. iii, 16. Biol. C.-A. Dipt. ii, 10, pl. 1, ff. 5a, 5b.—So. Amer. (Sch.); Bogota (Mcq.); Mexico; Guatemala; Costa Rica (v. d. W.).Syn. *D. corpulenta* Mcq., Dipt. Ex. ii, 3, 35. Sup. i, 143, pl. 12, f. 2. Sch., Novara, 337. *Echinomyia corpulenta* Mcq., Hist. Nat. ii, 77.**podiceria** Rdi., Dipt. Exot. 17, f. 14.—Equatorial America.Gen. **CRYPTOPALPUS**.

Rondani, Esap. ditt. (sep.) 7. Annali di Bologna. (1850).

**histrix** Rdi., Dipt. Exot. 18.—Bogota.**ornatus** Mcq., Dipt. Ex. ii, 3, 47, pl. 4, f. 6 (*Micropalpus*). Sch., Nov. 333 (*Saundersia*). Rdi., Esap. Ditt. 9, No. 6 (sep.). Br. Bgst., Mus. Sch. i, 64, f. 237.—Colombia (Sch., Mcq.); Venezuela (Rdi., B. B.); Mexico (Mcq.).**palliceps** Big., An. Soc. Ent. Fr. 1888, 94.—Colombia.Gen. **LASIOPALPUS**.

Mcq., Dipt. Exot. Sup. ii, 63. (1847).

**flavitarsis** Mcq., Dipt. Ex. Supl. ii, 64, pl. iii, f. 1. Sch., Novara, 337. B. B., Mus. Sch. i, 63, f. 228.—So. Amer. (Sch.).Gen. **BOMBYLIOMYIA**.

Br. Bgst., Musc. Schiz. i, 63. (1889).

**flavipalpis** Mcq., Dipt. Ex. Sup. i, 147, pl. 12, f. 10 (*Hystricia*). Sch., Novara, 332 (*Hystricia*). Rdi., Dipt. Exot. 17 (*Hystricia*). Br. Bgst., Musc. Schiz. i, 63.—Brazil (Sch. Mcq.); So. Amer. (Rdi.).

- flavitorsis** Mcq., Dipt. Ex. Sup. i, 148, pl. 13, f. 9 (*Hystricia*). Sch., Novara, 332 (*do.*). Rdi., Dipt. Am. Æq. Osculati, 8 (*do.*). Br. Bgst., Musc. Sch. ii, 105.—So. Amer. (Sch.); Colombia (Mcq.); Rio Napo (Rdi.).
- testacea** Mcq., Dipt. Ex. Sup. i, 148, pl. 13, f. 2 (*Hystricia*). B. B., Mus. Sch. ii, 105.—Colombia (Mcq.).

Gen. **TROPIDOPSIS.**

Br. Bgst., Musc. Schiz. i, 64. (1889).

- pyrrhaspis** Wd., Aus. Zw. ii, 307 (*Tachina*). Mcq., Dipt. Ex. ii, 3, 43 (*Hystricia*). Sch., Nov. 332 (*do.*). v. d. W., Biol. C.-A. Dipt. ii, 18 (*do.*). Br. Bgst., Musc. Sch. i, 64.—Brazil (Wd.); So. Amer. (Sch.); Mexico; Guatemala (v. d. W.).

Gen. **HYSTRICIA.**

Macq., Dipt. Exot. ii, 3, 43. (1843).

- ambigua** Mcq., Dipt. Ex. Sup. iv, 172. v. d. W., Biol. C.-A. Dipt. ii, 13, pl. 1, f. 7. B. B., Mus. Sch. ii, 105.—Colo.; Orizaba; Guatemala; Costa Rica (v. d. W.); So. Amer. (B. B.).

Note.—It may be that the locality of So. Amer. given by Br. and Bgst. is a typographical as well as a topographical error!

- copulata** Wd., pt. Aus. Zw. ii, 295 (*Tachina*). B. B., Mus. Sch. ii, 105.—Brazil (Wd.).

**etythrina** Big., An. Soc. Ent. Fr. 1888, 79.—Bahia.

**immaculata** Mcq., Dipt. Ex. Sup. i, 148, pl. 12, f. 9.—Colombia.

**nigroscutata** Rdi., Dipt. Exot. 18.—Colombia.

**obesa** Sch., B. B. Mus. Sch. ii, 105.—Venezuela.

Note.—Is this species described?

**palpina** Rdi., Dipt. Am. Æq. Oscul. 8.—Rio Napo.

**tarsata** Sch., Novara, 333.—So. America.

Gen. **JURINELLA.**

Br. Bgst., Musc. Schiz. i, 64. (1889).

- cœruleonigra** Mcq., Dipt. Ex. Sup. i, 146, pl. 12, f. 8 (*Jurinia*). B. B., Mus. Sch. i, 64, f. 235.—New Granada (Mcq., B. B.).

Gen. **SAUNDERSIA.**

Schiner, Novara Dipt. 333. (1868).

**affinis** Sch., Novara, 336.—So. Amer.

**albolineatus** Mcq., Dipt. Ex. Sup. v, 99 (*Micropalpus*).—Colombia.

Note.—Mcq. says that the absence of the antennæ and palpi makes his generic determination doubtful. The bare eyes and other points in the description suggest the genus *Saundersia*.

**dorsopunctata** Mcq., Dipt. Ex. ii, 3, 47, pl. 4, f. 5 (*Micropalpus*). Schiner, Novara, 334.—So. Amer. (Sch.); Bogota (Mcq.).

**flavicans** Mcq., Dipt. Ex. Sup. i, 151, pl. 13, f. 4 (*Micropalpus*).—Colombia.

Note.—As the eyes are bare, and the third antennal joint not elongate, this should doubtless be referred to *Saundersia*.

- flavitarsis** Guérin, Mcq., Dipt. Ex. ii, 3, 47, pl. 5, f. 1. Sup. i, 152, pl. 13, f. 7. Sup. iii, 45 (*Micropalpus*). Schiner, Novara, 334.—So. Amer. (Sch.); Venezuela (Rdi.); Quito, Peru; Colombia; Mexico (Mcq.).  
Syn. *Epalpus pallitarsis* Rdi. Esap. Ditt. 8, No. 5.
- heros** Sch., B. B. Mus. Sch. ii, 105.—Colombia (B. B.).  
Note.—Is this species described?
- hystrix** Sch., B. B. Mus. Sch. ii, 105.—Colombia (B. B.).  
Note.—Is this described?
- inornata** Sch., Novara, 335.—So. Amer.
- macula** Mcq., Dipt. Ex. ii, 3, 46, pl. 5, f. 2 (*Micropalpus*). Sch., Nov. 334. v. d. W., Biol. C.-A. Dipt. ii, 21, pl. 1, f. 16.—So. Amer. (Mcq., Sch.); Costa Rica (v. d. W.).
- nigriventris** Mcq., Dipt. Ex. ii, 3, 44, pl. 4, f. 3 (*Hystricia*). L. c. Sup. i, 150 (*Micropalpus*). Sch., Novara, 334. v. Röder, Dipt. ges. S. A. Al. Stübel, 10 (sep.).—So. Amer. (Sch.); Colombia (Mcq., v. Röd.).
- nitidus** Mcq., Dipt. Ex. Sup. iv, 174, pl. 15, f. 14 (*Micropalpus*).—So. Amer.  
Note.—Probably belongs in *Saundersia*.
- peruviana** Mcq., Dipt. Ex. Sup. iii, 45, pl. 5, f. 2 (*Micropalpus*). v. Röder, Dipt. ges. S. A. Al. Stübel, 10 (sep.).—Ecuador (Mcq., v. Röd.); Peru (Mcq.).
- picta** Sch., Novara, 335.—So. Amer.
- pictipennis** Mcq., B. B. Mus. Sch. ii, 105.—Colombia.  
Note.—Is this described?
- pulverulenta** Sch., Novara, 335.—So. Amer.
- rubripes** Sch., B. B. Mus. Sch. ii, 105.—Colombia.  
Note.—Is this described?
- rufa** Sch., Novara, 335.—So. Amer.
- rufipes** Mcq., Dipt. Ex. Sup. iv, 172, pl. 15, f. 11 (*Hystricia*). v. d. W., Biol. C.-A. Dipt. ii, 27.—Brazil (Mcq.).
- rufiventris** Mcq., Dipt. Ex. Sup. i, 151, pl. 13, f. 3 (*Micropalpus*).—Colombia.  
Note.—This is probably a *Saundersia*, as the eyes are bare and the third antennal joint short.
- semiatrata** Sch., Novara, 334.—So. Amer.
- tarsalis** Sch., Novara, 334.—So. Amer.
- varia** Wlk., Dipt. Saund. 268 (*Tachina*). v. Röd., Dipt. ges. S. A. Al. Stübel, 10 (sep.).—Colombia (Wlk.); Ecuador (v. Röd.).

## Gen. EPALPUS.

Rdi., Esap. ditt. (sep.) 6. Annali di Bologna (1850).

- erythrostroma** Big., An. Soc. Ent. Fr. 1888, 95.—Chili.
- lineolatus** Big., An. Soc. Ent. Fr. 1888, 94.—Chili.
- ochricornis** Big., An. Soc. Ent. Fr. 1888, 95.—Chili.
- rostratus**, Rdi., Dipt. Am. merid. Strobel (Ann. Soc. Nat. Mod., iii) 2. (sep.) pl. 4, f. 1, 2.—Mendoza.
- rubripilus** Rdi., Esapodi Ditteri, 7, No. 4 (sep.).—Venezuela.

**rufipennis** Mcq., Dipt. Ex. Sup. i, 152, pl. 13, f. 5 (*Micropalpus*). Sch., Novara, 334 (*Saundersia*). Br. Bgst., Mus. Sch. i, 64.—So. Amer. (Sch.); Colombia (B. B., Mcq.).

Gen. **JURINIA**.

Rob., Desv. Myod. 34. (1830).

**amethystina** Mcq., Dipt. Ex. ii, 3, 42, pl. 3, f. 7. Sup. i, 147.—Colombia; Venezuela; Minas Geraes, Brazil; Georgia.

**analis** Mcq., Dipt. Ex. ii, 3, 39, pl. 3, f. 8.—Brazil; Mexico.

**aurifacies** R. Desv., Myod. 38.—Brazil.

**bicolor** Wd., Aus. Zw. ii, 282 (*Tachina*). Mcq., Dipt. Ex. ii, 3, 39, pl. 3, f. 7.—Brazil (Wd., R. D., Mcq.); ?Montevideo (Big.).

Syn. *Jurinia fuliginipennis* Big., An. Soc. Ent. Fr. 1888, 79.

?*J. brasiliensis* R. D., Myod. 35.

*Echinomyia fuliginipennis* Mcq., Hist. Nat. ii, 77.

**chrysiceps** R. D., Myod. 37.—Brazil.

**flavifacies** Mcq., Dipt. Ex. Sup. iv, 171.—Brazil.

**fulviventris** R. D., Myod. 37.—Rio Grande, Brazil.

**gagatea** R. D., Myod. 36.—Brazil.

**hyalipennis** Mcq., Hist. Nat. ii, 80.—Brazil.

**laticornis** Mcq., Dipt. Ex. Sup. i, 146.—Colombia.

**nigricalyptata** Mcq., Dipt. Ex. Sup. i, 145, pl. 12, f. 6.—Minas-Geraes, Brazil.

**nigriventris** v. d. Wulp., Notes Leyd. Mus. iv, 81. Amerik. Dipt. iii, 17.—Chili; Argentine Rep.

**notata** Wlk., Dipt. Saund. 267 (*Tachina*). v. Röder., Dipt. gesamm. S. A. Al. Stübel, 10 (sep.).—Colombia (Wlk.); Ecuador (v. Röd.).

**obesa** Wd., Aus. Zw. ii, 282 (*Tachina*). B. B., Mus. Sch. i, 64, f. 234.—Brazil (Wd.).

**plagiata** Sch., Novara, 332 (*Hystericia*). B. B., Mus. Sch. ii, 105.—So. Amer. (Sch.).

**rufipalpis** Mcq., Dipt. Ex. ii, 3, 40.—Guiana.

**rufiventris** Mcq., Dipt. Ex. ii, 3, 41, pl. 3, f. 9. Sup. i, 147.—Bogota.

**scutellaris** R. D., Myod. 36.—Guaratuba, Brazil.

**scutellata** Mcq., Dipt. Ex. ii, 3, 41.—Chili; Bogota.

**smaragdina** Mcq., Dipt. Ex. ii, 3, 39, pl. 3, f. 6.—?Brazil.

**surinamensis** Mcq., Dipt. Ex. ii, 3, 40, pl. 4, f. 1.—Surinam.

**testacea** R. D., Myod. 38.—Rio Grande, Brazil.

**translucens** Mcq., Dipt. Ex. Sup. i, 145, pl. 12, f. 7.—Minas-Geraes, Brazil.

Gen. **FABRICIA**.

Rob. Desv., Myod. 42. (1830).

**andicola** Big., An. Soc. Ent. Fr. 1888, 86.—Chili.

**daemon** Sch., (non Wd.) Novara, 331. B. B., Mus. Sch. ii, 104.—Brazil (Sch.).

Note.—Schiner wrongly identified his species with Wiedemann's, according to B. B.

**leucophrys** Wd., pt. Aus. Zw. ii, 308 (*Tachina*). B. B., Mus. Sch. ii, 104.—Brazil (Wd.).

Gen. **BLEPHARIPEZA.**

Macq., Dipt. Ex. ii, 3, 54. (1843).

- albifacies** Big., An. Soc. Ent. Fr. 1888, 92.—Brazil.  
**andina** Big., An. Soc. Ent. Fr. 1888, 90.—Chili.  
**aurocaudata** Big., An. Soc. Ent. Fr. 1888, 90.—Montevideo.  
**bicolor** Mcq., Dipt. Ex. Sup. i, 158, pl. 20, f. 7. Sch., Nov. 336.—So. Amer. (Sch.); Galveston, Texas (Mcq.).  
**breviventris** Wd., Aus. Zw. ii, 297 (*Tachina*). Wlk., List, 712 (*do.*). B. B., Musc. Sch. ii, 98.—Brazil (Wd.); Jamaica (Wlk.).  
**cyaneiventris** Mcq., Dipt. Ex. Sup. i, 157, pl. 13, f. 11.—Minas-Geraes, Brazil.  
**leucophrys** Wd., Aus. Zw. ii, 308 (*Tachina*). v. d. W., Biol. C.-A. Dipt. ii, 30, pl. 2, ff. 9, 9a (*Belvosia*). Sch., Novara, 336. Br. Bgst., Mus. Sch. i, 28, f. 53. Willist., Tr. Am. Ent. Soc. xiii, 304.—Brazil (Wd., Sch., v. d. W.); Colombia (Sch., v. d. W.); Rio Napo (Rdi.); Argentine Rep.; Costa Rica (v. d. W.); San Domingo (Willist.); Guiana; Mexico (Mcq.); Cuba (Big.); N. Amer.  
 Syn. *Blepharipeza rufipalpis* Mcq., Dipt. Ex. ii, 3, 55, pl. 6, f. 1. Sup. i, 158. Rdi., Dipt. Am. Æq. Osc. 8 (sep.). Big. Sagra, 815.  
 Syn. *Belvosia rufipalpis* v. d. W., Amerik. Dipt. iii, 25, pl. 1, f. 15.

Gen. **BELVOSIA.**

Rob. Desv., Myod. 103. (1830).

- analis** Mcq., Dipt. Ex. Sup. i, 160, pl. 14, f. 4.—? Brazil.  
**bifasciata** Fab., Syst. Ent. 777. Ent. Syst. iv, 325. Mant. Ins. ii, 345. Syst. Ant. 299 (*Musca*). Wd., Aus. Zw. ii, 305 (*Tachina*). Mcq., Hist. Nat. ii, 104 (*Nemoræa*). Big. Sagra. 813 (*do.*) Latr. Dict. d'Hist. Nat. xxiv, 195 (*Ocyptera*). R. Desv., Myod. 104 (*Latreillia*). B. B., Musc. Sch. i, 29, f. 62; ii, 99 (*do.*). Mcq., Dipt. Ex. ii, 3, 57, pl. 6, f. 2. Sup. iii, 45. v. d. W., Amerik. Dipt. iii, 23, pl. 1, ff. 13, 14. Biol. C.-A. Dipt. ii, 30, pl. 2, ff. 8, 8a.—So. Amer. (Wd. Big.); Is. Am. (Fab.); Brazil (Mcq., R. D., v. d. W.); Colombia; Guatemala (v. d. W.); Cuba (Big.); No. Amer.  
**leucopyga** v. d. W., Notes Leyd. Mus. iv, 84. Amerik. Dipt. iii, 27.—Brazil.

Gen. **WILLISTONIA.**

Br. Bgst., Musc. Schiz. i, 29. (1889).

- bicincta** R. Desv., Myod. 103 (*Belvosia*). Mcq., Hist. Nat. ii, 112 (*Senometopia*). Mcq., Dipt. Ex. ii, 3, 56, 57. Sup. ii, 66 (*Belvosia*). Br. Bgst., Musc. Sch. ii, 99.—Brazil (Mcq.); Antilles; Carolina (R. D.); N. Am.  
**copulata** Wd., Aus. Zw. ii, 295 (*Tachina*). B. B., Mus. Sch. ii, 99.—Brazil (Wd.).  
**esuriens** Fab., Syst. Ant. 301 (*Tachina*). Wd., Aus. Zw. ii, 309 (*do.*). Mcq., Dipt. Ex. ii, 3, 57 (*Belvosia*). B. B., Musc. Sch. i, 29.—So. Amer. (Fab.); Brazil (Wd.).



**potens** Wd., Aus. Zw. ii, 312 (*Tachina*). Big. Sagra, 810 (*do.*). Meq., Dipt. Ex. ii, 3, 58 (*Eurygaster*). B. B., Mus. Sch. ii, 99.—Rio Janeiro (Wd.); Cuba (Big.).

**weyenberghiana** v. d. W., Amerik. Dipt. iii, 26, pl. 1, ff. 16, 17, 18 (*Belvosia*). B. B., Musc. Sch. ii, 99.—Argentine Rep. (v. d. W.); Brazil (B. B.).

Gen. **CHÆTOPROCTA.**

Br. Bgst., Musc. Schiz. ii, 37. (1891).

**tarsalis** Sch., Novara, 336 (*Blepharipeza*). B. B., Mus. Sch. ii, 38.—So. Amer. (Sch.); Venezuela (B. B.).

Gen. **ATACTA.**

Schin., Novara, Dipt. 328. (1868).

**brasiliensis** Sch., Novara, 328. B. B., Musc. Sch. i, 28, f. 57.—Brazil (Sch.).

Gen. **BLEPHAROPODA.**

Br. Bgst., Musc. Schiz. i, 28. (1889).

**pilitarsis** Rdi., Dipt. Am. Æq. Oscul. 9 (sep.).—Rio Napo.

Gen. **THYSANOMYIA.**

Br. Bgst., Musc. Sch. ii, 36. (1891).

**fimbriata** v. d. W., Biol. C.-A. Dipt. ii, 97 (*Brachycoma*). B. B., Musc. Sch. ii, 36.—So. Amer. (B. B.); Mexico (v. d. W.).

Gen. **CTENOPHOROCERA.**

Br. Bgst., Musc. Sch. ii, 38. (1891).

**biserialis** Sch., Novara, 326 (*Phorocera*). B. B., Mus. Sch. ii, 38.—Brazil (Sch.).

? **blepharipus** B. B., Mus. Sch. ii, 38.—Cape of Good Hope, or Brazil.

Gen. **ECHINOMYIA.**

Duméril, Expos. méth. nat. cl. ins. (1798).

**analis** Meq., Dipt. Ex. Sup. i, 144, pl. 12, f. 3.—Colombia.

**brasiliensis** R. D., Myod. 33 (*Dejeania*). Meq., Hist. Nat. ii, 77.—Brazil (R. D., Meq.).

**filipalpis** Rdi., Dipt. Exot. 15 (sep.).—Chili.

**furiosa** Wlk., Tr. Ent. Soc. Lond. n. ser. iv, 194.—Rio Grande.

**ignobilis** Rdi., Dipt. Ex. 15 (sep.).—Chili.

**nigripennis** Wd., Aus. Zw. ii, 286 (*Tachina*). Meq., Hist. Nat. ii, 75.—Brazil (Wd., Meq.).

**pilifrons** Sch., Novara, 331.—Chili.

**piliventris** v. d. W., Amerik. Dipt. iii, 22. Biol. C.-A. Dipt. ii, 34, pl. 2, f. 13a.—Argentine Rep.; Mexico.

**pumila** Meq., Dipt. Ex. Sup. iv, 170, pl. 15, f. 9.—Minas Geraes, Brazil.

- pygmæa* Mcq., Dipt. Ex. Sup. iv, 170, pl. 15, f. 10.—Chili.  
*rubida* R. Desv., Myod. 39 (*Dumerillia*). Mcq., Hist. Nat. ii, 79.—Brazil (R. D., Mcq.).  
*vittata* v. d. W., Amerik. Dipt. iii, 21.—Argentine Rep.

Gen. **PELETERIA.**

Rob. Desv., Myod. 39. (1830).

- lalandii* R. D., Myod. 40.—Brazil.  
*leschenaldi* R. D., Myod. 40.—Surinam.  
*robusta* Wd., Aus. Zw. ii, 290 (*Tachina*). v. d. Wulp., Amerik. Dipt. iii, 19. Biol. C.-A. Dipt. ii, 32, pl. 2, f. 10a (*Echinomyia*). B. B., Mus. Sch. ii, 104.—Montevideo (Wd.); Argentine Rep.; Chili; Colombia; Mexico; Costa Rica (v. d. W.); No. Amer.  
 Syn. *Echin. analis* Mcq., Dipt. Ex. Sup. i, 144, pl. 12, f. 3.  
*E. filipalpis* Rdi., Arch. Zool. iii (sep.), p. 15.  
*E. hæmorrhœa*, v. d. W., Tijds. v. Ent. x, 145, pl. 4, ff. 13, 14, 15, 16. Willist., Tr. Am. Ent. Soc. xiii, 301.

Gen. **TACHINODES.**

Br. Bgst., Muse. Schiz. i, 65. (1889).

- analis* Fab., Syst. Ant. 311 (*Tachina*). Wd., Aus. Zw. ii, 288 (*do.*). Sch., Novara, 331 (*Echinomyia*). Rdi., Esame ditt. Brasil. 1848 (sep.) 15 (*do.*). v. d. W., Biol. C.-A. Dipt. ii, 33, pl. 2, f. 12a (*do.*). B. B., Mus. Sch. ii, 105.—Brazil (Wd.); So. Am. (Fab., Sch.); Mexico; Nicaragua; Costa Rica (v. d. W.).  
*dæmon* Wd., Aus. Zw. ii, 292 (*Tachina*). B. B., Mus. Sch. ii, 105.—Brazil (Wd.).  
*diaphana* Fab., Syst. Ant. 308 (*Tachina*). ? Mant. Ins. ii, 349 (*Musca*). Wd., Aus. Zw. ii, 281 (*Tachina*). Rdi., Esame ditt. Brasil. (sep.) 15. (*Echinomyia*). B. B., Mus. Sch. ii, 105.—So. Amer. (Fab., Wd.); Brazil (Rdi.).  
*hystrix* Fab., Syst. Ent. 777. Ent. Syst. iv, 325 (*Musca*). Syst. Ant. 310 (*Tachina*). Wd., Aus. Zw. ii, 283 (*do.*). B. B., Mus. Sch. i, 65.—Brazil (B. B.).  
*immaculata* Mcq., Dipt. Ex. Sup. iv, 169, pl. 15, f. 8 (*Echinomyia*). v. d. W., Notes Leyd. Mus. iv, 83. Amerik. Dipt. iii, 19 (*do.*). B. B., Mus. Sch. ii, 105.—Minas Geraes, Brazil (Mcq.); Arizona (v. d. W.)  
*robusta* Sch., litt. B. B. Mus. Sch. ii, 105.—Brazil.  
 Note.—Is this described?  
*seminigra* Wd., Aus. Zw. ii, 296 (*Tachina*). Sch., Novara, 331 (*Echinomyia*). B. B., Mus. Sch. ii, 105.—Brazil (Wd.); Chili; Colombia (Sch.).

Gen. **TALAROCERA.**

Williston, Ent. Amer. iii, 152. (1887).

- smithii* Will., Ent. Amer. iii, 153. B. B., Mus. Sch. ii, 79.—Chapada, Brazil (Will.).

Gen. **ARCHYTAS.**

Jännicke, Neue Exot. Dipt. 392. (1867).

**bicolor** Jæn., Neue Exot. Dipt. 392, pl. 44, f. 8.—Venezuela.

Gen. **CUPHOCERA.**

Macq., An. soc. ent. Fr. ser. 2, iii, 267. (1845).

**callipiga** Big., An. Soc. Ent. Fr. 1857. Rdi., Dipt. Exot. (sep.) 16.—Chili

(Big.); Valdivia (Rdi.).

**decorata** Rdi., Dipt. Am. Æq. Oscul. (sep.) 7.—Rio Napo.

**pruinosa** Rdi., Dipt. Exot. (sep.) 16.—Chili.

Gen. **ELACHIPALPUS.**

Rdi., Esap. ditt. (sep.) 7. Annali di Bologna. (1850).

**macrocera** Wd., Aus. Zw. ii, 290 (*Tachina*). Sch., Novara, 330 (*Cuphocera*).

v. d. W., Amerik. Dipt. iii, 22 (*do.*). B. B., Mus. Sch. ii, 102.—Brazil  
(Wd., Sch.); Bahia (v. d. W.).

**nitens** Wd., Aus. Zw. ii, 294 (*Tachina*). Sch., Nov. 330 (*Cuphocera*). B. B.,  
Mus. Sch. ii, 102.—Brazil (Wd.); So. Am. (Sch.); Venezuela (B. B.).

Gen. **CHÆTOPROSOPA.**

Mcq., Dipt. Ex. Sup. iv, 196. (1850).

**cyanea** Mcq., Dipt. Ex. Sup. iv, 196, pl. 17, f. 17.—Minas Geraes, Brazil.

Gen. **SISYROPA.**

Br. Bgst., Musc. Schiz. i, 95. (1889).

**leptotrichopa** B. B., Mus. Sch. ii, 43.—Brazil.

? Syn. *Hemimasicera quadra* Wd.

**prosopina** B. B., Mus. Sch. ii, 43.—Brazil.

**rufiventris** B. B., Mus. Sch. ii, 42.—Brazil.

**vorax** Wd., Aus. Zw. ii, 315 (*Tachina*). B. B., Mus. Sch. ii, 43.—Brazil (Wd.).

Gen. **BOLOMYIA.**

Br. Bgst., Musc. Schiz. ii, 43. (1891).

**violacea** v. d. W., Biol. C.-A. Dipt. ii, 53 (*Mystacella*). B. B., Mus. Sch. ii,  
44.—Brazil (B. B.); Mexico; Yucatan; Guatemala (v. d. W.).

Gen. **CHÆTOLYGA.**

Rdi., Pr. Dipt. Ital. i. (1856).

**pyrrhopyga** Wd., Zool. Mag. iii, 53. Aus. Zw. ii, 319 (*Tachina*). B. B., Mus.  
Sch. ii, 98.—Bahia, Brazil (Wd.).



Gen. **GONIA**.

Meigen, Illig. Mag. ii, 280. (1803).

**crassicornis** Fab., Ent. Syst. iv, 328. Syst. Ant. 301 (*Musca*). Wd., Aus. Zw. ii, 345.—So. Amer. (Wd.); Is. Am. (Fab.).

**erythroceræ** Big., An. Soc. Ent. Fr. 1888, 86.—Chili.

**genei** Rdi., Dipt. Exot. (sep.) 14.—Venezuela.

Syn. *Gonia capitata* Rdi., Ann. Bolog. 1850.

**incerta** Mcq., Dipt. Ex. Sup. iv, 179.—Corrientes, Brazil.

**lineata** Mcq., Dipt. Ex. Sup. iv, 178.—Patagonia.

**pallens** Wd., Aus. Zw. ii, 346. Mcq., Dipt. Ex. ii, 3, 50. Sch., Novara, 329.

Lynch-Arribalz. An. Soc. Cien. Arg. 1880. v. d. W., Amerik. Dipt. iii, 23. Biol. C.-A. Dipt. ii, 39.—Brazil (Wd., Mcq.); Chili (Mcq., Sch., Blanch.); Patagonia; Argentine Rep.; Mexico; Jamaica (v. d. W.); Cuba (Mcq.).

Var. *G. chilensis* Mcq., Dipt. Ex. ii, 3, 50, pl. 5, f. 4. Big. Sagra, 809. Blanch. in Gay. Hist. Chili, vii, 422.

Syn. *G. angusta* Mcq., Dipt. Ex. ii, 3, 56, pl. 5, f. 5.

*G. lineata* Mcq., Dipt. Ex. Sup. iv, 178.

**trifaria** Zeller, Rdi. Esap. Ditt. (sep.) 9.—Venezuela (Rdi.).

Syn. *G. capitata* Meig., Rdi. l. c.

Note.—This synonymy is on authority of Rdi. l. c. Is *Gonia capitata* Degeer meant? According to Schiner (Catalogus Dipterorum Europæ, 98) *G. capitata* Mg. is a synonym of *G. trifaria* Zllr. It is a question whether the species referred to is found in So. America.

**virescens** Mcq., Dipt. Ex. ii, 3, 50.—Brazil or Chili.

Gen. **SPALLANZANIA**.

Rob. Desv., Myod. 78. (1830).

**americana** Sch., Novara, 327 (*Cnephalia*). B. B., Mus. Sch. ii, 100.—Chili (Sch.).

Gen. **GONYSTYLUM**.

Mcq., Dipt. Ex. Sup. iv, 180. (1850).

**ruficorne** Mcq., Dipt. Ex. Sup. iv, 180, pl. 16, f. 2.—Corrientes, Brazil.

Gen. **DEMOTICUS**.

Mcq., An. Soc. Ent. Fr. ser. 3, ii, 443. (1854).

**ratzeburgii** Jæn., Neue Exot. Dipt. 386.—Chili.

Gen. **CHÆTODEMOTICUS**.

Br. Bgst., Musc. Schiz. ii, 81. (1891).

**chilensis** Sch., Novara, 324 (*Demoticus*). B. B., Mus. Sch. ii, 81.—Chili (Sch.).

Gen. **ARTHROCHÆTA.**

Br. Bgst., Musc. Schiz. i, 66. (1889).

*demoticoïdes* B. B., Mus. Sch. i, 66, 101.—Colombia; Venezuela.Gen. **RHAMPHININA.**

Bigot, Bull. soc. ent. Fr. 1885, 14 janv. (1885).

*argentina* Big., An. Soc. Ent. Fr. 1888, 265.—Buenos Ayres.Gen. **TACHINA.**

Meigen, Illiger's Magazine, ii, 280. (1803).

*æquabilis* Wlk., List, 704.—Venezuela.*albimacula* Wd., Aus. Zw. ii, 328.—So. Amer.*alligans* Wlk., List, 713.—Venezuela.*alterna* Wlk., List, 701.—Venezuela.*antheumon* Wlk., List, 733.—Brazil.*anthracina* Wd., Aus. Zw. ii, 324.—Brazil.*apicalis* Wlk., Dipt. Saund. 275.—Colombia.*atrata* Wlk., Dipt. Saund. 284.—Brazil.*atratura* Wlk., Dipt. Saund. 304.—Brazil.*atrifrons* Wd., Anal. Ent. 46 (*Melanophora*). Aus. Zw. ii, 338.—So. America.*aurifera* Wlk., List, 702.—Venezuela.*basalis* Wlk., Dipt. Saund. 285.—So. Amer.*caliginosa* Wlk., Dipt. Saund. 268.—Brazil.*chrysoptera* Wd., Aus. Zw. ii, 316.—Brazil.*chrysotelus* Wlk., Dipt. Saund. 296.—Brazil.*cincta* Wlk., Dipt. Saund. 303.—Brazil.*cingulata* Fab., Syst. Ant. 301. Wd., Aus. Zw. ii, 323.—So. Amer. (Wd.);

Is. So. Amer. (Fab.).

*compacta* Wlk., Dipt. Saund. 294.—Brazil.*constans* Wlk., List, 705.—Venezuela.*contermina* Wlk., Dipt. Saund. 285.—So. Amer.*diversa* Wlk., List, 703.—Venezuela.*divisa* Wlk., Dipt. Saund. 270.—Pará, Brazil.*infirmata* Wlk., List, 719.—Chili.*latifrons* Wlk., Dipt. Saund. 284.—So. Amer.*melaleuca* Wd., Aus. Zw. ii, 320.—Brazil.*melanax* Wlk., List, 700.—Venezuela.*melanopyga* Wd., Aus. Zw. ii, 292.—Surinam.*mutata* Wd., Aus. Zw. ii, 338.—So. Amer. (Wd., Fab.).Syn. *Ocyptera diaphana* Fab., Syst. Ant. 314.*nigrifera* Wlk., Dipt. Saund. 303.—Brazil.*nigrorufa* Wlk., Dipt. Saund. 284.—Colombia.*picea* Wlk., Dipt. Saund. 293.—Colombia.*pilosa* Wlk., Dipt. Saund. 266.—So. America.? Syn. *Musca pilosa* Drury.

- pinguis* Fab., Syst. Ant. 302 (*Musca*). ? Wd., Aus. Zw. ii, 342.—So. Amer. (Fab., Wd.?).
- planiventris* Mcq., Dipt. Exot. Sup. iv, 205, pl. 18, f. 13.—So. Amer.
- proxima* Wlk., Dipt. Saund. 287.—Pará.
- ruficornis* Wlk., Dipt. Saund. 304.—So. America.
- scita* Wlk., Dipt. Saund. 302.—Brazil.
- similis* Wlk., Dipt. Saund. 269.—So. America.
- singularis* Wd., Aus. Zw. ii, 335.—Brazil.
- socia* Wlk., Dipt. Saund. 286.—Brazil.
- sordida* Wlk., Dipt. Saund. 297.—So. Amer.
- spinipennis* Wd., Aus. Zw. ii, 303.—Brazil.
- squamata* Wlk., Dipt. Saund. 279.—Colombia.
- subpicea* Wlk., Dipt. Saund. 297.—Brazil.
- tenebrifera* Wlk., Dipt. Saund. 302.—Brazil.
- tincta* Wlk., Dipt. Saund. 287.—Brazil.
- transiens* Wlk., List, 706.—Quito.
- transversa* Wlk., Dipt. Saund. 274.—Brazil.
- trianguli* Wlk., List, 706.—Venezuela.
- tricincta* Fab., Syst. Ant. 301. Wd., Aus. Zw. ii, 327.—So. Amer. (Fab., Wd.).
- triformis* Wlk., Dipt. Saund. 267.—Colombia.
- umbrifera* Wlk., Dipt. Saund. 294.—Brazil.
- usta* Wd., Aus. Zw. ii, 313.—Brazil.
- vittata* Wlk., Dipt. Saund. 273.—Colombia.
- vittata* Wlk., Dipt. Saund. 301.—So. Amer.
- Note.—It is useless to change the specific name until it becomes evident that this and the preceding belong in the same genus, which is improbable.
- vulgata* Wlk., Dipt. Saund. 300.—So. Amer.

Gen. **HYPOTACHINA.**

Br. Bgst., Musc. Schiz. ii, 47. (1891).

- disparata*
- B. B., Mus. Sch. ii, 47.—Brazil.

Gen. **TRICHOLYGA.**

Rdi., Pr. Dipt. Ital. i. (1856).

- vivida*
- Wd., Aus. Zw. ii, 312 (
- Tachina*
- ). B. B., Mus. Sch. ii, 99.—Brazil (Wd.).

Gen. **GYMNOMMA.**

v. d. Wulp., Biol. C.-A. Dipt. ii, 38. (1888).

- nitidiventris*
- v. d. W., Biol. C.-A. Dipt. ii, 38, pl. 5, ff. 17, 17a.—Mexico (v. d. W.); Brazil (B. B.).

Gen. **TRICHOPHORA.**

Mcq., Dipt. Ex. Sup. ii, 62. (1847).

- ?albocalyptrata*
- Big., An. Soc. Ent. Fr. 1888, 82.—Quito.
- 
- analisis*
- Sch., Novara, 330. B. B., Mus. Sch. 66, f. 246.—So. Amer.

**mitis** Sch., B. B. Mus. Sch. ii, 102.—Colombia.

Note.—Is this species described?

**nigra** Mcq., Dipt. Ex. Sup. ii, 63, pl. 3, f. 7.—Brazil.

Gen. **PARAGYMNOMMA.**

Br. Bgst., Musc. Schiz. ii, 80. (1891).

**diaphana** B. B., Mus. Sch. ii, 80.—Brazil.

**hystrix** B. B., Mus. Sch. ii, 80.—Brazil.

Gen. **TRIXA.**

Meigen, Syst. Besch. iv, 222. (1824).

ii, 98.—So. Amer. (Fab., Wd., Mcq.).

**uncana** Fab., Syst. Ant. 330 (*Dictya*). Wd., Aus. Zw. ii, 277. Mcq., Hist. Nat.

Gen. **MILTOGRAMMA.**

Meigen, Illig. Mag. ii, 280. (1803).

**unicolor** Mcq., Dipt. Ex. Sup. i, 166, pl. 20, f. 9.—Brazil.

Gen. **BOLBOCHÆTA.**

Bigot, Bull. Soc. Ent. Fr. 1885, 25 fév. (1885).

**haustellata** Big., Bull. Soc. Ent. Fr. 1885, 25 fév.—Buenos Ayres.

Gen. **TRICHODISCHIA.**

Bigot, Bull. Soc. Ent. Fr. 1885, 25 fév. (1885).

**cærulea** Big., Bull. Soc. Ent. Fr. 1885, 25 fév.—Buenos Ayres.

**soror** Big., l. c.—Buenos Ayres.

Gen. **MASICERA.**

Mcq., Hist. Nat. ii, 118. (1835).

**arcuatipennis** Mcq., Dipt. Ex. Sup. v, 101.—Quito; Peru.

**auriceps** Mcq., Dipt. Ex. ii, 3, 59.—Brazil or Chili.

**inclinans** Wlk., Tr. Ent. Soc. Lond. n. s. iv, 199.—So. America.

**insignis** v. d. W., Notes Leyd. Mus. iv. 85. Amerik. Dipt. iii, 29.—Chili.

**longiuscula** Wlk., Tr. Ent. Soc. Lond. n. s. iv, 198.—So. Amer.

**nigricalyptrata** Mcq., Dipt. Ex. Sup. v. 100.—Amazon.

**tenuiseta** Mcq., Dipt. Ex. Sup. i, 164, pl. 15, f. 4.—Venezuela.

Gen. **CRYPTOMEIGENIA.**

Br. Bgst., Musc. Schiz. ii, 7. (1891).

**setifacies** B. B., Mus. Sch. ii, 7.—Brazil.

Gen. **PSEUDOVIVIANA.**

Br. Bgst., Musc. Schiz. ii, 7. (1891).

**platypoda** B. B., Mus. Sch. ii, 7.—Venezuela.

Gen. **MASIPHYA.**

Br. Bgst., Musc. Schiz. ii, 9. (1891).

*brasiliانا* B. B., Mus. Sch. ii, 9.—Ypanema, Brazil.

Gen. **ALSOPSYCHE.**

Br. Bgst., Musc. Schiz. ii, 9. (1891).

*nemoralis* B. B., Mus. Sch. ii, 9.—Venezuela.

Gen. **PROSOPOCHÆTA.**

Mcq., Dipt. Ex. Sup. iv, 210. (1850).

*nitidiventris* Mcq., Dipt. Ex. Sup. iv, 211, pl. 19, f. 5.—Chili.

Gen. **CHRYSOTACHINA.**

Br., Bgst. Musc. Schiz. i, 93. (1889).

*reinwardtii* Wd., Aus. Zw. ii, 315 (*Tachina*). v. d. Wulp, Biol. C.-A. Dipt. ii, 40 (*Gymnochæta*). B. B., Mus. Sch. i, 93; ii, 14.—Brazil (Wd.); Guatemala (v. d. W.).

Gen. **EXOPALPUS.**

Mcq., Dipt. Ex. Sup. iv, 176. (1850).

*bicolor* Mcq., Dipt. Ex. Sup. iv, 177, pl. 16, f. 1.—Colombia.

Gen. **SELENOMYIA.**

Br. Bgst., Musc. Schiz. ii, 57. (1891).

*brevicornis* Phil., B. B. Mus. Sch. ii, 57.—Chili (B. B.).

Gen. **NEMORÆA.**

Rob., Desv. Myod. 71. (1830).

*brasiliensis* Sch., Novara, 329.—Brazil.

? *ciligera* R. Desv., Myod. 173 (*Winthemia*).—Brazil.

Note.—This may perhaps be an *Exorista*.

*erythroptya* v. d. W., Notes Leyd. Mus. iv, 83. Amerik. Dipt. iii, 28.—Chili.

*pictipennis* Mcq., Dipt. Ex. Sup. iv, 183, pl. 16, f. 7.—Colombia.

Gen. **MYIOPHASIA.**

Br. Bgst., Musc. Schiz. ii, 58. (1891).

*ænea* Wd., Aus. Zw. ii, 298 (*Tachina*). B. B., Mus. Sch. ii, 58.—Montevideo (Wd.); Georgia (B. B.).

Gen. **MASIPODA.**

Br. Bgst., Musc. Schiz. i, 94. (1889).

*geminata* B. B., Mus. Sch. i, 94; ii, 37.—Orizaba, Mexico; Brazil.

*xanthocera* Wd., Aus. Zw. ii, 329 (*Tachina*). B. B., Mus. Sch. ii, 98.—Brazil.

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Gen. **APORIA.**

Mcq., Dipt. Ex. Sup. i, 168. (1846).

*caudata* Sch., Novara, 320.—So. America.*nitens* Sch., Nov. 320.—So. Amer.*quadrimaculata* Mcq., Dipt. Ex. Sup. i, 169, pl. 15, f. 7. Sch. Nov. 319.  
B. B., Mus. Sch. i, 62, f. 222.—Colombia (Sch., Mcq.).Gen. **MICROTRICHODES.**

Mcq., Dipt. Ex. Sup. i, 160. (1846).

 *analis* Mcq., Dipt. Ex. Sup. i, 161, pl. 14, f. 5.—Minas Geraes, Brazil.Gen. **LEPTOSTYLUM.**

Mcq., Dipt. Ex. Sup. iv, 207. (1850).

*pulchellum* Mcq., Dipt. Ex. Sup. iv, 208, pl. 19, f. 2.—Bahia.Gen. **EXORISTA.**

Meigen, Illig. Mag. ii, 280. (1803).

*brasiliensis* R. D., Myod. 116 (*Olinda*).—Brazil.*flaviventris* Mcq., Dipt. Ex. ii, 3, 61 (*Lydella*).—Guiana.*longa* Rdi., Dipt. Am. Æq. Oscul. (sep.) 10.—Rio Napo.*niveifacies* Mcq., Dipt. Ex. Sup. iv, 189, pl. 17, f. 7.—Bahia.*rubescens* R. D., Myod. 117 (*Platymya*).—Guaratuba, Brazil.*rufata* Big., An. Soc. Ent. Fr. 1888, 257.—Pará, Brazil; Mexico.*ruficornis* Thoms., Eugen. Resa, 520.—Rio Janeiro.*rufilatera* Rdi., Esap. ditt. (sep.) 9.—Venezuela.Gen. **PAREXORISTA.**

Br. Bgst., Musc. Schiz. i, 19. (1889).

*inculta* Wd., Aus. Zw. ii, 330 (*Tachina*). B. B., Mus. Sch. ii, 19.—Brazil (Wd.).*optica* Sch., Novara, 327 (*Exorista*). B. B., Mus. Sch. ii, 19.—Brazil (Sch.).Gen. **HEMIMASICERA.**

Br. Bgst., Musc. Schiz. i, 19. (1889).

? *quadra* Wd., Aus. Zw. ii, 328 (*Tachina*). B. B., Mus. Sch. ii, 96.—Brazil (Wd.).Gen. **ACHÆTONEURA.**

Br. Bgst., Musc. Schiz. ii, 30. (1891).

*lata* Wd., Aus. Zw. ii, 322 (*Tachina*). B. B., Mus. Sch. ii, 30.—Montevideo (Wd.).Gen. **PARALISPE.**

Br. Bgst., Musc. Schiz. ii, 33. (1891).

*brasiliana* B. B., Mus. Sch. ii, 33.—Brazil.



Gen. **PHOROCERA.**

Rob., Desv. Myod. 131. (1830).

*ciliata* Mcq., Dipt. Ex. Sup. iii, 49, pl. 5, f. 9.—Colombia.

*cirrata* R. D., Myod. 138.—Brazil.

*elongata* R. D., Myod. 139 (*Medina*).—Guaratuba, Brazil.

*elongata* Rdi., Esame ditt. Brasil. (sep.) 15.—Brazil (Rdi.); ? Cayenne (Mcq.).

?Syn. *Phorocera tenuiseta* Mcq. Dipt. Ex. Sup. i, 166, pl. 14, f. 6.

Note.—If the latter is the same species, Macquart's name should hold; but if not, some other name must be substituted for Rondani's, which is preoccupied.

Gen. **PARADORIA.**

Br. Bgst., Musc. Schiz. ii, 35. (1891).

*nigra* B. B., Mus. Sch. ii, 35.—Venezuela.

Gen. **NEOMINTHO.**

Br. Bgst., Musc. Schiz. ii, 35. (1891).

*heros* Sch., Novara, 325 (*Phorocera*). B. B., Mus. Sch. ii, 35.—Rio Janeiro (Sch.).

*macilenta* Wd., Aus. Zw. ii, 305 (*Tachina*). Sch. Nov. 326 (*Phorocera*). B. B., Mus. Sch. ii, 35.—Brazil (Wd., Sch.).

Gen. **FRONTINA.**

Meigen, Syst. Besch. vii, 247. (1838).

*aurulenta* Big., An. Soc. Ent. Fr. 1888, 84.—Brazil.

Gen. **DEGEERIA.**

Meigen, Syst. Besch. vii, 249. (1838).

*antarctica* Thoms., Eugen. Resa, 527.—Patagonia.

*brunisquamis* R. D., Myod. 157 (*Elophoria*).—Brazil.

Gen. **GNADOCHÆTA.**

Mcq., Dipt. Exot. Sup. iv, 227. (1850).

*ocerulea* Mcq., Dipt. Ex. Sup. iv, 228, pl. 21, f. 7.—Minas Geraes, Brazil.

Gen. **GYMNOSTYLIA.**

Mcq., Hist. Nat. ii, 216. (1835).

*analís* R. D., Myod. 322 (*Macromya*).—Brazil.

*analís* Mcq., Dipt. Exot. ii, 3, 88.—Guiana.

Note.—This name is preoccupied by R. Desv. It may be changed to *G. guianensis*.

*brasiliensis* R. D., Myod. 324 (*Harrisia*).—Guaratuba, Brazil.

*cilipes* R. D., Myod. 325 (*Leschenaultia*). Mcq. Hist. Nat. ii, 217. Dipt. Ex. ii, 3, 89.—Surinam (Mcq., R. D.).

- cingulata* Sch., Novara, 327 (*Meigenia*). B. B., Mus. Sch. ii, 101.—Brazil (Sch.).
- depressa* R. D., Myod. 322 (*Macromya*). Mcq., Hist. Nat. ii, 217.—Brazil (R. D., Mcq.).
- famelica* Wd., Aus. Zw. ii, 331 (*Tachina*). B. B., Mus. Sch. ii, 101.—Brazil (Wd.).
- fasciata* Mcq., Dipt. Ex. Sup. iii, 52, pl. 6, f. 3.—Brazil.
- ornata* Sch. litt. B. B., Mus. Sch. i, 60, f. 212; ii, 70.—Colombia; Venezuela (B. B.).
- scutellaris* R. D., Myod. 324 (*Harrisia*). Mcq., Hist. Nat. ii, 217.—Brazil (R. D., Mcq.).

Gen. **PHASIOPTERYX.**

Br. Bgst., Musc. Schiz. i, 79. (1889).

- depleta* Wd., Aus. Zw. ii, 298 (*Tachina*). B. B., Mus. Sch. i, 79.—Brazil (Wd.).

Gen. **MYIOMINTHO.**

Br. Bgst., Musc. Schiz. i, 70. (1889).

- elata* B. B., Mus. Sch. i, 70.—Venezuela.

Gen. **PSEUDORED TENBACHERIA.**

Br. Bgst., Musc. Schiz. i, 70. (1889).

- brasiliensis* Sch., Novara, 323 (*Redtenbacheria*). B. B., Musc. Schiz. i, 70.—Brazil (Sch.).

Gen. **MYOBIA.**

Rob. Desv., Myod. 99. (1830).

- aurifrons* Mcq., Dipt. Ex. Sup. i, 169, pl. 15, f. 8.—Venezuela.
- brachyptera* Thoms., Eugen. Resa, 527.—Rio Janeiro.
- dasyncnemis* Thoms., Eugen. Resa, 525.—Galapagos.
- diadema* Wd., Aus. Zw. ii, 382 (*Dexia*). v. d. W., Biol. C.-A. Dipt. ii, 137, pl. 4, f. 2.—Brazil (Wd.); Mexico; Yucatan; Costa Rica (v. d. W.); U. S.
- flavipennis* Wd., Aus. Zw. ii, 380 (*Dexia*). v. d. W., Biol. C.-A. Dipt. ii, 138.—Brazil (Wd.); Mexico (v. d. W.).
- longicornis* Mcq., Dipt. Ex. ii, 3, 65, pl. 7, f. 3.—Brazil, or Chili.

Gen. **GENEA.**

Rdi., Esap. Ditt. (sep.) 10. (1850).

- maculiventris* Rdi., Esap. Ditt. (sep.) 11.—Venezuela.



Gen. **TELOTHYRIA.**

v. d. Wulp., Biol. C.-A. Dipt. ii, 167. (1890).

**brevipennis** Sch., Novara, 324 (*Miltogramma*). B. B., Mus. Sch. ii, 74.—Brazil (Sch.).

Gen. **RHINOMACQUARTIA.**

Br. Bgst., Musc. Sch. ii, 76. (1891).

**chætophora** (Sch.) B. B., Mus. Sch. ii, 77.—Brazil (B. B.).

Gen. **ARGYROMIMA.**

Br. Bgst., Musc. Schiz. i, 72. (1889).

**mirabilis** B. B., Mus. Sch. i, 72, 102, f. 277.—So. America.

Gen. **BESKIA.**

Br. Bgst., Musc. Schiz. i, 71. (1889).

**cornuta** B. B., Mus. Sch. i, 71, 102, f. 276.—Brazil.

Gen. **HYADESIMYIA.**

Bigot, Mission Scien. du Cap Horn, Dipt. 26. (1888).

**clausa** Bigot, Miss. Cap Horn, Dipt. 27, pl. 3, f. 7.—Cape Horn.

**sarcophagidea** Big., Miss. Cap Horn, Dipt. 28, pl. 3, f. 8.—Cape Horn.

Gen. **EUCESTROPHASIA.**

Towns., Trans. Am. Ent. Soc. xix. 133. (1892).

**aperta** B. B., Mus. Sch. i, 78 (*Oestrophasia*). Towns., Tr. Am. Ent. Soc. xix. 133.—So. Amer. (B. B.).

Gen. **TRICHOPROSOPUS.**

Mcq., Dipt. Ex. ii, 3, 70. (1843).

**durvillei** Mcq., Dipt. Ex. ii, 3, 71, pl. 8, f. 2.—Conception, Chili.

Fam. **DEXIIDÆ.**

Gen. **ACTINOCHÆTA.**

Br. Bgst., Musc. Schiz. i, 69. (1889).

**columbiæ** B. B., Mus. Sch. i, 69, 102.—Colombia; Venezuela (B. B.).

Gen. **UROMYIA**.

Rob. Desv., Myod. 215. (1830).

**caudata** Sch., B. B. Musc. Sch. ii, 139.—So. Amer.Note.—Described? B. B. indicate this species with a query as equal to *U. producta* R. D.**nitens** Sch., B. B. Mus. Sch. ii, 139.—So. Amer.Note.—Described? B. B. indicate it with a query as equal to *U. producta* R. D.**producta** R. D., Myod. 216 (*U.*). Mcq., Hist. Nat. ii, 168 (*Sericocera*).

B. B., Mus. Sch. i, 62. v. d. W., Biol. C.-A. Dipt. ii, 251, pl. 6, ff. 6, 6a.—Brazil (R. D., Mcq.); Centr. Am. (B. B.); Mexico (v. d. W.).

Gen. **DASYUROMYIA**.

Bigot, Bull. Soc. Ent. Fr. 1885, 11 Mars. (1885).

**penicillata** Big., Bull. Soc. Ent. Fr. 1885, 11 Mars.—Chili.Gen. **DEXIOSOMA**.

Rdi., Dipt. Ital. Prod. i. (1856).

**nigrum** Mcq., B. B. Mus. Sch. ii, 112.—Brazil.

Note.—Is this species described?

**pyrrhoprocta** Wd., Aus. Zw. ii, 381 (*Dexia*). B. B., Mus. Sch. ii, 112.—Brazil.Gen. **EBENIA**.

Mcq., Dipt. Ex. Sup. i, 171. (1846).

**claripennis** Mcq., Dipt. Ex. Sup. i, 171, pl. 16, f. 2.—Brazil.Gen. **CHÆTONA**.

v. d. W., Biol. C.-A. Dipt. ii, 253. (1891).

**icterica** Wd., Aus. Zw. ii, 321 (*Tachina*). B. B., Musc. Sch. ii, 74.—Brazil (Wd.).Note.—Br. and Bgst. refer *Dexia icterica* Wd. to *Chatona* (see Mus. Sch. ii, 74). There is no *Dexia icterica* Wd., that I know of. I therefore take it that the authors mean *Tachina icterica* Wd.**longiseta** Wd., Aus. Zw. ii, 381 (*Dexia*). v. d. W., Biol. C.-A. Dipt. ii, 253, pl. 6, ff. 8, 8a. B. B., Mus. Sch. ii, 74.—Brazil (Wd.); Costa Rica (v. d. W.).Gen. **EUANTHA**.

v. d. Wulp, Tijds. v. Ent. xxviii. 198. (1885).

**aucta** Wd., Aus. Zw. ii, 377 (*Dexia*). v. d. W., Biol. C.-A. Dipt. ii, 248. B. B., Mus. Sch. ii, 101.—Brazil.**dives** Wd., Aus. Zw. ii, 377 (*Dexia*). B. B., Musc. Sch. ii, 101.—Kentucky (Wd.); So. Amer. (B. B.).

Note.—The locality So. Amer., given by B. B., may be a typographical error.

Gen. **DEXIA**.

Meigen, Syst. Besch. v, 33. (1826).

- ? *albicans* Wlk., Tr. Ent. Soc. Lond. n. s. iv, 204.—Valley of the Amazon.  
*angusta* Wlk., Dipt. Saund. 314.—Brazil.  
*basalis* Wlk., Dipt. Saund. 311.—So. Amer.  
*convexa* Wlk., Dipt. Saund. 312.—Brazil.  
*dorsalis* Wlk., Dipt. Saund. 308.—So. Amer.  
*extrema* Wlk., Tr. Ent. Soc. Lond. n. s. iv, 203.—Valley of the Amazon.  
*gortys* Wlk., List, 839.—Brazil.  
*insolita* Wlk., Dipt. Saund. 318.—Brazil.  
*limbata* Wd., Aus. Zw. ii, 371.—Brazil.  
*longa* Wlk., Dipt. Saund. 311.—So. Amer.  
*muscaria* Wlk., Dipt. Saund. 308.—Brazil.  
*obscura* Wlk., Dipt. Saund. 307.—Brazil.  
*parvicornis* v. d. W., Amerik. Dipt. iii, 33, pl. 2, ff. 7, 8.—Argentine Rep.  
*pica* Fab., Syst. Ant. 293 (*Musca*). Wd., Aus. Zw. ii, 371.—So. Amer. (Fab., Wd.).  
*plana* Wlk., Dipt. Saund. 315.—Brazil.  
*quadrimaculata* Wlk., Dipt. Saund. 319.—Brazil.  
*randa* Wlk., List, 852.—Brazil.  
*semipicta* Wlk., Dipt. Saund. 316.—Amazon River.  
*sermyla* Wlk., List, 850.—Brazil.  
*tenuicornis* v. d. W., Amerik. Dipt. iii, 32, pl. 2, ff. 5, 6.—Argentine Rep.

Gen. **PTILODEXIA**.

Br. Bgst., Musc. Schiz. i, 51. (1889).

- rubriventris* Mcq., Dipt. Ex. Sup. i, 188, pl. 20, f. 10 (*Dexia*). B. B., Mus. Sch. i, 51 (*Clinoneura*). B. B., Mus. Sch. ii, 113.—Venezuela (B. B.); Merida, Yucatan (Mcq.).

Gen. **SARDIOCERA**.

Br. Bgst., Musc. Schiz. i, 51. (1889).

- rutilans* Fab., Sp. Ins. ii, 436. Mant. Ins. ii, 342. Ent. Syst. iv, 314. Syst. Ant. 287 (*Musca*). Wd., Aus. Zw. ii, 392 (*do*). B. B., Mus. Sch. ii, 113.—So. Amer. (Wd.); Is. Am. (Fab.).

Gen. **TRICHODURA**.

Mcq., Dipt. Ex. ii, 3, 91. (1843).

- anceps* Fab., Syst. Ant. 296 (*Musca*). Wd., Aus. Zw. ii, 372 (*Dexia*). Mcq., Dipt. Ex. ii, 3, 91, pl. 11, f. 1. v. d. W., Tijds. voor. Ent. xxviii, 194, pl. 6, ff. 5, 6, 7, 8. B. B., Mus. Sch. i, 52.—So. Amer. (Fab., Wd., Mcq.); Brazil (B. B.); Surinam (v. d. W.).  
*recta* Sch., Novara, 320.—So. Amer.  
*vidua* Sch., Novara, 321.—Brazil.

Gen. **HYSTRICHODEXIA.**

v. Röder, Dipt. Ges. S. A. Al. Stübel. (sep.) 12. (1886).

*armata* v. Röd., Dipt. Ges. S. A. 12 (sep.), pl., ff. 3, 3a, 3b.—Ecuador.Gen. **EUDEXIA.**

Br. Bgst., Musc. Schiz. i, 52. (1889).

*goliath* Br. Bgst., Musc. Sch. i, 52, 99.—So. Amer.; Venezuela.*nemorina* Sch. litt. B. B., Mus. Sch. ii, 113.—Brazil.

Note.—Is this species described?

Gen. **MELANOPHORA.**

Meig., Illig. Mag. ii, 279. (1803).

*americana* Mcq., Dipt. Ex. ii, 3, 72, pl. 8, f. 4.—Brazil, or Chili.Gen. **PROSENA.**

St. Farg. and Serv., Encycl. Méth. x, 500. (1825).

*brevicornis* Mcq., Dipt. Ex. Sup. iv, 230.—Bahia.*longipalpis* v. d. W., Amerik. Dipt. iii, 30, pl. 2, ff. 1, 2.—Argentine Rep.*longitarsis* Mcq., Dipt. Ex. ii, 3, 92, pl. 11, f. 2.—Bogota.*sarcophagina* v. d. W., Amerik. Dipt. iii, 31, pl. 2, ff. 3, 4.—Argentine Rep.Gen. **MYIOMIMA.**

Br. Bgst., Musc. Schiz. i, 51. (1889).

*braziliana* B. B., Mus. Sch. ii, 60.—Brazil.*crassa* Wd., Aus. Zw. ii, 387 (*Musca*). B. B., Mus. Sch. ii, 139.—Brazil (Wd.).Gen. **PROSENOIDES.**

Br. Bgst., Musc. Schiz. ii, 66. (1891).

*papilio* Sch. litt. (*Prosenia*) B. B., Mus. Sch. ii, 66.—Brazil (B. B.).Gen. **SCOTIPTERA.**

Mcq., Dipt. Ex. ii, 3, 83. (1843).

*filipes* R. D., Myod. 318 (*Sophia*).—Brazil.*gagatea* R. D., Myod. 318 (*Sophia*).—Brazil.*melaleuca* Wd., Aus. Zw. ii, 369 (*Dexia*). Mcq., Dipt. Ex. ii, 3, 83, pl. 9, f. 1.

Perty, Delect. An. Brasil. 186, pl. 37, f. 7. v. d. W., Biol. C.-A. Dipt.

ii, 224, pl. 5, ff. 5, 5a. B. B., Mus. Sch. i, 58, f. 204.—Rio Janeiro (Wd.);

Sebastianopolis (Pty.); Brazil (Mcq.); Panama; Guatemala (v. d. W.).

**punctata** R. D., Myod. 318 (*Sophia*). Mcq., Hist. Nat. ii, 215.—Brazil (R. D., Mcq.).

Note.—Mcq. (Dipt. Ex. ii, 3, 83) says this is perhaps the same species as *Scotiptera (Dexia) melaleuca* Wd., and *S. vittata* Guérin. Mr. v. d. Wulp (Biol. C.-A. Dipt. ii, 224) gives it as a synonym of *S. melaleuca*, with a query.

Gen. **MEGISTOGASTER.**

Mcq., Dipt. Ex. Sup. iv, 211. (1850).

**analís** Mcq., Dipt. Ex. Sup. iv, 214.—Amazon.

Gen. **CORDYLIGASTER.**

Mcq., Dipt. Ex. ii, 3, 90. (1843).

**petiolatus** Wd., Aus. Zw. ii, 374 (*Dexia*). Wlk., List, 851 (*do.*). Mcq., Dipt. Ex. ii, 3, 90, pl. 10, f. 6. Rdi., Esame Ditt. Brazil. (sep.) 16. Sch., Novara, 322. v. d. W., Tijds. v. Ent. xxviii, 192, pl. 6, ff. 1, 2, 3, 4. B. B., Mus. Sch. i, 61.—So. Amer. (Sch.); Brazil (Wd., Wlk., Mcq., Rdi.); ?Java (Mcq.).

**tipuliformis** Wlk., Tr. Ent. Soc. Lond. n. s. iv, 205.—So. Amer.

Gen. **PACHYGRAPHIA.**

Br. Bgst., Musc. Schiz. ii, 75. (1891).

**fervens** Wd., Aus. Zw. ii, 383 (*Dexia*). B. B., Mus. Sch. ii, 75.—So. Amer. (Wd.); Brazil (B. B.).

**virgata** Wd., Aus. Zw. ii, 382 (*Dexia*). B. B., Musc. Sch. ii, 75.—Brazil (Wd.).

Gen. **LEPIDODEXIA.**

Br. Bgst., Musc. Schiz. ii, 75. (1891).

**tetraptera** (Sch.) B. B. Mus. Sch. ii, 75.—Venezuela.

Gen. **XANTHODEXIA.**

v. d. Wulp, Biol. C.-A. Dipt. ii, 256. (1891).

**sericea** Wd., Aus. Zw. ii, 316 (*Tachina*). v. d. W., Biol. C.-A. Dipt. ii, 256, pl. 6, ff. 11, 11a, 11b. B. B., Mus. Sch. ii, 73.—Brazil (Wd.); Mexico (v. d. W.).

Gen. **CALODEXIA.**

v. d. Wulp, Biol. C.-A. Dipt. ii, 257. (1891).

**flavipes** Sch., Novara, 326 (*Meigenia*). B. B., Mus. Sch. ii, 72.—Brazil (Sch.).

Gen. **MINTHODEXIA.**

Br. Bgst., Musc. Schiz. ii, 72. (1891).

**flavicornis** B. B., Mus. Sch. ii, 72.—Venezuela.**gravipes** B. B., Mus. Sch. ii, 72.—Venezuela.Gen. **PSEUDODEXIA.**

Br. Bgst., Musc. Sch. ii, 74. (1891).

**eques** Wd., Aus. Zw. ii, 378 (*Dexia*). B. B., Mus. Sch. ii, 74.—Brazil (Wd.).Gen. **LEPTODA.**

v. d. Wulp, Tijds. v. Ent. xxviii, 196. (1885).

**bicolor** Fab., Syst. Ant. 291 (*Musca*). Wd., Aus. Zw. ii, 392 (*do.*). B. B., Mus. Sch. ii, 102.—So. Amer. (Fab., Wd.).**filipes** Wlk., Tr. Ent. Soc. Lond. n. s. iv, 202 (*Dexia*). B. B., Mus. Sch. ii, 102.—Valley of the Amazon.**longipes** Fab., Syst. Ant. 298. Mant. Ins. ii, 348 (*Musca*). Wd., Aus. Zw. ii, 379 (*Dexia*). B. B., Mus. Sch. ii, 102.—So. Amer. (Fab., Wd.); Cayenne (Fab., Mant. Ins.).**pellucida** R. D., Myod. 318 (*Sophia*). Mcq., Hist. Nat. ii, 215 (*Scotiptera*). B. B., Mus. Sch. ii, 102.—Brazil (R. D., Mcq.).**phæoptera** Wd., Aus. Zw. ii, 370 (*Dexia*). B. B., Mus. Sch. ii, 102.—Brazil (Wd.).**plumosa** Wd., Aus. Zw. ii, 370 (*Dexia*). Mcq., Dipt. Ex. Sup. iii, 53 (*do.*). Big., Sagra, 815 (*do.*). B. B., Mus. Sch. ii, 102.—Brazil (Wd.); Rio Negro (Mcq.); Cuba (Big.).**potens** Wd., Aus. Zw. ii, 368 (*Dexia*). B. B., Mus. Sch. ii, 102.—Brazil (Wd.).Gen. **GONATORRHINA.**

v. Röder, Dipt. Ges. S. A. Al. Stübel (sep.) 10. (1886).

**paramonensis** v. Röd. Dipt. Ges. S. A. (sep.) 10, pl., ff. 2, 2a, 2b.—Paramo, Colombia.Gen. **STOMATODEXIA.**

Br. Bgst., Musc. Schiz. i, 57. (1889).

**bibens** Wd., Aus. Zw. ii, 249 (*Stomoxys*). B. B., Mus. Sch. ii, 105.—Brazil (Wd.).**cothurnata** Wd., Aus. Zw. ii, 249 (*Stomoxys*). v. d. W., Biol. C.-A. Dipt. ii, 239. B. B., Mus. Sch. i, 57, f. 195.—Brazil (Wd.); Mexico (Big., v. d. W.).Syn. *Prosenia maculifera* Big., An. Soc. Ent. Fr. 1888, 264.**famelica** Wd., Aus. Zw. ii, 250 (*Stomoxys*). B. B., Mus. Sch. ii, 102.—Brazil (Wd.).



Gen. **SPATHIPALPUS**.

Rdi., Dipt. Exot. (sep.) 20. (1863).

*flavifrons* Rdi., Dipt. Exot. (sep.) 21.—Valdivia.*longipalpis* v. d. W., Biol. C.-A. Dipt. ii, 138 (*Myobia*). B. B., Mus. Sch. ii, 102.—Bahia (B. B.); Mexico (v. d. W.).*philippii* Rdi., Dipt. Exot. (sep.) 21. B. B., Mus. Sch. ii, 69.—Valdivia (Rdi.); Bahia (B. B.).Fam. **SARCOPHAGIDAE**.Gen. **TOXOTARSUS**.

Mcq., Dipt. Ex. Sup. iv, 238. (1850).

*rufipalpis* Mcq., Dipt. Ex. Sup. iv, 238, pl. 22, f. 3.—Chili.Gen. **DIAUGIA**.

Perty, Delect. An. Brasil. 187. (1830-4).

*angusta* Perty, Delect. An. Bras. 187, pl. 37, f. 9. Mcq., Dipt. Ex. ii, 3, 109.—Minas (Pty.); Brazil (Mcq.).Note.—Mr. v. d. Wulp (Biol. C.-A. Dipt. ii, 250) expresses the opinion that this genus may be closely allied to *Leptoda*. As Perty states, however, that it is allied to *Sarcophaga*, I have included it in the *Sarcophagidae*.Gen. **AGRIA**.

Rob. Desv., Myod. 376. (1830).

*fuscipennis* Mcq., Dipt. Ex. ii, 3, 109. Bigot, Mission du Cap Horn, Dipt. 26.—Brazil, or Chili (Mcq.); Chili (Big.).Gen. **CYNOMYIA**.

Rob. Desv., Myod. 363. (1830).

*auriceps* Wlk., Tr. Ent. Soc. Lond. n. s. iv, 209.—Quito.*desvoidyi* Jæn., N. Ex. Dipt. 378.—Chili.*fuscipennis* Mcq., Dipt. Ex. ii, 3, 110.—Brazil, or Chili.*splendens* Mcq., Dipt. Ex. Sup. iv, 231 (*Phrissopoda*). Dipt. Ex. ii, 3, 96, pl. 11, f. 3 (*do.*). Blanch. in Gay, Hist. Chili, vii, 427, pl. 5, f. 3 (*do.*). v. d. W., Amerik. Dipt. iii, 34 (*do.*). Notes Leyd. Mus. iv, 87 (*do.*). B. B., Mus. Sch. ii, 110.—Cobija, Bolivia; Chili; Africa (Mcq.); Chili (v. d. W., Blanch.).Gen. **ONESIA**.

Rob. Desv., Myod. 365. (1830).

*americana* Sch., Novara, 311.—Chili.*bivittata* Jæn., Neue Ex. Dipt. 378.—Chili.*muscaria* Jæn., Neue Ex. Dipt. 378.—Chili.

Gen. **TRIPANURGA.**

Sch. litt. Br. Bgst., Musc. Schiz. ii, 63. (1891).

- albicans** Wd., Aus. Zw. ii, 363 (*Sarcophaga*). B. B., Mus. Sch. ii, 63.—Brazil (Wd.).
- bicolor** (Sch.) B. B. Mus. Sch. ii, 63.—Brazil.
- dimidiata** Wd., Aus. Zw. ii, 360 (*Sarcophaga*). B. B., Musc. Sch. ii, 63.—Brazil (Wd.).

Gen. **TRICHARÆA.**

Thoms., Dipt. Eugen. Resa, 541. (1868).

- scatophagina** Thoms., Eugen. Resa, 541.—Rio Janeiro.

Gen. **SAROTHROMYIA.**

Br. Bgst., Musc. Schiz. ii, 61. (1891).

- femoralis** Sch., Novara, 315 (*Sarcophila*). B. B., Mus. Sch. ii, 61.—Brazil (Sch.).

Gen. **SARCONESIA.**

Bigot, An. Soc. Ent. Fr. 3 ser., v. (1857).

- chlorogaster** Wd., Aus. Zw. ii, 359 (*Sarcophaga*). Meq., Dipt. Ex. ii, 3, 110 (*Onesia*). v. d. W., Notes Leyd. Mus. iv. 87 (*Sarcophaga*). Amerik. Dipt. iii, 35 (*do.*). Bigot, An. Soc. Ent. Fr. 3 ser., v. 301, pl. 7, f. 5. B. B., Mus. Sch. i, 54.—Montevideo; La Plata (Wd.); Chili; Argentine Rep. (v. d. W.).

Gen. **SARCOPHAGA.**

Meig., Syst. Besch. v, 14. (1826).

- advena** Wlk., Dipt. Saund. 324.—Brazil.
- amorosa** Sch., Novara, 314.—Brazil.
- aureiceps** Meq., Dipt. Ex. Sup. v, 108.—So. Amer.
- aurifinis** Wlk., Dipt. Saund. 325.—Brazil.
- aurifrons** R. D., Myod. 383 (*Gesneria*).—Cayenne.
- bifrons** Wlk., Dipt. Saund. 327.—So. Amer.
- brasiliensis** R. D., Myod. 338 (*Myophora*).—Goyaz, Brazil.
- ? **calida** Wd., Wlk. Dipt. Saund. 326.—Colombia.
- cayennensis** Meq., Dipt. Ex. ii, 3, 105.—Cayenne.
- chilensis** Meq., Dipt. Ex. ii, 3, 104, pl. 11, f. 6. Blanch. in Gay, Hist. Chili, vii, 429. v. d. W., Notes Leyd. Mus. iv. 88. Amerik. Dipt. iii, 36.—Chili (Meq., Blanch., v. d. W.).
- chrysellæ** R. D., Myod. 339 (*Myophora*). Rdi., Dipt. Am. Mer. Str. (sep.) 3.—Brazil (R. D.); Bahia (Rdi.).



- chrysostoma** Wd., Aus. Zw. ii, 356. Sch., Novara, 313. v. d. W., Amerik. Dipt. iii, 36.—Brazil (Wd., Sch.); Bahia (v. d. W.); W. Indies (O. S. Cat.).
- chrysotelus** Wlk., Dipt. Saund. 329.—So. Amer.
- chrysuræ** Rdi., Dipt. Exot. (sep.) 25.—So. Amer.
- circumcisa** Rdi., Esame Ditt. Brasil. (sep.) 16.—Brazil.
- cognata** Wlk., Dipt. Saund. 325.—So. Amer.
- comta** Wd., Aus. Zw. ii, 365.—Brazil.
- contermina** Wlk., Dipt. Saund. 327.—Brazil.
- cruenta** Mcq., B. B. Mus. Sch. ii, 110.—Brazil.
- Note.—Is this described?
- decedens** Wlk., Tr. Ent. Soc. Lond. n. s. iv, 207.—Colombia.
- dichroa** Sch., Novara, 313.—Chili.
- diversimaculata** Mcq., Dipt. Ex. Sup. iii, 54, pl. 6, f. 4.—Brazil.
- flaveola** R. D., Myod. 339 (*Myophora*).—Guaratuba, Brazil.
- flaviceps** Mcq., Dipt. Ex. ii, 3, 103, pl. 13, f. 3.—Brazil.
- flavicostata** Mcq., Dipt. Ex. ii, 3, 104, pl. 13, f. 4.—Conception, Chili.
- flavifrons** Mcq., Dipt. Ex. Sup. i, 191. Blanch. in Gay, Hist. Chili, vii, 428, pl. 5, f. 4. v. d. W., Amer. Dipt. iii, 37.—Brazil (Mcq.); Chili (Blanch.); Argentine Rep. (v. d. W.).
- fulvivitta** Wlk., Dipt. Saund. 326.—So. Amer.
- griseoflavescens** R. D., Myod. 383 (*Gesneria*).—Cayenne.
- hirtipes** Wlk., Dipt. Saund. 321.—Colombia.
- humboldtii** R. D., Myod. 338 (*Myophora*).—Peru.
- injuncta** Wlk., Tr. Ent. Soc. Lond. n. s. iv, 208.—Brazil.
- inoæ** Wlk., List, 832.—Galapagos.
- jejuna** Wlk., List, 811.—Venezuela.
- lambens** Wd., Aus. Zw. ii, 365.—Sao Paulo (Wd.); W. Indies (O. S. Cat.).
- modesta** Wd., Aus. Zw. ii, 363.—Brazil.
- nobilis** Thoms., Eugen. Resa, 536.—Montevideo; Buenos Ayres.
- notata** Mcq., Dipt. Ex. Sup. v, 108.—So. Amer.
- nurus** Rdi., Dipt. Am. Merid. Strob. (sep.) 3.—Buenos Ayres; Europe (Rdi.).
- Syn. *S. hæmorrhoidalis* Meig. (non Fall.).
- obtusifrons** Thoms., Eugen. Resa, 536.—Galapagos.
- occipitalis** Thoms., Eugen. Resa, 532.—Callao.
- opima** Wd., Aus. Zw. ii, 364.—Brazil.
- oralis** Rdi., Dipt. Am. Merid. Strob. (sep.) 3.—Bahia.
- ortogesa** Wlk., List, 834.—Chili.
- parva** Wlk., Dipt. Saund. 321.—Pará.
- philippii** Rdi., Dipt. Exot. (sep.) 24.—Valdivia.
- phœnicurus** Wd., Aus. Zw. ii, 365.—Brazil.
- pigmaea** Rdi., Dipt. Am. Æq. Oscul.—Rio Napo.
- plinthopyga** Wd., Aus. Zw. ii, 360. Wlk., Lin. Trans. xvii, 352. List, 820.—Brazil; Demerara; Jamaica; Nova Scotia (Wlk.); St. Thomas (Wd.).
- proerna** Wlk., List, 835.—Montevideo.
- pudica** Rdi., Esap. Ditt. (sep.) 12.—Is. Brazil.

- ? **punctipennis** Wlk., Tr. Ent. Soc. Lond. n. s. iv, 208.—Colombia.  
**quadrivittata** Mcq., Dipt. Ex. ii, 3, 102, pl. 12, f. 4. v. d. W., Amerik. Dipt. iii, 36.—Brazil (Mcq.); Argentine Rep. (v. d. W.).  
**rubrianalís** Mcq., Dipt. Ex. Sup. iv, 235.—Chili.  
**rubriventris** Mcq., Dipt. Ex. Sup. iv, 235.—Corrientes, Brazil.  
**ruficrura** Rdi., Dipt. Exot. 25 (sep.).—Equatorial Amer.  
**rufipalpis** Mcq., Dipt. Ex. ii, 3, 102. v. d. W., Notes Leyd. Mus. iv, 88. Amerik. Dipt. iii, 36.—Brazil (Mcq.); Curaçao (v. d. W.).  
**rufipes** Mcq., Dipt. Ex. ii, 3, 103.—Chili.  
**rufiventris** Wd., Aus. Zw. ii, 362.—Brazil.  
**spinigena** Rdi., Dipt. Exot. (sep.) 26.—Valdivia.  
**subsericans** Wlk., Tr. Ent. Soc. Lond. n. s. iv, 207.—So. Amer.  
**taitensis** Sch., Novara, 314. v. d. W., Amerik. Dipt. iii, 36.—Tahiti (Sch.). Bahia; Guadeloupe (v. d. W.).  
**tessellata** Fab., Syst. Ant. 285 (*Musca*). Wd., Aus. Zw. ii, 363.—Brazil (Wd.); So. Amer. (Fab.).  
**truncata** Sch., Novara, 314.—Chili.  
**varipes** Rdi., Dipt. Am. Æq. Oscul. (sep.) 10.—Rio Napo.  
**violenta** Wlk., List, 826.—Galapagos.  
**xanthophora** Sch., Novara, 313.—So. Amer.

Gen. **SARCOPHAGULA.**

v. d. Wulp, Tijds. v. Ent. xxx, 174. (1887).

- amata** Wd., Aus. Zw. ii, 367 (*Sarcophaga*). v. d. W., Tijds. v. Ent. xxx, 174.—So. Amer. (Wd.).  
**brevispina** Thoms., Eugen. Resa, 539 (*Sarcophaga*). v. d. W., Tijds. v. Ent. xxx, 174.—Rio Janeiro (Thoms.).  
**calida** Wd., Aus. Zw. ii, 366 (*Sarcophaga*). v. d. W., Tijds. v. Ent. xxx, 174.—Brazil (Wd.).  
**canescens** Thoms., Eugen. Resa, 539 (*Sarcophaga*). v. d. W., Tijds. v. Ent. xxx, 174.—Rio Janeiro (Thoms.).  
**despecta** Thoms., Eugen. Resa, 540 (*Sarcophaga*). v. d. W., Tijds. v. Ent. xxx, 174.—Panama; Puna (Thoms.); So. Amer. (v. d. W.).  
**genalis** Thoms., Eugen. Resa, 539 (*Sarcophaga*). v. d. W., Tijds. v. Ent. xxx, 174.—Brazil (Wd., Thoms.).  
 Syn. *Sarcophaga parvula* Wd., Aus. Zw. ii, 368.  
 Note.—B. B. (Musc. Sch. ii, 110) recognize *S. parvula* and *S. genalis* as distinct.  
**obsoleta** Wd., Aus. Zw. ii, 367 (*Sarcophaga*). v. d. W., Tijds. v. Ent. xxx, 174.—W. Indies (Wd.); So. Amer. (v. d. W.)  
**occidua** Fab., Ent. Syst. iv, 315. Syst. Ant. 288 (*Sarcophaga*). Wd., Aus. Zw. ii, 368 (*do.*). v. d. W., Amerik. Dipt. iii, 37 (*do.*). v. d. W., Tijds. v. Ent. xxx, 174.—Argentine Rep. (v. d. W.); W. I. (Wd.).  
**pallicrus** Thoms., Eugen. Resa (*Sarcophaga*).—So. Amer.

- sugens** Wd., Aus. Zw. ii, 367 (*Sarcophaga*). v. d. W., Tijds. v. Ent. xxx, 174.—Brazil (Wd.).
- surinamensis** Wd., Aus. Zw. ii, 366 (*Sarcophaga*). v. d. W., Tijds. v. Ent. xxx, 174.—Surinam (Wd.).
- terminalis** Wd., Aus. Zw. ii, 366 (*Sarcophaga*). v. d. W., Tijds. v. Ent. xxx, 174.—Brazil (Wd.).

Gen. **PTILOZEUXIA**.

Br. Bgst., Musc. Schiz. i, 55. (1889).

- brevicornis** Wd., Aus. Zw. ii, 299 (*Tachina*). B. B., Musc. Sch. iii, 111.—Montevideo (Wd.).

Gen. **PHRISSOPODA**.

Meq., Hist. Nat. Dipt. ii, 222. (1835).

- brullei** Meq., Hist. Nat. ii, 223.—So. Amer.
- maculata** Meq., Dipt. Ex. ii, 3, 97, pl. 11, f. 4.—Cayenne.
- præceps** Wd., Aus. Zw. ii, 355 (*Sarcophaga*). B. B., Mus. Sch. i, 56.—So. Amer. (B. B.).
- splendens** Meq., Dipt. Ex. ii, 3, 96, pl. 11, f. 3.—Africa; ? Chili.

Gen. **MICROCERELLA**.

Meq., Dipt. Ex. Sup. iv, 236. (1850).

- rufomaculata** Meq., Dipt. Ex. Sup. iv, 236, pl. 22, f. 1.—Chili.
- sarcophagina** Thoms., Eugen. Resa, 541.—Valparaiso.
- steindachneri** B. B., Mus. Sch. ii, 85.—Galapagos Is.

Fam. **MUSCIDAE**.

Gen. **STOMOXYS**.

Geoffroy, Hist. des Insectes, i, (1764).

- calcitrans** Lin., Fab., Meig., Harris, et al., R. Desv. Myod. 386.—Brazil (R. D.).
- geniculata** Meq., Dipt. Ex. Sup. i, 192.—Brazil.
- morio** Fab., Ent. Syst. iv, 393. Syst. Ant. 279. Mant. Ins. ii, 362. Syst. Ent. 797.—Brazil.
- nebulosa** Fab., Syst. Ant. 282. Wd., Aus. Zw. ii, 252.—So. America. (Wd.); Is. So. Amer. (Fab.).
- sugillatrix** R. D., Myod. 386.—Brazil.
- trifaria** Wd., Aus. Zw. ii, 250. Anal. Ent. 41.—So. Amer.
- variegata** Fab., Syst. Ant. 281. Wd., Aus. Zw. ii, 251.—So. Amer. (Fab., Wd.).

Gen. **PACHYMYIA.**

Mcq., Dipt. Ex. ii, 3, 115. (1843).

**crassa** Wd., B. B. Mus. Sch. ii, 113 (*Chætogyne*).—Brazil.Note.—Is this *Musca crassa* Wd., Aus. Zw. ii, 387?**vexans** Wd., Aus. Zw. ii, 248 (*Stomoxys*). Mcq., Hist. Nat. ii, 208 (*Prosenia*).B. B., Mus. Sch. i, 57 (*Chætogyne*). Mcq., Dipt. Ex. ii, 3, 115, pl. 14, f. 3.—Sao Paulo, Brazil (Wd., Mcq.).Gen. **MYIOSPILA.**

Rdi., Dipt. Ital. Prod. i, 91. (1856).

**cyanea** Mcq., B. B., Musc. Sch. i, 139.—Chili.

Note.—Is this species described?

Gen. **GRAPHOMYIA.**

Rob., Desv. Myod. 403. (1830).

**americana** Sch., Novara, 304.—So. America.Note.—The name is preoccupied by R. D. for a N. Am. species. If the two species are finally relegated to the same genus, the present one may be known as *G. meridionalis*.**chilensis** Big., Bull. Soc. Zool. Fr. xii, 616.—Chili.Gen. **MUSCA.**

Linn., Fauna Suecica, 439. (1763).

**acromion** Wd., Anal. Ent. 47. Aus. Zw. ii, 412.—So. America.**annulata** Fab., Mant. Ins. ii, 348.—Cayenne.**aurulans** R. D., Myod. 397.—Brazil.**basilaris** Mcq., Dipt. Ex. ii, 3, 153. Wlk., List, 901.—Brazil (Mcq.); Jamaica (Wlk.).**caruca** Wlk., List, 877.—Chili.**chilensis** Mcq., Dipt. Ex. ii, 3, 154, pl. 20, f. 6.—Chili.**concolor** Wlk., Dipt. Saund. 333.—So. Amer.**consanguinea** Rdi., Esame Ditt. Brasil. (sep.) 18. Dipt. Am. Merid. Strobel (sep.) 4.—Brazil; Buenos Ayres; Patagonia.Note.—This is perhaps a var. of *M. domestica*.**costalis** Wlk., Dipt. Saund. 344.—So. Amer.**dilecta** Wd., Aus. Zw. ii, 419.—Brazil.Note.—Br. and Bgst. say (Musc. Schiz. ii, 72) that this species is very likely the same as *Zosteromyia cingulata* Mcq., from Tasmania.**domestica** Lin., Fab., Meig., R. Desv., et al. Sch., Novara, 306. Rdi., Dipt. Am. Merid. Strobel (sep.) 3. v. d. W. Amerik. Dipt. iii, 37.—So. Amer. ?(Sch.); Buenos Ayres; Patagonia (Rdi.); Chili (Mcq.); Argentine Rep. (v. d. W.); N. Amer.; Europe (auct.).Var. *aurifacies* R. D.; *campestris* R. D.; *vicina* Mcq. (Rdi. l. c.)Syn. *M. analis* Mcq., Dipt. Ex. ii, 3, 154, pl. 21, f. 2.

- ? *equestris* Fab., Syst. Ent. 782.—Brazil.  
*fasciata* Wlk., Dipt. Saund. 337.—Brazil.  
*fulvescens* R. D., Myod. 397.—Cayenne.  
*gamelia* Wlk., List, 878.—Montevideo.  
*gibba* Fab., Syst. Ant. 297.—So. Amer.  
*incerta* Wlk., Dipt. Saund. 334.—Colombia.  
*lateralis* Fab., Syst. Ant. 286. Wd., Aus. Zw. ii, 394.—So. Amer. (Fab., Wd.).  
*lyrcea* Wlk., List, 873.—Montevideo.  
*mactans* Fab., Ent. Syst. iv, 321. Mant. Ins. ii, 344. Syst. Ant. 295.—Cayenne.  
*pampasiana* Big., Bull. Soc. Zool. Fr. xxii, 607.—Buenos Ayres.  
*phauda* Wlk., List, 896.—Galapagos.  
*pionia* Wlk., List, 880.—Galapagos.  
*purpurascens* Wlk., Lin. Trans. xvii, 355. List, 889.—St. Catharine, Brazil.  
*purpurea* Wlk., Dipt. Saund. 337.—So. Amer.  
*rufiventris* Mcq., Dipt. Ex. Sup. i, 200, pl. 17, 8.—Brazil.  
*semiatra* Wd., Aus. Zw. ii, 421.—Brazil.  
*stipata* Wlk., Dipt. Saund. 348.—Demerara.  
*stomoxidea* R. D., Myod. 396.—Brazil.  
*suffusa* Wlk., Dipt. Saund. 336.—Brazil.  
*venatoria* Fab., Syst. Ant. 285. Wd., Aus. Zw. ii, 391.—So. Amer. (Fab., Wd.).  
*verena* Wlk., List, 874.—Venezuela.

Gen. **PHASIOPHANA.**

Br. Bgst., Musc. Schiz. ii, 86. (1891).

- obsoleta* Wd. litt. (*Musca*). B. B., Mus. Sch. ii, 86.—Brazil (B. B.).

Gen. **CYRTONEURA.**

Mcq., Hist. Nat. ii, 274. (1835).

- bipunctata* Wd., Aus. Zw. ii, 417 (*Musca*). B. B., Mus. Sch. ii, 115.—Brazil (Wd.).  
*brevis* Sch., Novara, 303.—So. America.  
*cyanea* Mcq., Dipt. Ex. ii, 3, 157, pl. 21, f. 6.—Conception, Chili.  
*cylindrica* Mcq., Dipt. Ex. Sup. i, 200, pl. 17, f. 12.—Brazil.  
*lindigii* Sch., Novara, 298 (*Anthonyia*). B. B., Mus. Sch. ii, 115.—So. Amer. (Sch.).  
*maculipennata* Mcq., Dipt. Ex. Sup. iv, 252, pl. 23, f. 7 (*Pyrellia*). Sch., Novara, 304 (*do.*). B. B., Mus. Sch. ii, 115.—So. Amer.; Colombia (Sch.); Brazil (Mcq., Sch.).  
*nudiseta* v. d. W., Amerik. Dipt. iii, 42.—Argentine Rep.  
*pictipennis* Big., An. Soc. Ent. Fr. 1878, 39.—Brazil.  
*scutellaris* Fab., Syst. Ant. 293 (*Musca*). Wd., Aus. Zw. ii, 410 (*do.*). B. B., Mus. Sch. ii, 115.—So. Amer. (Fab., Wd.).  
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- stabulans** Fall., Meig. Ztt. (*Musca*). Mcq., Hist. Nat. ii, 277. Sch., Dipt. Austr. i, 597. Blanch. in Gay. Hist. Chili, vii, 437. v. d. W., Notes Leyd. Mus. iv, 89. Amerik. Dipt. iii, 41.—Chili (Mcq., Blanch., v. d. W.); Eu. and No. Amer. (O. S.); Auckland (Sch.); Australia (Mcq.).  
Syn. *Anthomyia cinerascens* Wd., Zool. Mag. i, 1, 79.  
*Cyrtoneura vicina* Mcq., Dipt. Ex. ii, 3, 157, pl. 21, f. 7.
- violacea** Fab., Syst. Ant. 288 (*Musca*). Wd., Aus. Zw. ii, 409 (*do.*). B. B., Mus. Sch. ii, 115.—Brazil (Wd.); So. Amer. (Fab.).

Gen. **IDIA**.

Meig., Syst. Besch. v, 9. (1826).

- americana** Mcq., Dipt. Ex. Sup. i, 193.—Colombia.

Gen. **RHYNCHOMYIA**.

Rob. Desv., Myod. 424. (1830).

- fasciata** Mcq., Dipt. Ex. Sup. i, 194.—Colombia.

Gen. **MESEMBRINA**

Meigen, Syst. Besch. v, 10. (1826).

- æneiventris** Wd., Aus. Zw. ii, 376 (*Dexia*). B. B., Mus. Sch. ii, 115.—Brazil (Wd.).
- quadrilineata** Fab., Syst. Ant. 286 (*Musca*). Wd., Aus. Zw. ii, 347. Perty, Delect. An. Brasil. 186, pl. 37, f. 6.—Brazil (Wd.); So. Amer. (Fab.); Sebastianopolis (Pty.).

Gen. **PARALUCILIA**.

Br. Bgst., Musc. Schiz. ii, 87. (1891).

- fulvipes** Mcq., Dipt. Ex. ii, 3, 132, pl. 16, f. 3 (*Calliphora*). Sch., Novara, 309 (*do.*). Rdi., Dipt. Am. Merid. Strobel (sep.) 3 (*Somomyia*). B. B., Mus. Sch. ii, 87.—Chili (Mcq., Sch.); Buenos Ayres; Mendoza; Concordia (Rdi.).

Gen. **LUCILIA**.

Rob. Desv., Myod. 452. (1830).

- curvipes** Thoms., Eugen. Resa, 544.—Rio Janeiro.
- durvillei** Mcq., Dipt. Ex. ii, 3, 142, pl. 20, f. 3.—Payta, Peru.
- elegans** Mcq., Dipt. Ex. Sup. v, 112.—So. Amer.
- eximia** Wd., Aus. Zw. ii, 399 (*Musca*). v. d. W., Amerik. Dipt. iii, 39.—Brazil (Wd.); Argentine (v. d. W.).
- fernandica** Mcq., Dipt. Ex. Sup. v, 112, pl. 6, f. 9.—Fernando.
- fulvicornis** R. D., Myod. 462.—Brazil.
- fuscanipennis** Mcq., Dipt. Ex. Sup. iv, 250, pl. 23, f. 5.—Bahia.
- incisuralis** Mcq., Dipt. Ex. ii, 3, 147, pl. 20, f. 2.—Brazil.

- luteicornis** Jæn., Neue Ex. Dipt. 375.—Venezuela.  
**marginata** Mcq., Dipt. Ex. ii, 3, 147.—Brazil, or Chili.  
**nigrofasciata** Mcq., Dipt. Ex. Sup. v, 112, pl. 6, f. 8.—Fernando.  
**nubipennis** Rdi., Esame Ditt. Brasil. (sep.) 17.—Brazil (Wd., Rdi.).  
 Syn. *Musca segmentaria* Wd. (non Fab.), Aus. Zw. ii, 40.  
**ochricornis** Wd., Aus. Zw. ii, 408 (*Musca*). Mcq., Dipt. Ex. ii, 3, 149, pl. 20,  
 f. 5 (*Pyrellia*). Bigot, Sagra, 821 (*do.*). B. B., Mus. Sch. ii, 116.—  
 Brazil (Wd., Mcq.); Cuba (Mcq., Big.).  
**parensis** Mcq., Dipt. Ex. ii, 3, 142, pl. 18, f. 5.—Pará.  
**peruviana** R. D., Myod. 455.—Peru.  
**picicrus** Thoms., Eugen. Resa, 543.—Panama.  
**porticola** Thoms., Eugen. Resa, 544.—Callao.  
**princeps** Rdi., Esame Ditt. Brasil. (sep.) 17.—Brazil.  
**punctipennis** Mcq., Dipt. Ex. Supl. iii, 56.—Brazil.  
**putrida** Fab., Syst. Ent. 775. Ent. Syst. iv, 316. Mant. Ins. ii, 343. Syst.  
 Ant. 288 (*Musca*). Wd., Aus. Zw. ii, 404 (*do.*). Jæn., Neue Ex. Dipt.  
 4 (sep.). B. B., Mus. Sch. ii, 116.—Is. Amer. (Fab.); So. Amer. (Wd.);  
 Cuba (Jæn.).  
**quadrisingnata** Thoms., Eugen. Resa, 544.—Galapagos.  
**ruficornis** Mcq., Dipt. Ex. Sup. i, 198. Sch., Novara, 304. Bigot, Sagra, 821.  
 —Chili (Sch.); Colombia (Mcq.); Cuba (Big.).  
**segmentaria** Fab., Syst. Ant. 292 (*Musca*). B. B., Mus. Sch. ii, 116.—So.  
 Amer. (Fab.).  
**smaragdula** R. D., Myod. 462.—Brazil.  
**subrectineuris** Mcq., Dipt. Ex. Sup. iv, 250.—Minas-Geraes, Brazil.  
**varipalpis** Mcq., Dipt. Ex. ii, 3, 141, pl. 19, f. 3.—Brazil.

Gen. **COMPSOMYIA.**

Rdi., An. Mus. Civ. Stor. Nat. Genova vii. 9. (1875).

- macellaria** Fab., Syst. Ent. 776. Ent. Syst. iv, 319. Mant. Ins. ii, 344.  
 Syst. Ant. 292 (*Musca*). Wd., Aus. Zw. ii, 405 (*do.*). Mcq., Dipt. Ex.  
 ii, 3, 147, pl. 17, f. 9 (*Lucilia*). E. Lynch-Arribalz., An. Soc. Cien.  
 Agent. x, 71. v. d. W., Amerik. Dipt. iii, 38. See Willist., Albatross  
 Explor., Proc. U. S. Nat. Mus. xii, 203-4, for extensive synonymy which  
 I have not recognized in this catalogue.—Brazil (Wd., Mcq.); Is. Amer.  
 (Fab.); Argentine Rep.; Guadeloupe (v. d. W.); Cuba (Mcq.); United  
 States.

Note.—B. B. (Mus. Sch. ii, 116) apparently do not recognize this genus,  
 but refer the species to *Calliphora*.

Gen. **METALLICOMYIA.**

v. Röder, Dipt. Ges. S. A. Al. Stübel (sep.) 13. (1886).

- elegans** v. Röd., Dipt. Ges. S. A. (sep.) 13, pl., ff. 4, 4a.—Ecuador.

Gen. **BLEPHARICNEMA.**

Mcq. Dipt. Ex. ii, 3, 126. (1843).

- splendens** Mcq., Dipt. Ex. ii, 3, 127, pl. 15, f. 5. Sch., Novara, 312. v. Röd. Dipt. Ges. S. A. Al. Stübel, (sep.) 13. B. B., Mus. Sch. i, 54.—So. Amer. (Sch.); Ecuador (v. Röd.); Venezuela (B. B.).

Gen. **CALLIPHORA.**

Rob. Desv., Myod. 433. (1830).

- anthropophaga** Conil, Act. Ac. N. C. Ex. iii, 41.—So. Amer.  
**fuscipennis** Jæn., Neue Ex. Dipt. 376.—Brazil.  
**gulo** Fab., Syst. Ant. 283 (*Musca*). Wd., Aus. Zw. ii, 384 (*do.*). Mcq., Hist. Nat. ii, 263.—So. Amer. (Fab.).  
**infesta** Philippi, Zeitschr. Ges. Naturw. xvii, 513.—Chili.  
**magellanica** Mcq., Dipt. Ex. ii, 3, 131.—Str. Magellan.  
**nigribasis** Mcq., Dipt. Ex. Sup. iv, 242.—Colombia.  
**peruviana** R. D., Myod. 438. Mcq. Dipt. Ex. ii, 3, 131, pl. 16, f. 9.—Peru (R. D.).  
**peruviana** Mcq., Dipt. Ex. Sup. iv, 243, pl. 22, f. 9.—Payta, Peru.  
 Note.—The name is preoccupied, and may be changed to *C. paytensis*.  
**phacoptera** v. d. W., Notes Leyd. Mus. iv, 88. Amerik. Dipt. iii, 40.—Chili.  
**semiatra** Sch., Novara, 308. v. Röd., Dipt. Ges. S. A. Al. Stübel (sep.), 15.—Colombia (Sch.); Paramo, Colomb. (v. Röd.).  
**tibialis** Mcq., Dipt. Ex. Sup. iv, 242.—Rio Janeiro.  
**vomitorea** Lin., Fab., Meig., et al. (*Musca*). Mcq., Dipt. Ex. iii, 3, 127.—Guiana (Mcq.); Eu. and No. Amer.

Gen. **CHRYSOMYIA.**

Rob. Desv., Myod. 444. (1830).

- affinis** R. D., Myod., 445.—Brazil.  
**fulvicrura** R. D., Myod., 446.—Montevideo.  
**hyacinthina** R. D., Myod., 450. Mcq., Dipt. Ex. ii, 3, 148, pl. 17, f. 8 (*Lucilia*). —So. Amer. (R. D.); No. Amer. (Mcq.).  
**hyacinthina** R. D., Myod., 462.—Brazil.  
 Note.—The name is preoccupied. It may be called *C. brasiliensis*.  
**idioidea** R. D., Myod., 445. Mcq., Hist. Nat. ii, 251 (*Lucilia*).—Brazil (Mcq., R. D.).  
**lepida** R. D., Myod., 448.—Brazil.  
**socia** R. D., Myod., 447.—Brazil.  
**viridula** R. D., Myod., 445.—Brazil.

Gen. **SOMOMYIA.**

Rdi., Att. Accad. Sc. Bologna. (1861).

- acutangula** Rdi., Dipt. Ex. (sep.) 28.—So. Amer.  
**amazona** Big., An. Soc. Ent. Fr. 1877, 255.—Brazil.



- americana** Rdi., Dipt. Ex. (sep.) 29.—Chili (Mcq.).  
 Syn. *Calliphora rufipalpis* Mcq., Dipt. Ex. ii, 3, 132.  
**annulipes** Philippi, Zeitschr. Ges. Naturw. xvii, 514 (*Calliphora*). Rdi., Dipt. Ex. (sep.) 30.—Chili (Phil., Rdi.).  
**argentina** Big., An. Soc. Ent. Fr. 1877, 254.—Buenos Ayres.  
**calogaster** Big., An. Soc. Ent. Fr. 1877, 246.—La Plata.  
**castanipes** Big., An. Soc. Ent. Fr. 1877, 245.—Quito.  
**chilensis** Mcq., Dipt. Ex. ii, 3, 131, pl. 16, f. 1 (*Calliphora*). Sch., Nov. 309 (do.). Rdi., Dipt. Ex. (sep.) 29.—Chili (Mcq., Sch., Rdi.).  
 ? Syn. *Som. philippiana* Rdi., Dipt. Ex. (sep.) 29.  
**fulvobarbata** Big., Bull. Soc. Zool. Fr., xii, 598.—Montevideo.  
**gratiosa** Big., An. Soc. Ent. Fr. 1877, 253.—Buenos Ayres.  
**montevidensis** Big., An. Soc. Ent. Fr. 1877, 46.—Montevideo.  
**nitens** Big., An. Soc. Ent. Fr. 1877, 244.—Colombia.  
**orenoquina** Big., An. Soc. Ent. Fr. 1877, 253.—Brazil.  
**rubrifrons** Mcq., Dipt. Ex. Sup. iv, 250, pl. 23, f. 5 (*Lucilia*). Rdi., Dipt. Am. Merid. Strob. (sep.) 3.—Buenos Ayres (Mcq., Rdi.).  
**transmarina** Rdi., Dipt. Ex. (sep.) 29.—So. Amer.

Gen. **PYRELLIA**.

Rob. Desv., Myod. 462. (1830).

- chloe** Big., An. Soc. Ent. Fr. 1878, 36.—Quito.  
**diversipalpis** Rdi., Dipt. Ex. (sep.) 30.—So. Amer. (Mcq.).  
 Syn. *Pyr. rufipalpis* Mcq., Dipt. Ex. Sup. v, 114.  
**facilis** Wlk., Tr. Ent. Soc. Lond. n. s. iv, 214.—So. Amer.  
**flavicornis** Mcq., Dipt. Ex. Sup. i, 58, pl. 6, f. 11.—Brazil.  
**maculipennis** Mcq., Dipt. Ex. Sup. i, 199, pl. 17, f. 6.—Colombia; Brazil.  
**ochrifacies** Rdi., Esap. Ditt. (sep.) 15.—St. Sebastian, Brazil.  
**rufipalpis** Mcq., Dipt. Ex. Sup. iv, 252.—Minas-Geraes, Brazil.  
**violacea** R. D., Myod. 463.—Brazil.

Gen. **DASYPHORA**.

Rob. Desv., Myod. 409. (1830).

- spinifera** v. d. W., Amerik. Dipt. iii, 39.—Argentine Rep.

Gen. **OCHROMYIA**.

Mcq., Dipt. Ex. ii, 3, 132. (1843).

- flavipennis** Mcq., Dipt. Ex. ii, 3, 134, pl. 17, f. 3.—Pará.  
**fuscipennis** Mcq., Dipt. Ex. ii, 3, 135, pl. 17, f. 2. Rdi., Esame Ditt. Brasil. 17 (sep.).—Pará (Mcq., Rdi.).  
**gigas** Mcq., Dipt. Ex. Sup. i, 196, pl. 17, f. 9.—Brazil.  
**nigrifrons** Big., An. Soc. Ent. Fr. 1878, 39.—Brazil.  
**testacea** R. D., Myod. 426 (*Bengalia*).—Cayenne; New Holland.

Gen. **REINWARDTIA**.

Br. Bgst., Musc. Sch. i, 90. (1889).

**tachinina** B. B., Mus. Sch. i, 90, 103; ii, 109.—Venezuela.Gen. **MYA**.

Rdi., Esap. Ditt. (sep.) 13. (1850).

**alia** R. D., Myod. 447 (*Chrysomyia*). Rdi., Esap. Ditt. (sep.) 13.—Brazil (R. D.); St. Sebastian (Rdi.).**jonicroma** Rdi., Dipt. Am. Æq. Oscul. (sep.) 12.—Rio Napo.**semidiaphana** Rdi., Esap. Ditt. (sep.) 15.—St. Sebastian.**versicolor** Rdi., Esap. Ditt. (sep.) 13. Dipt. Am. Æq. Oscul. (sep.) 11.—Venezuela; Rio Napo.Gen. **GRALLOMYA**.

Rdi., Esap. Ditt. (sep.) 18. (1850).

**osculati** Rdi., Dipt. Am. Æq. Oscul. (sep.) 12.—Rio Napo.Fam. **ANTHOMYIDÆ**.Gen. **ARICIA**.

Rob. Desv., Myod. 486. (1830).

**bicolor** Meq., Dipt. Ex. Sup. v, 117, pl. 6, f. 14.—?Brazil.**canaliculata** R. D., Myod. 484 (*Phaonia*).—Brazil.**? chilensis** Big., An. Soc. Ent. Fr. 1885, 294 (*Yetodesia*).—Chili.**dichroma** Wd., Aus. Zw. ii, 425 (*Anthomyia*). Meq., Dipt. Ex. Sup. v, 117, pl. 6, f. 13.—Brazil (Wd., Meq.).**dubia** Big., An. Soc. Ent. Fr. 1885, 294 (*Yetodesia*).—Chili.**erratica** Fall., Macq. Dipt. Ex. ii, 3, 162.—Brazil; Europe (Meq.).**flavicornis** Meq., Dipt. Ex. Sup. v, 117, pl. 6, f. 12.—St. Fernando.**ignava** Wlk., Tr. Ent. Soc. Lond. n. s. iv, 217.—Brazil.**rufiguttata** Meq., Dipt. Ex. Sup. iv, 258, pl. 23, f. 16.—Bahia.**semiclausula** Sch., Novara, 302.—Chili.Gen. **SPILOGASTER**.

Meq., Hist. Nat. ii, 293. (1835).

**adelpa** Sch., Novara, 300.—So. Amer.**bipunctata** Sch., Novara, 299.—So. Amer.**calliphoroides** Jæn., Neue Ex. Dipt. 371.—Brazil.**geniculatus** Big., An. Soc. Ent. Fr. 1885, 289.—Buenos Ayres.**grandis** Sch., Novara, 302.—So. Amer.**maculipennis** Meq., Dipt. Ex. ii, 3, 163, pl. 22, f. 3.—Guiana.**monacha** Sch., Novara, 301.—So. Amer.

*pæciloptera* Sch., Novara, 300.—Brazil.

*principalis* Sch., Novara, 301.—So. Amer.

*sæva* Wd., Aus. Zw. ii, 430 (*Anthomyia*). Sch., Nov. 300.—Brazil (Wd.);  
So. Amer. (Sch.).

*sexpunctata* v. d. W., Amerik. Dipt. iii, 43.—Argentine Rep.

*trispilus* Big., An. Soc. Ent. Fr. 1885, 285.—Buenos Ayres.

Gen. **HYDROTÆA.**

Rob. Desv., Myod. 509. (1830).

*stuebeli* v. Röd., Dipt. Ges. S. A. Al. Stübel, 15 (sep.).—Colombia (v. Röd.);  
? Chili; New Holland (Mcq.).

? Syn. *Hydr. cyaneiventris* Mcq., Dipt. Ex. Sup. iv, 263; Sup. v, 118.

Gen. **OPHYRA.**

Rob. Desv., Myod. 516. (1830).

*andina* Big., An. Soc. Ent. Fr. 1885, 304.—Chili.

*argentina* Big., An. Soc. Ent. Fr. 1885, 302.—Buenos Ayres.

*cœrulea* Mcq., Dipt. Ex. ii, 3, 165, pl. 22, f. 5. Rdi., Dipt. Am. Merid. Strob.  
(sep.) 4 (*Linnophora*). Big., Miss. Cap Horn. Dipt. 29.—Chili (Mcq.,  
Big.); Buenos Ayres (Rdi.).

*hirtula* Big., An. Soc. Ent. Fr. 1885, 303.—Chili.

*pusilla* Big., An. Soc. Ent. Fr. 1885, 304.—Chili.

*setosa* Big., An. Soc. Ent. Fr. 1885, 303.—Chili.

*virescens* Mcq., Dipt. Ex. ii, 3, 164.—Guaratuba, Brazil.

Gen. **LIMNOPHORA.**

Rob. Desv., Myod. 517. (1830).

*aurifera* Big., An. Soc. Ent. Fr. 1885, 273.—Chili.

*chlorogaster* Big., An. Soc. Ent. Fr. 1885, 271.—Buenos Ayres.

*elegans* Mcq., Dipt. Ex. ii, 3, 165, pl. 22, f. 6.—Guiana.

*fuscineuris* Mcq., Dipt. Ex. Sup. iv, 263, pl. 24, f. 6.—Buenos Ayres.

*limbata* Big., An. Soc. Ent. Fr. 1885, 271.—Chili.

*lynchii* v. d. W., Amerik. Dipt. iii, 43.—Argentine Rep.

*vicina* R. D., Myod. 520.—Brazil.

*zebrina* Big., An. Soc. Ent. Fr. 1885, 273.—Chili.

Gen. **HYLEMYIA.**

Rob. Desv., Myod. 550. (1830).

*andicola* Big., An. Soc. Ent. Fr. 1885, 300.—Chili.

*nigripes* R. D., Myod. 553. Mcq., Dipt. Ex. ii, 3, 168, pl. 22, f. 8.—Cayenne.

Gen. **ANTHOMYIA.**

Meig., Illig. Mag. ii, 281. (1803).

*æthiops* Wlk., Dipt. Saund. 365.—Brazil.

*arcuata* Wd., Aus. Zw. ii, 425.—Brazil.

- brasilensis* Wlk., Dipt. Saund. 366.—Brazil.  
*brevipalpis* Thoms., Eugen. Resa, 557.—Guayaquil.  
*certa* Wlk., Dipt. Saund. 364.—Brazil.  
*chilensis* Jæn., Neue Ex. Dipt. 373.—Chili.  
*chrysostoma* Rdi., Dipt. Exot. (sep.) 33.—Chili.  
*corelia* Wlk., List, 953.—Montevideo.  
 ? *cothurnata* Big., An. Soc. Ent. Fr. 1885, 298.—Chili.  
*cutilia* Wlk., List, 954.—Montevideo.  
*despecta* Wlk., Dipt. Saund. 364.—Brazil.  
*diversa* Wd., Aus. Zw. ii, 436.—Montevideo.  
 ? *dubia* Big., An. Soc. Ent. Fr. 1885, 298.—Chili.  
*felsina* Wlk., List, 955.—Montevideo.  
*gemina* Wd., Aus. Zw. ii, 436.—Brazil.  
*grisea* Fab., Syst. Ant. 293 (*Musca*). Wd., Aus. Zw. ii, 422.—So. Amer.  
 (Fab., Wd.).  
*heydenii* Wd., Aus. Zw. ii, 429.—Brazil.  
*inducta* Wlk., Dipt. Saund. 360.—Brazil.  
*lanicrus* Thoms., Eugen. Resa, 556.—Buenos Ayres.  
*leucotelus* Wlk., Dipt. Saund. 361.—Brazil.  
*limbata* Wd., Aus. Zw. ii, 425.—Brazil.  
*maculipennis* Wlk., Dipt. Saund. 357.—Brazil.  
*maculosa* Wlk., Dipt. Saund. 357.—Brazil.  
*nigrina* Wd., Aus. Zw. ii, 424.—Brazil.  
*ovativentris* Mcq., Dipt. Ex. Sup. iv, 267, pl. 24, f. 12.—Montevideo.  
*pantherina* Wd., Anal. Ent. 53. Aus. Zw. ii, 430.—So. Amer.  
*pedella* Wd., Aus. Zw. ii, 423.—Brazil.  
*præcipua* Wlk., Dipt. Saund. 351.—Brazil.  
*prominula* Thoms., Eugen. Resa, 550.—Buenos Ayres.  
 ? *rubrifrons* Big., An. Soc. Ent. Fr. 1885, 297.—Chili.  
*sanctijacobi* Big., An. Soc. Ent. Fr. 1885, 296.—Chili.  
*setia* Wlk., List, 956.—Galapagos.  
*spiloptera* Wd., Aus. Zw. ii, 433.—Brazil.  
*tenuior* Wlk., Dipt. Saund. 365.—Brazil.  
*tricolor* Wlk., Dipt. Saund. 358.—Brazil.  
*unicolor* Wlk., Dipt. Saund. 353.—So. Amer.  
*vicaria* Wlk., Dipt. Saund. 361.—Brazil.  
*virgata* Wd., Aus. Zw. ii, 434.—Brazil.

#### CRASPEDOCHÆTA.

Mcq., Dipt. Ex. Sup. iv, 268. (1850).

- punctipennis* Wd., Aus. Zw. ii, 435 (*Anthomyia*). v. d. W., Amerik. Dipt. iii, 45 (*Chortophila*). Mcq., Dipt. Ex. Sup. iv, 269, pl. 24, f. 14.—Montevideo (Wd., Mcq.); Argentine Rep. (v. d. W.).

Gen. **CHORTOPHILA.**

Mcq., Hist. Nat. ii, 323. (1835).

- albostrata* v. d. W., Amerik. Dipt. iii, 46.—Argentine Rep.  
*chilensis* Mcq., Dipt. Ex. Sup. iv, 265, pl. 24, f. 9.—Coquimbo, Chili.  
*chlorogaster* Wd., Aus. Zw. ii, 427 (*Anthomyia*). v. d. W., Amerik. Dipt.  
 iii, 47.—Montevideo (Wd.); Argentine Rep. (v. d. W.).  
*limbinervis* Mcq., Dipt. Ex. ii, 3, 169, pl. 22, f. 2.—Chili.  
*litrata* Rdi., Dipt. Am. Merid. Strob. (sep.) 5.—Buenos Ayres.  
*rubrifrons* Big., An. Soc. Ent. Fr. 1885, 279.—Buenos Ayres.

Gen. **PARACHORTOPHILA.**

Big., An. Soc. Ent. Fr. 1852, 21. (1852).

- ruficoxa* Big., An. Soc. Ent. Fr. 1885, 280.—Chili.

Gen. **ATOMOGASTER.**

Mcq., Hist. Nat. Dipt. ii, 329. (1835).

- pusio* Wd., Aus. Zw. ii, 437 (*Anthomyia*). Mcq., Dipt. Ex. ii, 3, 169.—So.  
 Amer. (Wd.).

Gen. **HOMALOMYIA.**

Bouché, Naturg. d. Insecten, i, 88. (1834).

- canicularis* Lin., Fab., et al. (*Musca*), Mg., Mcq., Ztt. (*Anthomyia*). Sch.,  
 Dipt. Austr. i, 654. v. d. W., Amerik. Dipt. iii, 47. Big., An. Soc.  
 Ent. Fr. 1885, 284.—Chili (Mcq., Blanch.); Buenos Ayres (Big., v. d.  
 W.); No. Amer. and Eu.  
 Syn. *Anthomyia chilensis* Mcq., Dipt. Ex. ii, 3, 171, pl. 23, f. 4. Blanch. in  
 Gay, Hist. Chili, vii, 442.  
*erythroptis* Big., Miss. Cap Horn. Dipt. 30, pl. 4, f. 1.—Cape Horn.

Gen. **LISPE.**

Latreille, Précis d. Caract. génér. (1796).

- rufitibialis* Mcq., Dipt. Ex., ii, 3, 168, pl. 22, f. 7.—Brazil, or Chili.

Gen. **CENOSIA.**

Meig., Syst. Besch. v, 210. (1826).

- annulipes* Mcq., Dipt. Ex. ii, 3, 172, pl. 23, f. 7.—Chili.  
*pipunculina* Thoms., Eugen. Resa, 559.—Rio Janeiro.

Gen. **MYANTHA.**

Rdi., Dipt. Ital. Prod. i. (1856).

- canicularis* Lin., Rdi. Dipt. Ex. (sep.) 34.—Chili.  
 Note.—Is this a synonym of *Homalomyia canicularis* L.?  
*fusconotata* Rdi., Dipt. Am. Merid. Strob. (sep.) 4.—Mendoza.

Gen. **BRACHYGASTERINA.**

Meq., Dipt. Exot. Sup. iv, 259. (1850-1).

**chalybea** Wd., Aus. Zw. ii, 428 (*Anthomyia*). Sch., Novara, 299 (*Limnophora*).  
v. d. W., Amerik. Dipt. iii, 44.—Brazil (Wd.); Chili (Meq., Blanch.,  
Sch.); Argentine Rep. (v. d. W.).

Syn. *Brachyg. violaceiventris* Meq., Dipt. Ex. Sup. iv, 259, pl. 23, f. 17.  
Blanch. in Gay, Hist. Chili, vii, 439.

Gen. **MICROCHYLUM.**

Meq., Dipt. Ex. Sup. iv, 256. (1850-1).

**vittatum** Meq., Dipt. Ex. Sup. iv, 257, pl. 23, f. 11.—Bahia.

Gen. **LEUCOMELINA.**

Meq., Dipt. Ex. Sup. iv, 261. (1850-1).

**pica** Meq., Dipt. Ex. Sup. iv, 262, pl. 24, f. 3.—Minas-Geraes, Brazil.

Gen. **SPATHIPHEROMYIA.**

Big., Bull. Soc. Ent. Fr. 1884, 123. An. Soc. Ent. Fr. 1885, 267. (1884).

**stellata** Big., An. Soc. Ent. Fr. 1885, 267.—Chili.

Gen. **DASYPHYMA.**

Bigot, Bull. Soc. Ent. Fr. 1882, 254. An. Soc. Ent. Fr. 1885, 268. (1882).

**armata** Big., An. Soc. Ent. Fr. 1885, 268.—Chili.



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II.—*An Enumeration of the Plants Collected by Dr. Thomas Morong in Paraguay, 1888–1890.*

BY THOMAS MORONG AND N. L. BRITTON,  
WITH THE ASSISTANCE OF MISS ANNA MURRAY VAIL.

Read June 6, 1892.

The journey in which the plants enumerated and described in this paper were collected was made in the years 1888, 1889, and 1890. It was undertaken under the auspices of the Torrey Botanical Club, and by the aid of two members of that organization and a generous friend of science in Boston, Mass.

With the exception of a few plants hastily snatched by the writer at or near Buenos Aires, while waiting to proceed up the Rio de la Plata, the main part of the specimens was obtained in central Paraguay within a radius of 100 miles from Asuncion. In January, 1890, an exploration of the Pilcomayo River, a tributary of the Paraguay which forms the boundary line between western Paraguay and the Argentine Republic, was set on foot by the Paraguay Land Company, and the writer was invited to act as naturalist of the expedition. A small steamer was built in England for the purpose, and sent up the river under the command of Prof. O. J. Storm, of Buenos Aires. After a well nigh herculean effort, lasting six months, to overcome the obstructions of this little stream, consisting of shallows, sand-bars, and innumerable snags and old logs, and after proceeding nearly 400 miles, stemming on the way many swift and dangerous rapids and a waterfall around which the steamer was dragged by land, we encountered an immense swamp or lagoon overgrown with grasses and weeds through which it was impossible to force a way by any means at our command, and the expedition was necessarily abandoned. All of this region, lying in the Gran Chaco, is uninhabited except by tribes of roving savages, and much of it had never been previously traversed by civilized men. Here a considerable, and not the least interesting, portion of the plants was collected.

The notes appended to the species are taken in all cases from

ANNALS N. Y. ACAD. SCI., VII, Dec. 1892.

written descriptions made by the collector in the field, or from fresh specimens directly after reaching home. The observations and measurements are entirely his own, none of them being drawn from the works cited in the naming of the species, and they simply record what he saw himself whether they conform exactly to the published descriptions or not.

The determinations of the genera and species are due principally to Prof. N. L. Britton, of Columbia College, who visited the Herbaria at Kew, the British Museum, Paris, and Geneva in the summer of 1891, and compared such as could not be matched in the Herbarium of Columbia with the vast collections stored in those places.

He was aided in his researches by such eminent European botanists as J. G. Baker, Edmund Baker, A. Cogniaux, N. E. Brown, M. T. Masters, A. Franchet, Casimir DeCandolle, and R. A. Rolfe, who courteously named many of the plants belonging to genera in which they are experts.

Prof. Britton's descriptions of new species and occasional notes bear his signature.

In this joint work we have been greatly assisted by Miss Anna Murray Vail, who has not only consulted many publications in the attempt to identify the species, but also sorted out the plants, arranged them in systematic order, and devoted much time and labor to preparing the labels and distributing the specimens to subscribers.

So much care has been exercised in the identification of the species, that we feel sure that the names are substantially correct.

The nomenclature adopted is in accordance with the rules promulgated by the Botanical Club of the American Association for the Advancement of Science at its recent meeting in Rochester, New York.

THOMAS MORONG.

COLUMBIA COLLEGE, October 26, 1892.

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#### RANUNCULACEÆ.

***Clematis Brasiliana***, D.C., Syst. i, 143.

Near Asuncion (759); Pilcomayo River (1067).

A climbing vine with white and very fragrant flowers, much like our *C. Virginiana*. The tails of the fruit are longer, plumose, and

exceedingly graceful. It climbs high and embowers tall shrubs in the Pilcomayo thickets. January–June.

**Ranunculus apiifolius**, Pers., Syn., ii, 105.

Buenos Aires (8). October.

**Ranunculus muricatus**, L. Sp. Pl., 780.

Buenos Aires (7). October.

### ANONACEÆ.

**Rollinia emarginata**, Schlecht., Linnæa, ix, 315.

Asuncion (99). November. = Balansa, No. 2296. Called in Guarani, Araticu; in Spanish Chirimoya.

This is not the large edible Chirimoya so common in Peru and the more northern South American countries, which, so far as I know, does not occur in Paraguay. It is a slender shrub with a handsome head of green, coriaceous leaves, 3–5 m. high, and sometimes a small tree of twice that height. The flowers are curiously constructed, consisting of 3 small, ovate, appressed sepals, and 6 petals, the 3 outer of which are yellow, flat bodies that stand edge upwards in a triangular position. These when drawn down at the base exhibit 3 other petals entirely unlike the outer ones, being small, rounded, and meeting in a whorl at the summit, with a purple interior. Under these is a ball or arch of cohering stamens, which are completely concealed by the overlapping inner petals. Under all is another ball or arch of styles and stigmas, and this is completely enclosed by the over-arching mass of stamens. I could see no possible manner in which the pollen could reach the stigmas, and am satisfied that it must be done as in the next species of the same order, which I examined more closely.

**Anona cornifolia**, St. Hil., Fl. Bras. Merid., i, 33. Ex. descr.

Asuncion and Pilcomayo River (149). November. = Gibert, No. 1095.

The outer petals here are not erect as in *Rollinia*, but flat and imbricated over the inner ones. A very similar arrangement of the stamens and pistils occurs however. The stamens are in an arched disk, the central ones apparently infertile, and all cohering by truncate callous connectives under which are the anthers. The stigmas

lie under the thick mass of infertile stamens, and so far as I could judge entirely out of the reach of the pollen by any action of the organs themselves. I found, however, that the pollen was very plentiful, and that a pin thrust through the anthers obliquely would carry its grains to the stigmas. There seemed in the older flowers to be evidence that this operation is performed by insects, and I came to the conclusion that, as in the case of *Eupomatia*, described by Maout and Decaisne, the plant must always depend for fructification upon insect agency. The fact that fruit is seldom found upon the shrub confirms the idea. I often obtained flowers both of this and *Rollinia*, but not one in ten of the flowers formed fruit. In both cases the fruit is a large, irregularly shaped berry containing many seeds imbedded in a pulpy aril, and said by the people to be edible. They are very inferior to the Chirimoya or custard apple, to which they are closely allied.

#### MENISPERMACEÆ.

##### **Cissampelos Pareira**, L., Sp. Pl., 1473.

Between Trinidad and Lympio (729); Pilcomayo River (815).  
November–June.

The "*Pareira brava*" of the druggists, the roots of which are in high repute, medicinally, in urinary diseases. A dioecious vine twining around shrubs and trees. It has many broad cordate-ovate leaves, 5–10 cm. long, and nearly as wide at the base. Stems fuscous hairy. Roots exceedingly large and rather woody.

##### **Cissampelos Pareira**, L., var. **Caapeba** (L.), Eichl., Mart. Fl. Bras., xiii, pt. 1, 190.

Asuncion (829). November.

The variety with leaves only 1 cm. long and 2 cm. broad, bearing, when in fruit, many small red berries. This looks different enough to be almost regarded as a distinct species.

##### **Castalia Gibertii**, Morong, n. sp.

Leaves oval in outline, entire, rounded at the apex, the lobes moderately spreading and obtuse, the under surface covered with short branching fuscous lines interspersed here and there with elevated raphioidal striæ, the upper surface having these striæ mingled with minute tubercles, especially near the sinus. Flowers white, turning yellowish in drying, inodorous, 6–7 cm. in diameter. Sepals oblong-ovate, 3–3½ cm. long, somewhat acute, with numer-

ous fuscous lines or elevated striæ on the exterior surface. Petals in 3 series, a little shorter than the sepals, marked with faint purplish lines, which are even with the surface or slightly raised, the outermost thick and green along the middle of the back, like the sepals, and with broad white margins. Stamens in 4 series. Anther cells of the outermost 6 or 7 mm. in length. Carpels somewhat immature, but apparently 18. Ripe fruit and tubers not seen.

An unnamed specimen collected by Gibert (No. 53) at Asuncion in June, 1858, is at Kew.

Above the Falls on the Pilcomayo River, May 6 (1028).

**Victoria Amazonica** (Pœpp.), Planch. Rev. Hort., Feb. 15, 1853  
(*V. regia*, Lindl.).

In lagoons near Asuncion (281). December–January.

This famous flower is abundant in the lagoons on the Paraguay River, and is found as far south as Corrientes. The popular name which it bears, "*Mais del agua*," is derived from the use made of its seeds. These are about as large as buck-shot, and are gathered by the natives and roasted or pounded into meal, from which very palatable and nutritious bread is made.

#### PAPAVERACEÆ.

**Argemone Mexicana**, L., Sp. Pl., 508.

Asuncion (155). Apparently naturalized.

#### FUMARIACEÆ.

**Fumaria capreolata**, L., Sp. Pl., 701.

Buenos Aires (18). October.

#### CRUCIFERÆ.

**Lepidium Bonariense**, L., Sp. Pl., 645.

Buenos Aires (12). October. Pilcomayo River (1056). June.

**Coronopus didymus** (L.), Smith, Fl. Brit. iii, 691.

Buenos Aires (5). October.

**Raphanus sativus**, L., Sp. Pl., 669.

Railroad between Paragua and Luque (855). December.

Seems to be thoroughly naturalized in the vicinity of towns, but it bears no root like the cultivated radish.



## CAPPARIDACEÆ.

**Cleome aculeata**, L. Syst., Ed. 12, iii, App., p. 232.

Asuncion (117 and 117 a). November.

**Gynandropsis pentaphylla** (L.), D. C., Prod., i, 238.

Asuncion (348). December.

6-9 dm. high. Flowers large, purple, showy. Leaves on long petioles, 5-foliolate. Stem, petioles, and the dorsal nerves of the leaves beset with glandular hairs and small prickles. Peduncles, petals, and ovary with yellow glands. Pods  $3\frac{1}{2}$ -4 cm. in length, on long peduncles, jointed about  $\frac{1}{2}$  way up.

**Capparis cynophallophora**, L., Sp. Pl., 504.

Asuncion (763). July.

Found only in fruit. A small tree 5-6 m. high, with flexuous greenish-yellow branches, glabrous, with small black warts on the bark. Leaves simple, alternate, elliptical or oval, coriaceous, shining above, greenish-yellow, shortly petioled, the blades about 7 cm. long, and 3 cm. wide. Pods in clusters of 1-5, often as much as 30 cm. long, cylindrical, moniliform, the outside greenish-yellow or brown, the interior lining red.

Thickets near Asuncion.

**Capparis declinata**, Vell., Fl. Flum., v, t. iii.

Pilcomayo River (946 a). In fruit. January.

Similar to No. 763, but with smaller leaves and pods.

**Capparis Tweediana**, Eichl., Mart. Fl. Bras., xiii, pt. 1, 273.

Pilcomayo River (1046). May.

Nearer *C. Tweediana* than *C. crotonoides* as described in Mart. Fl. Bras., but not exactly agreeing with either. The projections of the disk are 5, alternate with the stamens, looking like staminodea. Leaves larger, petioles longer, pedicels longer than in *C. Tweediana*. Flower bud tetragonous (not triquetrous, as in *C. Tweediana*). Stamens 5 (in *C. crotonoides* 6-8).

A common shrub or small tree on the Pilcomayo, with roundish leaves, which are green and glabrous above and white tomentose beneath. It blossoms late in May and then sparsely. The flowers are peculiar, with 4 spreading yellowish-green sepals and as many

petals, 5 long stamens, alternate with as many staminodia or disk projections, and an ovary on a stellately downy stipe  $2\frac{1}{2}$  cm. long. The flowers themselves are borne on a stellately downy peduncle  $1\frac{1}{2}$ –2 cm. in length. The trunk of this shrub has near the base light brown scaly bark, smooth and yellowish above.

**Crataeva Tapia**, L., Sp. Pl., 444.

Asuncion (820); Pilcomayo River (897).

A fine tree growing around Asuncion and far up on the Pilcomayo River. It reaches a height of 16 m. or more. It has a smooth gray bark, and smooth, glossy, ternate leaves. The flowers are white in thick clusters at the ends of the branches, on pedicels  $2\frac{1}{2}$ – $3\frac{1}{2}$  cm. long. The fruit at the time I saw it, January 24, was nearly as large as a lemon, on peduncles 7–12 cm. long, solitary. green on the outside, with a thick white meat on the inside, containing many seeds irregularly disposed. The tree is known among the Paraguayan natives as "Papaguayan" (name of a tribe of Paraguayan Indians) or "Indian orange," and it is said that the fruit is eaten as an orange by the Indians. Its numerous, large dark green leaves well adapt it for an ornamental shade tree, as which it is sometimes used in Paraguay.

Flowers in October, fruits in January.

### VIOLARIÆ.

**Calceolaria Brasiliensis**, Britton.

*Ionidium album*, St. Hil., not *C. alba*, R. and P.

Caballero (410). January.

**Calceolaria communis** (St. Hil.), Kuntze, Rev. Gen. Pl., 41.

Near Pirayu (662). April.

This interesting plant growing in open woods is a suffruticose herb about 1 m. in height. The delicate white flowers are peculiar, entirely losing their character in dried specimens. There are 5 free, hairy, persistent sepals, and 5 distinct petals, 4 of them minute and the 5th larger and standing out prominently from the rest, with upturned edges which give it the appearance of a miniature sugar scoop. Stamens 5, the 2 lowest with short white spurs; filaments broad; anthers somewhat sagittate, the cells long and parallel, surmounted by a brownish sharp-pointed cap. The seeds, at first shallow pitted, when fully ripe are nearly smooth, black and shining.

## BIXINEÆ.

**Myroxylon Salzmanni** (Clos.), Kuntze, Rev. Gen. Pl., 44. Ex descr.

Asuncion (235 and 718). December. Pilcomayo River (1585). January–May.

An interesting diœcious shrub common about Asuncion,  $1\frac{1}{2}$ –3 m. in height, armed with sharp spines. Leaves coriaceous, round or oval, often cuneate, serrate, with 2 glands on the petiole at the base of the blade. Flowers small, white, apetalous, in clusters, the staminate with 4 or 5 ciliate, ovate sepals, the peduncles and pedicels subtended by several ciliate bracts; stamens numerous, the filaments long, yellow, much exerted, and the anthers small, round, yellow, 2-celled, opening by slits above. Pistillate flower on an articulated pedicel, with 5 round, ciliate sepals which are persistent on the fruit. The fruit, about as large as a huckleberry, is blackish-purple when ripe. In fact, I thought it was a huckleberry when I found it. Berries very numerous, rather insipid in taste.

The spines are generally at the base of the leaves, and seem to take the place of stipules. The staminate and pistillate plants often far apart.

## POLYGALEÆ.

**Polygala Areguensis**, A. W. Bennett, Jour. Bot., 17, p. 201.

Pilcomayo River (944). = Balansa, 2187, Herb. Kew. Named by A. W. Bennett.

An interesting purple-flowered species; growing on the open campo among grass. Some of the stalks are 50 cm. in height, and often twisted, several rising from the same root, frequently branched. Leaves in whorls of 5, sessile, minutely serrulate. The racemes are from 4 to 12 cm. long. The pod contains 2 light brown, hairy seeds, each with 2 flat, white caruncles one-half as long as the seeds. February.

**Polygala galioides**, Poir., var. **asperuloides** (H. B. K.), Britton.

*Polygala asperuloides*, H. B. K., Nov. Gen., v, 403.

*P. galioides*, var. *major*, A. W. Bennett, Mart. Fl. Bras., Fasc. lxxiii, 29.

Near Luque (325). December.

**Polygala glochidata**, H. B. K., Nov. Gen., v, 400.

A diminutive plant nearly hidden by the grasses on the Gran Campo, 8–10 cm. high. Flowers minute, white, on pedicels about



1 mm. long. Leaves linear, 5 or 6 mm. long, mucronulate, in verticils of 5s. Seeds very hairy, without a caruncle.

Near Luque (337). Determined by A. W. Bennett. December.

### CARYOPHYLLÆ.

#### **Cerastium Sellowii**, C. and S.

Buenos Aires (4). October. Pilcomayo River (921). February.  
= Balansa, No. 2274, Herb. Kew, in part.

I brought this plant from Kew under this name, but have since been unable to find the place of its publication.—N. L. B.

#### **Tissa grandis** (H. B. K.), Britton.

*Arenaria grandis*, H. B. K., Nov. Gen., vi, 30 (1823).

*Spergularia grandis*, Camb. in St. Hil. Fl. Bras., ii, 177.

Buenos Aires (3). February. Pilcomayo River (921).

I had ample opportunity to examine this plant on my Pilcomayo expedition, as it is not infrequent on the muddy banks of that river. It much resembles our common "Corn Cockle" in general appearance. In height it rises from one to two feet dichotomously much branched. The flowers are in irregular cymes at the ends of the branches, each on a short subulate pedicel. Calyx of 5 green sepals, membranous and white on their edges, persistent. Petals 5, white, much smaller than the sepals and hidden by them except when expanded. The 5 hypogynous stamens, opposite the petals, are on very delicate filaments, which are slightly dilated at the base. Ovary superior, 1-celled, many-ovuled, 2-4 mm. in length, increasing in fruit to an obtusely 3-angled, 1-celled pod a little longer than the sepals. The pod is filled with flat seeds, which lie horizontally upon each other, and have a broad, membranous wing notched on one side. The plant rises from a long, yellow tap-root.

#### **Polycarpa australis**, Britton, n. sp.

Diffuse, glabrous, much-branched, the branches ascending, terete, 20-50 cm. long. Leaves verticillate, oblanceolate or oblong, obtuse, thick, entire, narrowed at the base, 2-5 cm. long, 4-12 mm. wide; inflorescence dichotomously cymose, the flowers sessile, white, 1-2 mm. broad; bracts ovate-lanceolate, about 2 mm. long; sepals ovate, obtuse; petals entire, rounded, shorter than the sepals; stamens 3; ovary 3-angled, 1-celled; capsule membranous, shining, ovoid, about 4 mm. long.

Banks of the Pilcomayo River (933). February.

## PORTULACÆ.

**Portulaca pilosa**, L., Sp. Pl., 639.

Between Villa Rica and Escoba (452). January.

**Portulaca marginata**, H. B. K., Nov. Gen., vi, 58. Ex descr.

Between Villa Rica and Escoba (452 a). January. Pilcomayo River (1053). June.

**Portulaca grandiflora**, Hook., Bot. Mag., t. 2885.

Asuncion (278 and 59). December–June.

This *Portulaca* is very common around Asuncion, often growing in the streets of the city, and abundant in the sandy soil of the environs. It varies very much, however, in the size of the flowers, often showing a corolla not larger than a dime in diameter and again 3 times as large. It is usually of a bright purple or rose tint, but sometimes yellow. Its gay-colored corolla, fully expanded in the morning sun, scattered in masses over the green sward, often tempted me into early walks while the dew still lay upon the ground.

**Talinum crassifolium** (Jacq.), Willd., Sp. Pl., ii, 862.

Asuncion (104 and 677). = Balansa 2253. November–January.

A small branching plant 15–20 cm. high, with small terminal clusters of pretty rose-colored or sometimes yellowish-brown blossoms. Leaves succulent, obovate, 4 or 5 cm. long, rounded at apex, and sloping at base into a short petiole. Capsule white, as large as a pea, 1-celled, containing many small, black, striolate, cochleate seeds. In ordinary drying, this plant goes to fragments, and the only method by which I could preserve specimens whole, was to steep the fresh plant in boiling water.

**Talinum patens** (Jacq.), Willd., Sp. Pl., ii, 863.

Asuncion (252). December. Between Villa Rica and Escoba (531). January.

Similar to the preceding species in habit. Flowers white or yellow, in long, terminal panicles, on a leafless peduncle 10–15 cm. long. Leaves all near the base of the stem, obovate, rounded or abruptly pointed at the apex, 5–12 cm. long, sloping at the base into a short petiole. Stem reaches a height of 6 dm., and the panicle  $2\frac{1}{2}$  dm.

## MALVACEÆ.

This order is very prolific of species and individuals in Paraguay. Indeed, some of the species run so closely together that it is not easy to separate them. In a radius of 3 or 4 miles, on the Pilcomayo River, I found no less than 12 or 15 species of the small, shrubby forms which insensibly graded into each other, and even the genera were hard to distinguish.

**Malva parviflora**, L., Sp. Pl., Ed. 2, 969.

La Plata, Argentine Republic (37). October.

**Malveopsis lateritia** (Hook.), Morong.

*Malva lateritia*, Hook., Bot. Mag., t. 3846.

*Malvastrum lateritium*, Nicholson, Dict. Gard., 2, 319.

Caballero (403 b). January.

**Malveopsis Coromandeliana** (L.), Morong.

*Malva Coromandeliana*, L., Sp. Pl., 687.

*Malvastrum tricuspidatum*, A. Gray, Pl. Wright, ii, 16.

Asuncion (57 a); Pilcomayo River (995). November–April.

A small shrub about 6 dm. high. The fruit is striking, being a broad, flat pod of 10–12 peculiar carpels with grooves between them. A row of short, stiff hairs stands on each carpellary edge, and at the commencement of the curve of the point there are 2 minute projections, the point ending in 2 similar projections, each of which is tipped with a weak spine. In the perfectly mature fruit, these rows of hairs make the carpels quite rough. Each carpel contains a single large, flat, smooth seed which perfectly fills it.

**Malveopsis spicata** (L.), Kuntze, Rev. Gen. Pl., 72.

Asuncion (215). December.

**Sida angustifolia**, Lam., Encyc., i, 4.

Between Villa Rica and Escoba (454); Pilcomayo River (989). January–April.

**Sida carpinifolia**, L., f. Supp., 307.

Asuncion (172). November.

**Sida ciliaris**, L., Sp. Pl., Ed. 2, 961.

Asuncion (240). December.

**Sida cordifolia**, L., Sp. Pl., 684.

Asuncion (114). November–March.

**Sida dictyocarpa**, Gris., Mart. Fl. Bras., xii, pt. 3, 314.

Pilcomayo River (956). March. Named by Edmund Baker.

**Sida dictyocarpa**, var. **Cordobensis**, E. Baker, ined.

Pilcomayo River (953). February. Named by Edmund Baker.

**Sida paniculata**, L., Amœn. Acad., v, 401.

Asuncion (194). November.

**Sida rhombifolia**, L., Sp. Pl., 684.

Asuncion (57); Pilcomayo River (1055). November–June.

**Sida spinosa**, L., Sp. Pl., 683.

Pilcomayo River (953 a). February.

**Sida urens**, L., Amœn. Acad., v, 402.

Pilcomayo River (960). March.

The species of *Sida* here enumerated are small shrubs or suffruticose plants, one only, perhaps (*S. urens*), being herbaceous. As a rule, they have yellow or whitish-yellow flowers, but *S. ciliaris* has brownish-purple, and *S. paniculata* lurid-purple petals. They differ in the most extraordinary manner in regard to the number of styles, the number of carpels, and other fruit characters. *S. angustifolia* has 5 styles and 5 carpels, each containing a single seed which is downy and notched at the apex, the ventral summit projecting into one, sometimes two points. *S. ciliaris* has 8 styles and 7 carpels, the seeds somewhat irregular in shape, and the backs of the carpels covered with spine-like protuberances. *S. carpinifolia* has 7 smooth carpels which run up into a combined beak at the summit, each containing a single seed, and two flat faces meeting in a sharp ventral edge that terminates in a sort of curved horn at the apex. *S. cordifolia* has 13 one-seeded carpels, grooved on the curved back, which, with the faces, is rugose-reticulate-veiny, and beaked at the summit by two long, parallel, hispid awns that are very close together. *S. dictyocarpa* has 5.7 and 10 styles and 8 carpels, while its so-called var. *Cordobensis* has only 5 styles and 5 carpels. *S. paniculata* greatly differs in general appearance from its congeners, having numerous small lurid-purple flowers on long, naked, jointed pedicels in

branched panicles, 4 styles, 5, sometimes 4, carpels which are downy and destitute of awns, and seeds somewhat irregularly 3-sided and scarcely notched at the apex. *S. rhombifolia* has 10 downy carpels deeply grooved on the back, beaked at the apex by two short, smooth awns. *S. spinosa*, which bears no spines in my specimens to justify the name, has 5 carpels with very short hispidly hairy awns or horns, the faces marked by parallel veins, and smooth seeds which have a minute projecting point at the ventral apex. *S. urens*, the most peculiar of all these species in its general appearance, has only 3 styles, so far as I could discover in the fresh specimens. The whole plant is clothed with long, fuscous, glandular hairs, especially the calyx, which is greatly inflated, puffing out below in 5 folds and terminating in 5 acute lobes; carpels 5, small, smooth, beaked only by two minute points; seeds smooth, irregularly 3-sided; flowers yellow, massed in close clusters at the summit of the branches. The long hairs on the edges of the folds and lobes of the calyx impart a very nettle-like aspect to the plant, from which circumstance, I suppose, the specific name originates.

**Wissadula patens** (St. Hil.), Garcke, Zeitsch. Naturw., 1890, 123.

Pilcomayo River (1021). May.

**Wissadula periplocifolia** (L.), Presl. Reliq. Hænk., ii, 117.

Asuncion (251 and 376); Pilcomayo River (990). December–April. Named by Edmund Baker.

**Wissadula hernandioides** (L'Her.), Gürcke, in Mart. Fl. Bras. xii, pt. 3, 439.

Pilcomayo River (985). April.

**Abutilon crispum** (L.), Sweet., Hort. Brit. i, 53.

Pilcomayo River (979). March.

15–24 dm. in height. Leaves palmately 7–10 nerved, some of them measuring 8–10 cm. in length and 6–8 cm. in breadth. Petals white, with a slight bluish tinge, delicately striped with purple, the corolla nearly 2 cm. in diameter. Fruit a bladderly pod with 10–12 carpels, each containing several seeds.

**Abutilon inæquilaterum**, St. Hil. Fl. Bras. Merid., i, 155. Ex descr.

Pilcomayo River (992). March–April.



**Abutilon pedunculare**, H. B. K., Nov. Gen., v. 212.

Asuncion (204); Pilcomayo River (942). November–April.  
Named by Edmund Baker.

**Malachra alcaïfolia**, Jacq. Coll., ii, 350.

Pilcomayo River (1034). May.

A singular plant which was growing in the water of the great laguna on the Pilcomayo River. Stem 1–1¼ m. high, beset with weak, yellowish prickles. Lower leaves ternate, 3-lobed or entire, dentate, sparsely pellucid-punctate, hairy on the nerves. Flowers lilac, in terminal clusters, 5–8 in a cluster and sessile on an involucre of large, ovate, crenate, foliaceous bracts. Calyx with 5 ovate, very hairy, 3-nerved lobes, shorter than the corolla and subtended by 7 or 8 subulate, long-haired bracteoles. Styles 10. Ovary 5-celled, with 1 ovule in each cell. Pod 5 mm. high, and nearly 1 cm. broad across the truncate top of 5 rugose, separate carpels, each containing 1 large seed.

**Pavonia Morongii**, Spencer Moore, ined. n. sp.

Stem shrubby, clothed with long, white, scattered hairs and also a close down, much branched, 4–9 dm. high. Leaves cordate-ovate, pointed at the apex, unequally dentate, 5–7 palmately nerved, hairy and downy like the stem, 3–5 cm. long and 2–2½ cm. wide, on petioles 1½–2½ cm. long. Flowers solitary on axillary peduncles 3–5 cm. long. Corolla light yellow, with a dark eye at the base inside, the eye radiating in short lines at the top. Petals obovate, rounded at the apex. Calyx much shorter, subtended by 7–8 subulate bracteoles 10–12 mm. long, hairy and downy like the stem. Styles and stigmas 10. Pod glabrous, depressed globose, splitting into 4 or 5 1-seeded carpels. The flowers of this plant when fully developed are very showy and beautiful. On the campus nearly the whole length of the Pilcomayo.

Pilcomayo River (872, 988, and 947). January–April.

**Pavonia communis**, St. Hil., Fl. Bras. Merid., i, 224.

Between Villa Rica and Escoba (473). January.

Stem downy with close, stellate pubescence, 4–6 dm. high. Leaves ovate-lanceolate, 3–5 palmately nerved, dentate, stellately haired and pubescent, pellucid-dotted, rounded at base, 5–10 cm. long, on petioles 3–5 mm. long. Flowers large, dark yellow. Carpels 5, armed with 3 long, downwardly barbed teeth. Persistent sepals and bracteoles (5 or 6) longer than the pod. Styles 10.

**Pavonia sepium**, St. Hil., Fl. Bras. Merid., i, 225.

*P. flava*, Spring, Flora, xx, Beibl. No. 2, 96.

Asuncion (473 b); between Villa Rica and Escoba (473 c).  
= Mart. Herb. Flor. Bras., No. 95.

Similar to No. 473, but with taller stems, flowers smaller, on much longer peduncles, and the teeth of the carpels more slender. This frequently grows 2-3 m. high. Fruit abundant in a long, loose, terminal inflorescence, on peduncles 2-4 cm. long.

**Pavonia hastata**, Cav., Diss., iii, 138, t. 47, f. 2.

Caballero (428). January.

With hastate-lobed, oblong or ovate-lanceolate leaves. Flowers large and showy; petals 2 cm. long, light purple, with deeper purple stripes. Carpels very different from those of the preceding species, being flattened oval in shape, rugose-veiny, with 2 narrow wings on opposite sides and 2 gibbous points at the apex instead of the 3 long barbed teeth which are found in the other species. On the railroad track near Caballero.

**Pavonia Mutisii**, H. B. K., Nov. Gen., v, 283.

Asuncion (702). May. Named by Edmund Baker.

Stems 1-1 $\frac{1}{4}$  m. high, very downy, the down mixed with long white hairs. Leaves and short lateral branches numerous. Leaves broadly cordate-ovate, velvety-downy, 2-6 cm. long and 1 $\frac{1}{2}$ -2 $\frac{1}{2}$  cm. wide, on short petioles. Flowers numerous, solitary on short axillary peduncles, or when in bud looking as if in clusters, large, light yellow, with a dark purplish eye at the base inside. This is readily distinguished by its almost glomerate leaves, branches, and flowers, and especially by its curious carpels, which are hooded and 1-horned at the apex.

In old fields and along fence rows.

**Hibiscus cisplatinus**, St. Hil. Fl. Bras. Merid., i, 194.

Asuncion (849); Pilcomayo River (1016). December-April. Named by Edmund Baker.

This grows abundantly about the mouth of the Pilcomayo and at the Falls. It has a stem from 1 $\frac{1}{4}$ -3 m. in height, and clothed with small, hooked prickles which are slightly stinging. The corolla is very large, the petals being 5 cm. or more in length. They are



blood-red at the base, and lighter red above, making a very showy flower. The calyx lobes have 5 green nerves upon them, alternating with as many white stripes. Staminate column with 6 or 7 rows of stamens some distance apart; anthers red, stigmas some distance above the highest row of stamens, umbella-shaped from below, and with 5 broad, downy-edged lobes. The bark of this plant strips off like flax and splits into clean, fine fibres, and could doubtless be used in making textile fabrics, certainly as good for that purpose as that of our cotton plant, which, it is said, is now used in this way.

**Hibiscus furcellatus**, Desr., Lam. Encyc., iii, 358. Ex descr.  
*H. Diodon*, D.C., Prod., i, 449?

Asuncion (682). April.

Strongly resembles *H. cisplatinus*, and with an equally showy flower. It is often cultivated in gardens at Asuncion. When it first opens the corolla is rose-red, but soon after fully expanding it turns a pure white.

**Cienfugosia sulphurea** (St. Hil.), Garecke, Bonpl., viii, 148.  
*Fugosia Drummondii*, A. Gray, Pl. Wright, 23.

Pilcomayo River (929). February.

A shrubby, smooth-stemmed plant about 3 dm. high, with a tough, thick root, and many stems springing from it, which are somewhat decumbent at the base. Corolla sulphur-yellow, with a brown eye at the base inside, about  $1\frac{1}{2}$  cm. broad when expanded. Calyx smaller, deeply divided, the lobes lanceolate, 3-5 nerved, and they, the bracteoles, and the pods marked by rows of black dots. Bracteoles 8. Leaves broadly ovate, palmately 7-nerved, irregularly crenate-dentate, occasionally with small lobes, on petioles 1-2 cm. long. Capsule glabrous, 5 celled, cells 2-seeded. Peduncles 2-8 cm. long.

This occurs in Texas and also in Southern Brazil.

**Gossypium maritimum**, Tod., Osserv. Cot., 83.

Pilcomayo River (978). March.

The native cotton of Paraguay. It is supposed to have been originally introduced into the country, but it certainly grows now spontaneously. I found it quite abundant about the Falls of the Pilcomayo, not only in old Indian encampments, but in thickets upon the campos. There it flourishes with great vigor, growing often to the height of 2 or 3 m., sometimes bearing 10 or 15 bolls upon one stem. Although the staple of the wild plant is not as long

as that of our upland Southern cotton, yet the fibre is very fine. The seeds are much smaller than those of our cultivated cotton. I have no doubt that it would be greatly improved by cultivation, and that among an enterprising people it might become an article of great commercial importance. March–April.

**Chorisia speciosa**, St. Hil., Pl. Usuel., t. 43.

Asuncion (725); Pilcomayo River (1075). March–May.

One of the most remarkable trees in Paraguay, known popularly as Palo borracho, or drunken tree, from the huge belly-like protuberance of its trunk. The flowers, at first a pale yellow, finally become nearly or quite white, and are as large as those of a lily. The limbs are long and stand out horizontally from the trunk. The trunk and largest limbs are armed with stout spines, which have a large button-shaped base, and a strong, sharp, spiny point. The inner bark, of a fine white color, strips off in long ribbons, and can be twisted into strong twine, which is used by the Indians in making fishing-lines and nets. The sap turns blood-red after being exposed to the air, and evidently contains a red coloring-matter, which might be used as a dye. The swollen trunk is often used for making canoes. One that we hewed out was capable of carrying two or three men. The wood is soft and can be cut with a penknife as easily as a raw potato, which it much resembles, very different from most of the woods of the region, which are nearly as hard as iron.

#### STERCULIACEÆ.

**Sterculia striata**, St. Hil. et Naud., Ann. Sci. Nat., II, ser. xviii, 213.

Asuncion (616). March.

A large tree from 16 to 25 m. in height, which I often saw cultivated in gardens at Asuncion. The trunk has smooth, dark bark, with large palmately 5-lobed leaves, which have the 2 lower lobes overlapping, so as to give a peltate appearance to the leaves at first sight. The flowers appear to be polygamous, mostly staminate, and hence the fruit is scarce. The inflorescence is very glandular and quite sticky in drying. Fruit in 2 twin, divaricate pods, each of which is 1-celled and several seeded. An American gentleman, resident of Asuncion, who had the tree growing in his garden, called it the "Peanut tree," though I cannot tell why, as there is nothing in the appearance or taste of the fruit like a peanut.

**Melochia subcordata**, Morong, n. sp.

Stem about 1 m. high, stout, softly and densely fuscous hairy, simple or divergently branching at the summit. Leaves broadly ovate, subcordate, or the upper ones elliptical, unequally dentate, the teeth tipped with black points, stellately fuscous hairy on both sides, palmately 5-7 nerved, the largest collected 11 cm. long and 8 cm. broad at the base. Petioles 3-6 cm. long. Stipules subulate, 3-5 mm. long, deciduous. Inflorescence branched, elongated, the flowers spicate, in interrupted glomerules. Calyx purple-tinted, hairy, with 5 acute lobes, a little more than  $\frac{1}{2}$  as long as the corolla, subtended by 3 subulate bracteoles. Petals light purple, broad and outwardly curved at the apex, whitish and clawed at the base, 6-8 mm. long, staminate column connate with the petals below; anthers nearly sessile on the column, closely investing the style. Stigmas 5, projecting above the anthers, plumose; ovary silky hairy. Capsule obovoid, 3 mm. long, marked by small tubercles to the middle and white hairy above; seeds obtusely 3-angled, dark, puberulent.

Open places near Luque (292); railway track at Caballero (462).  
December-January.

**Melochia Morongii**, Britton, n. sp.

Erect, densely pubescent, branched, 4-6 dm. high. Stem and branches terete; petioles terete, about 1 cm. long; leaves ovate-lanceolate; prominently pinnately-veined, the veins impressed on the upper surface, crenate-dentate, obtuse or obtusish at the apex, rounded at the base, 4-5 cm. long, 1-1 $\frac{1}{2}$  cm. wide, pubescent on both sides; inflorescence densely capitate, terminal, and opposite the leaves, peduncles 2-4 cm. long; heads about 2 cm. in diameter; corolla about 8 mm. long; calyx 5-lobed to beyond the middle, the lobes lanceolate, acuminate; capsule pyramidal, 5-angled, the 5 carpels loculicidally dehiscent, triangular, 4 mm. long, tipped with a beak of about one-half their length.

Asuncion (201 a). November. Apparently nearest to *M. parvifolia*, H. B. K.

**Melochia pyramidata**, L., Sp. Pl., 774.

Asuncion (697). May.

**Melochia venosa**, Sw., Prod. Flor. Ind. Oc. 97.

Caballero (403). January.

**Melochia venosa**, Sw., var. *polystachya* (H. B. K.), Schum., Mart. Fl. Bras., xii, pt. 3, 37.

Caballero (403 a); between Villa Rica and Escoba (588). January.

This species is densely fuscous woolly all over. Blades of the leaves 5-8 cm. long and 1-3 cm. broad, unequally serrate; petioles

5-15 mm. long; stipules lanceolate, acute, 12 mm. long, 4 or 5 mm. broad. Flowers small, yellow, in an elongated, naked panicle. Calyx 5-lobed, the lobes  $\frac{2}{3}$  as long as the petals and very hairy. The variety is much more slender, much branched from the base. Leaves shorter and narrower; stipules 4 or 5 mm. long, setaceous or 1 mm. broad at the base. Inflorescence in a contracted terminal panicle, or a few flowers at the ends of the branches. Both occurring near Caballero and Villa Rica.

**Waltheria Americana**, L., Sp. Pl., 673.

Asuncion (201). November.

**Waltheria communis**, St. Hil., Flor. Bras. Merid., i, 123. Ex descr.

Asuncion (215 a). December.

**Chætæa Paraguayensis**, Britton, n. sp.

Climbing, softly pubescent, branched, the twigs channeled. Leaves short-petioled, lanceolate, rather coriaceous, obscurely reticulate, blunt-pointed, remotely dentate near the apex or entire, glabrous above, slightly pubescent beneath, 4-6 cm. long, about 1 cm. wide; flowers in short, axillary cymes; lamina of the petal filiform; fruit globose-ovoid, about 1 cm. in diameter, the spines conic acute, 3-4 mm. long; seed obliquely oblong, brown, smooth, rounded on the back, the sides nearly flat.

In thickets, Asuncion (288). December. Same as Balansa's 2002. I do not use the generic name *Büttneria*, Lœfl., because it is a homonym of *Butneria*, Duhamel = *Calycanthus*, L. N. L. B.

A singular liana which is not uncommon in the thickets around Asuncion. The stems are armed with small, recurved prickles, by means of which it climbs upon shrubs and low trees. It clings so closely to its supports that it is difficult to detach the branches. The largest leaves I found were 12 cm. in length by 5 cm. broad, and often had small prickles along the midrib beneath, with a petiole 2 mm. to 2 cm. long. Calyx monosepalous, with 5-pointed segments longer than the corolla. The whole flower is greenish-yellow in hue, and quite peculiar in appearance. The petals are flat at the base and 2-lobed, throwing up what appear to be 5 yellowish horns, which are the most conspicuous part of the flower. The capsule is normally 5-carpelled, but often several of the cells of the ovary are abortive, and not more than 2 or 3 of the ovules ripen into seeds. The fruit is down-covered, and has a curious prickly look about it.

## TILIACEÆ.

**Triumfetta semitriloba**, L., Mant., i, 73.

Asuncion (116 and 132). November.

This Florida plant is very common in old fields around Asuncion, a rough-hairy shrub 4–6 dm. high, bearing small globular fruit beset with hooked prickles.

**Corchorus hirtus**, L., Sp. Pl., Ed. 2, 747.

Asuncion (1089). June.

A small, very hirsute plant, 12–15 cm. high, with long, fibrous roots. Stem simple or a little branching at base. Leaves ovate, palmately 5-nerved, hirsute, often doubly crenate-serrate, 3–5 cm. long, and 10–15 mm. wide, on hirsute petioles 7–12 mm. long. Flowers few, axillary, yellow.

**Corchorus pilobolus**, Link, Enum. Hort. Berol., ii, 72.

Asuncion (703). May.

**Luhea divaricata**, Mart. et Zucc., Nov. Gen., i, 101, t. 63.

Near Escoba (604). January.

A tree 6–16 m. high, with smooth and gray bark. Young branches and inflorescence pubescent. Bracteoles 6, narrower than the sepals, tomentose. Calyx lobes 5, tomentose on the outside, glabrous and yellow on the inside. Petals yellow, broad at the apex. Flowers large. Leaves serrate, ovate or oval, slightly and obliquely cordate, abruptly acute at the apex, dark green above, white tomentose beneath, nerves conspicuous beneath, 5–10 cm. long and 2–5 cm. broad.

**Luhea uniflora**, St. Hil., Flor. Bras. Merid., i, 226, t. 57.

Asuncion (676). April. = Balansa 2009.

A shrub or small tree 5–8 m. in height, growing in copses near Asuncion. It was only in fruit when collected, but attached to the fruit were the bracteoles, which are green and thick, longer than the fruit, linear-lanceolate, 8 or 10 in number. The fruit is a hard, pointed, 5-winged nut, green and downy, 5 cm. long and 2 cm. in diameter, the spaces between the wings concave, having 5 narrow cells projecting from the centre of the nut to the edges of the wings. Remains of the petals show them to be white, and the stamens very numerous.



**Prockea Crucis**, L., Sp. Pl., Ed. 2, 745.

Asuncion (827). November.

A shrub 2-3 m. high with brown, smooth bark. Leaves nearly glabrous and shining above, downy beneath, acuminate at the apex, narrowed and subcordate at base, serrate, the teeth with blunt callos points, palmately 5-nerved, 3-10 cm. long and  $2\frac{1}{2}$ -7 cm. broad, on petioles 8-15 mm. long, stipules large, lunate, toothed, amplexicaul. Flowers in short axillary racemes. Flowers about 5 mm. high. Calyx lobes downy, ovate, abruptly acute at the apex, reflexed. Petals none. Stamens numerous, yellow. Ovary and young fruit downy. Each flower is on a downy pedicel 3-10 mm. long.

The genus *Prockea* is referred by Eichler to the Bixineæ.

#### ERYTHROXYLACEÆ.

**Erythroxylon microphyllum**, St. Hil., var. **cuneifolium**, Peyritsch., Mart. Flor. Bras., xii, pt. 1, 134.

Pilcomayo River (946). February.

A stragglingly-branched shrub, with light brown, very warty bark, 4 or 5 m. high, branches mostly short. Leaves cuneate,  $1-1\frac{1}{2}$  cm. long, 5-7 mm. broad, retuse. Found only in fruit, a flattish, angled, 1-seeded berry, when ripe pulpy and dark red, about 5 mm. long and 3 mm. wide. The persistent calyx has 5 ovate, acute lobes. This shrub occurs only rarely along the banks of the Pilcomayo. The ends of the branches are bare and sometimes inclined to be spinescent.

#### MALPIGHIACEÆ.

**Dicella bracteosa**, Gris., Linnæa, xiii, 250. Ex descr.

Between Villa Rica and Escoba (479). January.

A large tree. Leaves opposite, lanceolate, cuspidate, entire, glabrous and shining above, sparsely hairy beneath except on the nerves, the hairs often bicuspidate, 5-10 cm. long, 2-4 cm. wide, on slender petioles 6-8 mm. long, which are biglandular near the middle. Flowers in terminal panicles 10-15 cm. long. Sepals 5, oblong, 5 or 6 mm. long, silky with appressed hairs outside, whitish inside, bearing 8 large glands. Petals none. The nut is nearly 2 cm. long, obovate, covered, especially at the base, with silky, fuscous, appressed hairs, not crested and angled as described in Flor. Bras., but even,

surmounted by the sepals and glands. The flower buds are very silky with appressed fuliginous hairs, and the branches of the inflorescence marked in the same manner.

**Heteropterys angustifolia**, Gris., *Linnæa*, xiii, 223.

Between Villa Rica and Escoba (487). January.

A liana climbing high among trees, shrubby, or looking like a small tree. Leaves opposite, or alternate, willow-like, linear, cuspidate, entire, glabrous, 4–8 cm. long, and 4–8 mm. wide, on petioles bracteolate and articulate midway, 2–5 mm. long. Flowers in terminal corymbs 4–8 cm. long. Found only in fruit, but persistent sepals 5, oblong, with 2 glands on the outside of each, and petals 3-toothed. Fruit a samara in 2s., 2 cm. long, broadly winged.

**Heteropteris Pirayuensis**, Morong, n. sp.

Suffruticose. Stem terete, angled or striate below, more or less compressed and silky downy on the young branches, about 1 m. high. Leaves of a silvery hue, opposite, entire, coriaceous, ovate, subcordate, apiculate, glabrous and somewhat shining above, minutely downy beneath, often with 1 or 2 glands near the base of the blade; the largest collected 8 cm. long and 5 cm. wide. Petioles canaliculate above, eglandulose or biglandular near the apex, 5–10 mm. long. Flowers in small terminal panicles. Found only in fruit, but the persistent sepals oblong, each with 2 glands on the back. Flowers 4 in the umbel; pedicels jointed and bibracteolate above the base; bracteoles minute, obtuse. Samaras 2 together, obovate or sometimes cultriform, the wing beautifully purple-tinted, shining and sculptured with striæ, about 2 cm. long, on slender peduncles 10–15 mm. long.

Between Pirayu and Yaguaron (672). April 8.

**Heteropteris amplexicaulis**, Morong, n. sp.

A liana, twining over trees for 6 or 8 m. Leaves numerous, opposite, lanceolate, elliptical or nearly orbicular, amplexicaul, apiculate, entire, callous on the margins, glabrous, somewhat shining above, lighter colored beneath, eglandulose, 2–6 cm. long, and  $1\frac{1}{2}$ –3 cm. broad. Flowers in rather small terminal panicles. Calyx 4 or 5 parted, obtuse, downy, membranous and ciliate on the margin, with 8, sometimes 10 glands. Petals 4 or 5, bright yellow, longer than the calyx lobes (4 or 5 mm. long), rounded at apex, unguiculate. Pedicels jointed and bracteolate just above the base, midway or near the apex, occasionally glandular. Ovary quite hairy, the hairs sometimes reddish. Samaras reddish-purple, 3, about 2 cm. long, pubescent below, the wing sculptured with striæ, broad, crenate on the upper margin.

Asuncion (199). November–December. = Balansa 2400.



**Hiraea pulcherrima**, Morong, n. sp.

A liana, often climbing on trees for 10 or 15 m. Stem terete, glabrous or minutely appressed pubescent, especially on the young shoots and among the inflorescence. Leaves deep green, opposite, entire, ovate, rounded at base, acuminate at the apex, shining on the upper surface, pubescent when young, 5-10 cm. long, 3-6 cm. broad, usually biglandular at the base of the blade. Petioles 8-12 mm. long. Stipules minute, ovate, at the base of the petioles. Flowers in terminal panicles, often over 30 cm. long. Branches of the panicle opposite, spreading divaricately, 3-10 cm. long, the flowers disposed racemously or umbellately. Pedicels purplish, filiform, with minute bracts at the base, sometimes bibracteolate and jointed a little above the base, 8-15 mm. long. Sepals oblong, obtuse, hairy. Petals larger, purple, unguiculate. Ovary hairy. Samara 1, broadly 3-winged, clothed with long, appressed white hairs, crested on the back, becoming more or less glabrate; wings seniorbicular, separate or partly confluent at the base, striate, a shining purplish-brown when mature, the whole in dried specimens appearing orbicular and about 15 mm. in diameter. Seeds solitary in the centre of the axis of the wings. This liana is a great ornament to the woods when in flower, and its curious fruit are no less attractive.

Asuncion (626). March. = Balansa 2405.

**Hiraea Salzmanniana**, Juss., Monog., 312.

Chaco (431). March. = Balansa 24104.

In Bull. Soc. Bot. Suisse, i, 34, Prof. Chodat describes a var. *glandulifera* based on this number of Balansa, with the character that the leaves are biglandular at the base, with which our specimens agree, but Grisebach in Mart. Flor. Bras., xii, pt. 1, 99, previously described a different variety under the same name, the character being that the calyx is glandular.

A liana with small panicles or corymbs of yellow flowers; petals 6 or 7 mm. long, fringed, at the rounded apex. Sepals each biglandular and white tomentose. Leaves glabrous or pubescent when young, lanceolate or obovate, acute or apiculate, 10-20 cm. long, and 3-7 cm. broad. Petioles white tomentose, stipuliferous and biglandular at the apex. Wings of the samara separate, crenate or undulate on the border, golden-brown at maturity.

**Hiraea macrocarpa**, Chodat, Bull. Soc. Bot. Suisse, i, 35.

Asuncion (226); between the Recolleta and Luque (721). December-May. = Balansa 2408.

This species has round-oval, apiculate or abruptly acute leaves, glabrous above, covered with long, appressed white hairs beneath, 6-12 cm. long, and 4-8 cm. broad, eglandulose or biglandular at

base of the blade. Petioles very short. Flowers few, in small panicles, yellow or sometimes purple. Calyx with 8 glands. Fruit very large, 3- sometimes 5-winged, the wings 2 by  $3\frac{1}{2}$  cm., hairy, purple-tinged, lobed, or irregularly dentate on the margins.

**Janusia Guaranitica**, Juss., Monog., 350.

Asuncion (704). November–May.

A very pretty little twining shrub, common in old fields and on roadsides about Asuncion and on the Pilcomayo, often found climbing upon herbaceous plants and small shrubs. The 5 green sepals have each 2 bean-shaped glands on the back. Petals yellow, with long claws, large ovate blades, widely separated, and the corolla spreads open rotately in anthesis from half to three-quarters of an inch in diameter. The ovaries are 3-carpelled, each carpel becoming in fruit a 3-winged samara with the seeds at the base.

**Janusia Barbeyi**, Chodat, Bull. Soc. Bot. Suisse, i, 34.

Pilcomayo River (1090). January. = Balansa 2401, Herb. Kew.

Chodat, in his brief description of this species, cites this number of Balansa in part. Our specimens appear slightly different from our no. 704, but do not altogether agree with the characters assigned by M. Chodat to *J. Barbeyi*.

#### GERANIACEÆ.

**Tropæolum pentaphyllum**, Lam., Encyc., i, 612.

Buenos Aires (14). October.

**Oxalis articulata**, Sav., Lam. Encyc., xv, 636.

Asuncion (656). April.

Flowers usually bluish-purple, sometimes white.

**Oxalis corniculata**, L., Sp. Pl., 435.

Asuncion (319). December.

An odd-looking little *Oxalis*, resembling a small clover in general appearance. It throws out runners 10 to 15 cm. long, which root at the joints, and from each joint rises a fascicle of stems and leaves. Leaves ternately or quinate pinnate, the leaflets broader than long, emarginate and ciliate. Flowers light yellow. It has a curious habit in fruit. The peduncle is about 1 cm. long, and articulated half-way up, the joint marked by 2 small bracts. At the articula-

tion the peduncle bends sharply downwards, while the ripe pod bends sharply upwards again and thus becomes erect. It grows on the edges of the sidewalks and in the crevices of the bricks all over Asuncion. Also along the country roads, but outside of the city it attains a much larger size, with a corolla nearly 3 cm. in diameter, and the petals marked by six short purple stripes near the base inside.

**Zanthoxylum Naranjillo**, Gris., Symb. Flor. Arg., 76.

Asuncion (809). October.

A tall shrub 2-3 m. high, in dense thickets about Asuncion. The leaflets are minutely crenate, with a row of transparent dots, one in each crenature, and, when fresh, quite transparent along the venation. Flowers white, in large, terminal cymes. The stems and the rachis of the leaves armed with stout curved spines, an ugly customer to deal with.

**Pilocarpus pennatifolius**, Lam., Jard. Fleuriste, iii, t. 263.

Asuncion (466 and 635). February-April. = Balansa 2514, and Gibert 55.

The well-known Jaborandi, a medicinal plant of great value. The long racemes of dark, lurid flowers, sometimes 20 or 25 cm in length, are very striking. These contrast strangely with the dark green coriaceous shining foliage. The fruit is equally striking. It appears to be a large pod with a thick green shell, which dehisces on one side by 2 valves. Within appear 5 other pods, into which the 5 cells of the ovary have developed, each containing a shining black seed enclosed in a bladderly membrane that hardens in drying. A shrub about  $1\frac{1}{4}$  m. high, with smooth stem, branches, and leaves and greenish bark, common in the thickets around Asuncion.

**Helietta longifoliata**, Britton, n. sp.

Glabrous. Leaves opposite; petioles 2-3 cm. long; leaflets sessile, lanceolate or slightly oblanceolate, narrowed or cuneate at the base, 5-10 cm. long, 1-2 cm. wide, the margins entire, the tip inrolled into a slender, curved projection about 3 mm. long; inflorescence terminal, loose, the flowers numerous, about 2 mm. broad; samaras about 1.5 cm. long, the wing oblong, twice as long as the body.

Caballero (457). January. = Balansa 2515.

A tree 8 or 10 m. in height, occurring on the hillsides near Caballero, on the road from Villa Rica to Escoba. Flowers white.

## SIMARUBEÆ.

**Picramnia Sellowii**, Planch. in Hook. Lond. Jour. Bot., v, 578.

Asuncion (823). October. = Balansa 2506.

A straggling shrub 1-1½ m. high, with pinnate leaves and minute, greenish flowers in long, compound, linear spikes. Leaves numerous, shining above; leaflets 3-4 pairs, the largest 6-7 cm. long and about 3 cm. wide.

## MELIACEÆ.

**Trichilia Cantigua**, A. Juss. in St. Hil. Flor. Bras. Merid., ii, 53.

Asuncion (762); between Villa Rica and Escoba (448). January-July. = Balansa 4655 and 2532.

A tree 8-12 m. high. Leaves pinnate; leaflets 5 or 6 pairs and 1 odd one, oblong, glabrous, shining above, 6-8 cm. long, and 2-3 cm. wide. Flowers 3 mm. long, creamy-white, in small, close axillary panicles or racemes along the branches.

**Trichilia elegans**, A. Juss. in St. Hil. Flor. Bras. Merid., ii, 79, t. 98.

Asuncion (834). November. = Riedel, 532, from Brazil, and Balansa, 2530.

Differs from the preceding species in having numerous small, bright green leaves, the leaflets 2-2½ cm. long, 8-10 mm. wide, broader in the middle, sloping to both ends, nearly sessile, retuse or nearly truncate at the apex. Flowers minute, white, but little more than 1 mm. long, in axillary racemes; petals very deciduous, falling off at a touch. A rather smaller tree, but much more graceful, with more numerous blossoms.

**Cedrela fissilis**, Vell., Flor. Flum. iv, t. 68, 177.

Asuncion (629).

This tree is known all over Paraguay by the name of Cedar, although it bears no resemblance to the true cedar, except in its light, red-colored heart wood. It often attains a height of 20 m. or more, and is valued as the best cabinet-wood in the country, serving almost as well for that purpose as our red cedar, and therefore worthy of the name. It has long straggling branches. The long pinnate leaves give it an elegant appearance, and the great compound panicles of flowers, from 4 to 6 dm. in length, are equally striking. The ill-smelling leaves and flowers, however, are not

quite so attractive as the looks. The fruit is an obovate nut, 4–5 cm. in length, and  $2\frac{1}{2}$  cm. in diameter, with a thin, greenish-white scurfy rind, looking somewhat like our butternut. It is one of the few deciduous trees in Paraguay, the fruit hanging on long after the leaves have fallen, which they do in April or May. The fruit partakes of the malodor of the leaves and flowers.

#### ILICINEÆ.

**Ilex Paraguayensis**, St. Hil., Mem. Mus., ix, 351.

Asuncion (636). Not in flower or fruit.

The famous Paraguay Tea or Jesuits' Tea, or Yerba Maté, as it is variously called. It does not grow wild in eastern Paraguay, but is found only in the yerbales along the Parana River in the western districts. It is occasionally cultivated in gardens at Asuncion.

#### CELASTRINEÆ.

**Maytenus ilicifolia**, Mart., Fl. Bras. xi, pt. 1, 8.

Lympio (735). May.

A shrub about 2 m. high. Only in bud when collected. Flowers apparently white. Leaves ovate or oblong, coriaceous, glossy, with a callous edge and many spiny teeth on the margins, nearly sessile, 4–10 cm. long, and 5 or 6 cm. wide.

**Maytenus Vitis-Idæa**, Gris., Symb. Fl. Arg. 83.

Pilcomayo River (1049). May.

A shrub 3–5 m. high, common in the thickets on the banks of the Pilcomayo. It has very thick, flabby leaves, almost circular in shape, so heavy that the shrub is bent nearly to the ground under their weight. Flowers small, yellowish-green, in small clusters along the branches. Fruit an oval, red berry, very scarce.

#### RHAMNEÆ.

**Sageretia elegans** (H. B. K.), Brong.

Pilcomayo River (907). February. = Balansa 2420.

A shrub 3–5 m. high, with smooth light-colored bark. Leaves on short petioles, opposite, ovate, coriaceous, serrulate, glabrous, shining, acute, 4–8 cm. long, and  $1\frac{1}{2}$ –4 cm. broad, the nerves beneath prominent. Found only in fruit. Berry on a short pedicel, nearly



as large as a pea, red when ripe, 3-angled. This shrub is armed, at least below, with stout, straight spines.

### **Retanilla?**

Pilcomayo River (913).

Known to the natives as the Jacaranda or Caranda, a tree with a trunk about 20 cm. thick and 10 or 12 m. high. A striking object in the woods. I found it without flowers or fruit. The whole head presents the appearance of chevaux-de-frise, being composed, apparently, of long, stout spines, 8-25 cm. in length, thickened in the middle and very sharp at the apex. These are really the branches. Leaves reduced to 2 or 3 minute scales at the base of the branches, very caducous. The trunk has a dark shaggy bark, and the heartwood is bluish-black, densely hard, with a small ring of white wood next to the bark.

We suppose this to be a *Retanilla*, but Mr. N. E. Brown, of Kew, doubts that it belongs to that genus.

### **Gouania tomentosa**, Jacq., Amer., 263.

Asuncion (644). April.

A tendril climber, clambering in dense masses over shrubs and small trees in thickets in the vicinity of Asuncion. Flowers white, in long, slender, supra-axillary spikes, very conspicuous. Fruit a globular, slightly 3-angled, fuscous-hairy capsule, 3-celled, with 3 large, flat seeds, one in each cell.

## AMPELIDÆ.

### **Vitis palmata** (Poir.), Baker in Mart. Fl. Bras., xiv, pt. 2, 216.

Asuncion (138); Pilcomayo River (1091). Flower November; fruit May.

An interesting vine which I found climbing upon trees and fences in the neighborhood of Asuncion, and afterwards upon shrubs in the great laguna on the Pilcomayo River. It has deeply divided palmate leaves. Flowers small, wax-like, yellowish-brown, in umbel-like clusters. Fruit a pear-shaped, purple berry, 1-celled, 1-seeded. Exceedingly hard to preserve, as the leaves and flower clusters will disintegrate in spite of all endeavors. I never could keep one of those collected about Asuncion, although I tried repeatedly to press them, but for some reason had no difficulty with those of the Pilcomayo region.



**Vitis sicoyoides** (L.), Baker in Mart. Fl. Bras., xiv, pt. 2, 202.

Asuncion (287). December.

A tendril climber which clambers very high over tall trees. The lower part of the stem appears twin, as it has a deep channel in the middle which seems to divide it into two parts, while the branches are merely angled or grooved. Leaves deltoid, cordate at base, with a broad sinus and rounded lobes, sharply serrate, smooth on both sides, on petioles 2-4 cm. long. Flowers small, waxy-yellow. Fruit a 1-celled berry, containing 2 flat seeds which lie parallel with each other across the cell, the sharp side uppermost.

SAPINDACEÆ.

**Serjania fuscifolia**, Radlk. Mon. Serj. 221.

Asuncion (772). May-June.

A liana with sulcate, fuscous-downy stem. Leaves biternate or triternate, on long fuscous-downy petioles; leaflets ovate, doubly serrate, nearly glabrous above and fuscous-downy beneath. Racemes much longer than the leaves; rachis fuscous-downy, axillary, the lower part naked and 8-10 cm. long, the upper flowering part of the same length. Flowers small, white. Fruit not seen. Tendrils at the base of the flowers.

**Serjania glabrata**, H. B. K., Nov. Gen., v, 110.

Asuncion (625). March. = Gibert 1036.

A liana 4-8 m. high. Differs from the preceding species in having glabrous stems, only the young branches being puberulent. Leaflets glabrous, lobed or with a few large teeth. Fruit a 3-winged samara, the wings confluent at the base, in dried specimens when the lobes are pressed together looking cordate-ovate, 2-2½ cm. long, and 1½-2 cm. broad. The wings are membranous and glabrous, each bearing at the apex a globose seed nearly as large as a pea.

The flowers are on longer peduncles than in no. 772, and in paniced racemes at the top of the stem, instead of being in solitary racemes among the leaves as in that; racemes much shorter.

**Serjania meridionalis**, Camb. in St. Hil. Fl. Bras. Merid., i, t. 76.

Asuncion (625 b). March.

Found only in fruit, which is much smaller than that of no. 625, the wings yellowish-brown when mature and striate, the samara in

the dried specimens being about  $1\frac{1}{2}$  cm. long, and as wide or wider at the base.

**Cardiospermum Halicacabum**, L., Sp. Pl., 366.

Asuncion (650). April. Pilcomayo River (891). January.

**Cardiospermum grandiflorum**, Sw., Fl. Ind. Occ., ii, 698. (*C. velutinum*, H. and A.)

Asuncion (238). December.

A liana climbing by tendrils. Stem striate, angled, pubescent, becoming glabrate with age. Leaves ternate or biternate; rachis 2-4 cm. long. Leaflets ovate,  $2-2\frac{1}{2}$  cm. long, and  $1\frac{1}{2}-3\frac{1}{2}$  cm. wide, pubescent beneath, crenate-serrate or lobed, the teeth and lobes mucronate or with a callous point. Flowers white, 7 or 8 mm. high, numerous, in small corymbose clusters. Common peduncle 5-7 cm. long, striate, hirtulose. Tendrils twin at the summit of the peduncle under the flowers. Pod ovoid, 4 or 5 cm. long,  $2-2\frac{1}{2}$  cm. broad in the middle, pubescent, a light yellow when fully mature.

**Paullinia elegans**, Camb., St. Hil. Fl. Bras. Merid.

Asuncion (153, 387 and 764); Trinidad (737); Pilcomayo River (916 and 1092). November-June.

A climbing vine, running over shrubs and tall trees with coriaceous, shining, pinnate leaves, the pinnæ of 2 pairs and one odd leaflet. Flowers white, small, in axillary racemes, 8-10 cm. in length, on long peduncles. The stem is that of a strong, woody liana, with the tendrils generally two, at the base of the leaves. The fruit is the most conspicuous part of the plant, consisting of numerous bright red berries, as large as a cranberry, containing 3 shining black seeds, which are enveloped, like those of *Euonymus*, in a white, mealy aril that covers about one-half of the seed. The juice, though scanty, is milky, showing more clearly in the unripe fruit than in the stems.

**Paullinia pinnata**, L., Sp. Pl., 366.

Asuncion (373); Pilcomayo River (892). January.

This *Paullinia* differs from the preceding species in having winged petioles, pear-shaped and obtusely 3-angled fruit, with tendrils both on the stem and at the ends of the peduncles, the whole plant very glabrous. Leaflets oblong, with a few large obtuse teeth. Peduncles 8-10 cm. long.

**Schmeidelia edulis**, Camb. in St. Hil. Fl. Bras. Meridi.

Asuncion (844). October.

A shrub with smooth dark-gray bark, covered with white dots,  $1\frac{1}{2}$ –2 m. high. Leaves ternate; common petiole about 2 cm. long, downy; leaflets elliptical, glabrous above, downy on the veins beneath, pointed at either end, sessile or subsessile, irregularly serrate above, the largest collected  $4\frac{1}{2}$  cm. long and  $2\frac{1}{2}$  cm. wide. Found only in fruit. Berries small, red, in small axillary clusters, on peduncles 12 mm. to 2 cm. long.

**Cupania vernalis**, Camb. in St. Hil. Fl. Bras. Merid.

Asuncion (752). June. = Balansa 2473.

A tree with dark-grayish bark, smooth or somewhat fissured below, fuscous-downy on the young shoots, 10–15 m. high. Leaves alternate, pinnate; petioles 2–7 cm. long; petiolules very short; leaflets 5–7 pairs, oblong, rounded at the apex and base, the largest collected 10–12 cm. long and 3 or 4 cm. wide, serrate, shining above, a little downy on the prominent veins beneath. Flowers small, white, or greenish-white, in axillary compound racemes, the rachis and sepals downy. Flowers fragrant. Common name as given to me by a native Paraguayan, Petato.

**Thouinia Paraguayensis**, Britton, n. sp.

A stout, climbing, tendril-bearing vine, the young twigs densely and finely pubescent, angular. Leaves 3-foliolate; petioles 3–4 cm. long; leaflets stalked, thick, densely and finely pubescent beneath, glabrate above, broadly ovate, truncate but decurrent on the petiole, obtuse at the apex, remotely serrate, 3–4 cm. long, and about as wide; flowers minute, in subglobose, compound cymes; cymes axillary, peduncled; samaras 3, 3 cm. long, the wing obliquely obovate, twice as long as the seed.

Road to Lambare in thickets (625 a). May.

**Melicocca lepidopetala**, Radlk., Sitz. Akad. Mun., 1878, 344.

Asuncion (817).

A large tree from 10 to 18 m. in height, often planted as a shade tree about dwelling-houses in Asuncion, for which it is well adapted by its numerous branches and crowded, evergreen leaves. The native name, as it was spelled to me by a Guaraní scholar is Ibápôbô, pronounced in English, as nearly as it can be represented, ïvapuyu. It bears one of the most highly esteemed native fruits, which are often sold in the Asuncion market. This is about the size of a

plum, globular, with a thick, leathery rind, and a sweet, mucilaginous pulp that adheres closely to the seed. The meat is quite pleasant to the taste, but slightly astringent, and one may suck the pulp-covered seed as though it were a soft gum. The seeds are large, oval, with a soft shell, one, sometimes two, in the drupe. Parodi (Not. Pl. Us. de Corrientes y Paraguay, p. 54) states that the leaves are medicinal, and used in decoctions for mucous fluxes, owing their properties to an essential oil contained in the vesicular glands, which look like transparent dots, and to an astringent tonic principle which all the tissues contain. Flowers in September; ripe fruit in December.

**Sapindus Saponaria**, L., Sp. Pl., 367.

Asuncion (722). May.

In Paraguay this is a small tree 5-7 m. in height. Found only in fruit. The berries numerous, fleshy, greenish-yellow, about as large as marbles.

#### ANACARDIACEÆ.

**Schinus lenticifolius**, L., in March. Anac., 164.

Near Jaguaron (668). = Balansa 2523 a.

A small shrub about 1 m. in height, in large patches upon the open campo. The red, capsular fruit, about as large as peas, look almost exactly like those of the pepper tree (*Schinus molle*). The fruit has a thin, brittle shell, which easily crushes between the fingers, and contains a single, flattish seed covered with angles and grooves. In fruit April 8.

**Duvaua dependens** (Ort.), Kunth, Diet. Sci. Nat., Livr. 47.

La Plata, Arg. Republic (28). October.

**Duvaua spinosa** (Engler), Britton.

*Schinus spinosus*, Engler, in Mart. Fl. Bras., xii, pt. 2, 388, t. 81, f. 2.

Pilcomayo River (952). March.

A shrub 5 or 6 m. in height, and a great nuisance about our camp, as its short, stiff, stub-like branches are armed with sharp thorns, and when cut down it was impossible to burn it or to put it to any use. It seems to be all branches, as the leaves are few and quite small. The flowers are small, white, polygamo-dioecious, scattered along the branches, and looking much like those of our

*Ilex verticillata*. The fruit consists of a small, nearly globular berry, blackish-purple when ripe, containing a single seed which is flattish and irregularly grooved on the sides, and having a slight aromatic taste. When fully mature, the rind becomes dry and crushes into thin fragments under pressure.

I tried for several nights in succession to make a bonfire of a heap of these shrubs which our peons had cut down, and though every other shrub and tree in the region would burn readily, this was scarcely scorched.

**Quebrachia Morongii**, Britton, n. sp.

A large tree. Leaves simple, oblong, thick and coriaceous, entire, pale, reticulate-veined, obtuse at each end, mucronulate at the apex, 3-5 cm. long, 1.5-2 cm. wide, glabrous, petioles 3-5 mm. long, staminate flowers rather numerous, in small panicles; calyx campanulate, glabrous, about 1 mm. long, 5-lobed nearly to the middle, the lobes ovate-oblong, obtuse; petals 5, oblong, obtuse, apparently white with a green midrib, entire, about 3 times as long as the calyx, recurved at least when dry, slightly imbricated; disc annular, 5-lobed, elevated; stamens 5, alternate with the petals, inserted just outside the disc; filaments short, thickened below; anthers about the length of the filaments, versatile, 2-celled, the cells longitudinally dehiscent; pistil none in the single flower examined; fertile flowers not seen; samara oblong, slightly falcate, glabrous, 2-3 cm. long, the seed-bearing, lower portion rugose.

This description is drawn from the flowers of Mr. J. Graham Ker's No. 55, kindly sent me by Mr. N. E. Brown, of Kew, and the fruit of Dr. Morong's No. 914, both from the Pilcomayo River. The species differs from all the other described ones of the genus in its simple leaves. In the others they are pinnate.—N. L. B.

Known universally in Paraguay as Quebracho colorado. Quebracho or axe-breaker, as the Spanish word imports, is a very suitable name, for the wood is almost as hard as iron. The tree grows to the height of 20 or 25 m., and 1-1½ m. in diameter at the base.

It is found all through the Chaco territory in Paraguay, along the Pilcomayo River, on which these specimens were gathered, and down the Paraguay River nearly to Corrientes in the Argentine Republic. It is extensively used for building purposes, forming solid logs which make admirable beams for bridges and other structures in which great strength is required. It is almost indestructible by time and weather. I saw doors made of the wood 150 years old, and they seemed as sound as ever. In the ruins of the churches in the old Jesuit Misiones in eastern Paraguay there are



beams of this wood still standing, which are at least 250 years of age. The wood is so heavy that it sinks in water like lead, and it is almost impossible to cut it with a knife. In an attempt to bore it with a common gimblet, I twisted the handle off before I had penetrated the wood half an inch. The tree is stocky, somewhat resembling the English elm in appearance, with a rough, shaggy, grayish bark. The wood is ground up in Paraguay and used for tanning purposes. The samaras are of a beautiful glossy red color. The foliage is usually covered with gray usnea-like lichens, the branches thick and bearing strong spines, so that it cannot be regarded as a very handsome tree, although invaluable in those regions as timber.

#### LEGUMINOSÆ.

**Crotalaria anagyroides**, H. B. K., Nov. Gen. vi, 404.

Gran Chaco (375). January.

Fruticose, 3–6 dm. high. Stems branched, striate, fuscous-pubescent. Leaves ternate, on petioles 3–10 cm. long; leaflets obovate or elliptical, entire, pubescent, varying greatly in size, from 2 to 8 cm. long, and 6 mm. to  $2\frac{1}{2}$  cm. wide. Flowers yellow, in terminal racemes. Pods pubescent, 2– $2\frac{1}{2}$  cm. long.

**Crotalaria incana**, L., Sp. Pl., 716.

Asuncion (225); Pilcomayo River (1093). December–April.

**Medicago denticulata**, Willd., Sp. Pl., iii, 1414.

Buenos Aires (1). October.

**Indigofera Anil**, L., Mant., 272.

Asuncion (205). November–December.

This well-known plant of the East Indies was formerly cultivated largely in Paraguay for the manufacture of indigo, and is still used to some extent for that purpose. It has become quite extensively naturalized in the country.

**Indigofera gracilis**, Bong. in Ann. Nat. Hist., iii, 431.

Caballero (407). January. = Balansa 1568.

This species differs from the preceding in having simple linear leaves, few and scattered, 3–6 cm. long, 2–4 mm. wide. The flowers are purple, in long terminal spikes. A slender plant 3–5 dm. in



height, growing upon the open campo. It has a stout, shrubby root.

**Indigofera sabulicola**, Benth. in Mart. Fl. Bras., xv, pt. 1, 40.

Asuncion (185). November.

A small plant with thick, hard root, prostrate or ascending on sandy soil. The small flowers are purple in color, in close heads, or, when more developed, opening into short spikes. Leaves pinnate; leaflets cuneate or spatulate, retuse, mucronulate, 6–12 mm. long, 3–6 pairs and an odd one. Pods hairy, 13–15 mm. long. Many in dense terminal clusters.

**Cracca cinerea** (L.), Morong.

*Galega cinerea*, L., Amœn. Acad., v, 403.

*Tephrosia cinerea*, Pers., Syn., ii, 329.

Between Paragua and Luque (856). November–December.

A small shrub 15–30 cm. high, irregularly branching, with a tough, woody root, growing in dry soil. Flowers purple, downy, quite large for the plant, the petals 1–2 cm. in length. Leaflets 4–6 pairs and an odd one, pubescent, obovate, 10–18 mm. long, mucronate. Pods pubescent or glabrate, 3–5 cm. long, solitary or 1–4 in a cluster.

**Sesbania exasperata**, H. B. K., Nov. Gen., vi, 534.

Pilcomayo River (934). February–April.

A tall shrub-like, glabrous, much-branched plant, 2–2½ m. in height. Flowers light yellow, in short racemes on very long, naked, pendent peduncles. Leaflets 25–30 or more. Fruit in a long, loose panicle at the ends of the stem and branches, consisting of an elongated, narrow pod (often 25 cm. in length and only 4 mm. broad), with a sharp pointed apex and from 40 to 50 cross-partitioned cells, which contain as many small, square, flattish yellow seeds. When fully ripe, the leaves fall off and leave the plant covered with these long, pendent pods, thus imparting to it a very striking appearance. As the lower branches are the largest, the general outline is conical. The stem has a large pith in the centre, and the wood is soft. Not uncommon on the banks of the Pilcomayo.

**Sesbania marginata**, Benth., Mart. Fl. Bras., xv, pt. 1, 43.

Asuncion (621). February–March.

A cassia-like looking shrub, 2½–3 m. in height, common on the low lands around Asuncion. The flowers, which are quite hard to

catch, are very fugacious, small, yellow. The most peculiar thing about the plant is the fruit. This, notwithstanding the early disappearance of the flower, is quite abundant, and hangs on for several months. It consists of a 4-sided pod from 3 to 7 cm. in length, with 3-6 cross septa, containing as many oblong beans, each of which is imbedded in a light, greenish, dryish pulp. When dry the pods are sharply angled, and the angles corky. From 4 to 7 pods hang from a single peduncle. The stipules are even more fugacious than the petals, dropping off before the leaf is half developed.

***Æschynomene falcata*, D.C., Brod., ii, 322.**

Caballero (400). January.

Stems very slender, almost setaceous, striate, pubescent, 5 or 6 dm. high, branched, erect or ascending. Leaves pinnate, on petioles 2-4 mm. long; leaflets 3-5 pairs, obovate, entire, sessile, mucronulate, minutely pubescent, about 5 mm. long. Flowers 1 or 2, divergent, at summit of the branches, yellow, on a common setaceous axillary peduncle, 2-3 cm. long, and jointed and bracteolate in the middle. Loments 5-jointed, glabrous.

***Æschynomene Montevidensis*, Vog. Linnæa, xii, 83.**

Luque (310). December.

A shrub  $2\frac{1}{2}$ -3 m. high, with glabrous, glaucous stems. Leaves scarcely 2 cm. long, with 20-30 pairs of minute, crowded, mucronate leaflets, minutely pellucid-punctate. Flowers bright yellow, in long, lax, nearly naked panicles. Loments glabrous, 3-10 jointed, callous margined on either side, 2-5 cm. long.

***Æschynomene sensitiva*, Sw., Fl. Ind. Occ., iii, 1256.**

Asuncion (191). November.

A shrub  $1-1\frac{1}{2}$  m. high. Stems terete, striate, glabrous below, often hirsute and glandular on the young branches. Leaves with 10-20 pairs of pinnæ; leaflets crowded, 5-8 mm. long, oblong, mucronulate. Petioles about 5 mm. long, clothed with dark glands. Stipules greenish-purple, membranous, somewhat lunate, produced into flaps at the base, acute, fugacious. Flowers yellow, the petals striped with reddish or purplish veins. Sepals ciliolate, with dark glands on the margins. Loments 3-4 cm. long, callous margined, with 6-8 joints. Branches of this plant alternate, nearly erect, very short, 3-4 cm. apart.

**Discolobium pulchellum**, Benth., Ann. Mus. Vind., ii, 106.

Gran Chaco (377). January. = Balansa 1527.

**Stylosanthes Guianensis**, Sw., Svensk. Vet. Akad. Handl., 1789, 296.

Asuncion (255); Caballero (399 b). December–January.

A suffruticose plant with strong ligneous roots, prostrate, ascending or erect, 1–5 dm. high. Stems terete, hirsute, with long, spreading, yellow hairs. Leaves ternate, on petioles 5–15 mm. long. Leaflets linear-lanceolate, entire, or with minute spiny serratures or ciliæ, spine-tipped, nearly sessile, with strong white ribs, the midrib hirsute, 15–25 mm. long, and 3–5 mm. broad. Stipules connate with petioles for half their length, 3–5 nerved, more or less hirsute, tipped with 2 hirsutely haired, stout awns. Flowers in close heads, small, yellow; bracts 3-pronged, hirsute or pubescent, looking much like the stipules. Pods flattish, with a long curved beak, many specimens, at least, containing only a single seed.

The variety in my specimens has much fewer leaves, narrower and longer (2–4 cm. long), and only pubescent bracts, but perhaps it is not the var. *gracilis* of Vogel. It seems, however, to vary decidedly from the type.

**Stylosanthes Guianensis**, Sw., var. *gracilis* (H. B. K.), Vog. Linnæa, xii, 66.

Caballero (399). January.

**Arachis prostrata**, Benth., Trans. Lin. Soc., xviii, 159.

Near Villa Rica (187). January.

A small prostrate shrub, with tough, woody roots which run deep in sandy soil, and stems 3 dm. or more in length. It has a bright yellow flower with a large spreading standard, the keel with its parts coalescing so as to show hardly any lines of division, solitary on peduncles 3–8 cm. long. Leaves with 2 pairs of pinnæ, which are oblong or obovate, mucronulate, the veins resembling those of some species of clover, parallel and running from the midrib at an angle of 45° to the margin. It flowers very freely, but seldom shows any fruit. Common in old fields all the way from Asuncion to Villa Rica. November–January.

**Zornia diphylla** (L.), Pers., var. *gracilis* (D.C.), Benth., Mart. Fl. Bras., xv, pt. 1, 83.

Gran Chaco (361); Caballero (398 a). December–January.

Stem slender, 3–5 dm. in height, from tough, woody roots,

minutely silvery dotted. Leaves binate, that is with a pair of linear, divaricate leaflets at the end of the petiole, but so few that the stem appears almost naked. Stipules peculiar, being acute, striate, and attached in the middle, that is with a flap below the point of attachment nearly as long as the upper part. Flowers in terminal spikes, each under a pair of bracts which are just like the stipules. Standard large, purple and yellow, with deeper purple stripes. Calyx of 5 segments, one of which is larger than the rest and ciliate hairy. Fruit a loment of 7 or 8 joints, each joint covered with prickles.

**Zornia diphylla** (L.), Pers., var. **latifolia** (D.C.), Benth., l. c., 81.

Caballero (398). January.

This form is quite leafy, the leaflets ovate-lanceolate, 2–3 cm. or more long, and 5–14 mm. broad. The delicate yellow flowers are nearly hidden by a pair of large, oval, striate bracts.

**Meibomia albiflora** (Salzm.), Kuntze, Rev. Gen. Pl., i, 97.

Asuncion (105 a). November–December.

This genus, so far as my experience goes, is very poorly represented in Paraguay. The species here noted has a very slender prostrate puberulent stem, 3–3½ dm. long. Leaflets round-ovate or ovate, 3–5 cm. long and 1½–3¼ cm. wide, sparsely hairy. Flowers pale rose color. Stipules free, cordate, lanceolate, very acute, strongly nerved. Loment 1–4 cm. long, of 2–7 very hairy joints.

**Meibomia barbata** (L.), Kuntze, Rev. Gen. Pl., 195.

Caballero (408). January.

Stem erect, much branched, very downy, 3–6 dm. high. Leaflets obovate, rounded, and retuse at the apex, glabrous above, pubescent beneath, 2–3 cm. long and 1–2 cm. or a little more in breadth. Stipules longer than in No. 105 a, lanceolate, acuminate, striate. Flowers small, rose-colored, in glomerate spikes or heads. Calyx woolly. Bracts like the stipules.

**Meibomia cuneata** (H. and A.), Kuntze, l. c., 197.

Asuncion (159); Pilcomayo River (937). November–February.

This plant, which grows in old fields around Asuncion, 1–1½ m. in height, occurs also on the campos along the Pilcomayo, where it attains a height of 3 m. The flowers are rose-colored, in great masses

at the top of the stem, and so great is the weight of the flowers and fruit at maturity that they almost bend the stalk to the ground. Stem much branched at the top, covered with a thick down, striate, stiff and hard. Flowers small, bluish-purple.

**Meibomia supina** (Sw.), Britton.

*Hedysarum supinum*, Sw., Fl. Ind. Occ., iii, 1264.

*Hedysarum incanum*, Sw., l. c., 1265, not Thunb.

*Desmodium incanum*, D.C., Prod., ii, 332.

Asuncion (105). November.

**Cruminium Virginianum** (L.), Britton, Bull. Torr. Bot. Cl., xviii, 269.

Asuncion (111 a). November.

**Erythrina Crista-Galli**, L., Mant., 99.

Luque (291). December-June.

Known in Paraguay as Ceibo. A shrub or small tree from 3 to 8 m. in height, common in wet grounds and along watercourses, much resembling our Tupelo in general appearance. Trunk, limbs, and petioles armed with small but strong hooked spines. The showy flowers are in terminal racemes, conspicuous not only for their bright red color but also for their curious elongated boat-shape, each of them mounted on a reddish-purple pedicel. The standard is nearly 6 cm. in length, emarginate, oval, with an open fold or curled projecting part on each side at the base, the edges slightly cohering over the other parts of the flower when young, but slightly spreading with age; keel undivided, closing over the stamens and style; laterals hidden under the large standard, each with 2 teeth, 1 tooth much larger than the other. Fruit a cylindrical, smooth pod, often 20 or 25 cm. in length, containing from 15 to 20 smooth, polished, bluish, slightly curved seeds. This tree is sometimes cultivated in gardens at Asuncion, but does not do so well as in the wild state. The bark of the trunk is thick and corky below, and sometimes employed as cork. I was informed by natives that a decoction of it was regarded as a good remedy for throat affections.

**Galactia tenuiflora** (Willd.), W. and A., Prod., i, 206.

Lympio (730). May.

The specimens collected show a slender twining vine which climbs over shrubs for 3 m. or more. Stems glabrous or pubescent. Leaf-



lets ovate, entire, glabrous above, appressed pubescent beneath, obtuse at either end, 2–4 cm. long and 1–1½ cm. wide. Peduncles usually longer than the petioles. Corolla light yellow. Pod pubescent, 4 or 5 cm. long.

**Dioclea reflexa**, Hook., f. Fl. Nigr., 306.

Caballero (472). January.

A liana with stems almost as large as cables, clambering over trees 12–16 m. in height, and overpowering them with its multitude of branches. It bears large spikes of magnificent bluish-purple flowers, but unfortunately the flowers, as well as the leaves, drop off in the process of drying, so that herbarium specimens afford but a very faint idea of the inflorescence as seen in its native woods. The fruit is a large silky fuscous-hairy legume.

**Canavalia ensiformis** (L.), D.C. Prod., ii, 404.

*C. gladiata*, D.C., l. c.

Asuncion (639 and 694). March–May.

A liana with a stout, strong stem, climbing over shrubs and trees 6–10 m. in height. Flowers in axillary racemes, yellow and purple, quite showy. The standard is a large, long, twisted body, curiously convolute and lobed; keel tubular, closed around the stamens and style, with a somewhat enlarged base, closely coiled up and 8 or 10 cm. in length. Fruit a narrow, sharp-pointed pod from 10–20 cm. in length, or often a ponderous bean-like pod, 25 cm. long and 3 or 4 cm. broad, flat, with 2 sharp, longitudinal angles near the top, concave in the centre, and containing from 10 to 20 small seeds lying crosswise and separated by thick partitions.

**Phaseolus campestris**, Mart.; Benth., Ann. Mus. Vind., ii, 141.

Pilcomayo River (904). February–March.

Reminding me of the sweet pea in looks, but with a flower much inferior to that in beauty. Twining about small plants and bushes. Stems and petioles fuscous-hairy. Flowers yellow, two or three together, on a hairy peduncle about 20 cm. in length, the standard round, emarginate, spreading, 1–2 cm. high. Fruit a fuscous-hairy pod, 5 or 6 cm. long and 5 mm. wide, containing 7 or 8 black, smooth, irregularly shaped seeds marked with the white scar of the hilum. This pea was very abundant about our camp on the Pilcomayo River.



**Phaseolus erythroloma**, Mart. ; Benth. in Ann. Mus. Vind., ii, 141.

Asuncion (198); Pilcomayo River (993). November–April.

Stems stout, soft hairy, running over the ground or twining about herbs and shrubs. Leaflets of the ternate leaves rhomboidal, velvety downy. Just above each leaf is a conspicuous whorl of green, downy, subulate bracts, about 1 cm. in length. Flowers on peduncles 30 cm. in length, the lateral petals spreading, very dark reddish-purple, imparting that hue to the corolla; standard greenish, much smaller than the laterals. Fruit a hairy pod containing 18 or 20 lenticular seeds, shining, mottled black and pale yellow, marked with a white hilum scar. I found this at Asuncion in fields and pastures, and in thickets on the Pilcomayo climbing upon shrubs 5 m. high.

**Phaseolus Truxillensis**, H. B. K., Nov. Gen., vi, 451.

Asuncion (127, 695, 778, and 778 a). November–June.

Twining about herbs and shrubs. Flowers 1–2 cm. high, purple and yellow; standard large, roundish, emarginate; wings obovate and beautifully striped with purple. At the base of each leaflet is a flat, thick gland. Fruit a heavy pod 12 cm. in length and about 1 cm. wide, containing from 8 to 15 flattish seeds, undivided by septa. The whole plant is clothed with thick, fuscous hairs. Very variable in size and length of the stems, hairiness, and especially in the size of the leaflets. In some specimens the leaflets are lanceolate with subhastate lobes at the base, 3–4 cm. long and 15–18 mm. wide, in others they are rhombic-ovate, 12 cm. long and 8 cm. wide. At times the stem and leaves are nearly glabrous. At times the pod is much smaller than the dimensions given above and scantily pubescent.

**Phaseolus prostratus**, Benth., var. **angustifolius**, Benth., Mart. Fl. Bras., xv, pt. 1, 192.

Caballero (414). January.

**Phaseolus rufus**, Mich., Mem. Soc. Genève, xxviii, No. 7, 29 ?

Caballero (406). January.

A small twining plant, often trailing, in fields. The flowers are white or a very pale yellow. Leaflets round or oval, 2 cm. long or less. Not seen in fruit.

**Rhynchosia Balansæ**, Mich., l. c., 31.

Asuncion (646); railway track near Caballero (486). January–April. = Balansa, 1513. = Gibert, 1022.

**Rhynchosia melanosticta**, Gris., Pl. Lorentz, 76.

Asuncion (724). May.

**Rhynchosia Texana**, T. and G., Fl. N. A., i, 687.

Pilcomayo River (1023). May.

The *Rhynchosias* here enumerated are small shrubbyish plants, often with declining or prostrate stems, and racemes of yellow flowers. Fruit a small pod with several flattish seeds. Except *R. Texana*, which is twining or creeping, flowers a pale yellow, very small, solitary or 2 or 3 together in axillary clusters. Fruit a flat pod, 1 cm. long, containing a single seed. They all grow in dry soil.

**Pterocarpus Michellii**, Britton, n. sp.

Twigs glabrous. Leaves pale, petioled, 9–12 cm. long, 5–7 foliolate; leaflets stalked, broadly oblong, oval or slightly ovate, finely reticulated, rather thick, entire, rounded or truncate at the base, obtuse at the apex, 4–7 cm. long, 2–4 cm. wide; raceme dense, 10–15 cm. long, about 3 cm. thick, the rachis, pedicels, and calyx densely and finely pubescent with brown hairs; pedicels 4–5 mm. long; calyx oblique about 6 mm. long; corolla yellow, about twice as long as the calyx; legume glabrous, rugose, narrowly winged on one side, 3–4 cm. long and nearly as wide, about 1 cm. thick.

Gran Chaco, opposite Asuncion (379). January.

The same as Balansa's 1497, collected near the same place, and provisionally referred by M. Micheli to *P. Rohrii*, Vahl.

A fine large tree from 13 to 20 m. in height, with a branching, wide-spread head, and many shoots rising from the base. Covered at the time of my visit with racemes of bright yellow blossoms, which made it very conspicuous from a distance.

I visited this tree and others in the vicinity later in the season in the hope of getting fruit, but all of them were barren. The fruit described above is from Balansa's specimen.

**Bergeronia sericea**, Mich., l. c., 39.

Asuncion (285, 363 and 811). October–December.

An unarmed, stragglingly-branched shrub or small tree 3–10 m. in height. Bark gray, smooth or warty. Leaves unequally pin-

nate, with 5-7 pairs of leaflets. Flowers in racemes 8-10 cm. long, bluish-purple. Legume pluricelled, 2-8 cm. long and 6 or 7 mm. wide, grayish-downy, containing 1-6 long yellowish beans marked by the hilum, which is surrounded by a large aureole. This tree occurs in the Chaco, opposite Asuncion, and east of the city in open grounds.

**Geoffroya striata** (Willd.), Morong.

*Robinia striata*, Willd., Sp. Pl., iii, 1132 (1803).

*Geoffroya superba*, H. and B., Pl. Æquin., ii, 69, t. 100 (1809).

Pilcomayo River (888). January-April.

This is one of the most noticeable trees on the Pilcomayo. It sometimes attains a height of 13 m., with long, horizontal branches stretching out over the river, on the borders of which it grows. Bark rugged and dark colored, the wood very hard, not good for timber, as it is knotty and seldom over 10 or 15 cm. in diameter. Flowers in small axillary racemes, yellow, and leguminous in structure. This would hardly be supposed from the fruit, which is not a legume, but a drupe or stone-fruit. When fully ripe, this is from  $2\frac{1}{2}$  to 4 cm. in length, flattened-oval in shape, with a green, rather thick downy husk or rind, which turns yellowish when mellow, enclosing a thin, sweetish, edible pulp. The seed is a hard-shelled nut, nearly as large as the fruit, irregularly grooved. This contains a kernel which is much like an almond in shape and color. We tried roasting these stones in the fire, and found the meat quite pleasant to the taste. This in all probability gives the popular name to the tree, "Mani de los Indios" or Indian peanut, as it certainly has little resemblance to the peanut in any other respect.

The plant is curiously intermediate between the Leguminosæ and the Rosaceæ, in all respects belonging to the former by its flowers and to the latter by its fruit. The stones, however, do not dehisce along the edges as in the peach, but along the middle of the two flattish sides. It might well be regarded as belonging to a distinct order from the Leguminosæ. So far as the leaves are concerned, they might belong to either family. This tree was very abundant upon the part of the Pilcomayo between the Junta and the Falls, and we often gathered the fruit. I found only a few flowers, as we were a little too late in the season for them.

**Gourliæa decorticans**, Hook., Bot. Misc., iii, 208, pl. cvi.

Pilcomayo River, near the Falls (1024). May-June.

Very different in general appearance from the preceding species. Our peons called it an "algorroba." A small tree some 6 m. in height, much and stragglingly branched, all the shortest branches armed at the end with a sharp spine. The tree at the time of our visit was a mass of yellow flowers, the flowers not being in terminal racemes as in no. 888, but massed together in clusters of short racemes along the trunk and limbs, each raceme 3 cm. or less in length. One of the most noticeable things about the plant, in which it varies widely from 888, is the bark. The inner bark is green and smooth; as it grows older it rolls up and peels off in dry scrolls, leaving the young green bark in patches, thus imparting a singular appearance to the trunk. In all the specimens that I saw the flowers were infertile, dropping off and setting no fruit. We were in the vicinity for two months, at least, and I should have found fruit had the trees borne any.

**Peltophorum dubium** (Spreng.), Britton.

*Cæsalpinia dubia*, Spreng., Syst. Veg., ii, 343 (1825).

*Peltophorum Vogelianum*, Benth. in Hook. Jour. Bot., ii, 75 (1840).

Asuncion (685). April.

A tree with smooth bark, growing from 6 to 12 m. in height. Young twigs and inflorescence covered with ferruginous down. Leaves 20-30 cm. long, bipinnate; pinnæ oblong, numerous, 4-8 cm. long; leaflets 20-40 pairs, oblong, bright green, shining above, oblique at the base, 6-8 mm. long. Flowers in very long, terminal racemes, bright yellow, on pedicels 1-1½ cm. long. Fruit a flat, smooth, and glabrous legume, 6-8 cm. long, pointed at both ends, with 2 sharp edges, containing a few bean-like seeds. This tree is an abundant bloomer, and forms a conspicuous object in the woods about Asuncion when in blossom.

**Cæsalpinia melanocarpa**, Gris., Symb. Flor. Arg., 114.

Pilcomayo River (912). February.

A large tree 16 or 25 m. in height, known among the natives as *Guaiacán*. The leaves bipinnate, having 3-4 pairs of pinnæ and 1 odd one; leaflets about 10 pairs, very small, obtuse. I found it only in fruit, which consists of an oval or obovate, flattish pod 3-4 cm. in length and about 2 cm. in width, with 2-5 small flattish seeds lying crosswise. The tree has a very smooth, green, thin bark,

which is easily peeled off. The heart-wood is dark in color, somewhat bluish in tint, glossy when dry, the outer wood white, and all the wood very hard and susceptible of a fine polish.

**Cæsalpinia pulcherrima** (L.), Sw., Obs., 166.

Asuncion (150). November–February.

A very handsome shrub, with large, showy racemes of red flowers at the ends of the branches, much cultivated in gardens at Asuncion. 5 red sepals, somewhat obovate, alternate with the petals and about one-third as long; petals large, with broad, round, crimped summits, clawed, whitish on the edges, spread wide open in flower, red and pale yellow; stamens and styles filiform, much exerted. Flowers numerous and elegant in appearance. A thorny shrub with handsome bipinnate leaves. Fruit a legume bearing several large seeds.

**Parkinsonia aculeata**, L., Sp. Pl., 375.

Asuncion (151); Pilcomayo River (1094). November–December.

This thorny shrub, cultivated in Asuncion gardens, vies in beauty with no. 150. I found it growing wild on the banks of the Pilcomayo, but at that time without flowers or fruit. Very different, however, from its rival. The leaves, instead of being bipinnate, might almost be called pinnate phyllodia, as they consist of a very narrow blade 6–20 cm. long, bearing on the sides short oblong pinnæ in pairs, 6–8 mm. apart. These leaves are very numerous, drooping, and impart an elegant appearance to the plant. Flowers in racemes at the ends of the branches, numerous, on pedicels about  $2\frac{1}{2}$  cm. long, light yellow. Sepals 5, reflexed in anthesis, one-third as long as the petals; petals 5, about equal, the standard of a brownish tint, all hairy at the base within. Stamens and styles filiform, exerted. Legume narrow, few seeded. Flowers not as abundant or showy as in no. 150, but the peculiar leaves give it an appearance almost as elegant. It is much used as a border along the garden sides and streets in the suburban portions of Asuncion, growing 3–8 m. in height. The numerous sharp spines with which it is armed secure it very effectually from molestation.

**Cassia absus**, L., Sp. Pl., 376.

Asuncion (700). May.

The Cassias are very numerous in Paraguay, the most of them tall, shrubby plants with showy yellow flowers, and long, many-seeded pods.



I note a few points of difference among those here enumerated. No. 700 is a glandular, much-branched *herbaceous* plant from 3 to 6 dm. high. The petiolar gland is erect, acute, one between the base of each pair of leaflets. Stamens 5-7, perfect, unequal. Fruit a small, flat, glandular-hairy legume 3-4 cm. long and  $\frac{1}{2}$  cm. wide, containing 6-8 seeds. Found in old cultivated fields.

**Cassia alata**, L., Sp. Pl., 378.

Asuncion (643). April.

A coarse, rank, showy-flowered shrub, much branched, 2-3 m. high, cultivated in Asuncion gardens and running wild. Pinnae 8-11 pairs; leaflets oblong or obovate, 6-10 cm. long, 3-6 cm. broad. Flowers very numerous, in long terminal racemes. Legume long, 2-winged, the wings on opposite sides and with many cross ribs which correspond to the septa, containing as many seeds as there are septa, 10-12 cm. in length and  $1-1\frac{1}{2}$  cm. wide.

**Cassia bicapsularis**, L., Sp. Pl., 376.

Asuncion (631). March-April.

A smooth shrub  $2-2\frac{1}{2}$  m. in height, growing in the environs of Asuncion. Leaflets large, 4 or 5 pairs, with a thick, greenish, oblong, top-shaped or almost globular gland between the lowest pair, and the whole leaf 8 or 10 cm. in length. Flowers showy, 2-3 cm. in diameter when expanded. Stamens 10, 7 perfect and 3 abortive. Pod nearly cylindrical, often 16 cm. long and only  $\frac{1}{2}$  cm. in diameter, with 2 furrows on opposite sides. On the Pilcomayo River in fruit.

**Cassia corymbosa**, Lam., Encyc., i, 644.

Asuncion (776); Pilcomayo River (1095 and 1096). May-June.

A shrub some 2 m. or more in height. Leaves with 2-4 leaflets and an oval or globular gland between the first pair. Flowers few, rather small. Pod 10-15 cm. long, 1 cm. in diameter, with 2 convex sides and 2 deep furrows. Not common.

**Cassia leptocarpa**, Benth., Linnæa, xxii, 528.

Asuncion (82). November.

A shrub with smooth, striate stem, some 2 m. in height, growing in thickets about Asuncion. Leaflets 5 or 6 pairs. Flowers moderately large, but showy. Stamens 10, in 3 groups, 2 long, 4 shorter, all 6 fertile, the other 4 short and abortive. Fruit a thick, angular



legume 15–20 cm. long, 3 mm. broad, very abundant. The petiolar gland at the base of the petiole, and none between the leaflets. Downy on the upper part of the stem, petioles, and leaflet margins.

**Cassia mimusoides**, L., Sp. Pl., 379.

Caballero (404); Pilcomayo River (938). January–March.

This species much resembles our North American *P. nictitans*, L., although often much larger, sometimes reaching a height of 6 dm. Stems suffrutescent at base, simple or branched. Flowers yellow, small, in clusters or solitary on the stem. Gland elongated, cup-shaped. Stem and leaves hirsute. Leaflets small, mucronate, 14–36 pairs, linear-oblong, oblique.

**Cassia Morongii**, Britton, n. sp.

Section *Chamaefistula*. A shrub  $1\frac{1}{2}$ –2 m. high, the twigs, petioles, leaves and inflorescence densely pubescent. Branches striate or angled; leaves short-petioled 6–10-foliolate, 6–10 cm. long; leaflets 4 pairs, sessile, oblong-lanceolate, acutish and mucronate at the apex, rounded at the base, 3–4 cm. long, about 1 cm. wide; a sessile gland in the axil of one of the lower pairs; racemes 3–5-flowered, short-peduncled, terminal and in the axils of the uppermost leaves; pedicels 4–8 mm. long; flowers bright yellow, 1–2 cm. broad; legume stipitate, quadrangular, pubescent with scattered hairs, 5–6 cm. long, 6–7 mm. thick, the valves reticulated.

Pilcomayo River (1015). April. Resembles *C. tomentosa*, but the pod very different.

A tall, branching shrub, occurring sparsely on the banks of the Pilcomayo. Flowers showy, in axillary clusters. The pod has a sharp, subulate point, and contains from 30 to 40 small seeds lying crosswise in as many cells. This was found at the Falls and in one or two other places on the river, and always attracted attention by its bright yellow flowers.

**Cassia mucronifera**, Mart., Fl. Bras., xv, pt. 2, 116.

Villa Rica (613). January.

Stems and leaflets fuscous-hairy. Leaflets 2 or 3 pairs. Glands erect, oblong, between each of the 2 lower pairs of leaflets, not cup-shaped. Flowers smaller than in no. 82 or 350. A shrub 9 to 12 dm. in height, growing upon the open campo at Villa Rica. It has long, sharp and hairy stipules, not so deciduous as in most of the species.

**Cassia oblongifolia**, Vog., Syn. Cass., 23.

Asuncion (350); Pilcomayo River (1097). December–January.

This merits the specific name bestowed upon it by Vogel, for the leaflets of 4 pairs are decidedly oblong, being  $3\frac{1}{2}$  cm. long by  $1\frac{1}{2}$  cm. broad. It is a much branched shrub,  $1\frac{1}{2}$ –2 m. in height, with a terete stem, downy on the young branches. Flowers large, conspicuous, in terminal, leafy racemes, the corolla often 4 cm. in diameter when expanded, and spread wide open rotately. Glands large, thick, one between each of the 2 lowest pairs of leaflets, or one only. Fruit a cylindrical pod 6–10 cm. long and some 6 or 7 mm. in breadth. Common in thickets.

**Cassia occidentalis**, L., Sp. Pl., 377.

Asuncion (41). November–December.

A shrub 12–15 dm. in height, common both in the streets of Asuncion and in fields on the outskirts of the town. Stem smooth, terete or angled above. The whole plant rather ill-smelling. Leaflets 4 or 5 pairs; petiole with a swollen articulation at its junction with the stem, and a large, purple gland on its upper side at that point. Flowers in small terminal clusters. Fruit a flat pod 7 or 8 cm. long, with a thick margin on each side; seeds oval, some 30 or more in the pod.

**Cassia pilifera**, Vog., Syn. Cass., 23.

Near Jaquaron (665). April.

A Cassia with the lowest stems and the largest flowers of any that I have seen in Paraguay. Stems not over 3 dm. in height, shrubby, with long, scattered white hairs, angled, often prone or bending over towards the ground. Leaflets in 2 pairs, large, oval, mucronate, ciliate on the margins and hairy on the veins beneath. Flowers very showy, bright yellow, often 6 cm. in diameter when expanded, frequently lying upon the ground from the bending of the stems. Fruit a narrow, linear, downy pod, 25 or more cm. in length. A large patch of this was found in the clearing around a native's house on the road between Pirayu and Jaquaron, some 30 miles from Asuncion.

**Cassia rotundifolia**, Pers., Syn., i, 456.

Asuncion (171). November.

A small, clover-like plant, from 13 to 18 cm. in height. Stem shrubbyish, covered with small, appressed, scattered hairs. Leaf-

lets 2, ciliate on the margins, rounded at the apex, narrowing and oblique at the base, sessile, with a weak spinulose stipel. Flowers very small, axillary, on a long peduncle, which is bent downwards at a sharp angle with the stem, bright yellow. Fruit a legume about 3 cm. long when ripe.

**Cassia serpens**, L., Sp. Pl., Ed. 2, 541.

Asuncion (236). December.

A small trailing, branching shrub, 10–20 cm. long, growing in open, sandy grounds, Roots thick, woody, apparently perennial. Stem pilose. Leaflets 4–5 pairs, oblong, cuspidate, oblique at the base, sessile, 3–5 nerved, 5–8 mm. long. Gland stipitate. Flowers bright yellow, solitary, on filiform pedicels  $1\frac{1}{2}$ –5 cm. long. Stamens with long anthers and scarcely any filaments. Legume not quite 3 cm. in length.

**Cassia splendida**, Vog., Syn. Cass., 17.

Near Caballero (426). January.

A very large-flowered and showy shrub, 1– $1\frac{1}{2}$  m. high, widely branched. Stem smooth. Leaflets in 2 pairs, some of them 9 cm. long and 4 cm. wide. Flowers almost as large as no. 665. Glands horn-like, one between each of the two pairs of leaflets. Stipules bristle-shaped.

**Cassia Tora**, L., Sp. Pl., 376.

Asuncion (175). November.

A shrub 1– $1\frac{1}{2}$  m. in height, with a strong, rank odor. Stem terete below, 4-gonous above, striate, covered with small black glands or tubercles. Leaflets in 3 pairs, the gland thick, spotted with black, looking like a wart between the two lowest pairs. Flowers small, not over 1 cm. in diameter when expanded. Legume 8–10 cm. in length and 4 mm. wide, squarish, on articulated pedicels 2–3 cm. long, containing 25 or more greenish-yellow, rhomboidal, slightly shining seeds.

**Bauhinia microphylla**, Vog., Linnæa, xiii, 301.

Asuncion (284 a). December.

A stragglingly-branched shrub or small tree from 3 to 6 m. in height, armed with spines. The branches usually bend downwards. Bark purplish, smooth, striate. Leaflets a single pair,

small, at the end of a filiform petiole, a small spine projecting between them at the base. The stipules consist of small spines. Flowers greenish, in terminal racemes or clusters. The calyx is entire, splitting down on one side when the flower opens, the tube marked by 10 ridges. Legume 8–15 cm. long, with a fleshy pulp; seeds small, flattish, shining. The leaves are prettily marked with purple-branching veins. This shrub is not very abundant, occurring in thickets.

**Piptadenia colubrina** (Vell.), Benth. in Mart. Fl. Bras., xv, pt. 2, 282.

Asuncion (371, 804 and 829 a). Flower October; fruit January.

A handsome tree with smooth lightish-gray bark, from 10 to 13 m. in height. It has a head of drooping limbs, and light, graceful foliage. Leaves bipinnate, with 10–25 pairs of pinnæ; each pinna with 50 or more pairs of light green, minute, oblong leaflets. The main rachis is channelled above, and one-third of the way up the petiole there is a small, oblong, flat red gland which looks like an insect resting upon it. Flowers light yellow, in globular heads, axillary, in pairs. Fruit a large, flat pod, 4–17 cm. long, 2–3½ cm. wide, with raised borders on each valve, dehiscing on the lower side; the upper side, and sometimes the lower, wavy or irregularly and deeply notched, imparting a jointed look to it. The pod contains from 6 to 12 flat, dark brown, smooth seeds. This tree grows in sandy, open grounds. The native name was given to me variously, now as Yarupi, and now as Cypay, the y sounding something like the French u.

**Piptadenia communis**, Benth. in Mart. Fl. Bras., xv, pt. 2, 279.

Asuncion (756). Young fruit, June 20.

A tree similar to no. 371 in general appearance, in foliage, and fruit, but handsomer in shape, the bark whitish, very smooth, and the limbs rising upward and bending over in a graceful curve. The petiolar gland is small, oval, and cup-shaped. It attains a height of from 16 to 20 m., and forms a beautiful object in the monte around Asuncion. The leaves have only 6–9 pairs of pinnæ, the ultimate segments a little larger than those of no. 371, somewhat falcate in shape. The native name, as I understood it, is Verayú.

**Piptadenia rigida**, Benth., Hook. Jour. Bot., iv, 338.

Asunción (744 and 825). Flower November; fruit May.

A tree similar to the two preceding species, with very smooth, light-gray bark, growing from 10 to 16 m. in height, common in the vicinity of Asunción. Petiolar gland green, elongated, cup-shaped. Flowers greenish-yellow, in axillary, cylindrical spikes 4 or 5 cm. in length. Pinnæ 2-6 pairs, ultimate segments somewhat falcate, dark green, 16-30 pairs. Legume 3-10 cm. long and 1-1½ cm. broad, containing 2-6 flat, round seeds, which are attached by long threads to the upper suture, and enveloped in a hyaline membrane.

**Prosopis Algarobilla**, Gris., Pl. Lorentz, 83.

Near Luque (851). December.

An ungainly, very thorny tree, with straggling branches, 5-7 m. high, growing on the open campo near the railroad track between Paragua and Luque. This is known to the natives as Espanilla, a name commonly given to spiny leguminous trees. Also often called Algarobo. Flowers white, in slender spikes 6-10 cm. long, either among the leaves or on naked branches. Legumes slightly curved, constricted between the seeds, 7 or 8 cm. long, containing 6-8 seeds. Leaves 2-5 cm. long, glabrous or the rachis puberulent; leaflets 10-25 pairs, oblong, 3-nerved, the lateral nerves on the margins, mucronulate, 3-5 mm. long, sessile. Branches very flexuous.

**Prosopis campestris**, Gris., Pl. Lorentz, 84.

Between Villa Rica and Escoba (481).

This tree, so far as my specimens go, differs from the preceding species only in having fewer and smaller leaves (2-3 cm. long), smaller leaflets (2-3 mm. long), and longer and much-curved legumes. Also called Espinilla.

**Prosopis ruscifolia**, Gris., Pl. Lorentz, 82.

Pilcomayo River (1098).

An algarobo 8-10 m. in height, very smooth; bark dark gray. Leaves pinnate, with 3 or 4 pairs of large, smooth, elliptical leaflets. Without flowers or fruit. The thorns of this tree are gigantic, some of them nearly a foot long and half an inch thick at the base, their wood densely hard, sharp-pointed, looking more like spears than thorns.



**Neptunia pubescens**, Benth., Hook. Jour. Bot., iv, 356.

Between Paragua and Luque (857). December.

A slender trailing shrub 20–35 cm. long, entirely unarmed. The leaves close at a touch as in *Mimosa*. It grows in hard dry soil. Leaves bipinnate, with 2–4 pairs of pinnæ and 8–25 pairs of minute leaflets. Flowers bright yellow, exceedingly pretty when fresh, in solitary globose heads, on peduncles 3 cm. in length. Fruit a smooth pod 2–3 cm. long and 5 or 6 mm. broad, flat, 2-edged, containing 6–10 seeds, 2 or 3 together, shortly stipitate. Only a minute, scattered pubescence on the leaf rachis.

**Acuan virgata** (L.), Med. Theod. Sp., 62.

*Desmanthus virgatus*, Willd., Sp. Pl., iv, 1047.

Gran Chaco (202); Pilcomayo River (1099). November–February.

Stem branching, glabrous, angular, 1–1½ m. high. Leaves bipinnate, pinnæ 2 or 3 pairs, with about 30 pairs of small, oblong, sessile leaflets on each pinnule. A large cup-shaped gland on the rachis at the base of the pinnæ. Flowers small, greenish-white, in small terminal clusters. Legumes 3–6 in the cluster, 4–6 cm. long, about 4 mm. wide, acutely pointed, flat, turning black when ripe. Seeds in one row, numerous, flattish, chestnut colored, shining. This plant is very common in old fields in the neighborhood of Asuncion.

**Mimosa asperata**, L., Sp. Pl., Ed. 2, 1507.

Asuncion (143). August–September.

The *Mimosas* are numerous in Paraguay. I collected 9 species, and there are many more. They are usually small shrubs, very spiny, often trailing upon the ground, always with handsome heads of flowers. I give notes upon these species in order to show the differences among them, which are sometimes very striking.

No. 143 forms dense, almost impenetrable, thickets on the borders of the Paraguay River, in the lowlands near Asuncion. It is a thorny shrub 3–5 m. high, much-branched, the thorns straight or a little hooked, 3–6 mm. long on the stem and petioles. Leaves bipinnate, with 5–10 pairs of pinnæ, some of the pinnæ 8 cm. long and bearing 41 pairs of leaflets, the leaves often 20 cm. long. Flowers purple, in terminal racemes. Young shoots and stems fuscous-hairy. Fruit a large legume, 5–6 cm. long and 1 cm. wide,



thickly covered with fuscous hairs, usually 3-6 together and spreading divaricately, pluri-celled, a large flat seed in each cell.

**Mimosa Balansæ**, Mich., Mem. Soc. Geneve, xxviii, No. 7, p. 52.

Asuncion (1500). August-September.

A small shrub, 15-25 cm. high, with tough roots, growing on grassy knolls. Pinnæ 2, divaricate, at the apex of a petiole 10-15 mm. long. Leaflets 6-10 pairs, oblong, mucronulate, pubescent, 5 or 6 mm. long. Heads purple, on short peduncles. Legumes hairy, 10-15 mm. long, 2-3 seeded.

**Mimosa conferta**, Benth., Mart. Fl. Bras., xv, pt. 2, 331.

Between Villa Rica and Escoba (477). January.

This I did not find in flower, but the fruit is very peculiar, the legumes rolling themselves into balls, which are 3 cm. in diameter when mature. They are densely clothed with long, rather weak prickles. A shrub 1-1 $\frac{1}{4}$  m. in height, stems and petioles covered with prickles like those on the fruit. Leaves of 2 pinnæ, at the end of a petiole; pinnæ 5-7 cm. long, with about 20 pairs of oblong-cuspidate leaflets.

**Mimosa diversipila**, Mich., l. c., 57.

Caballero (429 and 504). = Balansa 1463. January.

A fuscous-hirsute and lepidote species, with an angular, spineless stem 5-9 dm. high. Pinnæ 2, at the end of a very short petiole or sessile, 4-6 cm. long. Leaflets oblong, cuspidate, oblique, strongly lepidote and hirsute, about 8 mm. long, 12-20 pairs. Flowers racemously disposed on long naked terminal stalks. Heads globose, about 1 cm. in diameter, purple, on short peduncles.

**Mimosa Morongii**, Britton, n. sp.

Branches and petioles pubescent with spreading hairs; petioles slender, 1-2 cm. long; pinnæ 4-6, digitate, short-stalked, 1 $\frac{1}{2}$ -2 cm. long; leaflets approximate, 14-18 pairs, obliquely linear-oblong, acutish, 3-5 mm. long, 2 mm. wide, hirsute-pubescent beneath, glabrous above; peduncles axillary, longer than the petioles; heads globose-ovoid, 1-1 $\frac{1}{2}$  cm. long; legumes sessile, 2-3-jointed, linear-oblong, acute, 1 $\frac{1}{2}$  cm. long, 4 mm. wide, the joints papillose and somewhat pubescent. Similar to *M. digitata*, Benth.

Central Paraguay (728). May. The same as Balansa's no. 1478 from Trinidad, referred by M. Micheli to *M. hirsuta*, Spreng.

A small creeping plant, 15–30 cm. in length, growing in hard soil on the Gran Campo near Luque. Prickles few, small, straight, mostly just under the leaves. Flowers a light purple, the heads spreading and very pretty, especially in early morning when the fresh dew is upon them. The heads of flowers upon this small plant are quite striking, and its persistency upon the railroad track over which trains are daily passing, and over which many people are daily tramping, exhibits a toughness of vitality which deserves notice.

***Mimosa polycarpa*, Kunth, Mim. 8, t. 3.**

Asuncion (101, 351, 773 and 779). Between Villa Rica and Escoba (455). November–May.

An erect, armed shrub 12–15 dm. in height, with beautiful, bluish-purple flowers. Stems striate, covered with small, dark glands, and armed with stout, curved or straight spines. Leaves bipinnate, or, rather, with 2 long pinnate divisions at the end of a petiole 1 cm. in length. Between these divisions is a projecting spine. Pinnae with 30 or more pairs of leaflets, which are spiny-serrate, and with a projecting spine at the apex. Fruit a spine-clothed loment of 3 or 4 joints, usually borne in clusters, 4–12 or more in a cluster. Leaves very sensitive. Common in thickets.

***Mimosa rixosa*, Mart. ; Benth. in Hook. Jour. Bot., iv, 361.**

Asuncion (131). November.

Creeping on the ground or climbing upon other shrubs. Stems slender, clothed with hirsute, spreading hairs and numerous downwardly curved prickles, which have a dilated base. Flowers a beautiful bluish-purple; heads 8–10 mm. in diameter, often twin, on peduncles 1–2 cm. long. 2 pairs of pinnae at the end of a petiole 2–5 cm. long. Leaflets 2 pairs, oblong-elliptical or obovate, the first pair very unequal, one being 2–3 cm. long and 7–10 mm. wide, and the other 3 or 4 mm. long, all of them glabrous above and sparsely setose or hirsute beneath, callous and setose margined, the larger ones mucronate and the smaller aristate. Loments many in a cluster, very setose, 1–2 cm. long, few-seeded.

***Mimosa Alleniana*, Morong, n. sp.**

A low plant, with angular or striate ferruginous-hirsute stem. A close somewhat glandular down, under the spreading hairs. Leaves mostly conjugate, but occasionally with 2 pairs of pinnae on divaricate petiolules; common

petiole 8–15 mm. long; secondary petiole about 5 mm., hairy like the stem. Pinnæ about 4 cm. long, often a little curved; leaflets 5 or 6 mm. long and 2 mm. wide, 15–25 pairs, oblong, sessile, oblique at the base, mucronulate, glabrous or minutely pubescent above, appressed-pilose beneath, ciliate with long hairs, 1- rarely 2-ribbed, the midrib approximate to the margin; cross-nerves distinct, 5 or 6 on each side of the midrib. Stipules persistent, lanceolate, very acute, striate, ciliate and pubescent, 5 or 6 mm. long. Flowers not seen. Bracts ciliate. Legumes 1–1½ cm. long, 4 mm. wide, with 2–4 joints, constricted between the joints, apiculate, strongly appressed-pilose all over.

Railroad track between Escoba and Caballero (1501). January.

Named for Dr. T. F. Allen, of New York, a generous donor to the equipment of the expedition.

**Schrankia leptocarpa**, D.C., Mem. Leg., 12.

Asuncion (85). November–December.

A stiff, angular-stemmed shrub, creeping on the ground, or running over bushes, to which it clings by its spines. Stems with numerous, small, hooked spines, 15–24 dm. in length. Leaves bipinnate, the rachis with a circle of spines at the base, and smaller spines along its face; 4 or 5 pairs of pinnæ, a weak spine between each pair; leaflets about 15 pairs, the secondary rachis ending with a weak spine. Flowers bright, bluish-purple, in heads, the long projecting stamens and styles giving them an elegant appearance. Fruit a narrow, straight legume 6 cm. long, having upon it 10 or more rows of straight sharp setæ; seeds black, shining, irregular in shape. The leaves of this plant are as sensitive as those of a *Mimosa*, closing at a touch. Common in thickets.

**Acacia aroma**, Gillies in Hook. Bot., iii, 206.

Pilcomayo River (931 and 1502). February.

A thorny shrub 1½–4 m. high. Leaves bipinnate, with spiny stipules. Spines on the stems long and sharp. Flowers yellow, in globular balls, about 1 cm. in diameter, and closely packed together. The long, bright yellow, exserted stamens form the visible part of the flower. Fruit a hairy legume, moniliform, 5–7 cm. long, with 5–8 joints. The flowers are not fragrant.

**Acacia Bonariensis**, Gillies, Hook. Bot. Misc., iii, 207.

Asuncion (49). November.

A very thorny shrub 2–5 m. high. Stem angled, smooth or minutely downy, covered with long, sharp, dangerous spines

Leaves bipinnate. Flowers light yellow, numerous, in slightly oblong (12–15 by 10–12 mm.) heads, which are racemously arranged at the ends of the branches. Legume 4–6 cm. long, 15 mm. broad, irregularly moniliform. The graceful foliage and elegant flowers of this shrub are pleasant to look at, but the spines inflict dangerous wounds, which are liable to cause gangrene in the hot climate of Paraguay. Common in thickets.

**Acacia Farnesiana** (L.), Willd., Sp. Pl., iv, 1083.

Asuncion (751). June–July.

The well-known "Aromita," which occurs in many parts of South America, on both sides of the Andes. It is a straggling shrub, 2–3 m. in height, armed with stout, dangerous thorns. Flowers a deep yellow, in small, globular, fuzzy-looking heads. These are much esteemed for their fragrance, and when placed in bureau-drawers or trunks impart a delightful odor to clothing. Fruit a turgid, fusiform pod, 3 or 4 cm. long, filled with a white, cottony substance, in which many small, lenticular seeds are imbedded. Cultivated in gardens and common in thickets.

**Acacia?**

Pilcomayo River (1050).

A tall, slender tree some 25 feet high, with slate-colored bark on the trunk, and small hooked spines along the branches. Leaves delicate, bipinnate, with a small, round, flat gland one-third of the distance up the petiole. Pinnæ in 3 or 4 pairs, 5 cm. long; leaflets 3–5 mm. long, downy, mucronulate, 15–35 pairs, light green in color.

**Acacia.**

Suburbs of Asuncion (1503). = Balansa 1423.

Both M. Balansa's and Dr. Morong's specimens were collected only in fruit. N. L. B.

A small tree 4–6 m. high, glabrous, with gray bark and flexuous branches, the branches glabrescent or puberulent. Spines small, curved downwards, dilated at base, scattered or infra-petiolar. Leaves bipinnate, with 2–4 pairs of pinnæ, without glands; leaflets 10–15 pairs, glabrous, linear, acute at the apex, oblique at the base, 2–3 nerved, 3–5 mm. long, not quite 1 mm. broad. Common petiole 1–1½ cm. long, downy. Stipules subulate, deciduous. Flowers not seen. Legumes flat, glabrous, 2–4 cm. long, 8–10 mm.

wide, irregularly moniliform, containing 4-8 oblong, flat, fuscous, shining seeds.

**Annesleya parvifolia** (H. and A.), Britton.

*Inga parvifolia*, H. and A. in Hook. Bot. Misc., iii, 202.

*Calliandra bicolor*, Benth. in Hook. Jour. Bot., ii, 139.

Near Caballero (412). January.

A beautiful plant 15-25 cm. high, growing by the railway track. Leaves bipinnate; 4 or 5 pairs of pinnæ and 30 or more pairs of small leaflets. The flowers are exceedingly striking, a large cluster of them standing at the top of a long peduncle, the tubular corolla mingled red and purple, and surmounted by a mass of long, filiform or plumose purple stamens. 18 or 20 of these flowers are in the cluster, each on a short pedicel. I found only 2 or 3 of these charming plants, though I searched long for more. They must be rare. Fruit not seen.

**Pithecolobium scalare**, Gris., Symb. Flor. Arg., 123.

Asuncion (801). October.

A tree from 8 to 13 m. in height, with shaggy or broken, brown bark. Thorny, but often unarmed; the spines when they occur 2 together, diverging, at a leafy node. Leaves bipinnate; pinnæ 2-3 pairs, the pairs far apart. Flowers light yellow, looking much like those of an *Inga*, which I at first took it to be. They occur in axillary clusters, the corolla looking as though it were telescoped by the calyx, and the stamens long and exserted. On the rachis between the 3 pairs of pinnæ, and also on the secondary rachis between the pairs of leaflets are green scutelliform glands. In open grounds on the outskirts of the city. No fruit.

**Pithecolobium Paraguayense**, Benth., Trans. Linn. Soc., xxx, 574.

Lympio (736). May.

An unarmed shrub or small tree, with straggling branches, 3-6 m. in height. Stem smooth, grayish-white, warty. Leaves 4-binate, that is, with 2 pairs of binate leaflets, which are on a slender common petiole. Each pair on a divaricate petiolule, and each leaflet on a short articulated petiolule of its own. Not found in flower. Fruit a black, rough, or velvety pod, about 4 cm. long and 1 cm. broad, containing a single row of white, enamelled seeds, attached to the valves by threads. The pods dehisce along the lower suture, and the seeds are persistently attached by their threads. Thickets.



**Pithecolobium cauliflorum** (Willd.), Mart. Fl. Bras., xv, pt. 2, 450?

Gran Chaco (360). December.

Agrees well with this species as to foliage and flowers; but the pod is only 5 cm long and about 2.5 cm. broad. It is the same as Balansa's no. 1386, incorrectly referred by Micheli to *P. divaricatum*, Benth., of which I have seen the type in Herb. Kew.—N.L.B.

One of the most curious trees that I found in Paraguay. It is thickly, stragglingly branched, some 8 m. or more in height, very knotty, with white, broken bark. Entirely unarmed, but with a mass of strong, ungainly limbs. Leaves coriaceous, digitately bipinnate, that is, with 2 sets of pinnæ which diverge from the end of a common petiole or rachis, each with 2–6 leaflets. The flowers are large, white on the calyx and corolla tube, with numerous, showy, exserted purple stamens, in naked clusters on the old wood, frequently on very large limbs. Styles as long as the stamens, purple-colored above, and these with the numerous stamens (50 or more) are very conspicuous, especially as the flowers are borne on the old leafless portions of the branches. Fruit an arcuate, flat pod 3–6 cm. long, 2–3 cm. wide, containing 2–5 roundish, flat, smooth seeds, quite as curious as the flowers.

**Enterolobium contortisiliquum** (Vell.), Morong.

*Mimosa contortisiliqua*, Vell., Flor. Flum., xi, t. 25.

*Enterolobium Timbouva*, Benth. in Hook. Lond. Jour. Bot., iii, 224.

Asuncion (271). November–December.

One of the most noble trees in Paraguay, known popularly as the Timbo. Frequently cultivated as a shade tree in the streets and gardens of Asuncion, and common on the open campos around the city. It grows to the height of 25 m., and its wood is used in the construction of boats and in cabinet-work. It has a smooth bark on the trunk, which on the branches becomes purplish, shining and warty. Leaves bipinnate, bright green, giving a light, elegant appearance to the tree. The branches rise in a beautiful symmetrical head, bearing the leaves near their ends. Flowers white with a delicate yellowish tinge, in clustered heads on a common peduncle. Fruit a large, reniform pod, the largest 6 cm. broad and 5 cm. long, pluricelled, containing many oval, hard seeds.

One of the few deciduous trees of Paraguay, the leaves dropping



off in April or June, and the fruit hanging on conspicuously till July and August.

**Inga affinis**, D.C., Prod., ii, 433.

Asuncion (528). October–January.

A small, rather handsome tree 5–8 m. in height, with long limbs and thick foliage. Leaves pinnate, with 4 pairs of pinnæ, the leaflets elliptical or lanceolate, a little shining above, sessile, entire, the rachis between the pairs winged. Between each pair of leaflets is a cup-shaped gland. Fruit an edible legume, 8–10 cm. in length, with 2 thick, raised, fleshy margins, very downy, and with 10 or 12 septa, and as many seeds lying at right angles to the pod. Several pods on a peduncle. The flowers of this tree are large and conspicuous. The fruit eaten by the common people. Common in thickets. Native name Ingá.

#### COMBRETACEÆ.

**Combretum Jacquini**, Gris., Fl. Brit. W. Ind. Isd., 275.

Asuncion (822). October.

A bushy-headed and much-branched tree, with smooth, dark gray bark, 9–15 m. high. Leaves numerous, crowded, entire, opposite, coriaceous, dark green and shining above, lighter colored beneath, glabrous or the youngest pubescent beneath, 7–10 cm. long and 4–5 cm. wide. Flowers greenish-yellow, the racemes disposed in clusters on peduncles 2 or 3 cm. long. The inflorescence rusty pubescent and somewhat glandular. Calyx lobes and petals 4, the latter yellow. Stamens 8, much exserted. The young branches of this tree have the curious habit of ending in long naked twigs, which twine about themselves like a vine. Fruit not seen.

**Combretum Loefflingii**, Eichler, Mart. Fl. Bras., xiv, pt. 2, 110.

Caballero (450). January.

A large tree. Young branches, rachis, petioles, pedicels, and calyx lepidote. Leaves elliptical, 6–8 cm. long, 3–5 cm. wide, somewhat coriaceous, shining above, thickly lepidote beneath, on petioles about 1 cm. long. Flowers in lateral racemes 4–6 cm. long. Calyx and sepals reddish; stamens reddish-purple, much exserted, 3 or 4 times as long as the calyx. Petals much smaller than the calyx lobes and nearly hidden by them. Fruit a 4 or 5 winged

samara, which in the dried specimens appears about  $1\frac{1}{2}$  cm. in diameter.

In flower at Caballero; in fruit among the hills on the road between Villa Rica and Escoba.

## MYRTACEÆ.

### **Psidium Guajava**, L., Sp. Pl., 470.

Asuncion (118). November–December.

The well-known Guava, or "Guyada," as it is written and pronounced in Paraguay, so common in the West Indies. It is common both in gardens and wild at Asuncion. The tree grows 5–7 m. in height. The fruit, much like a small apple in size and shape, is highly esteemed both as a fruit for eating and for making jelly. It is yellowish-green when mature, and has a pleasant aromatic odor and a soft reddish pulp full of seeds. Birds are extremely fond of it, and so are pet animals like monkeys. To my own taste the meat is rather insipid. The flowers are large, white, looking as much like the flowers of a *Rubus* as anything.

### **Psidium Kennedyanum**, Morong, n. sp.

A small tree 5–7 m. high, generally bent downwards at the summit. It has the habit of *P. Guajava*, the outer bark scaling off and leaving a smooth, whitish-green surface beneath, something like our Buttonwood. Leaves opposite, glabrous, entire, elliptical, acute at either end, or the tip acuminate and sometimes curving upwardly, slightly revolute; midrib prominent beneath, veins and venules distinct, curving into a connected marginal vein, the same color on both sides, minutely pellucid-punctate; blades 3–7 cm. long, 1–2 cm. wide, on petioles 3–7 mm. long. Branches terete, or slightly compressed at the apex, glabrous. Flowers solitary, axillary, in peduncles about 2 cm. long. Calyx closed in bud, 6 or 7 mm. long, in anthesis rupturing to the disk in 4 or 5 very thick ovate lobes. Petals 4 or 5, white, free, oblong, obtuse, 8 or 9 mm. long. Stamens numerous; filaments filamentous; anthers capitate, fixed near the base. Style erect, 7 or 8 mm. long, about the length of the stamens; stigma capitate. Ovary 5-celled. Berry pyriform, 2–2½ cm. long, 1½ cm. broad, glabrous, minutely rough, many-seeded, surmounted by the remains of the calyx and the disk cavity, which is about 5 mm. broad.

Abundant in dense woods in some localities on the Pilcomayo River (890). January.

Called *Guyada chica* by our peons, who easily recognized its similarity to the common large Guava of the country. It is here named in honor of Dr. Geo. G. Kennedy, who generously contributed towards the expenses of my expedition.

**Myrcia Guavira**, Parodi, Cont. Flor. Par., iv, 142.

Near Asuncion (838).

A large fruit-bearing tree, found both wild and cultivated in Paraguay. The bark is silvery, breaking into long glistening fibres, at least on the young branches. Leaves opposite; sub-opposite or the lower alternate, glabrous, simple, entire, the margin callous or, on the older leaves, eroded, transparent along the venation, and minutely punctate with translucent dots, broadly elliptical or oval in outline, running into an acuminate point at the apex, sloping at base, the largest blades 12 cm. long by 7 cm. wide; on short, channelled petioles. The fruit is often sold in the Asuncion markets and greatly esteemed. It is yellow, as large as a plum, the flesh sweet and palatable, but slightly astringent, containing from 6 to 8 small, flattish seeds, to which the gum-like pulp closely adheres. The tree and the fruit are known popularly as the Guavirá. Fruit in October and November. The flowers I did not see.

**Myrcia ovata**, Camb. in St. Hil. Fl. Bras. Merid., ii, 229 ?

Pilcomayo River (894 a). = Balansa, 1305.

A shrub 3-5 m. in height, with brownish bark and clean erect, fuscous-downy branches. Flowers too young to make out. Leaves numerous, coriaceous, downy on midnerve below, pellucid-punctate, oval and pointed at both ends, opposite above and alternate below, on very short downy petioles. In woods.

**Myrcia ramulosa**, D. C., Prod., iii, 250. Ex descr.

Pilcomayo River (907 a). February.

A very branching shrub, with light-colored or brownish bark, 3-5 m. high. Young branches glabrous or minutely fuscous-pubescent. Leaves oval or ovate, opposite, entire, glabrous, coriaceous, obtusely acute at the apex, obtuse or somewhat acute at base, shining above, light green on both sides, pellucid-punctate, 2-4½ cm. long, 1-2 cm. broad in the middle; midrib prominent beneath and the surface reticulate veiny; petiole channelled, pubescent, 2-5 mm. long. Flowers not seen. Panicles lateral or terminal, axillary, 2-4 cm. long, 3-7 fruited, the lowest pedicels 5-8 mm. long. Berries when ripe red, 7 or 8 mm. in diameter, crowned with the calyx which has 5 small, roundish ovate, often minutely ciliolate, reflexed lobes, finally deciduous, leaving an orbicular operculum. The thin pulp is dotted with minute tubercles and sweetish to the taste.

Fruit 2-celled, each cell containing a single, yellowish seed with a shining membranaceous test.

**Myrcia Assumptionis**, Morong, n. sp.

A shrub  $2\frac{1}{2}$ –4 m. or more high, with reddish, scaly or corrugated bark, much branched, the branches opposite and sometimes tetragonous above. Young branches compressed, white villous. Leaves numerous, opposite, pellucid-punctate, lanceolate, rounded or subcordate at base, sharply or obtusely acuminate at the apex, revolute when dry, 3–7 cm. long, 1–2 $\frac{1}{2}$  cm. broad; nerves elevated on both sides and the midrib a little sulcate above; young leaves white villous below, especially on the midrib, soon glabrate. Buds silky canescent. Flowers small, white, in glabrous terminal panicles, 3–5 cm. long, many-flowered, the branches of the panicle 1–5 flowered, all the flowers pedicelled. Flower bud globose; calyx lobes shorter than the petals, ciliate, glabrous; petals glabrous, rounded above, 2 or 3 mm. long; calyx and petals reflexed in anthesis; stamens numerous, exerted; style about the length of the stamens. Bracts and bracteoles linear, 1–2 mm. long, ciliate, caducous. Ovary 2-celled. Berry about 5 mm. in diameter, red when ripe, containing a single bony seed.

In cposes. Asuncion (260). December.

**Eugenia camporum**, Morong, n. sp.

A small shrub 5–6 dm. high, glabrous, the bark silvery-white, dotted by scattered dark glands. Young branches glabrous, reddish-brown, dotted with small, yellow, pellucid glands. Leaves opposite, entire, elliptical, coriaceous, revolute, pellucid-punctate, sometimes bearing a few scattered fuscous glands beneath, sessile, narrowed at either end, obtuse at the apex, 3–6 cm. long, 1–2 cm. broad; doubly limb-nerved, the veins distinct and the midrib prominent beneath and slightly sulcate above. Flowers not seen. Fruit a red berry as large as a strawberry, gland-dotted, 7–8 ribbed, containing a thin, red, sweet pulp, and one large flattened-globular seed about 1 cm. long; test crustaceous. Peduncles drooping, filiform, solitary or 3 or 4 together, axillary or from a defoliated node, 12–20 mm. long. The fruit is crowned with 4 oblong, coriaceous, gland-dotted, venose, concave sepals.

Very near *Stenocalyx glaber*, Berg., in Mart. Fl., xiv, pt. 1, 337, but differs from that species as described in its narrow elongated, obtuse leaves, number of the peduncles, and in other points. It seems also to be the "*Eugenia Michellii*?" of Parodi in Cont. Flor. Par., Fasc. iv, 122, but that species (*E. uniflora*, L.) has much shorter ovate or obovate leaves, and is a much taller shrub, with smaller fruit.

Near Asuncion, open grounds (832). Fruits in November.

Guarani name Ñangapari-mi, fide Parodi.

**Eugenia Parodiana**, Morong, n. sp.

A branching glabrous shrub, 1-2 m. high, with whitish, scaly bark which is often dotted with small black glands. Young branches glabrous, often compressed, dotted with small yellow, translucent glands. Leaves opposite, entire, elliptical,  $2\frac{1}{2}$ -6 cm. long, 1-2 cm. wide, narrowed at either end, obtuse at the apex, midrib prominent beneath, impressed above, veins and veinlets raised, with an arcuate marginal nerve, revolute when dry, pellucid-punctate, the punctuations elevated; on a narrowly winged petiole 2-5 mm. long. Flowers pedicelled, pedicels solitary or 2 pairs on a short raceme, glabrous, axillary or at a defoliated node on the branches, the pedicels and rachis of the racemes 4 or 5 cm. long. Flowers very small, calyx lobes glabrous or ciliate, petals white, and with the disk pubescent, clawed, both calyx and petals reflexed in anthesis. Style as long as the stamens, uncinatate at the stigma. Bracts and bracteoles minute, ovate, ciliate, caducous. Ovary 2-celled, the cells several ovuled, apparently ripening only one seed. Fruit not seen.

In sandy soil east of Asuncion (821). October-November.  
= Balansa, 1314.

**Eugenia uniflora**, L., Sp. Pl., 470.

Pilcomayo River (894). January.

Compared with a specimen collected by Lorentz in the Argentine Republic and so named by Grisebach.—N. L. B.

A branching shrub about 3 m. in height, with grayish or brown bark. Flowers too young to be determined when first observed. Leaves (longest) 5 cm. long and 3 cm. wide, simple, entire, opposite, ovate, obtusely pointed at both ends, shining above and lighter green beneath, pellucid-dotted. I afterwards found good fruit. It is an edible, pleasant-tasting berry, depressed globular, slightly 7-8 angled, crowned with the oblong persistent calyx lobes, solitary or in axillary clusters along the stem, quite pulpy and bright red, with yellowish meat when ripe, containing a single flattish, crustaceous seed; on peduncles 2-3 cm. long. Birds are very fond of the fruit, and the crops of many "turkeys" that we killed were full of the berries. Common in thickets on the banks of the Pilcomayo.

**Eugenia cauliflora** (Mart.), D.C., Prod., iii, 273.

Asuncion (614). Fruit, March.

A well-known fruiting tree of Paraguay, called *Y-ba-pá-rá*, or, in English *Hivapurú*, by the natives. 5-8 m. high, with smooth, greenish bark. The flowers and fruit grow along the trunk, sometimes almost to the ground. Flowers very small, white, in short



clusters. Leaves opposite, pellucid-punctate, dark green above, ovate-lanceolate, acuminate, rounded at base, the largest 4 cm. long by 2 cm. broad. Petioles 2 or 3 mm. long, pubescent. Young leaves and branches pubescent. Fruit 1-1½ cm. or more in diameter, very dark purple when ripe, looking like a plum, with a white, somewhat astringent pulp that clings closely to the seeds. Seeds 2-4, irregularly shaped, soft-shelled. Often sold in the markets of Asuncion.

#### MELASTOMACEÆ.

**Rhynchanthera rosea**, Cogn. in Mart. Flor. Bras., xiv, pt. 3, 181.

Luque (293 a). December. Named by A. Cogniaux.

A square-stemmed plant about 6 dm. high, with showy rose-colored flowers and rough prickly stalk and linear leaves. Flowers in terminal racemes. Open grounds.

**Tibouchina herbacea** (D.C.), Cogn., l. c., 408.

Between Pirayu and Jaquaron (664). April. Named by A. Cogniaux.

A handsome purple-flowered plant 6-9 dm. high, growing on the open campo. Corolla smaller than in the other species collected, the petals being about 1 cm. in length. Stems and leaves densely villous and tomentose. It bears numerous blossoms in long terminal panicles.

**Tibouchina gracilis** (Bonpl.), Cogn., l. c., 386.

Luque (293); near Caballero (598). December-January.

A very showy-flowered plant, 3-6 dm. high, growing in open grounds. Corolla bright purple-red, the petals 2 cm. in length. Flowers in long terminal racemes. All the species are bristly hairy, the hairs rising from papillæ on the stem. In this species the hairs are prickly, white, spreading upwards or appressed, in no. 664 they are fuscous below and curve downwards.

**Leandra atropurpurea**, Cogn., l. c., pt. 4, 106.

Between Villa Rica and Escoba (456). January. Named by A. Cogniaux.

A shrub, 5-7 dm. high, with dark-setose stem and leaves, the hairs stiff and spreading. Leaves opposite, oval-lanceolate, the largest collected 10 cm. long and 5½ cm. wide. Petiole 1-2 cm.



long. Panicles 10 or 12 cm. long. Berries capsular, 4–7 mm. long, fuscous, setose and glandular-tomentose, 1 to many on each peduncle. Found only in fruit.

**Miconia staminea** (Desr.), D. C., var. *parvifolia*, Cogn., l. c., 231.

Caballero (502). January. Named by A. Cogniaux.

A shrub in dense thickets on the banks of the Tebicuary, near Caballero, 3–4 m. in height. Flowers large, yellow, in terminal panicles. Fruit a red berry. Leaves simple, smooth, oval, or elliptical, thick, the blade about 10 cm. in length. Upper part of the stem covered with a cinereous scurf.

According to M. Cogniaux (D.C., Mon. Phaner. vii, 725), *Miconia* is antedated by *Tamonea*, Aubl., Pl. Guian., i, 441 (1775), but the name does not appear on that page of our copy of Aublet's work, but is published on page 659 of the second volume, for the verbenaceous genus with which it is usually associated. *Leonicea*, Scop. (1777), is, however, doubtless an equivalent of *Miconia*, R. & P. (1794), and would be adopted here, but for the uncertainty which we feel concerning *Tamonea*, Aubl., which, if really anywhere in Aublet's book before page 659, ought to be taken up. We have failed to find it, but have concluded to allow *Miconia* to stand.—N. L. B.

#### LYTHRARIÆ.

**Cuphea Balsamona**, C. and S., Linnæa, ii, 363.

Asuncion (76). November.

A small plant 15–20 cm. high, with a stem 4-gonous above and terete below, growing in open, grassy grounds. Calyx somewhat inflated, with a gibbous swelling at the base, in which is a nectary. Petals 6, small, red, inserted on the calyx tube at its summit between as many small green projections. In fruit the pod and calyx burst open irregularly and emit the seeds, which are compressed, with 2 sharp and margined angles slightly cordate at the top, or, rather, the callous margins join cordately.

**Cuphea spicata**, Cav., Ic., iv, 56, t. 381.

Asuncion (136). November.

A glandular hairy herb about 3 dm. in height. Flowers in terminal racemes, the petals purple. The fruit is peculiar. Perianth persistent, closing as a pod over the ovary at maturity. The pod

contains 10 or more flat seeds arranged in a sort of head, lying imbricately upon each other in 3 or 4 rows and attached at the base, the uppermost covering the rest in a sloping direction, the whole surmounted by the persistent style and stigma. At maturity the seeds separate, and appear attached to the receptacle by minute stalks. The pod bursts open irregularly and the seeds with their stalks are thrust out. In open grounds.

**Pleurophora saccocarpa**, Kœhne, Engl. Bot. Jahrb., ii, 426.

Pilcomayo River (869). January. = Balansa 2218.

A shrubby, little, branching plant from 3 to 9 dm. in height. Flowers with red petals, numerous, crowded, in long racemes upon the stem and branches. Calyx enclosing the ovary in a sort of sack, whence the specific name. Stamens 6 or 7, filiform, much exerted, giving a graceful look to the flower. Found in open grounds at the Obraje de Pedro Gill.

**Nesæa salicifolia**, H. B. K., Nov. Gen., vi, 192.

Asuncion (129). November.

A shrubby, bushy-looking plant, common in low, open grounds and around watercourses. The bright yellow petals, long, exerted stamens, and numerous flowers impart a showy look to the inflorescence. Similar in its long slender leaves and willowy stem to the *Nesæa verticillata*, so common about our ponds.

**Lagerstrœmia Indica**, L., Sp. Pl., Ed. 2, 734.

Asuncion (837).

A handsome flowering shrub with roughish brown-colored bark, 5 or 6 m. in height, cultivated in gardens at Asuncion. Flowers in large terminal panicles or compound racemes, rose-colored, showy. Flower buds enclosed in a broad, somewhat membranous bract, and the flowers with 5 and 6 crimped and lobed petals. Flowering a large part of the year.

**Punica Granatum**, L., Sp. Pl., 472.

Asuncion (846).

The Pomegranate, or Granada, as it is called in Paraguay, is not a native of the country, but has been introduced probably from southern Europe. A shrub 3 or 4 m. high, with showy scarlet

flowers and a large edible fruit, often cultivated in gardens. It seems to flower at all seasons of the year, or, rather, at almost any season when the tree is old enough for the purpose.

## ONAGRARIÆ.

**Jussiaea decurrens** (Walt.), D.C., Prod., iii, 56.

Caballero (425). January.

This was so determined after a comparison with specimens at Kew thus labelled, but it is very doubtful if it can be included in this species. The stems are very slender, 3-9 dm. high, angled but not winged. Leaves linear or lanceolate, the linear leaves 4-12 cm. long, 2-3 mm. broad, the others 3-5 cm. long and 7-10 mm. broad, all acute at both ends and sessile or shortly petiolate. The yellow flowers are large and showy, the petals often measuring  $2\frac{1}{2}$  cm. in length, 3 times as long as the ovate, acute calyx lobes. The capsules appear to be those of *J. decurrens*, but they and the flowers are on pedicels 5 or 6 mm. long. Growing on the railroad track.

**Jussiaea lagunæ**, Morong, n. sp.

A shrubby plant occurring in the great laguna of the Pilcomayo River. Stem glabrous, terete below, angled and striate on the branches, 9-12 dm. high. Leaves alternate or fascicled, 1-nerved, glabrous or rough on the midrib and margins, entire, sessile, oblong-linear, acute at the apex, acuminate at the base, the largest collected 5 or 6 cm. long and 3 or 4 mm. wide. Flowers bright yellow, solitary, axillary, shortly pedicelled, 3 cm. high and 5 or 6 cm. in diameter when expanded; sepals 4, ovate, acute,  $\frac{1}{2}$  as long as the petals, with 2 free, subulate bracteoles at the base; petals 4, nerved, rounded or with a shallow sinus at the apex; stamens 8, equal, longer than the style, included; disk well marked, the curved lines of the lobes strongly woolly; style produced. Capsules tetragonous, 8 nerved, clavate, slightly compressed and 2 or 3 mm. broad at the apex,  $1\frac{1}{2}$ -2 cm. long, sloping at base into a pedicel about 5 mm. long. Seeds nearly round, flattish, scarcely  $\frac{1}{4}$  mm. long, striate under the lens, very numerous.

Pilcomayo River (1035). May.

**Jussiaea octonervia**, Lam., Encyc., iii, 332.

Asuncion (137 a and 137 b). November.

A shrubby plant 12-18 dm. in height, common in wet grounds. The 4 petals broad obovate, emarginate, feather-veined, yellow and showy. Leaves mostly narrow linear-lanceolate, sometimes  $2\frac{1}{2}$  cm. broad. Pods 8-nerved.

**Jussiaea Peruviana**, L., Sp. Pl., 388.

Asuncion (137). November.

About as tall as no. 137 a, but a much larger and coarser shrub. Leaves  $2\frac{1}{2}$ –4 cm. in breadth. Pods large, scattered, obovoid, 4-nerved and 4-angled. Both this and the preceding species are downy or hirsute, and common in low grounds.

**Jussiaea pilosa**, H. B. K., Nov. Gen., vi, 101, t. 532.

Asuncion (771). May.

Hairy, branching, 3–5 dm. high, in water or on low lands. Leaves linear-lanceolate,  $2\frac{1}{2}$ – $7\frac{1}{2}$  cm. long. Flowers yellow, small, the corolla not much over 1 cm. in diameter when expanded. Pod long, linear, downy or nearly smooth. At Asuncion and on the Gran Campo 10 or 12 miles from Asuncion. Petals in this species 5. Stem stout and angled.

**Jussiaea repens**, L., Sp. Pl., 388.

Asuncion (178 and 290). November.

A small creeping bog plant common in low lands, 8–20 cm. high, 5-parted. Corolla small, yellow, about 1 cm. in diameter.

**Jussiaea sericea**, Camb. in St. Hil. Fl. Bras. Merid., ii, 254.

Luque (302); Caballero (427). December–January.

This is the broad-leaved form of the species alluded to in Flor. Bras.

A half-shrubby plant 6–9 dm. high, with silky and ferruginous-hairy, angular stem, numerous leaves, and large, sulphur-yellow or purplish-yellow flowers, with fugacious petals. Petals and calyx lobes 4; stamens 8. Style thick and fleshy; stigma large, globular or oval. Around each petal at the base, on the ovarian disk, is a semicircular hairy fringe. Leaves sometimes 12 mm. broad. Pod 4-celled, with numerous small seeds. In dry open grounds.

## SAMYDACEÆ.

**Casearia sylvestris**, Sw., Fl. Ind. Occ., ii, 752.

Asuncion (765). July.

A smooth shrub or small tree 5 or 6 m. in height, with gray bark. Leaves numerous, crowded, lanceolate, acuminate, alternate, pellu-

cid-punctate; 5–7 cm. long, serrulate, the teeth callous-tipped, shining on the upper surface, often hanging downwards and the pairs meeting back to back. Petioles 3 or 4 mm. long. Flowers very small, white, in axillary clusters, the clusters appearing like verticels, looking much like those of our *Ilex verticillata*. Apetalous; divisions of perianth 6. Anthers 10 or 12. Thickets.

**Banara Brasiliensis** (Schott.), Benth. Jour. Lin. Soc., v, App. 2, 91.

Near Asuncion (689). April.

A tree 8 or 9 m. high, with gray bark, conspicuous in the woods for its numerous yellow blossoms. Sepals 3, pubescent on the outside, alternating with 3 petals, the corolla 10 or 12 mm. in diameter when expanded. Stamens numerous, yellow, conspicuous. Leaves alternate, glabrous and shining above, pubescent on the nerves beneath, on petioles 1–2 cm. long, which bear 1 or 2 cup-shaped glands at the top; the largest blades about 15 cm. long and not quite half as wide; the serrulate teeth callous or with a small round gland beneath. Berry a little larger than a pea, containing many small seeds, which are distributed irregularly, imbedded in a fleshy pulp. Style persistent as a beak. Flowers in rather loose terminal panicles 8–12 cm. long. Young branches cinereous-pubescent.

**Banara tomentosa**, Clos., Annal. Sci. Nat., ser. 4, viii, 240. Ex descr.

Near Asuncion (750). = Balansa 2293 a and 2293 b.

A tree about 9 m. in height, with grayish bark, the young branches, inflorescence, petioles and leaves covered with close white stellate and single hairs. Leaves simple, ovate, abruptly and obtusely acuminate, 5-nerved from the base, the nerves prominent; the largest blades 15–20 cm. in length and 5 cm. broad, with dark callous serratures, or a black gland in their place. Found only in fruit, which consists of close, pyramidal, terminal panicles of yellowish-red berries with a juicy pulp in the interior, containing 6 or 8 small, minutely pitted, irregularly-shaped, dark-colored seeds, distributed at random through the pulp. The pulp stains the fingers purple. Berries 5 or 6 mm. in diameter. Panicles 4–6 cm. long. In woods.



## TURNERACEÆ.

Named by R. A. Rolfe.

**Turnera nervosa**, Urban, Mon. Turn., 108.

Caballero (609). January.

A shrubby plant from 15 to 20 cm. high. Silky hairy on the inflorescence, especially on the flower buds, and smooth on the stem below. The floral leaves or foliaceous bracts are immediately below the flowers, so that the flowers appear without the adnate peduncle common to the genus. The cup-shaped glands large and conspicuous. A very delicate, large, light-purple corolla, 2 cm. long. Leaves oblong, glabrous above, pubescent on the midrib beneath, serrate above, the largest 3 cm. long and 1 cm. wide, biglandular at base. Petioles scarcely none. All the species and varieties here enumerated grow in dry soil, and have hard tough roots. All have somewhat vermiform, whitish or brownish pitted seeds.

**Turnera ulmifolia**, L., var. **cuneiformis** (Poir.), Urban, Mon. Turn., 138.

Caballero (608). January.

About as high as no. 609. Stem and leaves covered with long white or fuscous appressed hairs. Leaves oval, crenate-dentate, cuneiform at base, 2-4 cm. long, 1-2 cm. broad. Petioles 3-7 mm. long, white tomentose beneath and darker above. Flowers large, light yellowish-purple.

**Turnera ulmifolia**, L., var. **elegans** (Otto), Urban, Mon. Turn., 139.

Asuncion (222). December-January.

Stems very hairy with white appressed hairs, 2-3 dm. or more high. Leaves ovate or ovate-lanceolate, with large serrate teeth, the blades 3-6 cm. long, 1-2 cm. wide, biglandular at base, sloping into a petiole about 1 cm. long. Flowers large and showy, violet-colored, with a deep purple base inside, radiating on the petals above in lighter purple and yellowish lines. The corolla spreads wide open, about an inch in diameter. This plant is very abundant on the railroad track near Asuncion. I always found it inhabited by large black ants which resented disturbance.



**Turnera ulmifolia**, L., var. **Surinamensis** (Miq.), Urban, Mon. Turn., 143.

Pilcomayo River (1504). January.

This variety differs from the preceding forms in having a much taller stem (sometimes 5 or 7 dm. high), short or very short hairs on the main stem, leaves from linear to oblong-lanceolate, 2-4 cm. long, 5-15 mm. broad, and with petals of a single color.

**Piriqueta cistoides** (L.), Meyer, Ex Steud., Nomencl., Ed. 2, ii, 724.

Pilcomayo River (884). January.

Stems slender, angled, beset with stiff, spreading, tawny hairs, 2-4 dm. high. Leaves, petioles, and calyx covered with stellate down. The whole plant has a grayish aspect. Flowers small, yellow, axillary, solitary or somewhat clustered at the top; fruit on long peduncles, about the size of a pea. Growing among tall grass on the campo.

**Piriqueta Morongii**, R. A. Rolfe, n. sp.

Perennis. Rami glanduloso-setuliferi. Folia petiolata, lanceolato-ovata, subacuta, subserrata, glanduloso-hispidula,  $1\frac{1}{4}$ - $1\frac{1}{2}$  poll. longa, 6-8 lin. lata; petioli  $1\frac{1}{2}$ -2 lin. longi. Flores axillari, solitarii, heterostyli. Pedicelli glanduloso-setuliferi, 6-9 lin. longi. Calyx 4 lin. longus, hispidulo-hirsutus; tubus 1 lin. longus; lobi lanceolati, acuti; squamæ late suborbiculares, obtusæ, fimbriato-dentatæ,  $\frac{1}{3}$  lin. longæ. Petala violacea, obovata, 5 lin. longa. Stamina  $2\frac{1}{2}$  lin. longa; antheræ oblongæ, apice recurvæ, basi profunde bifidæ. Ovarium sericeum; styli glabri,  $1\frac{1}{2}$  lin. longi, apice breviter multipartiti. Capsula tuberculata, hirsuta; semina obovato-oblonga, recta v. parum curvata, læviter reticulato-striata.

Central Paraguay, Morong (220). In dry soil about Asuncion. December.

The species here briefly characterized is nearly allied to *P. Tamberlikii*, Urban (known to me only by description), next which it may be placed, but it has far smaller leaves, and comes from a different region.

In addition to the description given by Mr. Rolfe, it may be said that the stems are 3 or 4 dm. in height. The corolla is violet, with deeper purple stripes on the outside, having a deep purple base on the inside, upon which rests a beautiful 5-pointed green star. It spreads wide open rotately at anthesis. Seeds nearly black when mature.

## PASSIFLOREÆ.

Named by Dr. M. T. Masters.

**Passiflora cœrulea**, L., Sp. Pl., 959.

Asuncion (141). November–January.

Climbing over shrubs to a height of 6 m. or more. Very branching and leafy. Leaves small, smooth, 5–7 deeply palmately lobed. Flowers small, greenish-yellow. Fruit the size of a small hen's egg, orange-colored.

**Passiflora fœtida**, L., Sp. Pl., 959.

Asuncion (577); Pilcomayo River (935). January–February.

A charming little Passion-flower, 6–15 dm. high, climbing upon herbs or small shrubs. Flowers pure white or light purple, not larger than a silver half dollar when expanded, and enclosed in large, finely dissected involucre bracts, the ultimate segments of which are tipped with small glands. Stems hispid with yellow spreading hairs. Leaves cordate, mostly 3-lobed, the lobes sometimes angled or lobed, the 2 lower lobes much rounded at base. Fruit a bladdery pod nearly half as large as a hen's egg.

**Passiflora fœtida**, L., var. *gossypifolia* (Desv.), Masters in Mart. Fl. Bras., xiii, pt. 1, 582.

Asuncion (223). December. = Gibert 1031.

Were it not for the determination of Dr. Masters, who hesitates about separating this from *P. fœtida*, var. *gossypifolia*, I should not doubt its distinctness, for it bears little resemblance to no. 577, of which it is called a variety. Stems climbing 3–7 m., densely and closely tomentose, as are also the leaves. Leaves 3-lobed, but very differently from 577. The 2 lower ones stand out hastately at right angles from the erect upper one, and have a very broad, shallow sinus below. Tendrils very stiff and strong, opposite the leaves. Flowers blue, small, the involucre bracts shorter than the flowers, the segments few, short and undivided, glandless. Stipules apparently obsolete. Not seen in fruit.

**Passiflora Maximiliana**, Bory, Ann. Sci. Phys. Gen., ii, 149, t. 24.

Pilcomayo River (896 and 1032). January–May.

Stem 4-angled, downy, climbing over low shrubs. The leaves quite curious, being composed of 2 long linear leaflets, which are

thoroughly united at the base, spreading divaricately so as to appear as if there were only a single leaf 7-15 cm. in length, standing at right angles to the petiole. This is 8-20 mm. wide at the widest part, and obtuse or acuminate, sometimes aristate at each end. Flowers very light purple, not over 4 cm. in diameter. Fruit about as large as a plum and dark purple when mature. I found this on the banks of the Pilcomayo near the "Junta," and very common in the water of the great laguna above the Falls, where its numerous dark berries were very conspicuous.

**Passiflora Tucumanensis**, Hook., Bot. Mag., t. 3636.

Pilcomayo River (1505). May.

Leaves glabrous, nearly equally 3-lobed, with a broad, rather deep cordate sinus at base. Flowers large, sepals greenish; petals light purple. Fruit not seen. Climbing 5-6 m. or more. In thickets.

**Carica Papaya**, L., Sp. Pl., 1036.

Asuncion (370). January.

This tree is usually called the Mamona or Mamon in Paraguay. It is the well-known Papaw of the West Indies, and has been extensively cultivated in tropical South America for centuries. The fruit, about as large as an apple, is much liked by the natives, but to me it seemed insipid. The juice is milky, and has many valuable properties, among others that of rendering tough meat wrapped in the leaves quite tender. I tried many experiments with the leaves, and found that they readily dissolved small cubes of fresh beef and the white of a hard-boiled egg. This juice is highly esteemed as a pepsin, and for other medicinal qualities. For an account of the tree and its ally (no. 389) and their chemical and medicinal properties, see my article on *Carica quercifolia*, in the Bulletin of Pharmacy for April, 1891, p. 163.

**Carica quercifolia** (St. Hil.), Solms. in Mart. Fl. Bras., Fasc. cvi, 178.

Villa Rica (389). January.

Much resembles the preceding species in general appearance, but the leaves are simple instead of being palmately 7-cleft as in that. It is somewhat smaller, being from 3 to 7 m. in height, and it is diœcious, whereas the other is monœcio-polygamous. The fruit is small and not edible, pulpy and perishable. It has the same prop-

erties as the Mamona, if anything even more active in dissolving meat fibres. The name *Jacaratia* is applied by the natives to this species, although it is not the true *Jacaratia*. A native of Paraguay, and common around Asuncion as well as Villa Rica.

### CUCURBITACEÆ.

Named by A. Cognieux.

**Momordica Charantia**, L., var. *abbreviata*, Ser. in D.C. Prod., iii, 311.

Asuncion (45). November–May.

This vine is one of the most noticeable plants in the suburbs of Asuncion, climbing in thick masses over fences and shrubs to the height of 5 or 6 m. or more. Stem slender, glabrous, much branched. Leaves glabrous, deeply 5-cleft, the lobes broadened at the top and irregularly lobed or toothed. Flowers small, yellow, axillary, on long capillary peduncles. They are monœcious as in other *Cucurbitaceæ*, but instead of there being first a pistillate and then a staminate flower on the stem, those of one kind are on one branch, and the other on a different branch. The fruit is especially conspicuous. The ovary is green, covered with rows of spiny projections, running up into a long point upon which the flower is seated, 3-celled, several ovules in each cell, with a thick fleshy pulp. In the fruit 1, or sometimes 2, of these cells become abortive, and the ovary develops into a large, angular, oval body clothed with tubercles and spiny protuberances, which finally turns yellow, the pulp of which decays, leaving in the shrivelled shell 12–20 red flat-tish seeds, which stick like mucilage to each other and everything which they touch. These pepos hang on long, pendent peduncles, and at once attract attention. The roots are large, woody and tough, and are said to possess valuable medicinal properties, and similar virtues are attributed to the fruit. The pulp is quite nauseous both to the touch and taste.

**Melothria Cucumis**, Vell., Flor. Flum., i, t. 70, 29?

Pilcomayo River (1506).

A vine climbing 6 m. or more by tendrils in thickets. Leaves cordate, 4 or 5 inches in diameter, smooth, palmately 5-cleft, the 2 lower lobes hanging downwards below the others, all the lobes sparsely angled or toothed. Fruit oval, nearly as large as a hen's egg, blotched with white and green.

**Melothria uliginosa**, Cogn. in Mart. Fl. Bras., vi, pt. 4, 26.

Asuncion (761); Pilcomayo River (986). April–July.

This vine is rather delicate, climbing by thread-like tendrils over stumps and underbrush, or running along the ground and rooting at the nodes. Leaves broad-ovate, 5-lobed or angled, deep green, the surface sprinkled with silvery, hardly punctate, dots, and somewhat prickly hairs, ciliate on the margins. Petioles 2–5 cm. long, like the stems angular and often prickly haired. Flowers minute, rough downy on the exterior, yellow, and the 2 kinds on different branches on the same plant as in no. 45, or sometimes fully dioecious. Fruit an oval pepo 5–7 cm. long, 1–2 cm. in diameter, pointed at both ends, 3-celled, with many small seeds in each cell.

**Cucurbitella cucumifolia** (Griseb.), Cogn. in Mart. Fl. Bras., vi, pt. 4, 70.

Pilcomayo River (930, 936 and 1508). February–April.

A dioecious vine common on high banks along the Pilcomayo River. Leaves deeply 3-cleft, and the lobes toothed and lobed. Flowers rather small, yellow, mealy-granular on the outside of the petals. The plant runs several metres on the ground or over small shrubs and herbs. Fruit yellow, smooth, oval or obovoid, 3–4 cm. long, filled with small flattish seeds, brownish-black when mature. The plant has a large, thick, woody root which runs deep into the dry soil in which it grows. Leaves rough on both surfaces, deep green, on stout striate petioles, 3–4 cm. long, the petioles with 1 or 2 rows of minute hooked prickles. One can feel occasionally the same kind of prickles on the stems.

No. 1508, which is possibly a variety, has a leaf which is acuminate pointed at the apex, and the lateral lobes irregularly formed or none, 6–7 cm. long and 4–7 cm. broad, cordate. The leaves appear to be polymorphous in many of the specimens collected.

**Cayaponia citrullifolia** (Griseb.), Cogn. in Griseb. Symb. Flor. Arg., 135, var. **breviloba**, Griseb. in D.C. Monog. Phanerog., iii, 749.

Asuncion (190). November.

A rough, angular-stemmed tendril-climber with 3–5 palmately lobed leaves which have scattered, callous teeth on the margins, rough with short hairs, rugosely veiny beneath, nearly smooth above, 5–10 cm. long, 6–12 cm. broad. Flowers greenish-yellow. Not seen in fruit. The leaves are very irregularly lobed, all deeply cordate at base.



**Cayaponia podantha**, Cogn. in D.C. Monog. Phanerog., iii, 753.

Pilcomayo River (1027 and 1507).

A vine climbing over grasses and shrubs for several metres, both monœcious and diœcious, in wet, marshy grounds. The yellow flower is quite pretty, the corolla being about 2 cm. high and 3 cm. in diameter when open, the outer portion of the lobes green, pointed, nerved and hairy, while the inner lining is white with a broad border extending beyond the outer part and glandular hairy. Fruit 1-celled, oval, about  $2\frac{1}{2}$  cm. long, with a thin, watery, white pulp; seeds several, large, flattish, in the centre of the pod. Leaves rough, deeply 3-lobed and 3-nerved, with spinous teeth on the margins, 5-7 cm. long and about as broad, the lobes obtuse, apiculate or aristate. No. 1507 has small lateral lobes or is simply angulate.

**Lagenaria vulgaris**, Ser., Mem. Soc. Phys. Genève, iii, 25, t. 2.

Asuncion (1588). January-May.

The form of the common gourd, the fruit of which serves in Paraguay as a vessel for drinking Yerba or "Paraguay tea," the national beverage. It is both cultivated and runs wild on the farms around Asuncion. The gourd or "mate," as it is popularly called, is ovoid, 6 or 8 inches in length, with a short neck. When young, it is bound with twine, and made to grow in various fantastic shapes. When ripe, the outer shell is carved with various ornamental figures, blackened with soot, often rimmed with silver, and used as a drinking-cup for the favorite beverage. The powdered or broken tea is crowded into the gourd, boiling-hot water is poured upon it, and the beverage is sucked through the "*bombilla*," a long tin or silver tube, which has a perforated bulb at the base.

#### BEGONIACEÆ.

**Begonia semperflorens**, Link and Otto, Ic. Rar., t. 9.

Asuncion (145). November-December.

The Begonias are numerous in Paraguay, but this is the only species that I attempted to collect, as they are very succulent and exceedingly difficult to dry. This has a reddish fleshy stem, 3-9 dm. in height, common on the borders of thickets and along moist sandy roads. Flowers small, white, with a ruddy tinge, in terminal



clusters, on peduncles 2–7 cm. long, subtended by ciliate bracts. Leaves slightly diagonally reniform, the lower part projecting downwards. Stipules lunate, ciliate, acute. Whole plant very smooth.

### CACTEÆ.

#### **Cereus saxicolus**, Morong, n. sp.

Growing among rocks, often reclining or creeping. Stem cylindrical, 1–2 m. or more in height, 2–3 cm. in diameter, glabrous. Costæ 9, somewhat sharply angled; furrows obtuse. Areoles 10 or 12 mm. apart, 5 or 6 mm. in diameter, the short yellowish wool becoming with age fulvous tomentum. Spines 6–11, stout, straight, the lowest 5 or 6 mm. long, the central one, or the 3 central, larger and 10–15 mm. long, all cinereous below and black at the tip. Flowers solitary, 6 or 7 cm. long, about 6 cm. in diameter when expanded, the outer scales small, round-ovate, sometimes ciliolate, the uppermost greenish-purple; petals silvery-white. The flower is very showy, opening at night and closing soon after sunrise. Berry stipitate, oval, about 5 cm. long and 3 cm. in diameter; seeds small, black, shining, very numerous. The berry is edible, but rather dry.

This plant seems to differ from any of the species described in Flor. Bras., D.C. Prod., or Salm-Dyck's Cact. Hort. Dyck.

Near Trinidad (267). December.

#### **Cereus Balansæ**, K. Schum. in Mart. Fl. Bras., iv, pt. 2, 210.

Trinidad (268). December. = Balansa 2504.

Stem columnar, 5–8 cm. thick, growing upright among rocks 3 m. or more, with 4–5 angles and as many rows of spines, the spines in 5s, of unequal length (1–4 cm.). Flowers very handsome, some 15 cm. in length, the petals a brilliant white; peduncles 7 or 8 cm. long and covered with lanceolate scales,  $2\frac{1}{2}$  cm. in length. Fruit a large globular red berry, 6 cm. long and nearly as broad, the pulp fleshy, white, edible, full of small black, hard seeds. The flowers close soon after sunrise.

#### **Opuntia nigricans**, Haw., Syn., 189.

Asuncion (164). November–January.

Common on rocky cliffs by the Paraguay River, a much branched cactus, some 2 or 3 m. in height. The dark yellow spines, springing from a cushion-like disk, consist of 3–5 larger ones, divaricately spreading, unequal, the largest  $1\frac{1}{2}$  cm. long, and many smaller ones. Flowers with reddish-yellow corollas about 3 cm. high and 5 or 6 cm. in diameter when spread wide open, the sepals frequently of a

dark-purple tinge. Fruit a red, pear-shaped berry, 5–7 cm. long and 3–5 cm. in diameter. The joints of the stem are oblong-ovate, 10–20 cm. long.

**Peireskia Bleo**, D.C., Prod., iii, 475.

Asuncion (188). November–January.

One of the most striking plants in the region, often used as a hedge, for which it is admirably adapted by its thick foliage, its numerous, spreading branches, and its terrible thorns. Shrub-like, often growing into a small tree 6–8 m. high. Stems green, smooth. Leaves coriaceous, thick, nearly sessile, obovate or oblong, 5–10 cm. long, 4–5 cm. wide. The spines are in axillary clusters, the main one 4 or 5 cm. in length, very sharp and strong, wounds from which are very painful and apt to cause gangrene. The flowers, in terminal clusters, are white and rose-colored, as large as a *Camellia* blossom, very showy. Fruit a hard green nutlet, about  $2\frac{1}{2}$  cm. in diameter, 1-celled, many seeded. Very difficult to preserve in Herbarium specimens, as the leaves and stems fall to pieces in drying. The common Spanish name of this species is *Amapola*, and the Guarani name *Surubi-y*.

#### FICOIDEÆ.

**Tetragonia horrida**, Britton, n. sp.

Decumbent, glabrous, stems angular, branched, 3–9 dm. long. Leaves fleshy, rhomboid-spatulate, obtuse at the apex, narrowed into a broad petiole, papillose, 4–6 cm. long, 2–4 cm. wide; flowers axillary, several together, sessile; fruit strictly sessile, dry, angular, 3–4 mm. long, crowned by the 4–7, unequal veiny, spiny calyx-lobes. Stamens 50.

Pilcomayo River (917). February.

Related to *T. expansa*, Ait., which occurs in southern Brazil and Uruguay.

This vicious-looking plant spreads upon the ground in large masses. Corolla small, some 6 mm. in height, whitish, with purple stripes, folded and ending in 5 short hardly apparent lobes. The persistent calyx, enlarging on the ovary, forms a spiny, burr-like fruit, which it is decidedly unpleasant to handle.

**Sesuvium parviflorum**, D.C., Prod., iii, 453.

Pilcomayo River (1042). May.

Growing in dry soil on the open campo. This species differs from the following in having an erect, suffruticose, dichotomously-

branched stem, terete below, linear leaves 1–2 cm. long, and crowded and sessile or subsessile flowers. It is regarded as a variety of *S. Portulacastrum* by Rohrbach in Mart. Fl. Bras., xiv, pt. 2, 310.

**Sesuvium Portulacastrum**, L., Sp. Pl., Ed. 2, 684.

Asuncion (789). October.

Succulent. Spreading on the ground 15–20 cm. Leaves linear or spatulate, 1–2 cm. long. Flowers small, pedicellate, the interior of the calyx lobes rose-colored. I found these little plants springing up in great numbers on the river-side where the land had been overflowed in the winter freshet, and from which the waters had receded. The bright rose-tinted perianth spreads wide open in the sun.

**Mollugo verticillata**, L., Sp. Pl., 89.

Asuncion (186). November–January.

This cosmopolitan plant is as abundant around Asuncion as it is in cultivated grounds in North America.

#### UMBELLIFERÆ.

**Hydrocotyle leucocephala**, C. and S., Linnæa, i, 364.

Asuncion (100). November.

A delicate plant, running over the ground under the shade of larger plants and rooting at the nodes. Flowers white, very small, waxy, in simple umbels, on long capillary peduncles. Stem, petioles and leaves sparsely pilose. Leaves crenate or lobed, very variable as to size, about 9-nerved.

**Hydrocotyle ranunculoides**, L., f. Suppl., 177.

Asuncion (241). December.

Common in miry places, pools, and rivulets, which form from streams that run down into the Paraguay from the high banks around Asuncion. Notable for its supposed medicinal virtues among the herb doctors of Asuncion. Called by quacks Verdolaga palustre, or Herva do capitao, in Guarani Acaricoba and Caahay. It is regarded as aperient and diuretic, and is employed for removing obstructions of the liver and bowels. Like thousands of the vegetable nostrums of the Paraguayans, its reputation is far beyond its real value.

**Eryngium coronatum**, H. and A. in Hook. Bot. Misc., iii, 350.

Between Paragua and Luque (852). December. = Balansa 1079 a.

Stem smooth, striate, 2–3½ dm. high. Leaves mostly radical, 5–10 cm. long, 1–1½ cm. wide, with numerous spine-tipped lobes, which are 4–15 mm. long and sometimes 2 mm. wide. Stem leaves under the branches similar but smaller. Involucral bracts 2 or 3, linear, spine-tipped, entire or sparsely spine-dentate. Heads cylindrical, 1–2 cm. long. Dry soil, open grounds.

**Eryngium elegans**, C. and S., Linnæa, i, 348.

Between Villa Rica and Escoba (419); Gran Chaco near Asuncion (576). January. = Balansa 1084.

Stem striate, glabrous, 2½–8 dm. high. Radical leaves numerous, oblanceolate, 7–25 cm. long, 1–2 cm. broad at the apex, beset with numerous sharp spiny teeth 4 or 5 mm. long. Involucral bracts 5–7 mm. long, with many spiny teeth. Heads globose, or globose-ovate, 5–6 mm. in diameter, in lax spreading corymbs 5–10 cm. broad and 12–15 cm. long. This corresponds very well with var. *microcephalum*, Urban, as given in Mart. Fl. Bras., xi, pt. 1, p. 11.

**Eryngium paniculatum**, Cav. in Delaroch Eryng., 59, t. 26.

Gran Chaco (436). January; Asuncion (840). October.

A stout, glabrous striate-stemmed plant, 1–2 m. high. Leaves 5–6 dm. long, 3½–4 cm. wide at the base, lanceolate, tapering into a long acuminate point, free from marginal spines on the sheathing part for 8–10 cm. Inflorescence very broad and lax, 2–3 forked, 10–30 cm. long and nearly or quite as wide. Heads oval, 8–15 mm. long, 7–10 mm. in diameter. Particularly distinguished by its broad forking panicle, and its long lanceolate radical leaves.

**Eryngium multicapitatum**, Morong, n. sp.

Stems 1½–3 m. high, fistulose, 7–8 mm. thick below, elevated striate, dark colored when dry. Radical leaves parallel-nerved, 3½–4 dm. long, 4–4½ cm. broad below, diminishing gradually to 2½ cm., oblong-lanceolate, shortly acuminate, the margins beset with single strong, upwardly-curved, fuscous spines 2–5 mm. long. Stem leaves under the peduncles very numerous, amplexicaul over the entire base, the lower 7 or 10 cm. long, diminishing to bracts 1½ cm. long, strongly parallel-nerved, spine-pointed, sparsely spiny-dentate, the teeth often double and canaliculate above, or the lower half of the leaf nude, turning white when dry. Inflorescence racemose, 30–40 cm. long; peduncles very numerous, 2 or 3 cm. apart, striate, often compressed or even ancipital, 4–7 cm. long; corymbs 3-rayed, or the rays sometimes again forked and 1½–3 cm.

long. Involucral bracts 4-8, lanceolate, striate, spine-tipped, entire, 5-10 mm. long, 1-3 mm. broad at the base. Floral bracts much longer than the flowers, similar to the involucral bracts. Heads cylindrical, 10-15 mm. long, 6-10 mm. in diameter. Sepals oblong, apiculate, about 1 mm. long. Petals shorter, white. Stamens about the length of the petals. Styles about 3 mm. long. Not seen in fruit.

On the campo between Villa Rica and Escoba (451). January.

This species resembles *E. Glazovianum*, Urban, in stem and character of the cauline leaves, but is very different in its long racemose inflorescence, in the shape and size of the heads and in its radical leaves.

**Eryngium Sanguisorba**, C. and S., Linnæa, i, 339. Ex descr.

Near Luque (334). December. = Balansa 1080 a.

Appears to be one of the forms of this very variable species, judging from the description given by the authors. Stem slender, striate, naked except for a single bract near the centre, about 3 dm. high. Radical leaves linear, 8-12 cm. long, about 6 mm. broad at the sheathing base, 4 mm. above, acute, with small distant, callous or setose teeth about 2 mm. long and usually retrorse. Inflorescence terminal, 3-5 radiate, the rays with solitary heads. Heads dark rosy-purple, ovoid or somewhat cylindrical, 8-12 mm. long, 6-7 mm. in diameter. Involucral bracts 6-8, entire, spine-pointed, reflexed, 1-3 nerved; bracts of the peduncles 1, and of the rays 2, minute, opposite. Among bushes on the open campo.

**Apium Ammi** (Jacq.), Urban in Mart. Fl. Bras., xi, pt. 1, 341.

La Plata, Arg. Republic (29); Asuncion (798). October-December.

#### ARALIACEÆ.

##### **Didymopanax?**

Pilcomayo River (997).

A tree 9-16 m. in height, growing on the open campo. Collected without flowers or fruit. It has a very thick, light, fissured, corky bark, and I thought when gathered that it might prove a substitute for the bark of *Quercus suber*, but experts in New York inform me that it lacks one of the chief qualities of true bark, namely elasticity, and yet it might be of considerable value in all other respects. The leaves are thick, coriaceous, quinate, on a thick petiole 10-15 cm. in length; leaflets elliptical, entire, thick, glabrous, granulated on



both surfaces, the 2 lower on very short petiolules, and smaller than the others; the 3 upper on petiolules 6 cm. long; the largest leaflets 20 cm. long by 6 cm. broad, all light green in color. It is known popularly as *Lepacho del campo*, resembling the true *Lepacho* only in having quinate leaves.

#### RUBIACEÆ.

***Ligustum ignitum*** (Vell.), Kuntze, *Rev. Gen. Pl.*, 287.

Lympio (731); Caballero (512). January–May.

A slender, climbing vine. Leaves glabrous, opposite, entire, ovate or ovate-lanceolate, acute or acuminate, shortly petioled, rounded at base, 2–4 cm. long, 1–2½ cm. wide. Flowers single, at the ends of long drooping peduncles, trumpet-shaped. Corolla dark red, about 4 cm. long, with 4 short oblong lobes. Capsule 2-celled, 2-seeded, 10–12 mm. long.

A showy-flowered vine in thickets.

***Oldenlandia thesiifolia*** (St. Hil.), Schum. in *Mart. Fl. Bras.*, vi, pt. 6, 269.

Near Luque (330). December.

A pretty little flower much resembling our *Houstonia cœrulea*, but decidedly different. The stems very slender, 6–10 cm. high; bending over or nearly prostrate, growing in wet grounds. The corolla is white, showing no trace of a yellow or blue tinge. No signs of dimorphism about the stamens or style. Flowers 1–3, in a pedicellate cluster at the top of the stem. Without radical leaves. Very hairy in the throat, style and stigma protruding through the hairs. Leaves ovate or nearly oval.

***Machaonia acuminata***, H. and B., *Pl. Æq.*, i, 101, t. 29.

Gran Chaco, near Asuncion (374 a). January–February.

An unarmed shrub 3–5 m. high, with light gray, warty bark. Leaves ovate-lanceolate, shortly petiolate, entire, acuminate, rounded at the base, at first pubescent, soon glabrate, lighter colored beneath, 5–7 cm. long, 2–3 cm. wide. Flowers small, white, in terminal pyramidal panicles. Twigs and perianth tube pubescent.

***Machaonia spinosa***, C. and S., *Linnaea*, iv, 2.

Asuncion (374); Pileomayo River (883). January–April.

A shrub or small tree 3–5 m. high, with light gray, warty bark. Quite spiny, but the spines a sharp, hard projection at the ends of



undeveloped branches. Leaves small, opposite, with an interpetiolar stipule which consists of one large-based, stiff hair. Flowers small, white, in large irregular corymbs. The disk is in 2 parts, which rise around the ovary like a collar. Fruit splits into 2 rather long seeds.

**Basanacantha spinosa** (Jacq.), Schum. in Mart. Fl. Bras., vi, pt. 6, 376.

Asuncion (806); Pilcomayo River (893).

A thorny shrub in thickets. Corolla greenish-white, tubular, with 5 large, downy, recurved lobes. The most striking thing about the plant is the fruit, which is a large oval nut, 4-celled, each cell containing a single seed, the interior filled with a thick, white meat, covered by a separable rind, which is sprinkled on the outside with mealy dots, reminding one in appearance of the Cedrella nut, though without the offensive odor of that. I could not learn that it is ever eaten, even by the Indians. Flower October; fruit January.

No. 806 corresponds very well with var. *pubescens*, Schum., in Mart. Fl. Bras., l. c., 378, and no. 893 with var. *ferox* of the same author.

**Chomelia Morongii**, Britton, n. sp.

A shrub 3-9 m. high, with divergent, reddish, smooth branches, the young twigs pubescent. Leaves short-petioled, oval or ovate-oval, acute, acuminate or sometimes obtuse at the apex, narrowed at the base, pubescent, with short hairs on the upper surface and with matted spreading ones on the lower, 4-10 cm. long, 2-4 cm. wide; peduncles slender, pubescent, 1-1½ cm. long, 2-8-flowered; corolla tube slender, finely pubescent without, about 1½ cm. long, 4-5 times as long as the oblong, obtuse lobes; calyx-teeth short, unequal; style slender, glabrous; fruit oblong, 1 cm. long, 5 mm. wide, finely and densely velvety-pubescent.

Pilcomayo River (906). = Balansa 3165. Related to *C. pedunculosa*, Benth.

A beautiful unarmed shrub abounding in thickets on the borders of the river. Flowers pink colored, in small clusters, exhaling fragrance in wet weather. The lobes of the calyx are sometimes obsolete; the lobes of the corolla and the stamens sometimes 5, instead of the normal number 4. Berry dark purple, with a thin pulp, the 4 cells becoming compact when ripe and appearing to mature only a single consolidated bony seed. It is quite sweet to the taste, and was freely eaten by our company.

**Chomelia obtusa**, C. and S., *Linnæa*, 1829, p. 185.

Asuncion (157). November. = Balansa 1755 a.

A thorny shrub 3 or 4 m. high, with numerous, small, coriaceous, shining leaves. Flowers small, a lurid purple, on long, thread-like peduncles, almost hidden among the leaves. Fruit a purple, pulpy berry, containing a flat bony seed, grooved on one side. In dense thickets.

**Chiococca brachiata**, R. and P., var. **acutifolia**, Müll. Arg. in Mart.

Fl. Bras., vi, pt. 5, 53.

*C. racemosa*, H. B. K., not L.

Asuncion (657). April. = Balansa 1757.

A small unarmed shrub, 6–9 dm. in height, with glabrous, shining leaves, common in thickets. Flowers small, numerous, greenish, in axillary clusters. Fruit a light purple-colored berry with 2 flat seeds.

**Coffea Arabica**, L., *Sp. Pl.*, 172.

Asuncion (212). Fruit December.

The coffee is cultivated to a very limited extent in Paraguay. For some reason it does not succeed well in that country. I am inclined to think that this is owing to the excessive humidity of the climate and the variation of the annual temperature. At any rate, I saw but very few attempts made at its culture, and the plants looked unhealthy, the leaves drooping and showing yellow spots as if attacked by a fungoid disease. Such berries as I saw ripened appeared inferior in size and, I was told, were of inferior quality. Probably if the right localities are chosen, and intelligent culture given, the coffee might do very well in Paraguay. As maté, however, is the favorite beverage, the people have little inducement to engage in coffee-raising.

**Psychotria alba**, R. and P., *Fl. Per.*, ii, 58, t. 205, f. a.

Pilcomayo River (878 and 1059); Caballero (606). January–June. = Balansa 1736.

This shrub and no. 877 (*Psychotria crocea*) grew side by side, and so much resembled each other that at first I mistook them for the same thing, but a close examination shows that they are different species. This has white flowers, while those of 877 are light yellow. The branches green, in the other dark red. The persistent

disk on the summit of the fruit here is white, in that red. The fruit in this case is marked with 10-12 ribs, while in that there are 5-8 ribs.

**Psychotria crocea**, Sw., Prod., 44.

Between Villa Rica and Escoba (501); Pilcomayo River (877).  
= Balansa 1738 a. January.

This is apparently not *Palicourea crocea*, Schlecht., Linnæa, xxviii, 525.

*Psychotrophum*, P. Br. Hist. Jam., 160, is undoubtedly an older name for the genus *Psychotria*, but we are retaining *Psychotria*, because we are uncertain about *Myrstiphyllum*, P. Br., l. c., 152, which Dr. Kuntze says is also an equivalent, and has 8 pages priority of place in Browne's work.—N. L. B.

**Geophila violæfolia**, D.C., Prod., iv, 537.

Near Pirayu (661). April.

A small trailing, somewhat succulent plant, growing in deep woods, the stems rooting at the nodes. Leaves opposite, entire, glabrous, cordate-ovate, acute or obtuse at the apex, the rounded basal lobes divergent, 3-6 cm. long,  $2\frac{1}{2}$ -5 cm. wide, on petioles 3-10 cm. long. Found only in fruit. Flowers said by DeCandolle to be white, 3-7 or more in clusters at the end of an axillary peduncle about as long as the petioles. Fruit an oval, pulpy, purplish-black drupe, crowned with the persistent calyx, containing 2 coffee-shaped, bony seeds.

**Geophila herbacea** (L.), Morong.

*Psychotria herbacea*, Sp. Pl., Ed. 2, 245.

*Geophila reniformis*, C. and S., Linnæa, 1829, p. 137.

Near Pirayu (669). April.

This species, found at the same time and place with no. 661, differs from that in having much more slender stems, smaller leaves, 2-3 cm. long and about as wide, the lobes smaller and approximate, shorter petioles and peduncles, fewer flowers (1-3), and scarlet drupes. Not at all succulent. Both species have 1 or 2 lines of short shaggy hairs on the petioles.

**Spermacoce tenuior**, L., Sp. Pl., 102.

Pilcomayo River (1057). June.

***Borreria centranthoides***, C. and S., *Linnaea*, iii, 328.

Between Villa Rica and Escoba (610). January. = Balansa 1743 a.

A stiff square-stemmed plant 3–6 dm. high, with opposite or fasciated narrowly-elliptical leaves, which are from 2 to 4 cm. long and 5–12 mm. broad. Flowers small, white, in long, naked, compound, terminal cymes. Young branches and calyx more or less downy. Inflorescence 5 or 6 times trichotomous. Stipules with a short sheath and 5–7 setæ.

***Borreria latifolia*** (Aubl.), Schum. in Mart. Fl. Bras., vi, pt. 6, 61.

Caballero (605). January.

Differs from the preceding species in having opposite, broad lanceolate, acuminate leaves, 4–7 cm. long and  $1\frac{1}{2}$ –3 cm. wide. Flowers white, in small axillary verticils along the stem for nearly its whole length. Stipules with 10 to 15 setæ. As I found it, it was not creeping, as in ordinary cases, but a weak-stemmed plant growing 2–2 $\frac{1}{2}$  m. high, and sustaining itself by leaning against shrubs in thickets.

***Borreria ocymoides***, D.C., *Prod.*, iv, 544.

Pilcomayo River (973). March.

This species has delicate stems, mostly prostrate, 2 to 6 dm. long. Leaves linear or linear-lanceolate, often cuspidate,  $1\frac{1}{2}$ –3 $\frac{1}{2}$  cm. long, 2–6 mm. wide, revolute, 1-nerved, the nerve white and prominent beneath. Flowers white, minute, terminal or in small clusters in opposite leaf axils appearing whorled. Stipules with 6–9 rather long setæ.

***Borreria Poaya***, D.C., *Prod.*, iv, 549.

Caballero (611). January. = Balansa 1765.

Stems 2–3 dm. high, ascending, often much branched, glabrous or pubescent on the upper branches, or sometimes all rough. Leaves 2–4 cm. long and 5–20 mm. broad, very acute at the apex, sloping into a very short petiole. Flowers in terminal, somewhat globular clusters, or of several terminal verticils, with a pair of reflexed, foliaceous bracts beneath them; corolla purplish, 7–12 mm. long. Stipules with 1–3 rather large setæ.

**Borreria tenera**, D.C., Prod., iv, 543.

Asuncion (67); between Trinidad and Lympio (727). November–May.

Stems nearly terete below, tetragonous above, 15–25 cm. high, much branched from the base, often ascending, with long tough roots. Leaves sub-setaceous, 1-nerved, often fasciated, sharply callous-tipped. Flowers white or often pale purple, in axillary or terminal verticils, the corolla about 5 mm. long. Stipular setæ 3–7, much longer than the sheath. Leaves about the length of the internodes. This rough-looking little plant is found growing along roadsides or on grassy knolls, in hard, dry or clayey soil, and its numerous verticils of flowers have a burr-like aspect.

**Borreria verticillata**, Meyer, Prim. Fl. Esseq., 83.

Asuncion (66 and 106). November.

A very variable species. Forms growing in dry soil or among grass, with a ligneous root and very thick, hard, knot-like, numerous stems, spreading on the ground or ascending 10–15 cm., with crowded leaves. Others are erect, 40–50 cm. high, with nodes 3–6 cm. long. Leaves verticillate, linear or linear-lanceolate, 1–3 cm. long, 2–5 mm. broad, revolute and retrorsely scabrous on the margins, acute at both ends; petiole scarcely any. Stems more or less pilose or scabrous on the angles. Flowers small, white, in dense, globular verticils, which are terminal or axillary and 5–10 mm. in diameter. Stipular setæ 4–7 as long as or longer than the sheaths. The prostrate forms of this species might be mistaken for no. 727, but the plant is much coarser, with larger leaves, thicker stems and larger flower verticils.

**Richardia Brasiliensis**, Gomez, Mem. Ipecac., 31, t. 2.

Asuncion (55). November.

A rough, prostrate plant, spreading 15 or 20 cm. on the ground, dichotomously much branched. Stems tetragonous, hispid or villous. Leaves obovate or sometimes oblong-lanceolate, 1–3 cm. long, 5–10 mm. broad, glabrous or scabrous above, ciliate, acute, attenuated into a short petiole. Stipular setæ 3–5, hispid, usually shorter than the sheath. Differs principally from *Borreria* in having terminal verticils of flowers seated upon large involucre bracts. In this case the bracts are 2, sessile, oblong, rounded at the apex, 2 cm. long, 1 cm. broad. Flowers minute, white. Calyx 6-lobed, the



lobes ciliate, persistent, half as long as the corolla. Lobes of corolla 6, acute, hairy on the lower side. Style 3-divided, with 3 capitate stigmas. Fruit muricate or hispid, 3-carpelled, 3-celled, 1 seed in each cell. Seeds pitted.

**Richardia grandiflora** (C. and S), Britton.

*Richardsonia grandiflora*, C. and S., Linnæa, iii, 351.

Between Escoba and Caballero (422 and 413). January.

Differs from the preceding species in having stems setosely hispid, linear leaves 3–4 cm. long, very large heads, 2–4 acuminate, lanceolate involucre bracts 2 cm. long, many acuminate hispidly ciliate floral bracts, and purplish or rose-colored flowers with a corolla 10–13 mm. long. The seeds are covered with pellucid, glandular tubercles. This plant grows in red, clayey soil on the railroad track between Escoba and Caballero, its fine large flowers forming a great contrast to the rough stems and bracts.

CALYCERÆ.

**Acicarpa tribuloides**, Juss., Ann. Mus., ii, 348, t. 58, f. 1.

Buenos Aires and Asuncion (2).

Common about Buenos Aires, and covering all the waste grounds in and around Asuncion. Its spiny leaves and burrs make it a great nuisance. It continues to flower and fruit all the season from early October to May.

COMPOSITÆ.

**Pacourina edulis**, Aubl., Pl. Guian., ii, 800, p. 316.

Asuncion (224 a). December.

The main difference between this and the following form lies in the absence of lobes and spines on the leaves and scales. Leaves oblong-spatulate or lanceolate, 10–25 cm. along, sparsely spiny-dentate.

**Pacourina edulis**, Aubl., var. **spinosissima**, Britton, n. var.

Similar to *P. edulis*, Aubl., but with elongated, lanceolate-oval leaves, often a foot or more long, which are deeply lacinate into triangular-lanceolate, spine-pointed lobes; outer bracts of the involucre tipped with short spines.

Asuncion (224). December. Same as Balansa's 862. This appears to be different from *P. cirsiifolia*, H. B. K.—N. L. B.



The most striking among the herbaceous Composites growing at Asuncion. It occurs abundantly in wet grounds along the river-side. A stout succulent stem 9-12 dm. high, the upper portion curling over gracefully. On the upper side is a row of 10 or more conspicuous heads nearly 3 cm. in diameter, the involueral scales green in the middle and white membranous on the edges, giving them the appearance of a string of rosettes. When open the flowers are very handsome, of a bright rose tint, the corolla lobes curved, the staminate tube and styles long exserted. Leaves lanceolate, often 3 dm. long, deeply cut into triangular, strongly spine-pointed lobes. Outer scales of the involucre also tipped with short spines. Leaves pellucid-punctate. Achenia ornamented with rows of glistening glands.

**Vernonia Chamædrys**, Less, Linnæa, 1829, p. 259.

Luque (339); Villa Rica (495). December-January.

**Vernonia flexuosa**, Sims, Bot. Mag., t. 2477.

Caballero (467). January.

**Vernonia graminifolia**, Gard. in Hook. Lond. Jour. Bot., vi, 421.

Pilcomayo River (1509). January.

**Vernonia incana**, Less, Linnæa, 1829, p. 277.

Trinidad (275). December. = Balansa 771.

**Vernonia Platensis**, Less, Linnæa, 1829, p. 312.

Luque (305); Caballero (591). December-January.

**Vernonia scorpioides**, Pers., Syn., ii, 404.

Asuncion (767); between Villa Rica and Escoba (489). January-July.

**Vernonia tricholepis**, D.C., Prod., v, 54?

Asuncion (53 and 53 a). November. 53 = Balansa 1128. 53 a = Gardner 3787, which number is quoted under *V. tricholepis* by Mr. Baker in Mart. Fl. Bras., vi, pt. 2, 70.

**Vernonia Tweediana**, Baker, Mart. Fl. Bras., vi, pt. 2, 99.

Asuncion (174 and 653). November-April.

**Vernonia glabrata**, Less, Linnæa, 1829, p. 294.

Asuncion (165); Luque (590). November-January.

The Vernonias are very numerous in Paraguay, all of them bearing heads of showy, purple flowers. I collected 9 species, only a small part of the number occurring in the country. Perhaps the most striking of them is *V. glabrata* (nos. 165, 590), with many sessile heads 2 cm. in diameter, growing by fence rows and roadsides in the vicinity of Asuncion.

Another with ample leaves, rugose above and velvety hairy beneath, numerous crowded flower-heads, and strong stems over 3 m. in height, *V. Tweediana* (nos. 174, 653), abounded in waste grounds around Asuncion.

*V. incana* (no. 275) and *V. graminifolia* (no. 1509), both with long narrow, linear leaves, the panicles of flowers on long naked peduncles, are exceedingly graceful and ornamental species.

*V. Chamædrys* (nos. 339, 495) has a close, thyrus-like panicle of bright purple flowers. Leaves small, black or olive-green and shining on the upper surface, and white woolly beneath. Stem shrubbyish, 1-1½ m. in height.

**Elephantopus angustifolius**, Sw., Prod., 115.

Asuncion (162 a); Luque (313); Pilcomayo River (1510).

**Elephantopus tomentosus**, L., Sp. Pl., 814.

*E. scaber*, v. *tomentosus*, Schultz Bip., Linnæa, xx, 516.

Asuncion (258). December.

The two species of *Elephantopus* here noted are very different. *E. angustifolius* has its flowers in terminal wand-like spikes, sometimes 3½ dm. in length, the leaves oblanceolate, 1½-3 dm. long, the glomerules subtended by a single small ovate bract. *E. tomentosus* has its flowers in large terminal paniced corymbs, the leaves obovate, 10-13 cm. long, the glomerules much smaller, subtended by 3 large foliaceous bracts. Both occur in old fields and open grounds, the former very common in the vicinity of Asuncion and on the Pilcomayo River.

**Adenostemma triangulare**, D.C., Prod., v, 113.

Trinidad (270); Pilcomayo River (1003). December-April. = Balansa 865.

Noticeable for its lowest leaves, which are broad hastate-deltoid, sometimes 15 cm. long and as broad, and its corymbs of heads, which appear to be nearly all styles and stigmas, having 2 or 3 rows of small, appressed scales, numerous green tubular corollas,

a pappus of 5 minute red scales, and long exserted, pure white 12-divided styles, with clavate stigmas.

**Stevia satureiæfolia** (Lam.), Sch. Bip., Linnæa, xxv, 291.

Asuncion (107 a). November.

**Eupatorium bartsiaefolium**, D.C., Prod., v, 147.

Asuncion (1512). = Balansa 952.

This differs from all the following species in its low stems (3–6 dm. high), its crowded, deltoid-ovate leaves only 2–3½ cm. long, scabrous above, with large ciliate, retrorsely revolute teeth, and heads 8 or 9 mm. long, scales in 3 rows, with a pubescent, slightly recurved tip. Achenia black, hispid on the angles. Whole plant glandular and fuscous-hispid.

**Eupatorium betonicæforme** (D.C.), Baker, Mart. Fl. Bras., vi, pt. 2, 362.

Pilcomayo River (1511). April.

A coarse plant with scabrous, branching stems 6–9 dm. high. Leaves petiolate, opposite, cuneate, cordate or hastate at the base, more or less dentate. Heads small, shortly pedicellate, in dense corymbs 3 or 4 cm. long and broad. 30–40 flowers in the head.

**Eupatorium Candolleanum**, H. and A., Comp. Bot. Mag., ii, 243.

Gran Chaco near Asuncion (366); Caballero (465). December–January.

These numbers were distributed by mistake as *E. steviæfolium*, D.C., some of which may be mixed with them.

A more delicate species, 4½–5 dm. high, with lanceolate, petioled, more or less serrate leaves, with small corymbs of flowers on spreading terminal branches. Styles much exserted, giving a feathery appearance to the head. Flowers reddish-purple, 30–40 in the head.

**Eupatorium Christieanum**, Baker, Mart. Fl. Bras., vi, pt. 2, 298.

Asuncion (70). November.

Very glabrous, suffruticose, 6–12 dm. high. Leaves lanceolate, acuminate, cuneate at base, petioled, 3-nerved, entire or rarely few-toothed, the largest about 10 cm. long and 3 cm. wide. Flowers light blue, in small corymbs. Heads almost cylindrical, 6–8 mm. long, 9–10 flowered, with 4–5 rows of appressed, ciliate involueral scales.

**Eupatorium conyzoides**, Vahl., Symb., iii, 96.

Asuncion (684). April. = Balansa 940 a.

Stems downy. Branches opposite, divaricate, nearly at right angles to the stem. Leaves petioled, unequally serrate or entire, triangular, acuminate, cuneate at base. Flowers blue. Corymbs large, di-trichotomous. Heads 15-20 flowered, 9 or 10 mm. long. Scales 3-5 nerved, appressed. Achenia scabrous. This occurs occasionally on the Florida coast (*Curtiss*).

**Eupatorium densiflorum**, Morong, n. sp.

Stems 6-12 dm. high, and with the branches striate and pubescent. Branches numerous, opposite, ascending at a sharp angle; internodes  $1\frac{1}{2}$ -3 cm. long. Leaves numerous, opposite, lanceolate or linear-lanceolate, entire or sparsely and remotely serrulate, revolute, obtusely pointed at the apex, sloping at base into a short petiole, 3-nerved, glabrous above, pubescent and black glandular dotted beneath, the largest 10 cm. long and 2 cm. wide. Densely flowered. Flowers blue, the corymbs numerous on long terminal branches, the whole flower-bearing portion 20-25 cm. long. Heads scarcely campanulate, 7 or 8 mm. long, on peduncles 7-15 mm. in length. Involucral scales linear, acute, glabrous, 3-nerved, appressed, in 4 or 5 rows, the innermost 5-7 mm. long, a little surpassed by the white pappus. About 20-flowered. Achenia black, slightly pubescent on the angles.

Near *E. ivæfolium*, but differing from that species in the density of the inflorescence and leaves, the pubescence, and especially in the involucral scales.

Found at the Recoleta, near Asuncion (627). March.

**Eupatorium hecatanthum** (D.C.), Baker, l. c., 365.

Asuncion (280 b). December.

Easily distinguished by the red woolly appendages at the tips of the scales. Heads 50-80 flowered. Leaves long-petioled, broad cordate-hastate, deltoid in outline, crenate-dentate, 6-15 cm. long.

**Eupatorium ivæfolium**, L., Amœn. Acad., v, 405.

Trinidad (274); Pilcomayo River (1012). = Balansa 939. December-April.

Does not seem to differ from the forms of this species occurring in our Southern States.

**Eupatorium læve**, D.C., Prod., v, 169.

Asuncion (637). April. = Balansa 918.

The specimens obtained were from the garden of Herr Mangels, for many years German Consul at Asuncion. It has been exten-

sively cultivated in Paraguay for the manufacture of indigo, of which it makes an excellent quality, but is now seldom seen, except in the wild state. A shrub 12–15 dm. high, with white striate stem and large ovate-lanceolate, serrate leaves, the whole plant very smooth. Pappus tawny. Heads small, 15–20 flowered.

**Eupatorium lævigatum**, Lam., Encyc., ii, 408.

Pilcomayo River (951). March.

Stem 12–18 dm. high, viscous, much branched. Flowers blue, the corymbs with numerous crowded heads, on widely spreading terminal branches 25–35 cm. long. Heads cylindrical, 8–10 mm. long, with 4 or 5 rows of 3–5 nerved scales, about 20-flowered. Achenia black, glabrous. Leaves petioled, lanceolate or ovate-lanceolate, 4–12 cm. long, 2–5 cm. wide, acuminate, more or less serrate above the sloping base.

Some of this was probably distributed as *E. conyzoides*.

**Eupatorium macrocephalum** (D.C.), Less., Linnæa, 1830, p. 836.

Caballero (463); Pilcomayo River (1513). January–April.

The long naked peduncles, large heads, purplish involucreal scales, purple flowers and long plumose purple styles of this plant bear a striking resemblance to *Liatris* when growing on the campo. Heads often 2 cm. high and as broad when in full flower, 75–100 flowered. Stems very glandular hairy or bristly, the hairs nodose and translucent.

**Eupatorium macrophyllum**, L., Sp. Pl., Ed. 2, 1175.

Asuncion (280 and 280 a). December.

This was one of the “stickiest” plants I ever encountered, the stems and leaves being covered with glandular hairs, and adhering so forcibly to the drying-paper that it required a daily change and nearly a month’s drying to make herbarium specimens. Flowers very numerous, a bright purple, with long protruding yellow styles, giving them quite a variegated appearance. Heads 50–60 flowered. Leaves large, on long petioles, cordate-ovate, crenate.

**Eupatorium multicrenulatum**, Schultz Bip.; Baker, l. c., 335.

Villa Rica (482); Asuncion (632). January–March.

Suffruticose, like many other species growing in Paraguay. Stems from 1½ to 2 m. high, hoary with white down all over, with



large branching corymbs of small purple heads. Hairs on the peduncles and pedicels glandular. Leaves lanceolate, minutely serrulate, the largest 12–15 cm. long, 2–3 cm. broad. A striking plant upon the open campo where it grows.

**Eupatorium pallescens**, D.C., Prod., i, 154.

*E. glomeratum*, D.C., l. c.

Asuncion (630 and 683); Pilcomayo River (957). March–April.

Stems stout, pubescent, striate, growing on the Pilcomayo to a height of 3 m. Leaves deltoid-ovate, 3-nerved, pubescent, serrate above the sloping base, the largest 16 or 18 cm. long, 5 cm. or more wide. Petiole alate above. Corymbs dense, the flowers massed glomerately. Flowers white. Heads 5 mm. long, 12–15 flowered; scales in 2 or 3 rows, downy, rounded, somewhat spreading, nerved. Achenia glabrous or sometimes minutely downy.

**Eupatorium steviaefolium**, D.C., Prod., v, 158.

Gran Chaco near Asuncion (366 a). December.

**Eupatorium urticæfolium**, L., f. Supp., 354.

Asuncion (774). May. = Balansa 936.

Stems 6–12 dm. high, covered with long, spreading, translucent, nodose hairs. Leaves ovate, cuneate at base, obtusely pointed, incised-dentate,  $2\frac{1}{2}$ –7 cm. long, on petioles 6–25 mm. long. Flowers blue. Heads 20–25 flowered, in small corymbs on long, spreading branches. Common in old fields.

**Eupatorium vernoniopsis**, Schultz Bip.; Baker, l. c., 334.

Asuncion (107 and 109); Luque (589). = Balansa 784. November–January.

Stems striate, grayish-pubescent, often much branched at the top, sometimes simple, 9–18 dm. high. Flowers blue. Heads small, 8–10 flowered. Leaves opposite below, subopposite or alternate above, 2–5 cm. long, 1–3 cm. broad, crenate or serrate, pubescent on both sides, 3-nerved, the nerves prominent beneath, the teeth callous tipped.

**Willoughbya cordifolia** (L.), Kuntze, Rev. Gen. Pl., 372.

Gran Chaco near Lympio (182 a and 182 $\frac{1}{2}$ ). May.

This vine differs from the more common *W. scandens* in having the stems and leaves densely clothed with a grayish pubescence,

denser and larger clusters of flowers, larger heads (7–10 mm. long), and tawny pappus. The flowers are very fragrant, and attractive to insects, which were hovering over the blossoms in great numbers when collected.

**Willoughbya scandens** (L.), Kuntze, Rev. Gen. Pl., 371.

Asuncion (182); Pilcomayo River (1082). November–January.

**Solidago polyglossa**, D.C., Prod., v, 10.

Asuncion (111); Pilcomayo River (1080).

The only golden-rod which I found in Paraguay. Very abundant in all the waste grounds around Asuncion, and flowering the entire season from October to May. Of this genus I believe that not more than one or two species at the most are known to occur in all that part of South America. This plant is esteemed as a vulnerary by the common people, and hence was named *S. vulneraria* by Martius.

**Aster subtropicus**, Morong, n. sp.

*A. divaricatus*, T. and G., var. *graminifolius*, Baker in Mart. Fl. Bras., vi, pt. 3,

22. *A. exilis*, Ell., var. *australis*, Asa Gray, Syn. Fl., i, pt. 2, 203.

As found in Paraguay the plant which is commonly referred to this form seems sufficiently distinct from *A. divaricatus* to merit specific designation. It grows from 4 to 9 dm. high, with a stout, glabrous, often much branched stem. Leaves glabrous, lanceolate or linear-lanceolate, reduced on the branchlets to subulate bracts, entire or sparsely serrulate, the largest 6–8 cm. long and 5–8 mm. wide. The heads are usually much larger than in our North American plant, being often 8–10 mm. long, containing 50 or more flowers. Involucral scales in 4 or 5 rows, a little over 1 mm. in breadth, obscurely 1–3 nerved, rather abruptly acute, the innermost 7–8 mm. long, with green or rosy tips. Ray flowers small, pale blue, recurved, very fugacious. Disk flowers thread-like, scarcely surpassing the pappus. The pappus somewhat coarse and more copious than in *A. divaricatus*. Achenia pubescent.

This aster is much more stocky, the branches more massed, leaves and flowers more numerous than in the next species, of which it has been called a variety. It grows on the banks of fresh water and on uplands far inland.

Near Asuncion (620). March.

**Aster exilis**, Ell., Bot. S. Car. and Georgia, ii, 344.

Pilcomayo River (1081). February.

Growing in saline soil like the plant of this country. Much of the region along the Pilcomayo abounds in salt pools, and the

streams running from the Cordilleras to the Paraguay are brackish or strongly impregnated with salt.

**Erigeron Bonariense**, L., Sp. Pl., 863.

Gran Chaco near Asuncion (359). December–January.

It is difficult to see any difference between this species and a *Conyza*, as there is really no ligule on the ray flowers, or it is so minute as to be inappreciable. A tall coarse weed 12–15 dm. high, with a very large head of branches, some 5–7 dm. long, springing from nearly the same point. Heads small, apparently discoid, the flowers all threadlike, tubular and fertile. Flowers and pappus tawny. Stem stout, striate, rough on the striæ, pubescent among the inflorescence. Leaves linear, glabrous, serrulate, 6–12 cm. long. Common in the lowlands on the western side of the Paraguay.

**Erigeron linifolius**, Willd., Sp. Pl., iii, 1955.

*Conyza plebeja*, Phil. in Herb. Kew.

*Conyza ambigua*, D.C., Prod., v, 381.

La Plata, Arg. Republic (22); Asuncion (322 and 342). October–December.

Stems 3–9 dm. high, hirsute, branching. Flowers white. Ray flowers nearly or quite without ligules. Pappus tawny. Peduncles and scales hirsute. Leaves linear, sparsely serrate, 5–7 cm. long, 1 mm. wide. Differs from the preceding species also in the lower, more stragglingly branched stems, and larger heads.

**Conyza Chilensis**, Spreng., Nov. Prov., 1818, p. 14.

Luque (343); Asuncion (628); Pilcomayo River (1514). December–January.

Heads much larger than in either of the 2 preceding species, 1–1½ cm. high, 1 cm. broad. Stems striate, and with the leaves and peduncles closely white hirsute, 7–10 dm. high. Leaves oblong-linear or obovate, more or less serrate and scabrous on both sides, 4–8 cm. long and 5 mm. to 2½ cm. wide, the lowest usually obovate, the uppermost linear. Ray flowers without ligules. Heads in small terminal corymbs, 20 or less in number.

**Conyza triplinervia**, Less., Linnæa, 1831, p. 137.

Villa Rica (497). January.

A suffruticose, glabrous species, 3–6 dm. high. Heads small, in large terminal paniced corymbs. Stems and leaves more or less

viscous. Cauline leaves ovate-oblong, sharply serrate, 3-nerved, petiolate, 6–12 cm. long.

**Baccharis cognata**, D.C., Prod., v, 413.

Villa Morra near Asuncion (775). May.

Suffruticose, about 6 dm. high, glabrous. Heads small, clustered on short lateral branches, 12–25 flowered. Flowers white. Leaves obovate-cuneate, 1–2½ cm. long, 8–20 mm. broad, rigid, coarsely toothed, glabrous.

**Baccharis dracunculifolia**, D.C., l. c., 421.

Luque (318). December.

A shrub sometimes reaching a height of 2 m. or more. Bushy branched. Leaves numerous, sessile, linear-lanceolate, sparsely serrate, 2–3 cm. long, 3–5 mm. or more broad. Flowers thread-like, greenish in hue. Heads crowded, numerous, on short downy peduncles. Pubescent among the inflorescence.

**Baccharis genistilloides**, Pers., Syn., ii, 425.

Caballero (437); between Asuncion and San Lorenzo (723). January.

A curious plant occurring on the open campo. It has the stems broadly or narrowly 2–3 winged, and the leaves reduced to scales at the joints of the wings. Flowers spiked in interrupted verticils. The leafless-looking stems and branches lend a gaunt, weird aspect to the plant.

**Baccharis juncea**, Desf., Cat. Hort. Paris, 1829, p. 183?

Pilcomayo River (1516). March.

**Baccharis nana**, D. Don., Mart. Fl. Bras., vi, pt. 3, 56.

Asuncion (647). April.

A slender species, shrubby, 3–5 dm. high, scurfy above. Leaves linear-oblongate, 1–2½ cm. long, 2–3 mm. wide, sparsely serrate above. Heads about 5 mm. high, pedicellate, axillary, scattered; scales 4 or 5 rows, obtuse or abruptly acute, ciliolate, membranous on the margins. A strict dry-looking plant, occurring in open grounds and old fields.

**Baccharis notoserghila**, Gris., Symb. Flor. Arg., 183.

Pilcomayo River (1009). April.

Called by our Guarani peons Escoba de los Indios, or Indian broom, because it serves admirably for making small brooms or brushes. A dry, sage-like plant, about 6 dm. high, very branching and bushy. Shrubby, with a terete, slate-colored stem. Leaves square, sharp-angled phyllodia, without blades. Corolla very small, the tube green below and whitish above, with minute lobes, buried in the abundant silky-capillary pappus. Very common on the campos at the Pilcomayo Falls.

**Baccharis oxyodonta**, D.C., l. c., 404.

*B. triplinervia*, D.C., l. c.

Asuncion (135); Pilcomayo River (1515). November–May.

6–9 dm. high, angular, glabrous or somewhat pubescent among the inflorescence, both stem and leaves very viscous. Leaves alternate, long-petioled, 3-nerved, acute at either end, entire or sparsely serrulate, 4–10 cm. long, 6–15 mm. broad, black glandular spotted on both sides. Heads about 6 mm. long, in small terminal corymbs; scales in about 3 rows, acute, 1-nerved; pappus tawny. This plant grows in low wettish grounds around Asuncion, and also occurs in the great laguna on the Pilcomayo River.

**Baccharis Platensis**, Spreng., Syst., iii, 165.

Pilcomayo River (1022). May.

Stem shrubby, strict, branching, glabrous below, pubescent above, striate, angular, about 9 dm. high. Leaves 5–10 cm. long, 7 mm. to 2 cm. wide, opposite, oblanceolate, puberulent, serrate above, 1-nerved or the lowest 3-nerved, abruptly acute at the apex and sloping at the base into a short petiole. Heads not quite 1 cm. high, glomerate at the ends of the branches and projecting divaricately; scales in 4 or 5 rows, obtuse, ciliolate. Common on the campo at the Pilcomayo Falls.

**Baccharis sessiliflora**, Vahl., Symb., iii, 97.

Luque (1517).

**Baccharis subopposita**, D.C., l. c., 413.

Asuncion (647 a); Pilcomayo River (1518 and 941). February–April.

It is possible that these numbers represent different species. The



leaves of 1518 are nearly entire, many of them subopposite; those of 941 are sharply dentate and but few of them subopposite; while the leaves of 647 a are opposite or alternate, entire or 1-5 dentate on each side, the upper ones linear. The plants are all much branched, the branches rising at a sharp angle. Stem branches and leaves covered with a granular scurf, or in 1518 lepidote. Heads sessile or pedicelled, 15-20 flowered; scales somewhat spreading, subacute or obtuse, ciliolate, white membranous on the margins.

**Baccharis trinervis**, Pers., Syn., ii, 423.

Pilcomayo River (1011). April.

One of the most common species in South America, found in many parts of Brazil, and spreading from Ecuador across the high lands of Bolivia, through Paraguay to the Argentine Republic. The leaves are large, lanceolate, entire, glabrous, shortly petioled and strongly 3-nerved.

**Pluchea Quitoc**, D.C., l. c., 450.

Asuncion (619). March.

Flowers pale purple, in large terminal cymes, exhaling an agreeable aromatic odor. Stems about 6 dm. high, strict, winged by the decurrent leaves. Common in marshy grounds.

**Tessaria integrifolia**, R. and P., Syst., 213.

*T. mucronata*, D.C., Prod., v, 456.

Near Asuncion (383). January.

A small tree 5-8 m. in height, occurring in clumps in the lowlands of the Chaco, opposite Asuncion. As described in Benth. and Hook. Gen. Pl., the flower of *Tessaria* does not accord precisely with my specimens. All the outer flowers of the head are abortive. The central flower only is perfect, large, solitary, surrounded by setaceous chaff. All are apparently destitute of pappus. Achenium somewhat 4-gonous and top-shaped. Corolla with 5 large, purple, mucronate lobes, which are united around the staminate column, enclosing them and the style. Style single, just protruding through the opening of the corolla and ending in a club-shaped stigmatic tip. Branches brownish in color. Bark smooth. Leaves oblanceolate, canescent on both sides.

The gentleman on whose farm these trees grow told me that his cattle were extravagantly fond of the leaves and young branches, and made desperate efforts to pull them down.

**Pterocaulon angustifolium**, D.C., l. c., 454.

Luque (314). December. = Balansa 834 a.

According to Benth. and Hook. Gen. Pl., only 13 species of *Pterocaulon* are known, 7 of which are Australian and the other 6 inhabitants of North and South America. Four of these are included in this list of Paraguay plants. The most interesting of them, perhaps, is no. 192, *P. virgatum*, D.C. This grows on the open campo both in Central Paraguay and on the Pilcomayo. The heads are in long, narrow, terminal spikes 10–25 cm. long, or in interrupted verticils, on long, nearly naked peduncles. Leaves few, linear, 5–10 cm. in length, dark green on the upper surface, revolute and white woolly beneath, decurrent in long green wings upon the stem. Between the wings, the stem is white woolly like the under surface of the leaves.

By the side of this on the campo are two other species, *P. capitatum* (no. 958 b) and *P. alopecuroideum* (no. 958 a), the latter with elliptical leaves about  $2\frac{1}{2}$  cm. long, and densely white woolly below, the heads in short, compact, terminal spikes. All the species are very peculiar in appearance, and at once attract attention by their forlorn, starved looks among the luxuriant growths of South America.

**Pterocaulon capitatum** (H. and A.), Britton.

*Pluchea capitata*, H. and A.

Pilcomayo River (958 b). March. = Balansa 838.

**Pterocaulon virgatum** (L.), D.C., l. c., 454.

Pilcomayo River (958); Asuncion (192).

**Pterocaulon alopecuroideum** (Sw.), D.C., l. c.

Pilcomayo River (958 a). March.

**Achyrocline satureoides** (Lam.), D.C., Prod., vi, 220.

Gran Chaco near Asuncion (354). December.

While resembling *Gnaphalium* in general appearance, this genus is distinguished by its small heads, containing 5–8 flowers, and with 8–12 involucre scales, which close tightly over the flowers. The

species here noted has scattered leaves, the largest of which are 8 cm. long and  $1\frac{1}{2}$  cm. broad. The heads are densely crowded in small terminal corymbs, of a glistening golden tint.

**Gnaphalium cheiranthifolium**, Lam., Encyc., ii, 752.

Trinidad (793). October.

**Gnaphalium Indicum**, L., Sp. Pl., Ed. 2, 1200.

Pilcomayo River (1519). January.

**Gnaphalium purpureum**, L., l. c.

Asuncion (32 and 32 a). October–November.

**Gnaphalium spicatum**, Lam., Encyc., ii, 757.

Caballero (602). January.

Of the species of *Gnaphalium* here noted, no. 793 is the most striking. It grows 4–9 dm. high, with a glandular, webby-haired stem, crowded, oblanceolate leaves 8–10 cm. long, and a densely crowded corymb of large heads. It reminded me in looks of an overgrown *Anaphalis margaritacea*. No. 32 is very common in open grounds both in Paraguay and the Argentine Republic. No. 602 is a slender, erect species, 3–6 dm. high, very silvery-white on the stem and leaves. Flowers in small clusters at the ends of nearly erect branches, the scales pale brown in tint.

**Acanthospermum hispidum**, D.C., Prod., v, 522.

Asuncion (162). November.

We may well be thankful that of the 2 only known species (or 4 according to DeCandolle) of *Acanthospermum*, both of which are South American, but one (*A. xanthioides*) has found its way into our country. The sharp, 4-spined achenia, produced in great abundance, are very annoying. The bare-footed natives of Paraguay suffer very seriously from them sometimes, for wounds from thorns are dangerous things in a climate where even a scratch is liable to produce gangrene.

**Ambrosia artemisiaefolia**, L., Sp. Pl., 988.

Asuncion (133). November.

**Xanthium spinosum**, L., Sp. Pl., 987.

Asuncion (46). November.

**Xanthium Canadense**, Miller, Dict. Ed., 8.

Asuncion (807).

**Enhydra Anagallis**, Gard. in Hook. Lond. Jour. Bot., viii, 409.

Asuncion (79). November–February.

As none of this marsh-loving family are known in this country, readers of these notes may be interested to learn something about them. A succulent, spreading plant, growing abundantly in miry places along the borders of the Paraguay River at Asuncion, the stems hollow, rooting at the nodes, and sometimes running 3–6 dm. Flowers inconspicuous, in sessile, axillary heads, subtended by large foliaceous bracts. Involucral scales 4, large, whitish-green, often closing over the flowers so as to completely hide them. Ray flowers in 3 rows, white, pistillate, fertile, 3-toothed. Flowers of the disk perfect, the corolla greenish-white, the stamens and style exerted; stamens black; stigma small, feathery, not appendaged. Pappus none. Achenia smooth. Receptacle chaffy, the chaff large, very hairy and closely investing the flowers. As the native Paraguayans are great herb doctors, firmly persuaded that every known plant has its medicinal virtues, they prize a tea made by steeping the foliage of this plant as a remedy for various disorders of the bowels.

**Eclipta alba** (L.), Hassk., Pl. Jav. Rar., 528.

Asuncion (74). November.

**Wulffia baccata** (L. f.), Kuntze, Rev. Gen. Pl., 373.

Between Pirayu and Jaguaron (670). April.

A rough, hirsute plant, found in deep woods. The flowers are in small globular heads, the most conspicuous thing about them being the yellow paleæ, which are stiff, rough-pubescent, rising in a sharp point above the achenia when in fruit so as to present a bristly appearance to the head.

**Blainvillea biaristata**, D. C., Prod., v, 492.

Caballero (601). January. = Balansa 785.

This genus is distinguished by having heterogamous flowers, those of the ray obscurely or distinctly ligulate. Receptacle chaffy. Achenia subcompressed or triquetrous. Pappus of 2–3 bristles connate at the base. The species here noted is a weak plant 3–6 dm. high. Leaves opposite, ovate, acute at either end, sharply ser-

rate, hispidulous. Heads terminal or lateral, sessile or peduncled. Flowers pale yellow. Pappus of 2 very short, unequal bristles.

**Stemmodontia brachycarpa** (Baker), Morong.

*Wedelia brachycarpa* Baker in Mart. Fl. Bras., vi, pt. 3, 181.

Asuncion (52 and 819). October. = Balansa 855.

A rough hairy, branching plant 6-9 dm. high, with good sized, solitary heads on peduncles longer than the leaves. My specimens differ from the type in having petioles 1-8 mm. long. Leaves ovate or lanceolate, opposite, 3-nerved, serrate,  $2\frac{1}{2}$ -5 cm. long. Rays 8, yellow. Pappus horny, cupulate. Achenia densely papillose. Abundant in the neighborhood of Asuncion, both in low grounds and uplands.

We are using the name *Stemmodontia*, Cass., for this genus, because *Wedelia*, Jacq. (1760), is a homonym of *Wedelia*, Læfl. (1758), as pointed out by O. Kuntze.

**Aspilia reflexa**, Baker, l. c., 196.

Asuncion (1520). November. = Balansa 853.

**Aspilia setosa**, Griseb., Symb. Flor. Arg., 192.

Asuncion (464). January.

**Aspilia silphioides**, Baker, l. c., 197. Ex descr.

Asuncion (216). December.

The *Aspilia*s are hirsute plants, with large, solitary, yellow-flowered heads on long peduncles, reminding one in general of many of our smaller *Helianthi*. No. 1520 has showy flowers  $2\frac{1}{2}$  cm. high, 4 cm. in diameter when expanded; rays 9-12; pappus of 2 scales. Stems 4-5 dm. high, branching, decumbent. Leaves sessile, serrate, hispidulous, 5-10 cm. long. No. 464 is smaller, only 3 dm. high, with a softer pubescence. Its leaves are entire or remotely serrulate, linear-lanceolate, sessile, somewhat obscurely 3-nerved, the largest 10-12 cm. long and  $1\frac{1}{2}$ -2 cm. wide. Rays 10, golden-yellow, 2-toothed, about 2 cm. long. No. 216 has heads much smaller than in the preceding species, being only  $1\frac{1}{2}$  cm. high, and  $2\frac{1}{2}$  cm. when expanded. Leaves ovate-lanceolate, petioled, 3-nerved, serrate, the blades 6-10 cm. long,  $1\frac{1}{2}$ - $3\frac{1}{2}$  cm. wide. Pappus of 1 or 2 long projecting bristles. Achenia 5 mm. long, flattish, 4-angled, hairy, narrowing to the base, with a smooth, shining, callous base, somewhat pitted or ridged on the faces. Whole plant very rough, growing to a height of 9 dm.



**Echinocephalum latifolium**, Gardn. in Hook. Lond. Jour. Bot., vii, 295.

Pilcomayo River (1054). June. = Balansa 857.

Somewhat like the *Wulffia* above described. Heads smaller, globular, with yellow rays, burr-like in aspect when in fruit, the paleæ pointed by a weak yellow spine. Leaves ovate or deltoid-ovate, opposite, dentate, the blades 5–8 cm. long, on petioles  $1\frac{1}{2}$ – $2\frac{1}{2}$  cm. in length.

**Verbesina Arnottii**, Baker, l. c., 215.

Near Trinidad (845). November. = Gibert 1043.

A handsome plant, with large, solitary, sulphur-yellow heads, on naked peduncles 7–22 cm. long. Stems rough, often much branched, 3–6 dm. high. Leaves alternate, serrate, sessile, 3–5 cm. long, 6 mm. to 2 cm. broad. Rays about 12, often with a black line along the margins. Heads 2– $2\frac{1}{2}$  cm. high. Pappus of 3 awns. Receptacle with chaff longer than the achenia.

**Verbesina encelioides** (Cav.), A. Gray, Syn. Fl. N. A., i, pt. 2, 288. *Verbesina australis*, Baker, l. c.

Asuncion (98). November.

Much branched, 3–6 dm. high, with many showy heads of deep yellow flowers. Heads 2 cm. high,  $2\frac{1}{2}$  cm. in diameter when expanded. Leaves alternate or the lower opposite or subopposite, petioled, incisely serrate, acute or acuminate, cuneate or sometimes auriculate at base, white tomentose beneath, dark above, 3–8 cm. long, 2–4 cm. wide at base.

**Verbesina sordescens**, D.C., Prod., v, 613.

Asuncion (628 a). March. = Balansa 860 a.

Stems pubescent, much branched, 6–12 dm. high. Flowers smaller than in the preceding species, in large terminal corymbs, the peduncles 1–3 cm. long. Heads 1– $1\frac{1}{2}$  cm. high. Rays about 10, light yellow, striped. Leaves alternate or the lower opposite, sessile, dentate, the teeth callous, 7–15 cm. long, 2–4 cm. wide. In dry open grounds.

**Spilanthes stolonifera**, D.C., l. c., 621.

Asuncion (89). = Balansa 789 and 790.

This pretty little yellow-flowered composite, from 8 to 20 cm. in height, covers all the flats along the river-side near Asuncion. It

blossoms from November to April, and, in fact, even in July, in the depth of winter, specimens in flower could be obtained by careful search among the grass. Stems often creeping and rooting.

**Bidens pilosa**, L., Sp. Pl., 832.

Asuncion (208); Pilcomayo River (959). November–March.

This plant fills the waste grounds and old fields around the city, and is as great a nuisance as our own Spanish Needles. I found specimens on the Pilcomayo River banks nearly 3 m. in height. This was distributed as *B. leucantha*, Willd.

**Isostigma Vailiana**, Britton, n. sp.

Perennial, glabrous, stem prostrate or ascending, 10–15 cm. long. Leaves coriaceous, narrowly cuneate at the base, laciniately 3–7 toothed at the apex, 4–7 cm. long, 8–12 mm. wide; peduncles erect, usually single and terminal, sometimes with an additional one or two lateral ones, 10–20 cm. high; heads discoid, 1–1½ cm. broad; involucre campanulate; scales in 3 rows, ovate, obtusish; flowers purple; corolla rather deeply 4-lobed; achenia flat, linear, slightly narrowed below, with two divergent, subulate awns at the apex; paleæ linear, membranaceous, nearly as long as the achenia.

Limpio (734). May. Differs from other species of the genus in its 4-lobed corolla, all the described ones having 5-toothed corollas.

This rare plant, with large handsome dark purple heads, is named in honor of Miss Anna Murray Vail, by whose kindly assistance the work of arranging my Paraguay collection has been greatly facilitated.

**Calea clematidea**, Baker, l. c., 262.

Asuncion (766). July. = Balansa 845.

**Calea uniflora**, Less., Linnæa, 1830, p. 159.

Caballero (514). January. = Balansa 812.

This genus, which does not occur in the United States, is distinguished by having sagittate anthers, chaffy receptacles, and narrow, angled achenia crowned with a pappus of 5–20 chaff-like scales. No. 766 is very branching, the stems suffruticose, 4 or 5 dm. high. Leaves opposite, ovate, crenate-dentate, with truncate or subcordate base, pubescent, rugose beneath, the blades 3–4 cm. long, 1½–2 cm. wide, on short downy petioles. Flowers yellow in numerous small heads. Scales of the involucre broad, obtuse, appressed, imbricated, yellowish-green, striped, in 3 or 4 rows. Rays 4, with 3 or 4 teeth,

clawed. Pappus of many lanceolate, ciliate scales twice as long as the densely hispid achenia. No. 514 has much larger heads, solitary, on naked peduncles 8–20 cm. long. Rays numerous, 2 cm. long, light yellow, striped, entire or somewhat eroded at the tip. Pappus of about 15 linear-lanceolate, ciliate or lacerate scales, 5 mm. long, twice as long as the hispid achenia.

Both species grow in open grounds.

**Porophyllum ruderale** (Sw.), Cass. Dict., xliii, 56.

*Porophyllum ellipticum*, Cass., l. c.

Caballero (475). Asuncion (651). January–April.

Similar in most respects to no. 889, but the leaves are elliptical, long petioled, glaucous, 4–5 cm. long, 2 cm. wide or less. Achenia subulate, thickly clothed with short, upwardly pointing hairs. Pappus minutely hispid upwardly

I have seen no description of the curious marginal markings of the leaves. They are apparently crenate, but in reality have a wavy outline caused by indentures or depressions, which have below them, sunk in the surface of the leaf, a brownish gland corresponding in curvature with the indenture.

**Porophyllum lanceolatum**, D.C., Prod., v, 649.

Pilcomayo River (889). January.

Stems rigid, striate, much branched, 6–9 dm. high. Leaves linear-lanceolate, alternate, entire, sessile or the lower shortly petioled, much attenuated at the base,  $2\frac{1}{2}$ –5 cm. long, 5 mm. broad. Heads 2 cm. high, solitary, on peduncles 4–7 cm. long. Scales in a single series, linear, marked by 2 rows of dark sunken glands. These scales are so closely coalescent when growing as to appear but one tipped with 5 small lobes, but they separate in drying. Achenia linear, minutely striate, 8 mm. long. Scales, corollas, anthers, styles, and achenia all dark purple, causing the whole head to look almost black. An ill-smelling plant.

**Tagetes glandulifera**, Schrank., Pl. Rar. Monac., ii, t. 54.

Pirayu (671). = Balansa 912.

Certainly one of the most curiously constructed plants that I had the pleasure of examining in Paraguay. It grows in masses from 2 to  $2\frac{1}{2}$  m. high on the borders of woods. Leaves pinnate, the leaflets crenate, with yellow, often lunate glands beneath the crenatures, and 1–2 teeth in the marginal space between them, so that the

margin may be called compound, crenate and serrate. Stipules of 3-branched hairs, the same kind of hairs running up the petiole to some distance, and often dichotomously branching into 3 or 5 divisions. Involucre slender, cylindrical, 15 mm. long, consisting apparently of only one scale, the parts so completely coalescing that no lines of junction can be seen, leaving only 5 small lobes at the apex to mark their number. On this involucre are 5 rows of elongated yellow glands. The plant seems to have a great fancy for the number 5, there being often 5 branches to the stipular hairs, 5 lobes and 5 rows of glands on the involucre, 5 flowers in the head, 5 pappus scales, 5 corolla lobes, and 5 stamens.

Flowering from October to April.

**Tagetes patula**, L., Sp. Pl., 887.

Asuncion (81). November.

The French Marigold. This is not a native of Paraguay, but it sometimes escapes from gardens and grows spontaneously.

**Soliva anthemidifolia**, R. Br. Obs. Comp., 101.

La Plata, Arg. Republic (23). October.

**Soliva sessilis**, R. and P., Prod. Fl. Per., 113, t. 24.

La Plata, Arg. Republic (24).

**Erechthites hieracifolia** (L.), Raf. in D.C. Prod., vi, 294.

Asuncion (812); Pilcomayo River (1521).

The Fire-weed is found growing not only in its ordinary situations, but often in the streets, in the very heart of the city of Asuncion.

**Erechthites valerianæfolia** (Wolf.), D.C., l. c., 295.

Caballero (439). January.

With beautiful rosy-tinted, fleecy pappus. Leaves pinnate. Far handsomer than the rough fire-weed of our country.

**Senecio Benthami**, Griseb., Symb. Fl. Arg., 206.

Caballero (411); Pilcomayo River (848). November–February.

A very handsome flower. The heads large, rays crimson in color, reflexed in full flower, tips of the corolla lobes reddish, and the projecting staminate column and stigma yellow, thus giving a wonderful brilliancy of color to the flowers. It often climbs among trees upon which it leans to the height of 3 m. or more.

**Senecio Hualtata**, D.C., l. c., 417.

Buenos Aires (10). October.

**Chaptalia integrifolia** (Cass.), Baker in Mart. Fl. Bras., vi, pt. 3, 377.

Asuncion (710). May–July.

**Chaptalia nutans** (L.), Hemsl., Biol. Centr. Amer., Bot., ii, 255.

Asuncion (747). June.

This and no. 710 are quite similar and very interesting plants. They grow in the shade of trees on borders of forests and thickets. The large radical leaves, green above, white tomentose beneath, lie in a tuft upon the ground, and the scape produces a large, solitary flower at the summit. Ray flowers whitish, threadlike, fertile, with a long exserted style and double stigma. Disk flowers with a long filamentous tube, so slender as to appear like a bristle of the pappus. Pappus copious, soft, fleecy, white or bronze-tinted. No. 747 has lyrate-pinnatifid, more or less denticulate leaves, while those of 710 are entire or sparsely denticulate. The heads are at first nodding, and erect in fruit.

**Trixis divaricata** (H. B. K.), Spreng., Syst., iii, 501.

Asuncion (768). January–July.

Stems suffruticose, slender, sometimes growing to a height of 3 m., leaning on shrubs for support. Branches divaricate. Leaves alternate, narrow-lanceolate, entire, nearly glabrous above and white woolly beneath, auriculate, 2–15 cm. long, 5 mm. to 3 cm. wide. Inflorescence in very long (20–40 cm.), terminal, loose panicles. Heads 7–10 mm. high. Flowers all tubular, white. Scales in 2 series, the outer few and small, inner about 8, pubescent, ciliate. About 12 flowers in the heads. Pappus white.

**Trixis ochroleuca** (Cass.), H. and A. in Hook. Comp. Bot. Mag., i, 33.

Asuncion (842); Pilcomayo River (1010). November–April.  
= Balansa 788.

Stem very slender, 20–30 cm. high. Leaves mostly in a radical tuft, obovate, rounded or acute at the apex, 4–12 cm. long, 1–3 cm. wide, unequally dentate, sloping into a short petiole. Cauline leaves much smaller, oblong, sessile, acute, sometimes cuspidate. Flowers in terminal corymbs, the branches erect, much divided, the ultimate peduncles 2–3 cm. long. Heads about 1 cm. high. Scales 1-seriate,



pubescent, with a purple, almost black tuft of hairs at the apex. Corolla white, bilabiate, the exterior lip much the largest and 3-toothed. The heads are numerous and very pretty.

**Trixis verbasciformis**, Less., *Linnaea*, 1830, p. 29.

Villa Rica (491). January. = Balansa 727.

A stout yellow-flowered, shrubbyish plant, 4 or 5 feet high, occurring in open grounds at Villa Rica. Flowers exceedingly numerous, very fragrant. Pappus copious, of deep copper-colored bristles. Lobes of the corolla of the same color. A showy, conspicuous species.

**Jungia floribunda**, Less., l. c., 38.

Luque (306). December.

A coarse plant 12–24 dm. high. Stem stout, pubescent. Leaves alternate, orbicular-cordate, deeply 5–8 lobed, palmately veined, nearly glabrous above, velvety pubescent beneath, on petioles 10–12 cm. long, the largest blades over 20 cm. long, and the same in breadth. Stipules large, roundish, broader than long, cordate or slightly lobed at base, dentate or angular. Flowers in large, spreading, many-forked panicles. Heads 8–12 mm. high, containing about 12 flowers. There are only about 5 small, pubescent involucreal scales in one row. What seem to be an inner series of larger scales are really the outer row of paleæ, as they all enwrap a flower. These are oblong, pubescent, 3 or more nerved, ciliate, 7 or 8 mm. in length. Each flower is closely invested by a rigid palea. Corolla white, bilabiate, the exterior lip larger, 3-toothed, the interior 2-parted. Achenia ribbed, slightly beaked, very slender, pubescent, 5 mm. long. Bristles of the pappus plumose.

**Hypochæris lutea** (Vell.), Britton.

*Penanthes lutea*, Vell., *Flor. Flum.*, 350, viii, t. 91.

*Hypochæris Brasiliensis*, Griseb., *Symb. Flor. Arg.*, 217.

Asuncion (799 and 843). October–November.

Stem slender, striate, pilose with scattered, spreading hairs, 20–30 cm high. Leaves mostly in a radical tuft, pinnatifid or dentate, the largest 5–6 cm. long, 1–1½ cm. broad. Cauline leaves few, linear-lanceolate, clasping, hastate. Inflorescence loosely paniced. Heads solitary, 1½–2 cm. high; ultimate peduncles 3–10 cm. long. Scales biseriate, each with a white webby margin and green centre, the outer shorter. Corollas yellow or nearly white, ligulate, the

ligule bilabiate, one lip with 3 and one with 2 small teeth. Paleæ membranaceous, glabrous, acuminate, longer than the achenia. Achenia 7 or 8 mm. long, muricate, long-beaked. Pappus white or tawny, plumose. This plant has a milky juice, and the roots are very thick and large. The roots are sometimes used as chicory.

**Sonchus oleraceus**, L., Sp. Pl., 794.

Asuncion (193). November.

**Picrosia longifolia**, Don., Trans. Lin. Soc., xvi, 183.

Asuncion (146); Pilcomayo River (1522). November–May. = Balansa 867, and Mandon 287.

*Picrosia* differs from *Hypochæris* in having entire leaves, the involucrel scales in one series, naked receptacles, beaks of the achenia very long and filiform, and the ligules nearly equally 5-toothed. The species here noted has weak, glabrous stems and heads solitary on long, naked peduncles. The heads when fully mature are 3 cm. long, subtended by several small bracts. Achenia fusiform, 14 ribbed, with a beak 5–8 mm. long. Pappus plumose, tawny. Ligules conspicuous, pure white. Juice milky. Leaves linear-lanceolate or oblanceolate, 10–30 cm. long, the radical with extremely long, slender petioles, and the cauline sessile and hastate. It often occurs in the streets of Asuncion, creeping from under the curbstones of the sidewalks, so weak that it can scarcely keep itself erect. I found it on the banks of the Pilcomayo with stems nearly 12 dm. long, reclining on the ground at full length. It is called chicory by the natives, and the roots used like those of no. 146 as a substitute for coffee.

#### CAMPANULACEÆ.

**Lobelia Xalapensis**, H. B. K., Nov. Gen., iii, 315.

Caballero (443). January.

20–30 cm. high. Small blue flowers in terminal racemes. Stem and branches slender, glabrous. Leaves alternate, ovate-deltoid, subcordate or truncate at base, irregularly crenate-dentate, 1–2 cm. long, 8–15 mm. broad, shortly petioled. Branches naked for 7–10 cm. at the summit.

**Wahlenbergia linarioides** (Lam.), A. D. C., Mon. Camp., 158.

Gran Chaco, near Asuncion (1523); Pilcomayo River (919). February = Balansa 2149.

Found in fruit only. Stems very slender, glabrous, much and stragglingly branched,  $4\frac{1}{2}$ –6 dm. high. Leaves alternate, sparse, linear, sessile, acute, 3–15 mm. long. Pods many-nerved, 7 or 8 mm. long, on bracted pedicels 1–2 cm. long and crowned by 5 rigid, persistent sepals. Seeds brown, shining, nearly orbicular,  $\frac{2}{3}$  mm. long.

## PLUMBAGINEÆ.

**Plumbago scandens**, L., Sp. Pl., Ed. 2, 215.

Asuncion (691). May.

My specimens exhibited no tendency to climb, but were erect, 9–12 dm. high. A shrubby plant with alternate, oblong-lanceolate, entire, shining leaves, the largest 8–10 cm. long, 6 cm. wide, on short wing-margined petioles. Flowers in terminal spikes. Calyx tube 1 cm. long, shortly 3–4 lobed at the apex, with 5 green lines down the sides, alternating with white membranaceous nerves, beset with short, upright hairs each tipped by a small globular gland. Corolla white or slightly purplish, with a slender tube 2 cm. long; lobes 5, rotate, oblong. Stamens 4, much exserted; anthers blue. Capsule closely invested by the persistent, glandular calyx.

## PRIMULACEÆ.

**Anagallis cœrulea**, Schreb. Spic. Fl. Lips., 5.

Buenos Aires (17). October.

**Samolus floribundus**, H. B. K., Nov. Gen., ii, 181.

Pilcomayo River (925). February.

The plant which is so common in our country, and which has usually been mistaken for *S. Valerandi*, L. The Pilcomayo, on which it occurs, is a stream of brackish or, when low, of saline water.

## MYRSINEÆ.

**Myrsine Guyanensis** (Aublet), Kuntze, Rev. Gen. Pl., 402.

*Myrsine floribunda*, R. Br.

Asuncion (757). June.

A shrub or small tree with grayish, somewhat corrugated bark, 3–6 m. high. Found only in fruit. Leaves coriaceous, glabrous,

alternate, entire, obovate, rounded and emarginate at the apex, the largest 8 cm. long, 2 cm. broad, sloping into a short petiole. Berries purplish, globular, 3-5 mm. in diameter, on pedicels 1-3 mm. long, containing a single, large bony seed. The leaves are clustered at the ends of the branches. I found the trees covered with flocks of birds feeding upon the fruit.

### SAPOTACEÆ.

**Chrysophyllum Martianum**, A. D.C., Prod., viii, 161.

*C. ebenaceum*, Mart., var. *pedunculatum*, Miq. in Mart. Fl. Bras., vii, 100.

Asuncion (701 and 701 a).

A shrub or small tree 4-5 m. high. Young branches ferruginous-downy. Leaves thick, evergreen, glabrous (at least when old), alternate, entire, elliptical, rounded or often emarginate at the apex. On some trees all or nearly all the leaves are from 15 to 30 mm. long and  $1\frac{1}{2}$  to 2 cm. wide, on others they vary from 3 to 4 cm. long and  $1\frac{1}{2}$  to  $2\frac{1}{2}$  cm. wide. Petioles 2-3 mm. long, canaliculate above. Flowers small, in small clusters along the branches, on pubescent pedicels 2-4 mm. long. Calyx lobes rounded, pubescent, 5. Petals white, twice as long as the calyx. Fruit not seen. The flowering branches are mostly short and lateral

**Chrysophyllum maytenoides**, Mart. in A. D.C., l. c.

Asuncion (841). May. = Gibert no. 8.

A tree very similar in appearance to no. 701. Leaves rather more numerous, but quite similar, the largest collected  $2\frac{1}{2}$  cm. long, 8 mm. broad. Petioles 3-4 mm. long. Pedicels 3-5 mm. long, at least in fruit. Flowers not seen. Fruit a black, edible, sweet berry, about the size of a huckleberry, containing a single hard, brownish globular seed which has a large lunate, dark-bordered scar at the base.

Miquel states in *Flora Brasiliensis* that this species has a longer style than that of *C. Martianum*, and that the ovules are pendulous from the top of the cells instead of ascending from the base as in that.

**Sideroxylon reticulatum**, Britton, n. sp.

A glabrous shrub, 5-7 metres high, the branches densely leafy. Leaves coriaceous, short-petioled, obovate, rounded or obtuse at the apex, narrowed at the base, 6-10 cm. long, 2-4 cm. wide, entire, dark green both sides, finely

reticulate veined; flowers diœcious, solitary, axillary, white, about 3 mm. long; stamens 5; staminodia 5; fruit oval or pyriform, as large as a plum, the flesh greenish-yellow, sweet, containing 1-4, compressed, shining seeds about 15 mm. long and 6 mm. wide.

Asuncion (839). Same as Balansa's 2389 and 2391, Gibert's no. 46 from Asuncion, and Gardner's 1977 from Brazil. Near *S. Mastichodendron*. Possibly the same as *Lucuma laurifolia*, A. D.C. Called Aguay, but not the Argentine plant so known.

I found much of this growing along the course of the river Pilcomayo, where it becomes a tree from 8 to 13 m. in height, with leaves in some cases 26 cm. long and 3 cm. wide. The fruit is often sold in the market at Asuncion, and is much valued. The flesh, though sweet, is somewhat gummy, and may be sucked a long while in the mouth before dissolving. I was informed by physicians in Asuncion that the bark is used medicinally as a stimulant and for strengthening. The native name Aguay is pronounced something like *Arguao*. Fruits in January. The wild hog of the country or Peccary is quite fond of it, as we found droves of them under the trees devouring the fallen plums.

#### OLEACEÆ.

**Jasminum grandiflorum**, L., Sp. Pl., Ed. 2, 9.

Asuncion (640). April.

This lovely Jasmine is often cultivated in gardens at Asuncion, where it is a great favorite. It also runs wild, and climbs over hedges and fence rows. The flower is large, deliciously fragrant, pure white, or in the unopened bud sometimes pink or reddish-purple. Leaves pinnate.

**Jasminum revolutum**, Sims, Bot. Mag., t. 1731.

Asuncion (836). November.

A shrub 3-7 dm. in height, often cultivated in Asuncion gardens, where it is known as Jasmina. Leaves pinnate, but the leaflets are larger than in no. 640. The flowers are yellow, and slightly fragrant. I did not see it wild. Probably not a native of the country, as it is credited in D.C. Prod. to Nepaul.

**Jasminum Sambac** (L.), Ait., Hort. Kew, i, 8.

Asuncion (148); Pilcomayo River (1524). October-February.

A shrub from 1 to 3 dm. in height, bearing a pretty, pure white,



sweet-scented flower. From 2 to 7 flowers in a cluster on a common peduncle. This species has large, ovate, opposite, simple leaves. It is both cultivated in flower-gardens and runs wild in the country. I found it not only in the vicinity of Asuncion, but far up on the Pilcomayo.

#### APOCYNACEÆ.

**Thevetia neriifolia**, Juss. ex Steud.; D.C., Prod., viii, 43.

Asuncion (642). April–May.

A shrub or small tree, 3–7 m. high, with milky juice and long, linear, glabrous, coriaceous leaves. The flowers are large and showy, bright yellow, on filiform, drooping peduncles. The twin ovaries become in fruit perfectly united so as to form a 2 or 4-celled triangular drupe, containing a thick, hard pulp or aril. This is suspended on a long, slender, drooping stalk, soon dropping off. It is sometimes cultivated along the borders of walks in gardens, where it makes a pretty object. It is the "*Cerbera Thevetia*" of Parodi's catalogue, named by him "*San Francisco de los Uagos*."

**Thevetia Paraguayensis**, Britton, n. sp.

Twigs and pedicels densely velvety-pubescent. Leaves oblanceolate, thick, obtuse and cuspidate at the apex, narrowed at the base, glabrate above, densely puberulent beneath, 6–10 cm. long, 2–3 cm. wide; petioles 3–4 mm. long; flowers racemose or corymbose; pedicels ascending, 1½–3 cm. long; calyx lobes lanceolate, acuminate, 7–8 mm. long, puberulent; corolla ampliate, about 4 cm. long, the limb longer than the tube; follicles ovoid, 3 cm. long, about 1½ cm. thick; seeds flat, 1½ cm. long, 1 cm. wide, 2-pointed.

Gran Chaco, near Asuncion (381). Nearest to *T. cuneifolia*, D.C., of Mexico. January–February. = Balansa 1356.

A shrub not so tall as 642, but with flowers much like that. The stigma is large, umbella-shaped, looking to me like an open parasol under the anthers. I did not see it in cultivation.

**Aspidosperma Quebracho-blanco**, Schlecht., Bot. Zeit., xix, 136.

Pilcomayo River (900).

This is a large tree with hard white wood and light-colored bark, much valued as timber. It has small elliptical, coriaceous, shining leaves, tipped with a weak spine. It is abundant in Paraguay, but I was unable to obtain it in flower or fruit. It is popularly known as Quebracho blanco.

**Vinca rosea**, L., Sp. Pl., Ed. 2, 305.

Asuncion (802).

Frequently cultivated in flower gardens at Asuncion, and often escaping upon the roadsides. A shrub 6–15 dm. high, with a showy rose-colored flower, blossoming all the year round.

**Tabernæmontana australis**, Muell. Arg. in Mart. Fl. Bras., vi, pt. 1, 84. Ex descr.

Trinidad (273). December–January. = Balansa 1358.

A small tree 6–8 m. in height, very interesting on many accounts. It has a milky juice, and smooth, light-colored bark. Flowers rather small, as white as snow, fragrant, the tube of the corolla of a yellowish tint, 5-angled, bulging outwardly near the centre, the snowy lobes large, rounded at apex, oblique at base, and curving around each other convolutely from left to right like a boy's paper windmill. Ovary of 2 closely united carpels, forming in fruit 2 follicles, firmly attached at the base. Follicles large, very milky when young, one-celled, with a thick rind which is rough on the outside with knobby protuberances. Seeds when young with an egg-shaped, pellucid, striped body on one side, and a crumpled body looking like the meat of an English walnut on the other side. In fruit the follicles dehisce laterally in 2 valves, spreading wide open, the crumpled body spoken of above becoming a red aril, which finally drops off, leaving in the shell many dark seeds which resemble the coffee berry in appearance. The people show their appreciation of this handsome tree by planting it in their flower-gardens. The Guarani name is *Curupicay*. The viscous, milky juice is said to yield caoutchouc, and is used as a bird lime. The wood is light and sometimes employed as a substitute for cork. Parodi states that the juice is used by quacks on wounds and as a remedy for snake-bites. He thinks that it may serve as a substitute for Aconite and *Rhus Toxicodendron*, and is good as a corrosive for warts.

**Forsteronia Brasiliensis**, A. D.C., Prod., viii, 436.

Asuncion (712); Pilcomayo River (1525). February–May. = Balansa 1369.

A liana climbing without tendrils over bushes and trees, the main trunk somewhat spiny, the branches long and withe-like. Flowers small, light yellow, in terminal spikes. Follicles twin, united at

base, divaricate, cylindrical, 10–20 cm. long, moniliform, 2–5 in a cluster. Seeds far apart, 8–15 in a follicle, elliptical, about 1 cm. in length, striate, with a beautiful, tawny silky plume of hairs at the summit, which spreads wide open when loosened. Juice not milky. Found in Central Paraguay, and far up on the Pilcomayo.

**Forsteronia pubescens**, A. D.C., l. c.

Asuncion (810). October.

Differs from no. 712 in having the young branches and leaves fuscous-pubescent, larger leaves (the largest 9 cm. long,  $3\frac{1}{2}$  cm. broad), longer petioles (10 or 12 mm.), and very fragrant white flowers in terminal compound spikes 6–10 cm. long.

**Echites trifida**, Jacq., Hist. Stirp. Amer., 31, t. 24.

Near Asuncion (380); Pilcomayo River (895). January.  
= Balansa 1372.

A liana similar in general appearance to no. 712, but with very different flowers and follicles. Corolla light purple, 2 cm. high, with 5 broad lobes, which lap over each other dextrorsely and curl downwards. Follicles cylindrical, not moniliform, tapering to a long sharp point, 25 cm. in length. Juice milky. Seeds clothed with very long, tawny, plumose hairs. Twining over shrubs  $2\frac{1}{2}$ –3 m.

**Macrosiphonia longiflora** (Desf.), Muell. Arg. in Mart. Fl. Bras., vi, pt. 1, 140. Ex descr.

Between Villa Rica and Escoba (420). January.

**Macrosiphonia verticillata**, Muell. Arg., l. c., 141. Ex descr.

Between Villa Rica and Escoba (420 a). January.

These two species of *Macrosiphonia* grow on the open campo near Escoba, and are very peculiar and beautiful. Stems 20–30 cm. high. Flowers large, purple, solitary, on long terminal peduncles. The leaves in no. 420 ovate and opposite, in 420 a linear and verticillate, green above and white woolly beneath. Fruit long, somewhat moniliform follicles. Seeds covered with long, tawny, plumose hairs, which spread wide open when loosened. Tube of flowers campanulate, lobes several, very broad and spreading, with a crimped border. The dried specimens give a very poor appearance of the flower when fresh.

## ASCLEPIADEÆ.

**Araujia grandiflora** (Mart. et Zucc.), Morong.

*Schubertia grandiflora*, Mart. et Zucc., Nov. Gen., i, 57.

Asuncion (654); Pilcomayo River (654 a). January–April.  
= Balansa 1338, and Martius' Herb. Flor. Bras., 279.

A beautiful vine climbing over trees and shrubs 10 m. or more. Stem beset with tawny bristles, and that and the leaves discharging a copious milky secretion when wounded. Flowers in large clusters, the corolla white, showy, and fragrant, 4 cm. in length. Fruit a very large and heavy follicle 10–15 cm. in length, and covered with spiny protuberances.

**Araujia sericifera**, Brot., Trans. Lin. Soc., xii, 62.

Asuncion (777). May. = Balansa 1332.

Differs much from 654, though climbing and copiously milky like that. Whole vine, except the upper surface of the leaves, hoary with close white down. Flowers small, white, not conspicuous. Follicles as large as those of 654, but smooth and hoary white.

**Araujia Stormiana**, Morong, n. sp.

Climbing high upon trees. Stems terete, strong, canescent. Leaves opposite, very green and glabrous above, white tomentose beneath, hastate, the lobes obtuse, or sometimes merely dilated at the base, oblong-lanceolate above, the largest 16 cm. long, 6 cm. broad across the basal lobes,  $2\frac{1}{2}$  cm. broad at the middle; petioles  $1\frac{1}{2}$ – $2\frac{1}{2}$  cm. long. Calyx lobes green, pubescent, oblong, obtuse, erect, about half as long as the corolla. Corolla 5–7 mm. high, 5-lobed, the lobes greenish-yellow, glabrous above, a little pubescent below, spreading rotately in anthesis, 5 mm. long. Corona 5-lobed, the lobes 2-toothed, the teeth projecting against the gynostegium, hairy at the base inside and usually filled with a honey secretion. Apex of the stigma 2-horned. Fruit not seen. The flowers are in axillary clusters on slender pedicels 5–8 mm. long.

This plant occurs with no. 1043 near the Pilcomayo Falls (1044). May. Named in honor of Prof. O. J. Storm, who commanded our Pilcomayo expedition.

**Gothofreda oblongifolia**, Morong, n. sp.

Stem not climbing, erect, white pubescent. Leaves opposite, oblong, rounded at base or semi-cordate, abruptly acute or cuspidate at the apex, pubescent on both sides, midrib prominent beneath, the blades 3–5 cm. long,  $1$ – $2\frac{1}{2}$  cm. wide, on petioles 2–7 mm. long. Flowers on axillary peduncles  $2$ – $3\frac{1}{2}$  cm. long, 8–12 in the umbel; pedicels pubescent, 4–7 mm. long. Calyx very deeply 5-parted,

the lobes erect, linear, acute, pubescent, not quite as long as the tube of the corolla, 1 or 2 glandular in each axil. Corolla about 7 mm. high, greenish, pubescent, the lobes ovate-lanceolate, pubescent at the junction with the staminal crown inside, at length reflexed. Segments of the crown connate with the throat and the gynostegium, light purple on the back and almost violet-tinted on the face,  $\frac{3}{4}$  as long as the corolla lobes. Caudicle not dilated, the teeth erect and very short. Apex of the stigma entire, longer than the corolla lobes. Fruit not seen.

A half shrubby plant, 4–6 dm. high, with milky juice, growing in waste grounds at Asuncion (110). November.

**Gothofreda eriantha** (Desne.), Kuntze, Rev. Gen. Pl., 420.

*Orypetalum erianthum*, Desne., D.C., Prod., viii, 584.

Asuncion (655). April. = Balansa 1335.

Clambering over low bushes in thickets, and producing a great number of intertwisting branches. Flowers small, white, fragrant, in axillary clusters. Tube of corolla short, lobes long, linear, spreading. Stigma produced into 2 long, strap-shaped appendages. Stem, leaves, pedicels, calyx, and corolla all densely villous or woolly. Fruit a large conical, smoothish follicle. This plant, like many other Asclepiadaceous species, is an insect-catcher. On one occasion I found a large moth completely imprisoned by a flower, and struggling desperately to get loose, but in vain. It had thrust its proboscis into the corolla in search of nectar and was unable to withdraw it, although a powerful insect—in fact, as large as one of the smaller humming-birds, and for that reason called the humming-bird moth.

**Gothofreda gracilis**, Morong, n. sp.

A slender vine climbing over bushes and shrubs. All the parts except the petals grayish tomentose. Leaves opposite, cordate, acuminate,  $1\frac{1}{2}$ –4 cm. long, 6 mm. to 2 cm. wide, on petioles 3–15 mm. long. Flowers greenish-white, axillary, in 2s, on peduncles 5 or 6 mm. long; pedicels 8–15 mm. long. Sepals 5, green, erect, subulate, with 1 or more glands in each axil, about 4 mm. long; corolla so deeply lobed as to appear of 5 separate petals, the lobes erect, oblong, obtuse at the apex, 10 or 12 mm. long, 2–3 mm. in breadth, glabrous on both sides. Scales of the crown barely adnate at the base with the corolla lobes, 5 or 6 mm. long, bifid half-way up, the divisions beautifully fringed. Caudicles scarcely dilated, slightly gibbous; the gland oval, very short. Gynostegium truncate, with 5 bluntish lobes at the top. This vine is much branched, twining densely upon itself. Fruit not seen.

Occurring at El Obraje de Pedro Gill on the Pilcomayo River (866). January.



**Asclepias campestris**, Desne., l. c., 566.

Luque (333). December.

The petals of this species are greenish in the centre and white on the margins, thrice as long as the sepals, reflexed. Corona purplish in tint. Leaves entire, opposite, glabrous, elliptical, 6-8 cm. long, 2-3 cm. wide, nearly or quite sessile. Flowers 20 or more in the umbel. Fruit not seen.

**Asclepias Curassavica**, L., Sp. Pl., 215.

Asuncion (47). November.

A beautiful species, reminding one of our *A. tuberosa*, which it much resembles in the color of its flowers. Common in copses around Asuncion. Flowers in small umbels, petals red and the hoods and gynostegium bright orange. It flowers nearly the whole season from November to April. Fruit a follicle much like that of *A. incarnata*.

**Asclepias mellodora**, St. Hil., Pl. Rem. Brés., 227.

Caballero (603). January.

A low species with white flowers in large umbels. On the railroad track at Caballero and on the campo in the vicinity. The leaves are numerous, lanceolate, opposite, entire, slightly pubescent, acuminate, rounded at base, 10-12 cm. long, 1-3 cm. wide, nearly or quite sessile. Umbels numerous and very conspicuous when in flower. Follicles very similar to those of no. 47.

**Ditassa humilis**, Morong, n. sp.

Many-branched from the base, suffruticose, from thick, ligneous roots. Stems very slender, 8-15 cm. high, grayish pubescent. Leaves opposite, entire, ovate, acute or acuminate and mucronate at the apex, truncate or more or less cordate at base, sparsely hispid on either side, hispid ciliate and more or less recurved on the margins, the pairs decussate, slightly overlapping each other, 6-15 mm. long, 3-5 mm. wide; petioles about 2 mm. long. Flowers white, 4 or 5 mm. high, in small umbels, 2-4 in the umbel, axillary or supra-axillary; peduncles 2-5 mm. long; pedicels 5 or 6 mm. long. Sepals subulate, somewhat longer than the tube of the corolla, hispid. Corolla deeply 5-parted, the lobes lanceolate, acuminate, 3 or 4 mm. long, hispid outside, glabrous within. Scales of the corona much longer than the gynostegium, muticous, the inner and outer ones about the same length. Apex of the stigma protuberant. The sepals are more or less but not conspicuously glandular in the axils. Pollinia as long as the glands; caudicles minute. Sepals and corolla lobes erect.

This little plant occurs on the Gran Campo among grass.  
Near Luque (336). December. = Balansa 1375.

**Morrenia odorata**, Lind., Bot. Reg., t., 1838.

Asuncion (134); Pilcomayo River (1043). November–May.  
= Mandon, Bolivia, 355, and Balansa 1341.

A noble vine climbing over shrubs and trees, found in thickets throughout the country. Flowers white, very fragrant. Inside of the corolla is an erect 5-lobed corona, the truncate lobes 2-toothed, projecting in a flap over the gynostegium. Stem and leaves canescent, copiously milky. Leaves opposite, cordate or hastate, abruptly curving into a long acute point, the largest 10 cm. in length. Fruit an immense ovate follicle, sometimes 10 cm. long and 7 cm. broad at the base. Seeds black, somewhat angled and tuberculate, linear, 6 mm. long, surmounted by a soft white silky coma 4–5 cm. long. This plant is often cultivated in gardens at Asuncion, and the abundant coma is used for making pillows, for which purpose it is well fitted, as it is as soft as eider down.

**Roulinia Fluminensis**, Desne., l. c., 517.

Asuncion (183); Pilcomayo River (1037). November–May.

Stem glabrous below, pubescent above and on the inflorescence. Leaves deeply cordate, ovate, abruptly acute, glabrous, 5–7 cm. long, 3–5 cm. broad. Flowers in axillary clusters, 8–20 in the cluster; pedicels 1–1½ cm. long. Sepals erect, greenish in the middle, white on the edges, obtuse, not half as long as the corolla. Corolla lobes pointed, white without, dark purple or with purple lines in the middle of the interior and yellowish on the margins, 6 or 7 mm. long. Corona of 5 scales, inflexed at the top in a spoon-like projection. Stigma truncate. Fruit a smooth ovate pod 6–8 cm. long, 3–4 cm. broad at the base. This plant on the Pilcomayo was growing in the water of the great laguna, twining about shrubs that rose above the surface. At Asuncion it was in thickets. Probably the laguna was an overflow of water, though we did not remain there long enough to determine that.

**Sarcostemma Bonariense**, H. and A., Jour. Bot., 1834, p. 296.

Asuncion (681). April. = Balansa 136; collected also by Gibert.

Stems climbing over high bushes and trees, glabrous except on the young shoots. Leaves linear-lanceolate, acute and mucronate

at the apex, pubescent when young, becoming glabrate, the largest 6 cm. long by 2 cm. wide. Flowers creamy white, in umbellate clusters, 6-20 in the umbel, on peduncles as long as or longer than the leaves. Pedicels  $1\frac{1}{2}$ -2 cm. long. Peduncles, pedicels, calyx, and corolla sericeous-pubescent. Corolla lobes ovate, obtuse, ciliate, 5 or 6 mm. long. Inner scales of the crown as high as the gynostegium, the exterior ones nearly entire. Stigma apiculate, the apex shortly bifid. Fruit a large ovate follicle, 6-8 cm. long, sometimes 2, united at the base. The flowers are very fragrant, and much frequented by wasps and other insects.

**Sarcostemma bifidum**, Fourn. in Mart. Fl. Bras., vi, pt. 4, 235. Ex descr.

Pilcomayo River (1526). January.

Climbing high. Stems mostly glabrous, the young shoots pubescent. Leaves oval, narrowed and rounded at the base, or the lowest cordate, obtuse, and strongly mucronate at the apex, glabrous above, more or less pubescent below, 4-5 cm. long,  $1-2\frac{1}{2}$  cm. broad; petioles silky pubescent, 3-6 mm. long. Internodes 6-12 cm. long. Flowers white, in axillary umbels. Peduncles robust, 8-10 cm. long, 10-20 flowered. Pedicels about 2 cm. long, pubescent. Calyx and corolla silky pubescent, lobes of the former ovate, obtuse, surpassing the corolla tube, of the latter ovate, 5 or 6 mm. long and woolly ciliate as well as pubescent. Inner scales of the crown surpassing the gynostegium, the outer a mere border nearly entire or sinuous. Stigma conoidal, with a short bifid beak. Fruit a large ovate follicle like that of no. 681.

**Sarcostemma carpophylloides**, Morong, n. sp.

A very slender vine twining 2-5 m. or more over shrubs. Stems striate, very glabrous, much branched, the main stem below squarish, often brownish in color. Leaves delicate, opposite, glabrous, linear-lanceolate, acuminate, entire, 4-6 cm. long, 2-5 mm. wide, sloping acuminate into a capillary, channelled petiole 3-5 mm. long. Internodes 5-10 cm. long. Flowers white, few, in small axillary clusters, 2-4 in a cluster, 3 or 4 mm. high, and 5 mm. in diameter when expanded. Peduncles not over 10 mm. long. Calyx deeply 5-parted, greenish-yellow, the lobes obtuse, pubescent without, minutely glandular in the axils,  $1-1\frac{1}{2}$  mm. long. Corolla deeply 5 parted, lobes erect, oblong, obtuse, slightly pubescent at the base within, about 3 mm. long. Scales of the corona pure white, adnate to the gynostegium, the inner cylindrical, higher than the gynostegium, the outer much smaller, 10 cuneate-lobed. Stigma truncate or slightly conoidal. Follicles very slender, silky downy,

acuminately pointed at the apex, 3-6 cm. long, easily mistaken for leaves. Seeds flat, wing-margined, oblong, narrowing towards the base, papillose, 5 or 6 mm. long; coma white, plumose, 2-3 cm. long.

Pilcomayo Falls, Pilcomayo River (1004). April.

**Exolobus patens**, Four. in Mart. Fl. Bras., vi, pt. 4, 318, t. 94. Ex descr.

Pilcomayo River (1051). June.

A branching liana, in deep woods, running 10 or 12 m. over large trees, the stem 10-20 mm. in diameter. Flowers olivaceous in color, rotate,  $2\frac{1}{2}$  cm. in diameter when expanded; petals acuminate, and 3 or 4 times as long as the ciliate sepals. The stigma is surmounted by a beautiful 5-pointed star. Follicle ovate, glabrous, 10-12 cm long, 6-8 cm. in diameter at the base, ridged by 4 sharp longitudinal wings, with a partial, broader wing between two of the others, the edges of all of them revolute. Seeds flat, obcuneate, 7 mm. long, with thick winged margins, the attached plume very long and silky.

#### LOGANIACEÆ.

**Spigelia Humboldtiana**, C. and S., Linnæa, 1833, p. 200.

Pilcomayo River (966). March.

A low plant occurring in deep woods. The corolla is white, the flowers in terminal spikes 3-5 cm. long, two spikes together. Leaves verticillate, in 4s, the lowest smaller and opposite.

**Buddleia tubiflora**, Benth. in D.C. Prod., x, 433.

La Plata, Arg. Republic, and Asuncion (33). = Balansa 1018.

**Buddleia Brasiliensis**, Jacq. ex Spreng., System., i, 430.

Pilcomayo River (1527). = Balansa 1019.

This differs from the species common around Asuncion (*B. tubiflora*) in having the leaves more or less petioled, much smaller and axillary cymes, and a much smaller corolla. Both have handsome orange-colored flowers. *B. tubiflora* is used medicinally as an emollient by the Paraguayans. They flower from October to May, and sometimes grow to a height of 2 or 3 m.

## GENTIANEÆ.

**Limnanthemum Humboldtianum**, Griseb., Gent., 347.

Near Asuncion (713).

A beautiful aquatic, common in pools northeast of Asuncion, flowering from January to May. Leaves almost as large as those of *Castalia odorata*, and often 2 or 3. Corolla white, beautifully fringed on the margins of the lobes, yellow inside below the lobes. Anthers black on the back and edges of the cells. Stigma large with 2 erect, crimped lobes. Ovary large, pointed, violet-colored.

## HYDROPHYLLACEÆ.

**Hydrolea spinosa**, L., Sp. Pl., Ed. 2, 328.

Asuncion (228). December–January.

A coarse herb 6–9 dm. high, with many of the short lower branches ending in a sharp thorn. Flowers a bright blue. The whole plant covered with unequal glandular hairs, which adhere strongly to the drying-paper. Occurs in wet grounds.

## BORAGINEÆ.

**Cordia glabrata**, A. D.C. Prod., ix, 473.

Asuncion (792). October.

A tree 8–13 m. high, with smooth bark, looking something like a poplar. Leaves large, round-ovate, thick, glabrous, shining above, lighter-colored beneath. Flowers a light purple, showy, in terminal corymbs.

**Cordia hermanniæfolia**, Cham., Linnæa, 1829, p. 484.

Asuncion (156); Pilcomayo River (987). November–April.

Very different from the preceding species. A straggling, rough hairy shrub 15–24 dm. high. Leaves alternate, ovate or ovate-lanceolate, serrate, lighter colored above, hispid on both sides, acute, 4–6 cm. long, 2–4 cm. broad, on short petioles. Flowers glomerate in small cymes; corolla very small, obscurely 5-lobed, yellowish-white, veined with a delicate lilac outside. Calyx hispid. Fruit oval, about 5 mm. long, when fully ripe turning red, and the 2 cells hardening into an apparently single seed.



**Tournefortia psilostachya**, H. B. K., Nov. Gen. et Sp., iii, 78.

Pilcomayo River (1041). May. = Balansa 2045.

A shrub about 12 dm. high, with long virgate branches rising from near the base. Flowers in paniced secund spikes, small, greenish-yellow. Drupes yellow when ripe.

**Tournefortia Salzmanni**, D.C., Prod., ix, 524.

Asuncion (800). October.

Similar in inflorescence to no. 1041, but this has 2 rows of secund spikes on the branches of the panicle, while that has only one row. A twining shrub, climbing 2-3 m. upon trees, with a velvety fulvous tomentum on the leaves beneath, white pubescent above. Stem also fulvous-tomentose. In thickets.

**Heliotropium Curassavicum**, L., Sp. Pl., 130.

Asuncion (790); Pilcomayo River (1058). October-June.

This *Heliotropium* with scirpoid racemes of bluish-white flowers sprang up abundantly on the muddy flats of the Paraguay after the subsidence of a freshet, and also occurred on the borders of a saline pool on the banks of the Pilcomayo known as Laguna de las Palmas.

**Heliotropium Indicum**, L., Sp. Pl., 130.

Asuncion (56). November-January.

This plant occurs abundantly in the streets and waste grounds of the city, becoming an unsightly weed.

**Heliotropium leiocarpum**, Morong, n. sp.

Suffruticose, 3-6 dm. high. Stems glandular, fuscous-tomentose, much branched. Leaves opposite, subopposite or occasionally alternate, more or less glandular downy and pubescent or sometimes strigose on both sides, ovate, entire, or somewhat crenate or wavy on the margins, obtuse at the apex, rounded or subcordate at the base; blades 3-10 cm. long,  $1\frac{1}{2}$ -5 cm. wide; petioles 3-5 cm. long. Flowering racemes 3 or 4 together, 3-7 cm. long. Calyx deeply 5-lobed, the lobes subulate, glandular hairy, half as long as the corolla. Corolla bright blue, with a yellow eye at the base inside, very hairy in the throat, the tube spreading into a 5 crimped-lobed border, 5 or 6 mm. high. Fruit depressed globose, smooth, glabrous, about 3 mm. long and a little wider, slightly longer than the persistent sepals, deeply furrowed on 2 sides, the lobes not divaricate or toothed at the top, splitting into 2 carpels, each 1-seeded.

This plant is more robust, with much more showy flowers than no. 56, and is common in waste grounds and copses about Asuncion (634 and 786). April–August. = Balansa 2037 and 2039. These were distributed as *H. Indicum*, L.

**Heliotropium inundatum**, Sw., Flor. Ind. Occ., i, 343.

Asuncion (77); Gran Chaco (77 a). November–January.

**Heliotropium persicariæfolium** (D.C.), Britton.

*Heliohytum persicariæfolium*, D.C., Prod., ix, 556.

Caballero (409); Asuncion (754). January–June.

This shrub sometimes attains a height of 2 m. Flowers small, white, in elongated bifid spikes. In open grounds, roadsides near San Lorenzo and Caballero.

**Heliotropium fruticosum**, L., Sp. Pl., Ed. 2, 187. Ex descr.

Pilcomayo River (1528). January. = Balansa 2035.

Fruticose. Stems slender, branching, appressed-hispid. Flowering branches opposite, 15–25 cm. long, covered with small bracts for their whole length. Spikes at their summit, short, solitary, more or less scirpoid. Flowers comparatively large, white. Calyx lobes unequal, oblong-lanceolate, about equal to the tube of the corolla, pubescent. Fruit pubescent, without a beak, splitting into 4 nutlets, each of which has a large pit on its face.

## CONVOLVULACEÆ.

**Ipomœa acuminata** (Vahl.), R. and S., Syst., iv, 228.

Asuncion (699).

A very pretty species, with slender stems and lilac flowers, twining over bushes and small shrubs. Common in Paraguay, and blossoming from November to May.

**Ipomœa argyreia** (Chois.), Meisn. in Mart. Fl. Bras., vii, 246.

Caballero (583 and 583 a). January.

One of the shrubby Ipomœas, of which several species occur in the country. This grows on the railroad track near Caballero, and is from 9 to 12 dm. in height. Leaves alternate, entire, oblong, obtuse or acute, mucronate. Corolla large, rose-colored.

**Ipomœa Assumptionis**, Britton, n. sp.

Section Strophipomœa. Pubescent, twining, 1-2 m. long, stems terete; leaves slender-petioled, thick, hastate, entire-margined, obtuse and mucronulate at the apex, 6-9 cm. long, the basal lobes spreading or reflexed; peduncles shorter than the petioles, axillary, 1-2-flowered; flowers purple, 2 bracted, the bracts ovate, aristate; pedicels 5-15 mm. long, slender, bracted at the base; corolla purple, 3-4 cm. broad, tubular-funnel-form, the limb nearly 2 cm. broad; calyx-lobes aristate.

Gran Chaco, near Asuncion (584). = Balansa 1060. January-February.

**Ipomœa amnicola**, Morong, n. sp.

Stem slender, terete, striate, glabrous, twining. Leaves glabrous, entire, cordate-ovate, the sinus large, basal lobes rounded and sometimes divaricate, running to a bluntly acuminate, mucronate apex, the largest blades 7 cm. long, 5½ cm. broad; petioles 3-6 cm. long. Peduncles about 2 cm. long, usually bearing 3 flowers on pedicels 1-1½ cm. long, both peduncles and pedicels thick. Flowers funnel-form. Calyx of 5 rounded, entire, nearly or quite equal, coriaceous, mucronate sepals, their edges becoming membranaceous, 4 or 5 mm. long. Corolla lilac, with purplish stripes outside and a deep purple interior base, obscurely 5-lobed, 2-2½ cm. long, about as broad across the mouth when expanded. Stamens and style included. Pod conical, 8-11 mm. long, about half as broad, 2-celled, usually containing 2 fuscous-pubescent seeds.

This species resembles *I. coccinea*, L., but differs decidedly in the shape and lack of horns on the sepals, the color and shape of the corolla, inclusion of the stamens and styles, as well as in other characters. Growing in thickets and hanging over the banks of the Pilcomayo, usually running over bushes (974). March-April.

**Ipomœa Batatas** (L.), Lam. Encyc., vi, 14?

Asuncion (103). November.

**Ipomœa Bona-nox**, L., Sp. Pl., Ed. 2, 228.

Asuncion (269). December-April.

**Ipomœa fistulosa**, Mart.; Chois. in D.C., Prod., ix, 349.

Asuncion (80). November-March.

A stout shrub, growing on the lowlands on the banks of the Paraguay at Asuncion, 15-24 dm. in height. Many stems spring from the same root. Wood soft, with a large pith, and secreting a scanty milky juice. Flowers terminal, solitary or in small clusters.

Corolla very large and showy, a light purple or rose color without, and darker within. Capsules large, ovate, the 4 valves thick, brownish, opening wide in dehiscence, and containing 2-4 3-sided seeds, which are thickly clothed with a long fuscous wool.

***Ipomœa Martinicensis*** (Jacq.), Mey. Esseq., 98.

Gran Chaco, near Asuncion (362). December-January.

Procumbent or twining, with white flowers but little over 2 cm. long. It reminded me at the time of collection of our *Convolvulus arvensis*. The leaves, however, are elliptical instead of being sagittate.

***Ipomœa Morongii***, Britton, n. sp.

Erect or ascending, minutely puberulent at least above, 0.5 m. or more long. Stems angled; leaves petioled, the lower large, sometimes 2 dm. long and nearly as broad, 3-lobed to the middle or beyond, the lobes lanceolate, acute or acuminate, entire or very nearly so, mucronulate; upper leaves ovate, entire or lobed; flowers corymbose, numerous; ultimate pedicels short; calyx-lobes ovate, obtusish, 4-6 mm. long; corolla funnel-form (blue?), abruptly narrowed within the calyx, 6-7 cm. long, 4-5 cm. broad at the summit.

Luque (303). Perhaps the Mio-Mio, of Parodi, Contrib. Fl. Par., i, 16.

One of the shrubby *Ipomœas*, growing 9-12 dm. in height, varying much in different localities. The flowers are large, rose-tinted, purple at the base within; the tube covered with white, appressed hairs. The corolla is sometimes 8 cm. in length, and nearly as much in diameter when expanded. It occurs in open grounds at Asuncion and near the railroad track at Luque, flowering from December to May.

***Ipomœa trichocarpa***, Ell., Bot. S. Car. and Georgia, i, 258.

*I. commutata*, R. and S., Syst., iv, 228.

Asuncion (253). December.

***Ipomœa tuberculata*** (Desr.), R. and S., l. c., 208.

Asuncion (237). = Balansa 1059.

Taken altogether the handsomest Morning-glory of the country. It grows everywhere in the woods, climbing over trees 10 m. or more in height, and hanging out a rich profusion of lovely flowers, which open at sunrise and continue open for half the day. The leaves are palmately 5-lobed, the 2 lower lobes divided, very gla-

brous and of a dark glossy green, on long petioles. Corolla 5-7 cm. long, funnel-form, a light bluish-purple without, and a deep, dark purple at the base within. Capsule depressed-globose, 2-celled, 4-seeded; seeds black, trigonous, puberulent, the hilum marked with a deep scar. Specific name from the stem, which is white and warty. Blossoms from December to May.

***Ipomœa umbellata* (L.), Meyer, l. c., 99.**

Asuncion (649). April.

Procumbent or twining over bushes, the stem purplish or dark green, covered with a close stiff down. Juice milky. Leaves cordate-sagittate, large, downy. Flowers a light yellow, umbellate, 20 or more in an umbel, on peduncles 8-15 cm. long. Corolla trumpet-shaped, with scarcely any lobes, about 3 cm. long. Capsules globular, 7 or 8 mm. high, 4-seeded; seeds fuscous with minute pubescence on the surface and silky pubescence on the angles.

***Jacquemontia Blanchetii*, Moric., Pl. Nouv. Amer., 41, t. 27.**

Asuncion (638 and 687). April-May.

Twining over herbs and shrubs, with pretty little, bright blue, campanulate flowers, in umbels of 5-20, on long peduncles. Common in thickets.

***Jacquemontia Paraguayensis*, Britton, n. sp.**

Erect, branching, at least 0.5 m. high, densely and finely brownish-pubescent throughout. Stems and branches terete; leaves short-petioled, oblong, obtuse and mucronate at the apex, obtuse or rounded at the base, entire, 3-4 cm. long, 1-1.5 cm. wide; peduncles axillary, shorter than the leaves, umbellately 2-5 flowered; pedicels 3-5 mm. long; calyx-lobes all alike, ovate-oblong, acute, about as long as the pedicels; corolla white, narrowly funnel-form or nearly tubular, 10-12 mm. long; capsule ovoid, glabrous, shorter than the calyx.

Between Villa Rica and Escoba (594). January.

***Jacquemontia tamnifolia* (L.), Griseb., Fl. Brit. W. Ind., 474.**

Asuncion (679). April.

Trailing on the ground for several metres in old cultivated fields. Stem pilose with long, appressed white hairs. Flowers in dense, fuscous-woolly heads, on peduncles 8-12 cm. long. Sepals 5, clothed with long hairs, nearly equalling the corolla. Corolla tubular, light blue, white-blotched, slightly projected beyond the calyx.



**Evolvulus sericeus**, Sw., Prod. Flor. Ind. Occ., 55.

Luque (340). October–January.

A little herb spreading flat on the ground for some 10 cm. or more, branching numerous from the base. Flowers small, in leafy racemes or scattered along the stem, bright white, the corolla spreading wide open, and looking as much like a pearl shirt button as anything to which I could liken it. Common in the hard soil of the railroad track near Luque.

**Evolvulus mucronatus**, Sw. ex Wickstr., Guadal., 62.

Pilcomayo River (1020). May.

A small creeping plant, with terete, hairy, branching stem, growing among undershrubs on the borders of the campo at the Falls of the Pilcomayo. Leaves sparse, alternate, simple, entire, elliptical, mucronulate, 2–2½ cm. long, on petioles 3 or 4 mm. long. Flowers small, solitary, axillary, on pedicels 8 mm. to 2½ cm. long, jointed about half-way up, with 2 small bracts at the joint. Sepals 5, oval, green, ciliate, about half the length of the corolla. Corolla white, campanulate, with 5 broad lobes of very delicate texture, 7 mm. high. This plant is so hidden by the shrubbery that it is easily overlooked.

**Cuscuta trichostyla**, Engelm., Trans. St. Louis Acad. Sci., i, 495.

Asuncion (259). November–December.

The only *Cuscuta* that I found in Paraguay. This was growing upon *Solidago polyglossa*. Flowers small, white, crowded in small, glomerated cymes. The capsule which Dr. Engelman did not see is yellow, the crust thin, depressed-globose, 5 mm. wide, 3 mm. high, not half covered by the persistent sepals, with a central aperture 1 mm. in diameter; seeds about 2 mm. long, minutely downy, flattened or obscurely 3-angled.

## SOLANACEÆ.

**Solanum aridum**, Morong, n. sp.

Stem shrubby, terete, 3 dm. to 1 m. in height, sparsely branched, armed with straight acicular prickles, or sometimes unarmed or armed only at the base, glabrous below and stellately downy at the summit, usually leafless below. Leaves simple, alternate, oblong or ovate, obtuse, entire or with large teeth or occasionally lobed, pubescent, green above and white hoary below, most of the pubescence stellate; blade 3–5 cm. long and 1–2 cm. broad; petioles pubescent, 5–10 mm. long. Flowers solitary, axillary, on pedicels

about  $1\frac{1}{2}$  cm. long, thickening and elongating to 4 cm. in fruit. Calyx stellately pubescent,  $\frac{2}{3}$  as long as corolla, the lobes nearly subulate, much longer than the tube. Corolla sulphur-yellow, plicate, deeply cleft, pubescent outside, 2 cm. in diameter when expanded. Calyx and corolla usually 5-lobed, occasionally 4-lobed. Filaments very short; anthers nearly 1 cm. long, the pores minute, looking upwards. Stigma green, capitate. Ovary 2-celled. Fruit very large, glabrous, yellow, 2-celled, globular,  $1\frac{1}{2}$ -3 cm. in diameter.

The plant grows in dry or rocky places on the campo, and has a parched, dried appearance.

Falls of the Pilcomayo (1007). April-May.

**Solanum atropurpureum**, Schrank, Syll. Pl. Nov., 200.

Pilcomayo River (871). January.

Stem shrubby, erect, beset with long, white or yellowish downwardly pointed spines. Leaves large, green, deeply 5-7 lobed. Flowers small, yellowish-white. Berry blotched white and green, 8-10 cm. in diameter.

**Solanum boerhaaviæfolium**, Sendtn. in Mart. Fl. Bras., xiii, pt. 1, 48.

Between Pirayu and Jaguaron (34). April.

Stem shrubby, without spines, climbing on trees 3-5 m., very leafy. Flowers in cymes on capillary peduncles, white or very light blue. Berries black, about the size of those of *S. nigrum*.

**Solanum Brittonianum**, Morong, n. sp.

A shrubby, unarmed, glabrous plant. Stem erect below, twining at the top over the limbs of shrubs, 6-8 feet high, strongly flattened, angled. Leaves lanceolate, glabrous, entire, acute or somewhat obtuse, 5-10 cm. long and  $\frac{1}{2}$ -2 cm. broad, sloping at base into a petiole 5-20 mm. in length. Flowers in large, terminal, laxly paniced cymes. Calyx one-third the length of the corolla, the lobes ovate or rounded, somewhat mucronulate, shorter than the tube. Corolla lobes much shorter than the tube, ovate, puberulent on the outside. Filaments somewhat flattened, scarcely 1 mm. long; anthers 6-8 mm. long, the terminal pores introrse, oblique. Style included; stigmas shortly clavate, entire or sometimes 2-lobed.

Banks of the Pilcomayo (1531). January.

**Solanum Caavurana**, Vell., Fl. Flum., ii, t. 112.

Pilcomayo River (870). January.

Shrubby, erect, thornless, branching, about 6 dm. high. Leaves large, ovate-lanceolate, twin, on short petioles. Flowers small, white. Berries as large as peas, smooth, greenish.

**Solanum Capsicastrum**, Link., Cat. Hort. Berol.

Asuncion (617); Pilcomayo River (1529). = Balansa 2097.  
January–March.

A low shrub, 3–6 dm. high, with rough, straggling stems. Flowers white, not over 5 mm. in diameter when expanded. Stem, petioles, and leaves covered with a close, white, glandular, stellate pubescence. Fruit solitary along the stem, or in small clusters, a smooth red berry somewhat larger than a pea. Common in thickets throughout Central Paraguay.

**Solanum granuloso-leprosum**, Dunal., D.C., Prod., xiii, pt. 1, 115.

Asuncion (139). November–January.

A tall thornless shrub, thick-stemmed, covered in all its parts with a hoary, scurfy, stellate pubescence. Leaves numerous, large, ovate-lanceolate, on long petioles, rough with stellate pubescence above, whitish beneath. Stipules very large, round or oval, on short stalks. Flowers in clusters, blue, on long peduncles. Berries globose, about as large as a pea. This is a very conspicuous plant on the borders of woodlands. The dense whitish stellate tomentum has a granular and scaly look, and hence the specific name.

**Solanum Handelianum**, Morong.

*S. angustifolium*, Lam., Illus. no. 2343, not Miller.

Asuncion (818). October–November.

Here named for Prof. Pablo Handel, of the Collegio Nacional at Asuncion, who frequently accompanied the writer in his botanical excursions in Paraguay, and by his knowledge of the country and the languages of the people, and his friendly assistance, contributed much towards the collection.

A shrubby plant, strict and erect below, twining on the limbs of shrubs above, 2–3 m. in height. Stem very smooth, strongly 5-angled. Leaves few, linear or linear-lanceolate, entire, glabrous. Flowers blue, in terminal bractless cymes. Berries black.

**Solanum malacoxylon**, Sendtn., l. c., 51.

Asuncion (181); Pilcomayo River (1530). = Balansa 2105.  
October–May.

A tall, soft-stemmed shrub, with a large pith in the stem, growing sometimes 3 m. in height, entirely without thorns, very erect. Leaves glabrous, linear-lanceolate, 10–16 cm. long, acuminate, slop-

ing into a short petiole. Flowers light blue, in paniced cymes, on long drooping peduncles, showy. Berries purplish-black, smooth, with a bloom, somewhat larger than a pea. This plant was very abundant on the marshy borders of the Paraguay at Asuncion, and also in the water of the great laguna on the Pilcomayo River.

**Solanum mammosum**, L., Sp. Pl., 187.

Asuncion (102); near Luque (347). November–December.

A bushy shrub, 6–12 dm. in height. Stem and lower surface of leaves armed with straight, whitish-yellow spines, some of them nearly 2 cm. in length. Leaves very large, often nearly 2 dm. long by  $1\frac{1}{4}$  dm. broad, deeply, many-lobed, stellately pubescent beneath. Flowers bluish-purple or almost white. Fruit large, at first blotched with green and light yellow, becoming yellow when mature, globular, smooth. Some of the berries which I measured were 3 cm. in diameter. Common on low grounds.

**Solanum nigrum**, L., Sp. Pl., 186.

Buenos Aires (9); La Plata, Arg. Republic (27); Asuncion (262). October–December.

**Solanum nudum**, H. B. K., Nov. Gen., iii, 33.

Asuncion (126). November–May.

A shrub, or sometimes growing into a small tree 5 m. high, much branched, glabrous, the young shoots pubescent. Leaves alternate or sometimes in 4s, often geminate above, ovate-lanceolate, acuminate, entire, glabrous above, downy beneath, 5–10 cm. long, 2–4 cm. wide, sloping into a petiole 2–4 cm. long. Flowers in axillary clusters, the pedicels 1–2 cm. long. Calyx lobes ovate, shorter than the corolla tube. Corolla about 1 cm. in height, of 5 deeply parted segments with a greenish line down the centre and purplish on the sides. Berries red, as large as peas. This shrub is quite conspicuous in the thickets around Asuncion for its foliage and its clusters of red berries. It bears scattered spines on the branches, but generally is unarmed on the stem.

**Solanum oocarpum**, Sendt. in Mart. Fl. Bras., x, 106.

Pilcomayo River (885). January.

A tall shrub, with whitish stellate-tomentose stems. Leaves very large, 5–7 lobed, stellate-pubescent on both sides, beset with

stout spines on the midrib beneath and the winged petiole. Stem armed with strong, straight or hooked spines. Flowers not seen. Berries as large as marbles, green, covered with a yellowish tomentum.

**Solanum Pilcomayense**, Morong, n. sp.

A weak-stemmed, widely branching shrub, about 3 m. in height, supporting itself by the grasses and bushes among which it grows. Stem with 3 or 4 sharp angles or ridges, on which are often minute upwardly curved teeth that give a cutting edge to the ridge, otherwise smooth. Branches pubescent with small white, appressed hairs, or nearly glabrous. Leaves alternate, ovate, semi-cordate, entire or with a few small lobes, pubescent, especially below, the largest I collected 12 cm. long by 4 cm. wide, on petioles  $\frac{1}{2}$ - $2\frac{1}{2}$  cm. long. Flowers in small cymes, white or sometimes pale purple, not over  $\frac{1}{2}$  cm. high. Calyx with 5 ovate lobes and scarcely  $\frac{1}{3}$  as long as the corolla. Corolla deeply parted, the lobes ovate, obtuse. Anthers about 4 mm. long, the pores introrse, oblique. Style capillary, included; stigma capitate. Berries smooth, black, a little larger than those of *S. nigrum*.

This plant was found more or less all along the banks of the upper Pilcomayo, and even in the water of the great laguna where our voyage terminated (898). January-May.

**Solanum ramulosum**, Sendt., l. c., 45.

Villa Rica (458). January. = Balansa 2119.

A handsome unarmed shrub 12-15 dm. high, the branches and leaves hoary with stellate tomentum. Leaves green above, white beneath, ovate-lanceolate, solitary or often geminate, one of them smaller, 3-8 cm. long, 1- $2\frac{1}{2}$  cm. wide; petioles about 5 mm. long. Flowers white, numerous, in small axillary cymes. Berries small, black.

**Solanum sisymbriifolium**, Lam., Ill., no. 2386.

La Plata, Arg. Republic (25); Asuncion (91); Gran Chaco (587).

**Solanum urbanum**, Morong, n. sp.

A shrub 1-3 m. in height, unarmed. Stem angular, with gray bark, smooth below, the young shoots downy. Leaves entire, ovate-lanceolate, obtuse or acute at the apex, cuneate at the base, more or less pubescent on both sides, 3-6 cm. long and  $1\frac{1}{2}$ - $2\frac{1}{2}$  cm. broad. Petioles 1-2 cm. long, alate-margined above, pubescent. Flowers in small clusters, somewhat racemose, occasionally solitary, among the leaves at the top of the stem and branches. Pedicels erect or drooping, 1- $2\frac{1}{2}$  cm. long. Calyx pubescent, less than  $\frac{1}{2}$  as long as the corolla, with 5, often 10, subulate lobes longer than the tube, thickening and



persistent in fruit. Corolla blue, with white lines running down the sides, about 1 cm. high, with 5 broad, scarcely apparent lobes, their tips with a velvety tuft of hairs. Stamens much shorter than the corolla, the anthers thick, incurved at the apex, a little longer than the filaments, somewhat unequal. Style curved; stigma capitate. Fruit a large, smooth, globular berry, nearly 2 cm. in diameter, with a thick, fleshy rind, 4-celled; seeds compressed, turning black.

This plant is quite common in the streets of Asuncion on the borders of the sidewalks, growing to a much greater size on the roadsides in the outskirts of the city.

Streets of Asuncion (147); suburbs of Asuncion (708). = Balansa 2104. November–May.

**Solanum Villaricense**, Morong, n. sp.

A bushy, widely branched shrub 9–12 dm. high, all the parts, even to the calyx and corolla, covered with white or tawny stellate pubescence. Stem terete, armed with straight, acicular spines, becoming smooth and glabrous with age. Leaves lanceolate, somewhat obtuse, entire or occasionally a little lobed, lighter colored beneath, the blades 4–8 cm. long by 1–3½ cm. broad, sloping into a petiole 1–2 cm. in length. Flowers in large terminal cymes. Calyx ½ the length of the corolla, deeply cleft; lobes 5, as long as the tube, lanceolate-acuminate. Corolla white, 10–12 mm. high, and twice as much in diameter when fully expanded; lobes as long as the tube, ovate, mucronate-pointed. Filaments very short; anthers slightly puberulent, nearly 1 cm. long, the pores small, looking upwards. Fruit red, abundant, the berries as large as cherries.

This plant covers large tracts on the open hillsides at Villa Rica, and is quite conspicuous with its large white flowers and red berries (494). January.

**Solanum violæfolium**, Schott, in Spreng. Syst. Veg. iv, 403.

Pilcomayo River (920). February–March.

A creeping plant running for 6–9 dm., the stem rooting at the nodes, mostly under ground, glabrous and entirely free from spines or prickles. Leaves, as the specific name denotes, much like those of *Viola obliqua*, cordate-ovate, on petioles 3–8 cm. long. Flowers solitary, on axillary pedicels 2–5 cm. long, whitish; corolla spreading rotately ½–2 cm. in diameter, the 5 deeply cut lobes ciliate, eroded or a little fimbriate. Fruit a large oval berry, over 2 cm. long, yellow when ripe.

This plant grows on the sides of steep banks on the borders of the Pilcomayo River, in shady places, its long stems often running under leaf mould and loose soil, appearing here and there above ground.

**Physalis viscosa**, L., Sp. Pl., 183.

Asuncion (115); Pilcomayo River (1532). November–February.

Occurs in door-yards and waste grounds around Asuncion, as well as far up the Pilcomayo in uninhabited districts. Birds, monkeys, and insects eat the fruit with avidity. I lost a good many specimens through cockroaches, which devour all the berries that are not protected. It is used in Paraguay medicinally, being regarded by the natives as an efficacious remedy for children's complaints. The fruit is often sold in the city market of Asuncion.

**Capsicum annuum**, L., Sp. Pl., 188.

Asuncion (696). April–May.

Running wild in the waste grounds about the city. A shrub about 15 dm. high. The fruit is conical, 4–6 cm. in length, bright red when ripe, very hot to the taste. It is sold in the markets of Asuncion, and much relished as a flavoring for soups. Many medicinal virtues are attributed to it.

**Capsicum baccatum**, L., Sp. Pl., 188.

Villa Rica (388); Pilcomayo River (961). January–March.

A shrub 6–9 dm. high. Berries yellowish or red when ripe, oval, sometimes 13 mm. long, intensely hot to the taste.

**Jaborosa integrifolia**, Lam., Encyc., iii, 189.

Buenos Aires (6). October.

**Salpichroa rhomboidea** (Gill. and Hook.), Miers in Hook. Lond. Jour. Bot., iv, 326.

Asuncion (707). May.

Frutescent, 6–9 dm. high, growing in tangled masses by the roadsides. The flowers are small, white, nodding, with an urceolate corolla. Stems square, with a dead, dry look about them, the young shoots and branches green, bearing 2 rows of hairs which are curiously curled, nearly looped upwards. The older stems are weak and brittle, with a corky exterior.

**Lycium Tweedianum**, Griseb., Pl. Lorentz, 168.

Pilcomayo River (1006). May.

A thorny shrub  $1\frac{1}{2}$ –4 m. high, with many short, lateral, very brittle branches, sharply spinous at the apex. Flowers small, solitary, lilac. Fruit a small berry, red when ripe.

**Lycium Morongii**, Britton, n. sp.

A glabrous shrub. Leaves ovate or oval, thick, pinnately veined, 5-7 cm. long, 2-3 cm. wide, acute at the apex, narrowed at the base, crenulate on the margins, borne on petioles 3-10 mm. long; flowers about 3 mm. long, numerous, in dense clusters at the nodes; pedicels about 2 mm. long; corolla 4-lobed to about one-fourth of its length; stamens 4, inserted near the summit of the corolla-tube; stigma capitate; calyx 4-toothed, the teeth triangular, obtuse. Fruit nearly globose, 3 mm. in diameter.

Asuncion (161). November-May.

A straggling shrub, growing 3-4 m. high in the lowlands around Asuncion, and also near the road on the way to Lympio. The limbs are often flexuous, and the leaves shining on the upper surface. Strong spines occur at the ends of short lateral branches. The blood-red pulpy disk upon which the ovary is seated becomes dry and membranous in fruit. Fruit a dark purple berry.

**Datura fastuosa**, L., Sp. Pl., Ed. 2, 256.

Asuncion (652). January-May.

A favorite flower in Asuncion gardens where it sometimes grows to the height of 5 m. or more. Corolla light purple, very large and showy, double. It often escapes into waste grounds where it retains the double corolla, sometimes having as many as 3 corollas, one inside of the other. Running wild, it is very apt to have deformed fruit. Sometimes 2 or 3 imperfectly developed burrs coalesce in one.

**Datura Metel**, L., Sp. Pl., Ed. 2, 256.

Asuncion (69). October-February.

The common *Datura* around Asuncion, as frequent there as is our *D. Stramonium* here. A very beautiful flower, the corolla large, funnel-form, pure white and very fragrant.

**Cestrum calycinum**, Willd.; R. and S. Syst., iv, 808.

Asuncion (227); Caballero (445). December-January. = Tweedie 1193 and Balansa 2092.

A leafy shrub which sometimes grows into a small tree 5 m. or more in height. Flowers tubular, the corolla downy, greenish-yellow, 1 cm. or more in length.

**Cestrum Parqui**, L'Her., Stirp., iv, 73, t. 36.

Buenos Aires (16); Asuncion (257 and 369). November-December.

Common both in the Argentine Republic and Paraguay. A very bushy shrub, 1–2½ m. high, with clusters of pale yellow, tubular flowers. Fruit an oblong purple berry-like capsule. Often grown in gardens at Asuncion, and common in thickets about the city.

**Nicotiana glauca**, Graham, Bot. Mag., t. 2337.

Asuncion (38).

Usually a shrub, but sometimes a small tree 5–7 m. in height. Stem and leaves glaucous, the latter ovate, acute at apex and rounded or cuneate at base, on petioles 3 or 4 cm. long. Flowers very numerous, in large, naked, terminal, drooping clusters or panicle racemes. Corolla yellow, tubular, 4 cm. long, glandular hairy on the outside. Fruit a thickish ovoid capsule, dehiscing in 5 valves at the apex.

Common in the lowlands and on the river banks, where it is very conspicuous. It is often found in small forms growing upon the tiled roofs of houses along the gutters at Asuncion. It blossoms from November to February, and even longer.

**Nicotiana longiflora**, Cav., Deser. Pl., 106.

Asuncion (44). November–February.

This tobacco is very common in the suburbs of Asuncion, and frequently grows in the streets and waste grounds of the city itself. The flower opens at night and closes early next day. Corolla with a slender tube 7 or 8 cm. in length, white or bluish-white. Foliage viscous-pubescent. The largest leaf which I noted was about 10 cm. long, and the largest described by DeCandolle is 23 cm. long by 7½ cm. wide.

**Nicotiana longiflora**, Cav., var. **grandifolia**, Morong, n. var.

This form is distinguished from the type by its magnitude, unequal calyx lobes, and its denser pubescence. The stems are nearly twice as thick, tube of the corolla 9 or 10 cm. long, lobes of calyx 15 to 20 mm. long, and the largest leaves are 4–5 dm. in length by 1½–2 dm. in breadth. Flowers nocturnal, and slightly fragrant when freshly open and wet with the morning dews.

The large leaves often lie flat on the ground, and when hung in the sun to dry cure like those of *N. rustica*. I have no doubt that they contain nicotine enough to make a very good tobacco, as they have all the taste of that while green.

Banks of the Pilcomayo (1533). February–May.

**Petunia violacea**, Lindl., Bot. Reg., t. 1626.

Asuncion (785). August–September.

As I always found this *Petunia* in the neighborhood of dwelling-houses and in waste grounds where house rubbish was dumped, I thought it probably a garden escape, but as it occurs native in Southern Brazil (Fl. Bras., x, 172) it may well be a native plant of Paraguay.

**Bouchetia anomala** (Miers), Britton and Rusby, Trans. N. Y. Acad. Sci., vii, 12.

Pilcomayo River (943). February–April.

An herb with thick tough roots, 4 or 5 dm. high, with many virgate, nearly naked branches. Stem, pedicels, and calyx rough pubescent. Leaves glabrous or pubescent, lanceolate, linear or the lowest spatulate, 1–5 cm. long. Flowers solitary, in a long raceme, opposed to a leaf or bract. Calyx  $\frac{1}{2}$  as long as the corolla, with 5 linear lobes. Corolla about 1 cm. high, funnel-form, white, with 3 delicate purple lines down the lobes on the outside and yellowish at the base inside; lobes 5, broad. Pedicels 1–1 $\frac{1}{2}$  cm. long. Fruit a large, oval capsule, 2-celled, many-seeded, dehiscing by 4 valves.

**Schwenkia Americana**, L., Sys. Nat., iii, 62.

Asuncion (112). November–December. = Balansa 2171.

The *Schwenkias*, of which there may be 20 species, all but one confined to South America, were formerly classed in *Scrophularinææ*, but now placed by Bentham and Hooker in *Solanaceææ*. The species here noted is a frutescent plant about 6 dm. in height, with pubescent stem, leafy below, with a large terminal panicle of slender, naked branches. Leaves with blades 3–7 cm. long, rounded or semi-cordate at base, on petioles 5–12 mm. in length. The flowers are peculiar. Calyx scarcely 3 mm. long, with 5 minute ovate lobes. Corolla very slender, tubular, about 10 mm. long, lurid purple, 5-nerved, with a thick, green, glandular border that closes in 4 lobes over the stigma, from the 4 corners of which project 4 clavate teeth. Fruit a globular capsule, 3 or 4 mm. in diameter, 1-celled, many-seeded, dehiscing by 2 valves. Seeds pitted, commonly hexagonal.



## SCROPHULARINEÆ.

**Angelonia integerrima**, Spreng., Syst. Cur. Post., 235.

Asuncion (217). December. = Balansa 2145.

We have nothing resembling this genus in our country. Stem frutescent, 1 m. or more in height, glabrous, ascending or erect. Leaves opposite, entire, oblanceolate or lanceolate, acute or obtuse at the apex, sessile, 5-12 cm. long. Flowers blue, in long, terminal racemes (3 dm. or more). Calyx of 5 small, green sepals with membranous edges, closely appressed and about  $\frac{1}{4}$  as long as the corolla, persistent in fruit. Corolla ventricose, gibbous at base, not quite 1 cm. broad, 5-lobed, the 4 lower lobes rounded and reflexed, the 5th a broad, keeled hood with 2 folds on the outside at the upper part, which are greenish at the top and in the interior. Hood surmounted by an erect lobe crimped below and with a white projection at base inside, prettily spotted with white and blue on the lower side. Stamens 4, inserted on the corolla near the base; anthers with 2 divaricate cells, opening by slits at the top, their edges blue; filaments blue at the base. Fruit a large, ovoid, pointed capsule. It is almost impossible to convey any intelligible idea of this curious flower by description. It is not only curious to the stranger from northern climes, but very beautiful.

**Stemodiakra durantifolia** (L.), Kuntze, Rev. Gen. Pl., 466.

Asuncion (78). November.

Herbaceous. Stem 3-4 dm. high, branched, the whole plant glandular hairy. Leaves opposite or in whorls of 3s or 4s, lanceolate, acute at apex, sessile, auriculate. Flowers azure blue, in long terminal spikes.

Wet grounds on the river banks.

**Stemodiakra linearifolia**, Morong, n. sp.

Stem square, the angles sharp or obtuse, 4 dm. to 6 dm. high, the whole plant very glabrous, much branched above. Leaves opposite or occasionally on the inflorescence in 3s or 4s, linear, obtuse at the apex, sessile or slightly amplexicaul, punctate-dotted, 2-7 cm. long and 2-7 mm. broad. Flowers in long, slender, terminal racemes, in whorls of 3, each subtended by a subfoliaceous ovate bract; pedicels scarcely 1 mm. long. Corolla blue, blotched with white, about 3 mm. high. Calyx with 5 subulate lobes. Style much exserted; stigma thick, laterally flat.

Pilcomayo River (1534). January. = Balansa 2162.

**Stemodiakra hyptoides** (C. and S.), Kuntze, l. c.

Near Trinidad (833). November.

My specimens were none of them over 4 dm. high. Flowers much like those of no. 78, azure blue, and the plant very viscous glandular, but the leaves small and spatulate.

**Stemodiakra verticillata** (Miller), Kuntze, l. c.

Asuncion (800 a and 808); Pilcomayo River (972). October–March.

Herbaceous, 5–25 cm. high. Corolla azure, lighter colored within, the throat delicately fringed. This little plant has the odor of mint when freshly gathered.

In grassy grounds or in wettish places in the woods.

**Monniera lanigera** (C. and S.), Kuntze, l. c., 463.

Villa Rica (496). January.

A creeping or ascending bog plant, 5–15 cm. high. Stem densely villous. Leaves opposite, entire, orbicular-ovate, obtuse at the apex, amplexicaul, 8–15 mm. long. Flowers axillary, pedicellate, with 2 minute bracteoles under the calyx. Corolla blue.

**Monniera calycina** (Forsk.), Kuntze, l. c., 462.

Asuncion (90); Pilcomayo River (1029). November–May.

Growing in marshes at Asuncion, and as an aquatic, mostly submerged, in the Pilcomayo River near the Falls.

**Scoparia dulcis**, L., Sp. Pl., 116.

Asuncion (97). November.

**Scoparia pinnatifida**, C. and S., Linnæa, viii, 22.

Asuncion (72). November–December.

**Veronica arvensis**, L., Sp. Pl., 13.

La Plata, Arg. Republic (26). October.

**Buchnera elongata**, Sw., Flor. Ind. Occ., 1061.

Near Asuncion (324). December–May.

**Gerardia communis**, C. and S., Linnæa, iii, 12.

Asuncion (264); near Caballero (430). December–January.  
= Balansa 2152.

A shrubby, much branched plant, 3 or 4 dm. high, with large purple flowers, common on the campos east of Asuncion as far as Villa Rica.

**Gerardia genistifolia**, C. and S., l. c., 15.

Asuncion (231); Pilcomayo River (915). December–February. = Balansa 2168.

A very showy suffruticose species. Stems with many opposite, erect branches, 5–10 dm. high. Flowers numerous, in long terminal racemes, large, purple. This plant made a great display along the low grounds on the borders of the Pilcomayo River, where it occurred for miles.

#### LENTIBULARIÆ.

**Utricularia juncea**, Vahl., Enum., i, 202.

Villa Rica (581). January. = Balansa 2071

**Utricularia subulata**, L., Sp. Pl., 18.

Luque (332). December. = Balansa 2075.

#### GESNERACEÆ.

**Achimenes tubiflora** (Hook.), Britton.

*Gloxinia tubiflora*, Hook., Bot. Mag., t. 3971.

Pilcomayo River (865). January.

A fine plant 6–9 dm. high. Leaves thickly clustered towards the base. Flowers racemed on long naked stems. Corolla white, funnel-shaped, the long tube (5–7 cm.) projecting at right angles from the calyx, with a short, obtuse spur projecting from the other side, which is filled with nectar. Fruit a conical capsule, 1-celled, containing a multitude of small oblong seeds looking like little worms.

On the open campo, at a place known as Obraje de Pedro Gill.

#### BIGNONIACEÆ.

**Bignonia Morongii**, Britton, n. sp.

An erect, branching, glabrous shrub. Leaves simple, cuneate-oblong, thick, obtuse or rounded at the apex, narrowed at the base into a short petiole, entire, clustered at the ends of short, lateral branches, reticulate-veined, 3–5 cm. long, about 1 cm. wide; flowers terminating the short lateral

branches, solitary or in pairs, peduncled; peduncles slender, bracted, about 1 cm. long, lepidote; corolla about 3 cm. long, the tube abruptly narrowed above the base; calyx narrowly campanulate, lepidote, 1 cm. long; pod linear, subulate-tipped, glabrous, terete, 8-10 cm. long, 6-7 mm. thick; wings of the seed about as wide as the body.

Trinidad (276); Pilcomayo River (868). December-January.

Often growing into a small tree, 15 or 20 feet high, with a dark, wrinkled bark. Corolla bright yellow.

***Bignonia Tweediana***, Lindl., Bot. Reg., xxvi, t. 45.

Luque (719). May. = Gibert 1340.

The pods of this liana are flat, sometimes 5 dm. long by 1 cm. wide, generally in pairs.

***Bignonia venusta***, Ker, Bot. Reg., t. 249.

Asuncion (745). June-July.

A strong liana climbing by tendrils for 8 or 10 m. over trees. Flowers a deep yellow, in large terminal corymbs, very showy. Fruit a smooth, flat, 2-edged pod, 15 cm. or more in length, and 1-1½ cm. wide. Very common in thickets.

***Bignonia Columbiana***, Morong, n. sp.

Stem stout, glabrous, with grayish wrinkled and warty bark. Leaves ternate, a pair or several on a common stalk; common petiole slender, pubescent, 2-2½ cm. long; petiolules very slender, pubescent, 1-2 cm. long, the middle one longest; leaflets coriaceous, glabrous, oval, entire, obtuse and emarginate at the apex, rounded at base, 3-6 cm. long, 2-3 cm. wide. Flowers not seen. Fruit a flat pod, thick, with a very narrow raised border, acuminate pointed at the apex, 20-26 cm. long, 1-2 cm. wide, on stout stalks 2-3 cm. long, from 3 to 5 in a cluster. Seeds 3 cm. long, the scarious wing broader at the lower end, thickened along the outer side in the middle. Tendrils at the base of the leaf-bearing stalks.

Climbing upon trees on the banks of the Pilcomayo (1535). March.

***Bignonia corymbifera***, Vahl., Ecl., ii, 45, t. 17. Ex descr.

Asuncion (166); between Villa Rica and Escoba (480); Trinidad (835). November-April. = Balansa 497 a.

A very showy species with large panicles of rose-purple flowers. Stems glabrous, striate, grayish, sometimes white-spotted, often purple tinted on young shoots, glabrous or minutely pubescent on the inflorescence. Variable in the size and shape of the leaves,

which are bifoliate or trifoliate, a simple tendril often taking the place of a leaflet. Leaflets always glabrous, shining above, reticulate veiny, rounded or subcordate at base, abruptly acuminate at the apex, oval and ovate-lanceolate, 3–10 cm. long, 2–7 cm. broad. Calyx campanulate, loose, 5–8 mm. long, distantly 5 denticulate and 5-nerved. Corolla pubescent, 2–4 cm. long, obscurely bilabiate, the upper lip with 2 rounded, entire lobes, lower with 3 rather larger lobes. Style and stamens included. Fruit not seen. The flower buds and flowers are somewhat viscous, adhering to the drying-paper.

**Bignonia eximia**, Morong, n. sp.

Very glabrous in all its parts. Stem striate. Leaves opposite, bifoliate, apparently ecirrrose; petioles  $1\frac{1}{2}$ –3 cm. long; petiolules 4–6 mm. long. Leaflets entire, elliptical, narrowed at both ends, acute and mostly cuspidate at the apex,  $2\frac{3}{4}$ –4 cm. broad in the middle, 6–10 cm. long, reticulate-veiny on both sides. Pedicels axillary, 1-flowered,  $3\frac{1}{2}$  mm. long. Calyx campanulate, 4 or 5 mm. high, distantly denticulate. Corolla purple, infundibuliform, 5 cm. high, 5 cm. or more in diameter across the mouth when expanded, bilabiate, upper lip 2 and the lower 3-lobed, the lobes broad. Fruit not seen.

A very showy species, climbing tall trees.

On the highway between Villa Rica and Escoba (595). January.

**Bignonia**, species undetermined.

Near Trinidad (796). October. = Balansa 499.

**Macfadyena cynanchoides** (Cham.), Morong.

*Dolichandra cynanchoides*, Cham., *Linnaea*, 1832, p. 658.

*Spathodea?* *Dolichandra*, D.C., *Prod.*, ix, 205.

Between Villa Rica and Escoba (527); Lympio (732); Pilcomayo River (910). February–May.

This genus is tendril climbing, like most of the Bignonias, but differs from that genus principally in having a spathaceous calyx, fissured on one side, with a colored involucre of 2 delicate foliaceous bracts just beneath the calyx. The species here noted has opposite, bifoliate leaves, with lanceolate, apiculate, coriaceous, shining blades. Flowers solitary or in clusters of 3–6; calyx and corolla red; corolla 4 or 5 cm. long, infundibuliform, curved; stamens and style exserted, presenting a very showy appearance.



**Melloa populifolia** (D.C.), Britton.*Bignonia populifolia*, D.C., Prod., ix, 159.

Asuncion (1536). October.

A tendril climber, with large bifoliolate, rounded leaves and clusters of large, showy yellow flowers. Calyx much inflated, spathaceous, the fissure oblique, running to an aristate point on one side. Corolla infundibuliform, with a swelling tube and flaring, rounded lobes, often 6 or 7 cm. in length. Stem stout, warty, the branches striate. This plant is very conspicuous when in flower, and would make a beautiful object in gardens, though the Asuncionites never seem to have taken it for that purpose.

**Cuspidaria pterocarpa** (Cham.), D.C., Prod., ix, 178.

Caballero (596). January.

A genus closely allied to *Bignonia*, but differing in its tetrapterous fruit, hirsute anthers, and uniformly cuspidate-lobed calyx, from which the generic name is derived by DeCandolle. The species here noted climbs over large trees without tendrils, so far as I could see, with bi-tri-foliolate leaves, and lax, terminal racemes of showy funnel-shaped, yellow flowers. It is very ambitious, like all the South America lianas, and climbs to the very tops of the trees, and throws out its clusters of conspicuous flowers above their heads.

**Adenocalymna nitidum**, Mart. in D.C. Prod., ix, 200.

Asuncion (197). November–December. = Gibert 1106.

Stem glabrous, striate, cinereous-pubescent on the inflorescence. Leaves bifoliolate; petioles and petiolules about equal, canaliculate. Leaflets rigid, glabrous, shining above, elliptical, rounded at the base, acute and cuspidate at the apex, 6–12 cm. long, 3–4 cm. wide. Calyx marked by 2–17 black, cup-shaped glands, which also occur occasionally on the bracteoles. Corolla 6 or 7 cm. in length, bright yellow, often shading off into white towards the summit, with a ventricose tube and a large flaring border having 5 broad, rounded, subequal lobes. Fruit a heavy, drooping capsule, 2-celled, somewhat tetragonous when young, becoming at maturity almost cylindrical and very hard, 20 cm. long and 2 cm. wide, usually 2 on a peduncle.

**Anemopægma flavum**, Morong, n. sp.

A genus very similar to *Bignonia* in flowers, leaves, and stems, differing in having a thick pulvinate disk, stamens and styles always included, the calyx

always loose and campanulate, and usually truncate. It differs principally in the fruit, the capsule being broad ovate. The species here noted is a tendril-climbing shrub with ash-colored, striate, glabrous stems, hispid on the summits of the youngest branches. Leaves bi-tri-foliolate; petioles 10–15 mm. long, striate beneath, hispid and canaliculate above; petiolules 5 or 6 mm. long, striate and glabrous beneath, canaliculate and hispid above like the petioles, the hairs dense and running up the thick midrib and lowest nerves of the upper surface of the leaflets. Leaflets coriaceous, entire, elliptical, very glabrous except as above stated, nerves prominent beneath, narrowed at both ends, mucronate at the apex, 3–6 cm. long, 1–3 cm. wide. Flowers 1–3, axillary, on striate, glabrous, or slightly pubescent pedicels 8–10 mm. long. Calyx glabrous, nerveless, or obscurely nerved at the base, loosely campanulate, truncate, with a membranous margin, 7 or 8 mm. long, yellowish in color. Corolla yellow, darker colored at base, glabrous, infundibuliform, the tube slender, 4 or 5 cm. long, spreading about 2 cm. across the lobes when expanded, the lobes large and rounded, somewhat ringent. Fruit not seen.

On the highway from Villa Rica to Escoba (597). January.  
= Gibert 1104.

**Pithecolobium cordifolium**, Mart. in D.C. Prod., ix, 194.

Asuncion (158 and 749). = Balansa 485.

Climbing by tendrils over shrubs and trees. Stems smooth, hexagonal, the branches fuscous-downy. Leaves trifoliolate; leaflets ovate or orbicular, cordate, downy. Calyx downy, truncate or 5-dentate, scarcely  $\frac{1}{2}$  as long as the corolla. Corolla yellow, very close downy, smooth and dark at the base outside, curved, trumpet-shaped, the lobes broad, rounded, subequal, 4 or 5 cm. long, showy. Fruit a large, flattish, 2-celled, 2-valved capsule, densely echinate, 10–12 cm. long by 4 or 5 cm. broad, filled with broadly winged seeds, the wings silvery, delicate membranous and transparent. This is a fine liana, the flowers showy and the large echinate fruit very conspicuous.

Flowers November–February; fruit June–August.

**Amphilophium paniculatum**, H. B. K., Nov. Gen., iii, 149.

Between Villa Rica and Escoba (446); Asuncion (753).

A tendril climber distinguished by having a double calyx, the outer spreading, with a sub-5-lobed, reflexed border, and the inner appressed and bilabiate. Corolla bilabiate, with a short tube about 2 cm. long, ventricose at the throat, upper lip galeate, bilobate, the lower 3-lobate. Fruit very different from that of 158, in company with which it grows, being a thick, subligneous, lenticular capsule,

which is 2-celled, 2-valved, smooth or nearly so, 10–15 cm. long and 4 or 5 cm. broad. The seeds are winged membranously as in 158, but yellowish in color. The valves when emptied of their contents look like small boats, and are used for holding beads, pins, and small ornamental objects.

Flowers January and February; fruit June–August.

**Tabebuia araliacea** (Cham.), D.C., Prod., ix, 221.

Asuncion (740). May.

A large tree 10–13 m. in height, with grayish bark which is somewhat fissured below and smooth above. Fuscous-downy on the young branches and inflorescence. Leaves opposite, digitate, the leaflets 3–5, elliptical, acute or rounded at base, obtusely acuminate at apex, shining above, lighter and prominently nerved beneath, the largest about 10 cm. long and 5 cm. broad. Flowers in sessile corymbs, bright purple, large and conspicuous. Calyx thick, purplish, obscurely 5-lobed. Corolla funnel-form, tube ventricose above, somewhat bilabiate, upper lip with 2 rounded lobes, lower with 3 emarginate, rounded lobes. Sometimes the corolla is 6 cm. in length, spreading 3 or 4 cm. at the border, white downy outside and with translucent hairs within. A tree very common in the woods around the city, and when covered with its blossoms attracting great attention in the forest, as it is high enough to overtop most of its companions.

**Tabebuia Avellanedaë**, Lor., Griseb. Symb. Flor. Arg., 258.

Pilcomayo River (901).

One of the largest trees in Paraguay, common in the forests of the Pilcomayo region, growing at least 15 m. in height. It is popularly known as the Lapacho, and in the Argentine Republic as the Lapacho morado or colorado. I gathered the leaves only, as it flowers in August, a period when I was not on the river. Leaves digitate; leaflets 3–5, elliptical, abruptly acuminate, serrate, glabrous, the 2 middle ones the largest. Bark grayish. Wood very hard, bluish colored, considered a valuable timber for building purposes, nearly equalling the Quebracho colorado in that respect.

**Tecoma ochracea**, Cham., Linnæa, vii, 653.

Asuncion (791). October. = Balansa 3237.

A fine tree growing in the woods near Asuncion from 10 to 13 m. in height, with brown bark on the trunk, silverish-gray on the

young branches. Flowers only seen, as the leaves do not appear till after flowering. The flowers are bright yellow, very numerous, 12–30 in a cluster. Calyx 5-dentate, about  $\frac{1}{6}$  as long as the corolla, densely hirsute with long ochraceous hairs. Corolla trumpet-shaped, with 5 large, rounded, emarginate or eroded, subequal lobes, 5 or 6 cm. in length, many-nerved and glabrous without, and clothed with long ochraceous hairs in the interior. Fruit not seen. The great masses of yellow flowers on the naked branches make a splendid display at the time of blossoming.

#### PEDALINEÆ.

**Craniolaria integrifolia**, Cham., Linnæa, vii, 725.

Near Asuncion (824). November. = Gibert 1021.

A coarse, branching herb, beset with glandular hairs which render it very adhesive to the drying-paper. Stem succulent. Leaves rounded-ovate and cordate, or somewhat reniform and much broader than long, the largest 7–10 cm. broad and 5–6 cm. long. The flower has a membranous spathe-like calyx. Corolla white, with a slender tube 10–13 cm. long and a large bilabiate limb, the upper lip 2-lobed, lower 3-lobed, the middle lobe very large, rounded. Not seen in fruit. Very much like our *Martynia*. Roadsides east of the city.

#### ACANTHACEÆ.

**Thunbergia alata**, Boj. in Hook. Ex. Fl., t. 17.

Asuncion (688). April.

A slender vine, climbing over bushes. Leaves ovate, cordate-hastate at base, on alate petioles. Flowers very pretty, the tube of the corolla dark purple without and within, with 5 spreading lobes of a chrome-yellow, which are oblique to the tube.

**Hygrophila lacustris**, Nees, D.C., Prod., xi, 86.

Trinidad (272); Pilcomayo River (1537). December–January.

Some of this was distributed as *Hygrophila conferta*, Nees.

**Hygrophila oblongifolia**, Nees, Mart. Fl. Bras., ix, 21.

Luque (295). December.

Flowers light purplish-red, in many sessile axillary verticils for 3 or 4 dm. along the upper part of the stem. Stem square with excavated sides and 4 sharp angles below, very hairy, 6–12 dm.

high. Leaves oblong-elliptical, 4–15 cm. long,  $1\frac{1}{2}$ –4 cm. broad, the uppermost sessile, appressed-hispid on both sides, especially on the veins beneath.

**Ruellia Morongii**, Britton.

*Cryphiacanthus acaulis*, Nees in Mart. Fl. Bras., ix, 49, not *Ruellia acaulis* R. Br.

Near Asuncion (323). December.

Acaulescent, 7 to 10 cm. high, growing on the Gran Campo, some 5 or 6 miles from Asuncion. Flowers 2 or 3 on a short peduncle, infundibuliform, lilac without, and a deep purple mingled with streaks of yellow within. The flowers are quite conspicuous, appearing when growing almost as large as the plant.

**Ruellia spectabilis**, Britton.

*Cryphiacanthus angustifolius*, Nees in D. C. Prod., xi, 199, not *Ruellia angustifolia*, Sw

Caballero (461). January.

This species has branching stems 10–12 cm. high, linear, sessile leaves, and flowers larger than in no. 323, otherwise much the same. Occurs on the railway track.

**Ruellia Bahiensis** (Nees), Morong.

*Dipteracanthus Bahiensis*, Nees in Mart. Fl. Bras., ix, 39.

Between Villa Rica and Escoba (526); Asuncion (659). October–March.

A square-stemmed suffruticose plant 13–25 cm. high, in open grounds and among bushes in thickets. Stem hispidly hairy on the upper portion. Leaves opposite, oval or ovate, obtuse at the apex, more or less hispidly hairy and ciliate, 2–6 cm. long, 1–2 cm. wide, sloping into a petiole 1–7 mm. long. Flowers white or pale blue. Calyx divided to the base, the lobes linear or subulate, equal, strongly hispid ciliate,  $\frac{1}{4}$  or  $\frac{1}{3}$  as long as the corolla. Corolla  $2\frac{1}{2}$ –3 cm. high, somewhat 2-lipped, the lobes broad, rounded, and oblique to the pubescent tube. Flowers sessile, axillary, in pairs. Capsule obovoid, 8–10 mm. long, compressed at the base, pubescent.

**Ruellia Tweedii** (Nees), T. Anderson in Herb. Kew.

*Blechnum Tweedii*, Nees, D.C., Prod., xi, 466.

Pilcomayo River (967). March. = Balansa 2458.

Many-branched from the base, the stems 6–9 dm. long, nearly prostrate, the ends curling over and taking root at the nodes. Found only in fruit. Deep, moist woods.



**Ruellia lanceolata**, Morong, n. sp.

This species has a terete, white pubescent stem 3-5 dm. high. Leaves opposite, hirsute on both sides, the hairs often stellate, the veins prominent and white, lanceolate, acute at the apex and sloping at base into a petiole  $\frac{1}{2}$ -2 cm. long, the blade 4-8 cm. long and  $1\frac{1}{2}$ -3 cm. broad. Flowers in sessile, axillary verticils, 1-3 on a peduncle, many bracted, the bracts and calyx lobes similar, strongly nerved, linear-acuminate. Calyx very deeply 5-parted,  $\frac{1}{2}$  as long as the corolla tube, with the bracts hoary hirsute. Corolla purple, 4 cm. long, the tube puberulent outside and very hairy within, longer than the lobes; lobes 4, subequal or slightly 2-lipped, the upper lip entire, the lower 3-lobed, middle lobe longest. Stamens 4, didynamous, 2 perfect; anther 2-celled, one of the cells abortive; filaments long, decurrent on the corolla tube below their insertion. Capsule flattish, 4-sided,  $1\frac{1}{2}$  cm. long, glabrous, olive-colored, 3 or 4 seeded by abortion.

A somewhat erratic member of the genus. Lobes of the corolla certainly 4. The abortive anther cell looks as if it were a spur at the base of the other.

In thickets between Pirayu and Jaguaron (667). April.

**Ruellia cœrulea**, Morong, n. sp.

Suffruticose, 3-4 dm. high, glabrous. Stem square, striate, somewhat swollen at the nodes, with opposite branches. Leaves thick, opposite, ovate or lance-oblong, simple, entire, obtuse at the apex, sloping or abruptly rounded into a short petiole, 3-8 cm. long and 1-2 cm. broad. Flowers in small terminal panicles, one or two on a pedicel; a pair of linear, acute, keeled bracts at the base of each branch of the panicle, 4-5 mm. long. Calyx persistent, 6-7 mm. long, with 5 rigid subulate lobes longer than the tube. Corolla infundibuliform, with 5 large, spreading, equal lobes, minutely puberulent,  $2\frac{1}{2}$  cm. high, of a beautiful blue color, striped inside with deeper blue lines. Stamens on the corolla tube, didynamous, included; filaments short. Style as long as the stamens; stigma 2-lobed, one lobe flat and much larger than the other. Capsule 2-celled, many-seeded, slightly 4 sided, pointed and somewhat dilated towards the apex, turning brown when mature, 2 cm. long.

Common on the campo at the Falls of the Pilcomayo (1013). March-May.

**Justicia dumetorum**, Morong, n. sp.

Stem slender and weak, terete, striate, covered with scattered minute, appressed hairs, about 5 dm. high. Leaves few, opposite, entire, lanceolate-acuminate, under the flowers lance-linear, cuneate at base, hairy like the stem or glabrate, 5-10 cm. long and  $\frac{1}{2}$ -3 cm. broad. Flowers sessile, or 2 or 3 on a short, thick peduncle, in opposite leaf axils. Bracts and calyx lobes about equal, linear-lanceolate, very sharp-pointed, 1-nerved, pubescent, the

margins white membranous. Calyx not  $\frac{1}{2}$  as long as the corolla tube, deeply 5-parted. Corolla rose-purple, the tube slender, a little ampliate at the throat, smooth or slightly pubescent, ringent, the upper lip entire, the lower 3-lobed. Stamens 2, included or slightly exserted, on the corolla tube. Anther cells discrete, the one above the other. Capsule somewhat 4-sided, obconic, downy, 2-celled, 4-seeded; seeds subglobose.

Found in thickets, somewhat supported by bushes. Banks of the Pilcomayo River (1538). January. = Gibert no. 41.

**Stenandrium trinerve**, Nees, Mart. Fl. Bras., ix, 75.

Between Paragua and Luque (854); Caballero (507). December. = Balansa 2467.

Acaulescent. Scape 5 or 6 cm. high. Flowers in short terminal spikes, with leafy bracts at the base of the spikes and flowers. Corolla about 1 cm. long, purple, with shades of deeper purple and yellow on the interior of the lobes. Fruit a 2-celled capsule, each cell with several flat, very hairy seeds. A pretty little plant growing in dry grassy soil on the railway track.

**Beloporone ramulosa**, Morong, n. sp.

Suffruticose. Stems terete or squarish, swollen at the nodes, below glabrous or pubescent in lines, above pubescent, furnished with many erect, virgate branches, 7-10 dm. high. Leaves opposite, ovate-lanceolate, entire, acute, sloping at base into a petiole 3-20 mm. long, the uppermost passing into bracts and sessile, pubescent or lineolate or both, 2-10 cm. long, 1-3 cm. wide. Flowers mainly at the top of the branches in solitary, opposite, axillary spikes, the spikes about 2 cm. long. Bracts ovate, 1-1 $\frac{1}{2}$  cm. long, mucronate or cuspidate, hirsute, ciliate, attenuate at base. Bracteoles a little shorter than the calyx lobes. Calyx divided to the base, the segments linear, acuminate,  $\frac{1}{3}$  as long as the corolla. Corolla 3 cm. long, deep red, downy outside, bilabiate, the upper lip entire, the lower with a long middle lobe slightly spreading on the sides into 2 lateral lobes. Stamens 2, exserted, the anthers discrete, one cell above and one lower, the cells appendaged below. Style longer than the stamens; stigma erect, flat.

In thickets. Asuncion (706). May. = Balansa 3296.

**Beloporone Amherstiae**, Nees, l. c., 139.

Asuncion (200 a). December-April.

Stems frutescent, terete, glabrate or lepidote, very leafy, 6 dm. to 2 m. high. Leaves ovate, pubescent, sometimes lepidote above. Noticeable for its bright red narrow tubular, bilabiate corollas 2 or 3 cm. long, which make it conspicuous in woodlands.

**Dianthera obtusifolia** (Nees), Morong.  
*Rhytoglossa obtusifolia* Nees, Mart. Fl. Bras., ix, 120.

Caballero (435); Pilcomayo River (1031). January–May.

Herbaceous. Stem angular, 4 dm. to  $1\frac{1}{2}$  m. high. Flowers bluish-purple, with a short tube and broad flaring lobes. The plant varies very much. The leaves are seldom obtuse in my specimens, but generally linear-lanceolate, acuminate, 4–10 cm. long and  $\frac{1}{2}$ – $1\frac{1}{2}$  cm. broad. The specimens from Caballero grew on the railroad track, and are very glabrous, while those from the Pilcomayo grew in muddy places by the river-side, and are hispid hairy, sometimes even spiny, on the angles of the stem. The leaves of the latter are pellucid punctate, those of the former opaque. The flowers from the Pilcomayo were decidedly blue in color, while in the other they were of a rosy-purplish tinge. Perhaps several species are included in these forms.

**Diapedium Pohlianum** (Nees), Kuntze, Rev. Gen. Pl., 485.

Asuncion (200). December–April.

A showy plant, even more noticeable for its bright red flowers than no. 200 a, as the leaves are fewer, the internodes longer, and the flowers more numerous. The corolla is very slender, 2-lipped,  $2\frac{1}{2}$ – $3\frac{1}{2}$  cm. long, 3 times as long as the linear, acuminate lobes of the calyx; lower lip with 3 very short lobes. All the parts, even the corolla, are densely pubescent. Growing with no. 200 a, and about the same height.

**Diapedium Tweedianum** (Nees), Kuntze, l. c. ?

Pilcomayo River (1539). May.

#### VERBENACEÆ.

**Lantana Camara**, L., Sp. Pl., 627.

Luque (344). December.

**Lantana lilacina**, Desf., Cat. Hort. Par., Ed. 3, 392.

Asuncion (50). November.

**Lantana trifolia**, L., Sp. Pl., 626.

Caballero (599). January.

Of these *Lantanas*, the most common is *L. lilacina*, with numerous heads of lilac flowers, bearing a berry which is blue when ripe.

The most showy is *L. Camara* with flowers of orange and yellow. *L. trifolia* is a coarse, rank plant, the leaves usually opposite, but sometimes in 3s, with rather small heads of lilac flowers on very long peduncles. They blossom from November to April.

***Lippia angustifolia***, Cham., Linnæa, vii, 377.

Pilcomayo River (860). January–April.

Stems square, 6–12 dm. high, appressed-hairy. Internodes long. Leaves opposite, narrowly lanceolate, appressed-hairy, serrate, sessile or shortly petioled, 6–10 cm. long, 1–1½ cm. wide. Heads small, on axillary peduncles. The small flowers are nearly concealed by the cuspidate-acuminate bracts. Corolla yellow, turning orange with age. Common on the campo among tall grass.

***Lippia canescens***, H. B. K., Nov. Gen., ii, 263.

Pilcomayo River (905 and 1048). February–May.

A small prostrate shrub, with heads of purple flowers, and small obovate, serrulate leaves, running on the ground for 6 dm. or more. The heads are conical or cylindrical, 1–3 cm. long, on peduncles 3–4 cm. in length.

***Lippia nodiflora*** (L.), Mx., Fl. Bor. Am., ii, 15.

Asuncion (163). November.

***Lippia turneræfolia***, Cham., Linnæa, vii, 217.

Luque (575). December.

***Lippia urticoides***, Steud. Nomencl. ex Schauer, in D.C., Prod., xi, 573.

Asuncion (242). December.

A shrub with light gray bark, 3–6 m. high. Leaves ovate, obtuse at apex, rounded or subcuneate at base, very rough like shagreen above, downy and lighter colored beneath. Flowers white, very fragrant, in axillary or terminal racemes or spikes, densely and spirally arranged on the axis. Racemes numerous, often 10–15 cm. long. Branches and peduncles white pubescent, the branches 4-gonous. Calyx and minute pedicel woolly. This shrub is thickly covered with the flowering racemes when in blossom, and makes a great display on the lowlands at Asuncion where it occurs.

***Lippia Recolletæ***, Morong, n. sp.

Suffruticose. Stem nearly simple, or with 1 or 2 long branches from near the base, terete below, tetragonous and deeply grooved above, densely papil-

lose-hispid, 3-6 dm. high, springing from thick ligneous roots. Leaves opposite, ovate or lanceolate-ovate, strongly crenate-serrate, acute or obtuse at the apex, sloping at base into a petiole 5-15 mm. long, densely hispid on both sides, about 7-nerved on each side, scarcely penninerved, the blades 3-7 cm. long,  $1\frac{1}{2}$ - $2\frac{1}{2}$  cm. wide. Flowers in dense globular or ovate heads, the heads solitary, axillary, on hispid peduncles 3-5 mm. long. Bracts imbricated, cuspidate-acuminate, densely hirsute-ciliate and hispid, 2-3 mm. broad, 4 mm. long, nearly hiding the flowers. Calyx membranaceous, compressed, bifid, puberulent, dividing and falling off with the seeds at maturity. Corolla yellow, ampliate, 2-lipped, upper lip entire, lower lip 3-lobed, downy on either side under the lobes, about 3 mm. long, only the lobes showing under the acumens of the bracts. Seeds flattened-globose,  $1\frac{1}{2}$  mm. long, pubescent, splitting at maturity into 2 hemispherical nutlets.

The plant has a strong mint-like odor, and abounds in the neighborhood of the Recoleta, a well-known cemetery about 2 miles from Asuncion (62). October-November.

**Valerianodes Jamaicensis** (L.), Med. Phil. Bot., i, 177.

Asuncion (108). November.

Common in the waste grounds of the city. The numerous long, slender spikes (12-33 cm.) give it a very striking look, although it is such a common weed that everybody at Asuncion wondered to see me gather it.

**Verbena Bonariensis**, L., Sp. Pl., 20.

Asuncion (173); Pilcomayo River (1540). November-April.

**Verbena Peruviana** (L.), Britton.

*Erimus Peruvianus*, L., Sp. Pl., 630.

*Verbena chamædrifolia*, Juss., Ann. Mus., vii, 73.

Asuncion (51). = Balansa 1024.

This scarlet-flowered, trailing *Verbena* seems to grow all over Paraguay, and nearly all the year round. I found it not only in copses about Asuncion, but also in the streets of the city, and far up on the Pilcomayo River. It was equally common a hundred miles east of Asuncion. The stems sometimes climb up among bushes for 6 dm. or more.

**Verbena dissecta**, Willd.; Spreng. Syst. Veg., ii, 750.

Asuncion (219). December-January. = Balansa 1025.

A trailing *Verbena* with bright lilac flowers and dissected leaves. Not quite so common as no. 51, but still frequently found around Asuncion and by the side of the railway as far as Luque.



**Verbena intermedia**, Gill. and Hook. in Hook. Bot. Misc., i, 166.

Pilcomayo River (1014). April.

Many stems from the same root, very slender and much-branched, erect, 4–5½ dm. high, the upper parts naked. Flowers blue, scarcely 3 mm. high, in terminal spikes not over 3 mm. wide and 5–15 cm. long. Leaves small, linear, serrate, and confined mostly to the lower part of the stems, or soon dropping off, giving a naked, dry look to the plant. The stems are tetragonous and rough to the touch.

**Verbena litoralis**, H. B. K., Nov. Gen., ii, 276.

Asuncion (128). November–December.

A tall, rough, square-stemmed weed, with long cylindrical spikes of blue flowers, common in fields. Leaves few, linear, sharply serrate. The upper parts of the stem and branches naked. The spikes are sometimes 12 or 14 cm. long.

**Verbena venosa**, Gill. and Hook., l. c., 167.

Asuncion (1541). November.

**Verbena Morongii**, Britton, n. sp.

Ascending, branched, 30 cm. or more high, the branches sparsely pubescent, sharply 4-angled. Leaves sessile, linear-lanceolate, acuminate at the apex, narrowed at the base, sharply serrate or the upper entire, pubescent with short, rigid, subulate hairs on the upper surface, glabrous or very nearly so beneath, 5–7 cm. long, 5–10 mm. wide; flowers in dense, oblong, terminal, peduncled heads; corolla 1.5 cm. long, the tube narrow, somewhat enlarged above, the limb spreading; bracts linear-lanceolate, acuminate, striate, very ciliate, about as long as the corolla tube.

Caballero (600). January.

This plant sometimes reaches twice the height given in the description. Flowers lilac or purple. It grows on the railroad track in company with no. 599.

**Citharexylum myrianthum**, Cham., Linnæa, vii, 117.

Asuncion (830). November. = Balansa 2090.

A tree from 3 to 10 m. in height, with smooth gray bark. Leaves glabrous, shining on the upper surface, elliptical, bearing 2 green, thick, wart-like glands at the base of the blade, the largest 14 cm. long by 6 cm. broad. Flowers white, in long, secund, drooping racemes. It bears a drupe about as large as a cherry.

**Vitex cymosa**, Bert. in Spreng. Syst. Veg., ii, 757.

Asuncion (797). October. = Balansa 1022.

A tree with grayish, rather smooth bark, 3 to 10 m. in height. Flowers in panicles at the summit of the previous year's branches. Corolla blue, with a yellow eye in the centre. Leaves digitate; leaflets 3-5. Quite showy when in blossom, as the flowers appear on young shoots before the new leaves. The Guarani name for this tree is *Taryma guazu*, commonly called *Taruma*. It is common in the waste grounds of Asuncion and in the woods about the city.

**Clerodendron fragrans**, Vent., Jard. Malm., t. 70.

Asuncion (615). February-March.

I saw this plant frequently in the neighborhood of dwelling-houses, and think it must be a garden escape, although everybody declared that it was wild. I am confirmed in this opinion by the fact that all the flowers are double, the stamens being converted into petals, and showing no appearance of anthers. It is herbaceous, growing from 1 to 2 m. in height, with large clusters of white and violet flowers. No fragrance was noticed in the flowers.

#### LABIATÆ.

**Ocimum micranthum**, Willd., Enum., 630.

Caballero (470); Pilcomayo River (965). January-March.

**Peltodon longipes**, St. Hil. in Benth. Lab., 63.

Between Escoba and Caballero (421). January.

Only 4 species of this genus are known, all of them occurring in Brazil and the neighboring countries. The one here noted is a small, trailing plant with opposite, round-ovate, obtuse, crenate leaves. Flowers in small heads on very long peduncles, the corolla dark purple. It grows in hard soil on the railway track near Caballero.

**Hypstis brevipes**, Poit., Ann. Mus., vii, 465.

Asuncion (75). November-December.

Herbaceous. Stem stout, square, 4-6 dm. high, rough hairy on the angles. Leaves ovate or ovate-lanceolate, acute, sloping at base into a short petiole, black dotted, sparsely hairy, the hairs long, appressed, jointed. Flowers light purple spotted, the upper

lip nearly white, in globular heads, the heads in opposite leaf axils, on short peduncles, bristly with the lanceolate bracts and calyx teeth. Common on the river-side.

**Hyptis cinerea**, Morong, n. sp.

Stem rather slender, tetragonous, deeply grooved in the centre and sulcate on the sides, cinereous-pubescent below and densely and closely hispid above, with many opposite, erect, strict branches, 6–15 dm. high. Leaves narrowly lanceolate, 6–10 cm. long, 5–15 mm. wide, acuminate, unequally and sharply serrate, pellucid-dotted, cinereous pubescent on both sides, sloping into a winged petiole 10–20 cm. long. Internodes on the stem 5–15 cm. long. Heads few, solitary, axillary, globular, 8–10 mm. in diameter, on peduncles 10–15 mm. long. Bracts equalling the heads or shorter, lanceolate, hispid. Calyx campanulate, 5 mm. long, glabrous between the nerves, ciliate on the margins; teeth longer than the tube, hispid. Corolla when in flower much exerted beyond the calyx, about 1 cm. long, spotted white and purple. Receptacle villous.

Approaches *H. brevipes*, but the leaves in that are glabrate and black spotted, ovate, the bracts ciliate and broader, the flowers scarcely surpassing the calyx, and the stems not grooved as in this.

Luque (304); Pilcomayo River (924). November–February.  
= Balansa 1006 a.

**Hyptis dumetorum**, Morong, n. sp.

Stems 9–12 dm. high, tetragonous, the angles obtuse, densely white villous, even woolly towards the top, strict, sparsely branching. Heads globose, solitary, in opposite leaf axils, the largest 10–14 mm. in diameter; peduncles pubescent, 8–20 mm. long. Bracts subulate, villous, shorter than the heads. Calyx slightly inflated in the middle, sparingly pubescent, 10-nerved, reticulate-veiny, elongated and strongly recurved in fruit, naked in the interior, the fruiting 6 or 7 mm. long; teeth straight, 3 times shorter than the tube, equal, pubescent. Corolla scarcely exceeding the calyx, purplish in tint. Receptacle woolly. Seeds oval. Leaves ovate, rounded or truncate at the base, unequally dentate, densely fuscous-villous, rugose veiny and almost woolly beneath, the lowest on short petioles, the uppermost sessile; blades 5–7 cm. long, 3–5 cm. broad at the base, the uppermost becoming sessile bracts 1–2 cm. long.

This species seems to approach *H. recurvata*, Poit., but that as described has naked receptacles, leaves always petioled, smaller heads and longer peduncles.

A conspicuous plant in thickets around Asuncion (633). March–April. = Balansa 1009.

**Hyptis gracilipes**, Britton, n. sp.

Erect, slender, 35 cm. or more high, much branched, the stems and branches puberulent. Leaves oblong, acute at the apex, narrowed at the base, serrulate or the upper entire, pubescent beneath, puberulent above, the upper 1.5–2 cm. long; lower leaves not seen; branches of the panicle slender, elongated; pedicels 1-flowered, filiform,  $1\frac{1}{2}$ –2 cm. long; flowers minute, the corolla tube apparently not exceeding the calyx; calyx campanulate, minutely puberulent, reticulate veined, at length 2.5 mm. long, its teeth ovate, obtuse; nutlets oblong, smooth.

Near Asuncion (711 a). Related to *H. Salzmanni*, Benth. May.

**Hyptis lappacea**, Benth., Lab., 103.

Asuncion (75 b); Gran Chaco (585). November–February.

Stem simple, square, strict, rough, 4–6 dm. high. Leaves opposite, lanceolate, hispid, irregularly serrate, acuminate at both ends, petiolate, 6–12 cm. long, 8–20 mm. broad. Internodes 7–10 cm. long. Flowers white, in solitary, globular heads 8–12 mm. in diameter, on peduncles 5–20 mm. long, axillary below, glomerate above. Bracts lanceolate, acuminate, hispidulous, equalling the head. Calyx lobes rough-awned. The numerous heads have a very burr-like aspect.

**Hyptis spicata**, Poit., Ann. Mus., vii, 474.

Asuncion (48 and 711). November–May.

Much more slender than no. 75 b, the heads very small and arranged racemosely at the tops of the stems and branches, on capillary peduncles 2–4 mm. long.

**Hyptis suaveolens**, Poit., l. c., 472.

Asuncion (368). November.

Stems square, the angles armed with minute downwardly hooked prickles, growing 4 or 5 dm. high. Leaves rough with minute hirsute hairs, ovate, acute, serrate, cuneate at base, on petioles 1–2 cm. long. Flowers in small axillary heads, the corolla small, purple. Open grounds.

**Hyptis vestita**, Benth., Lab., 114.

Caballero (592). January. = Balansa 978.

Whole plant covered with a white or tawny, scurfy tomentum. Flowers in close terminal spikes. Corolla purple. Stem 4–6 dm.

high. Leaves petiolate, broadly ovate, unequally crenate-dentate, fuscous above, whitish beneath, rugose-veiny. Open grounds.

**Salvia cardiophylla**, Benth., Lab., 721.

Asuncion (65); Pilcomayo River (1542). November–June.

Stem 4–6 dm. high, glabrous or downy. Leaves broad deltoid, obtuse or acute, truncate or cordate at the base, dentate. Flowers light blue, 3–6 in the verticil. The plant has a strong aromatic odor.

**Salvia rigida**, Benth., Lab., 269.

Between Villa Rica and Escoba (415). January. = Balansa 990.

This species has an erect, hirsute stem, 3–6 dm. high. Leaves crowded, downy, elliptical, acute at the apex, sessile, somewhat auriculate at the base,  $2\frac{1}{2}$ –4 cm. long and  $1$ – $1\frac{1}{2}$  cm. broad. Flowers white, in long terminal racemes, the pedicels 2 or 3 mm. long. Growing on the open campo.

**Scutellaria rumicifolia**, H. B. K., Nov. Gen. ii, 324.

Asuncion (58 and 826). October–January.

A small, much branched plant,  $1\frac{1}{2}$ –2 dm. high. Flowers 3 or 4 mm. high, the corolla violet and white, the lower lip purple spotted. The flowers are very numerous, in long terminal racemes. Growing in grassy grounds on the outskirts of the city and even in the streets. On the edges of the sidewalk near my house I found plenty of it.

**Leonurus Sibiricus**, L., Sp. Pl., 584.

Asuncion (769). November–July.

This species, which occurs occasionally as a waif in our country, is quite common in the waste grounds of Asuncion. There it grows in large patches, 8–12 dm. in height.

**Teucrium inflatum**, Sw., Flor. Ind. Occ., ii, 1003.

Asuncion (179). November–December.

This plant occurs abundantly on the low grounds near the river at Asuncion. It is a coarse-leaved, pubescent species, 4–6 dm. high. Flowers crowded in terminal spikes. Calyx inflated, very downy. Corolla a light purple.



## PLANTAGINEÆ.

**Plantago tomentosa**, Lam., Encyc., v, 377.

Asuncion (160); Pilcomayo River (880). November–January.  
= Balansa 3185.

Common in the waste grounds of Asuncion, where it rises 15–20 cm. high, but on the borders of the Pilcomayo I found leaves sometimes 30 cm. long, and scapes from 60 to 70 cm. high, the spike alone being from 30 to 35 cm. in length. Leaves ovate or oblanceolate; both they and the scapes from the same roots very numerous. Seeds in my specimens 3 and 4 in a pod.

## NYCTAGINEÆ.

**Mirabilis Jalapa**, L., Sp. Pl., 177.

Asuncion (622). February–April.

Commonly cultivated in gardens at Asuncion, but not unfrequently running wild. The color of the flowers varies from deep red to purple, purple blotched and nearly white.

**Boerhaavia decumbens**, Vahl., Enum., i, 64.

Asuncion (93). November–December.

This occurs abundantly in the streets of Asuncion, on the edges of the sidewalks and in waste places. Indeed, I never found it outside of the city. A straggling, much-branched plant. Leaves broad ovate, acute at apex, rounded, truncate or semicordate at base, on a petiole about as long as the leaf, in pairs, one of them larger than the other, glabrous, lepidote, the larger 2–3 cm. long and the smaller 1–1½ cm. Flowers in naked, terminal panicles, the pedicels capillary. Flowers minute, greenish below, bright red above, 5-lobed, each lobe with a mucro rising from the centre of a notch. Fruit an obconic, 5-angled, 1-celled, 1-seeded capsule, 3 mm. long, lined with viscid appressed hairs. It was long before I could make out the character of these flowers, they are so minute, and they drop off the stems so easily, but the bright red speck was sufficiently conspicuous.

**Bougainvillea glabra**, Chois. in D.C., Prod., xiii, pt. 2, 437.

Asuncion (367).

A fine shrub 2½–4 dm. high. Stem and branches armed at irregular intervals with slightly curved spines. Leaves simple,

entire, alternate, shining, elliptical or oval, acuminate at apex and sloping at base into a petiole about 1 cm. in length. Flowers very showy, numerous, in terminal clusters. The showy part of the flower consists of a large involucre of 3 ovate, purple bracts, 4 cm. long and 3 cm. wide. The real flowers inside of these bracts are quite inconspicuous, one attached to each involucral bract. This shrub makes a beautiful ornament in the gardens of Asuncion, blossoming profusely all the year round. It is a native of Brazil and said to grow wild in Paraguay, but I doubt it, at least at any noticeable distance from the Brazilian border.

**Reichenbachia hirsuta**, Spreng., Syst. Veg., i, 94.

Asuncion (167). November–March.

A small tree 5–8 m. in height, placed by Sprengel and Choisy in this Order, but somewhat anomalous, and thought by Hooker to constitute a new family. Leaves thick, obovate, acute at both ends, green above, hoary with a white stellate tomentum beneath. Branches, peduncles, and exterior of the corolla covered with the same tomentum. Flowers in axillary clusters along the branches, 2–10 or more in a cluster, apetalous, tubular, 10 or 12 mm. long. Perianth with 4 small lobes, unequal, rotate in anthesis, yellowish above. Stamens 2, inserted on a disk beneath the ovary. Ovary 1-celled, 1-ovuled. Stigma penicillate. Fruit with a single flattish, black and shining seed in the persistent perianth. This grows on the borders of thickets and is also planted on the borders of fields.

**Pisonia combretifolia**, Mart. Fl. Bras., xiv, pt. 2, 360.

Asuncion (686); Pilcomayo River (999). April–June.

A fine tree 10–20 m. high, 1 m. or more in diameter at the base, with brown or grayish, furrowed or shaggy bark on the trunk, downy on young branches and on the inflorescence. The limbs are nearly horizontal; the flowering twigs erect and crowded, giving to the tree the look of a flat topped head with several tiers of projecting branches below. Leaves numerous, opposite or scattered, glabrous, a little revolute, oval or obovate, obtuse at the apex, sloping at base into a petiole 1–2 cm. long, the largest blades 7 cm. long and 3½ cm. wide. Flowers creamy-white and very fragrant, in large paniced cymes at the summit of the branches. They are polygamo-dioecious. Bracteoles at the base of the corolla 5, minute, caducous. Perianth epigynous, normally of 5 segments, but often

varying to 6, 7, or 10, the segments ovate, 4 or 5 mm. long, spreading wide open in anthesis. Perfect flowers with well developed stamens, as many in number as the perianth segments and alternate with them. Style protruding through a fringe of hairs upon the summit of the ovary, and divided at the apex into 2 or 3 stigmatic portions. Ovary inferior, with 2 long 1-ovuled cells. I am more particular to describe the structure of these flowers because there is a good deal of confusion in the characters of *Pisonia* as given in the books, at least judging from my specimens. This tree is known among the natives as *Palo blanco* because both the wood and flowers are white.

#### ILLECEBRACEÆ.

**Pentacæna ramosissima** (D.C.), H. and A. in Hook. Bot. Misc., iii, 338.

Between Paraguay and Luque (858). December.

Creeping, many-branched from the base, with numerous small crowded, subulate, spiny-pointed leaves,  $2\frac{1}{2}$  dm. high. Perianth segments in fruit 5 sharp spines. The plant reminds me in general appearance of our *Scleranthus annuus*. Growing in hard soil on the railway track.

#### AMARANTACEÆ.

**Iresine celosioides**, L., Sp. Pl., Ed. 2, 1456.

Asuncion (144). November–January.

**Kokera paniculata** (L.), Kuntze, Rev. Gen. Pl., 542.

Asuncion (746). June.

A slender-stemmed, branching herb, 8–12 dm. high, with naked racemes of flowers in small opposite or alternate clusters along the rachis. Flower axis rising from leaf axils, sometimes nearly 30 cm. long. Roadsides.

**Amarantus chlorostachys**, Willd., Hist. Amarant., xxxii, t. 10, f. 19.

Caballero (442); Pilcomayo River (980 and 1062). January–June.

This was found growing on the campos of the Pilcomayo River, frequently attaining a height of more than 3 m., with great panicles of spikes, some of them 5 dm. in length.

**Amarantus viridis**, L., Sp. Pl., Ed. 2, 1405.

Asuncion (335); Pilcomayo River (1018). = Balansa 1968.

The common Pigweed of the country, frequent in cultivated and waste grounds. To be seen the year round.

**Pfaffia glauca** (Maft.), Spreng. Syst. Veg. Cur. Post., 107.

Pilcomayo River (1066); Asuncion (140). November–June. = Balansa 1959.

Herbaceous. Stems widely branching, 8–12 dm. high, smooth below, downy on the inflorescence. Flowers in large loose paniced clusters, the clusters small and often on long naked peduncles. Perianth small, the segments white, the head composed of numerous, crowded, sessile flowers. Leaves linear or lanceolate, hoary with a close tomentum. The whole plant has a glaucous tint, and the long, widely branched, naked panicle of the inflorescence, with the small terminal flower heads, give it a peculiar appearance.

**Pfaffia luzulæflora** (Mart.), Dietr. Syn. Pl., i, 868.

Asuncion (144 a and 184). November.

**Mogiphanes rosea**, Morong, n. sp.

Stem erect, branching, 20–40 cm. high, striate, strigose-pubescent, rising from large, fleshy or tuberous roots. Leaves opposite, ovate, entire, sessile, or the lowest pair on petioles about 3 mm. long, acute and mucronate, strigose-pubescent, the hairs jointed, midnerve below prominent; the largest 5 or 6 cm. long by 3–3½ cm. wide. Heads naked, nearly globose at first, becoming cylindrical, 1–2 cm. long. Flowers rose-colored. Bracts membranous, ovate, cuspidate, the upper margins dentate or fimbriate, keeled, the keel more or less pubescent, about 2 mm. long. Perianth segments acute, strongly 3-nerved, slightly pubescent, 5 mm. long. Filaments capillary, as long as or longer than the staminal tube; anthers ovate. Staminodea broad and flat, surpassing the stamens, lacerate at the apex. Ovary oblong; style minute; stigma globular, obscurely lobed. Seeds cylindrical, shining, 3 mm. long.

This pretty flower occurs in open grounds around Asunción, its rose-colored, long-peduncled heads at once attracting attention (221). = Balansa 1943. December–January.

**Telanthera ficoidea** (L.), Mart. Nov. Gen., ii, 52.

Pilcomayo River (922). February.

Corresponding very well to this species as described in Fl. Bras., v, pt. 1, 171. The segments of the perianth, however, are 5 mm. in length, with 3 strong, fuscous nerves, pubescent between the

nerves and on the margins nearly to the apex. The plant is herbaceous, with a slender, widely branching stem, which is glabrous below and pubescent at the summit. Flowers white, in small sessile, axillary heads. Leaves opposite, lanceolate, mucronulate, very glabrous, sloping at the base into petioles 5–10 mm. long, comparatively few, separated by long internodes. Seeds flat.

**Telanthera phyloxeroides** (Mart.), Moq., D.C. Prod., xiii, pt. 2, 362.

Asuncion (168). November.

A weak-stemmed herb in moist grounds, prostrate below and rooting at the nodes, the ascending portion 2–5 dm. high. Flowers silvery-white, in terminal heads, on peduncles 2–7 cm. long, very handsome. Heads globular or becoming cylindrical with age, 1–2 cm. long. Leaves glabrous, narrow lanceolate, mucronulate, narrowed at the base and sessile, 4–8 cm. long. The stems are glabrous below, fringed with 2 lines of hairs on the uppermost internodes. They are also somewhat swollen and ruddy at the nodes.

**Alternanthera pilosa**, Moq., l. c., 357. Ex descr.

Asuncion (40). November–February.

A creeping plant with numerous small sessile heads of white flowers in the axils of the leaves, the stems often rooting at the nodes and running for 10 cm. or more upon the ground. It is much branched, and appears as if in mats. The heads are entirely free from spines, globular or ovoid, 5–9 mm. in length. Leaves spatulate or obovate, the largest blades 2–3 cm. long and 8–10 mm. wide, sloping into a short petiole, scantily pilose beneath. The stems are pilose on the young branches, especially at the axils of the leaves and under the heads where they are almost woolly. Very common along the edges of the sidewalks in Asuncion and in the suburbs.

Some of this was distributed as *A. Achyrantha*.

**Alternanthera pungens**, H. B. K., Nov. Gen., ii, 306.

*A. echinata*, Sw. in Rees Cyc., Suppl. no. 10.

Asuncion (39). November–February.

This plant is prostrate, spreading on the ground for 3 dm. or more, rooting at the nodes, very branching in all directions. It is a much larger species than no. 40, though similar in habit, with longer stems and larger leaves, but unlike that it has echinate heads, the bracts and 2 of the perianth segments being armed with



long spines. Perianth with segments 6 or 7 mm. long. Heads silvery-white, densely woolly at the base. It occurs with no. 40.

**Alternanthera Chacoensis**, Morong, n. sp.

Stem decumbent and rooting at the lower nodes, compressed, striate, pilose, thickened and woolly at the nodes, the young shoots woolly, 3-5 dm. high, much branched. Leaves 2-6 cm. long, 8-20 mm. wide, opposite, entire, glabrous above, appressed-pilose beneath, pellucidly lined, obovate, acute and cuspidate at the apex, sloping into a petiole 5-15 mm. long, or the uppermost sessile. Heads sessile, axillary, about 5 mm. in diameter, not spinous. Sepals silvery white, oblong, obtuse, glabrous, equal, 1-nerved, sometimes obscurely tricostate at the base, about 3 mm. long. Bracts shorter. Stamens 3, much longer than the pistil; staminodes entire.

This species approaches both *A. sessilis* and *A. paronychioides*, but differs from them in being ascending, in having obtuse and 1-nerved sepals and compressed and more woolly stems. The leaves, as in those species, are often in pairs of unequal size.

In the Chaco territory, Pilcomayo River (1587). February.

**Gomphrena decumbens**, Jacq., Hort. Schœnbr., t. 482.

Asuncion (42, 73, and 73½). October-January.

A very pretty and interesting species, quite common in open places about Asuncion, and in the streets of the city. Stems erect, bushy-branched from the base and spreading, lanate, the long white hairs appressed. Heads terminal, subtended by a pair of leaves, at first ovate, elongating with age, woolly-haired under the bracts and perianth segments. The most common is no. 42, with silvery-white heads. No. 73 has purple heads. No. 73½ is a rare variety, with yellow heads, 1-2½ dm. high, with long, fleshy roots.

**Gomphrena perennis**, L., Sp. Pl., 224.

Pilcomayo River (923). February.

Herbaceous. Stem strigose-hairy, trichotomously branched. Perigonium tipped with yellow at the summit, all the sepals and bracts otherwise silvery-white and woolly at the base. The 2 lateral bracts crested and keeled on the back. Heads globular, on long naked peduncles, each head subtended by 1-2 broad, ovate, mucronate, strigose-hirsute bracts. Sometimes the peduncles are as much as 30 cm. in length, and bear 1 or 2 lateral heads as well as the terminal one. Leaves very few, mostly confined to the lower part of the stem, sessile, strigosely hairy, pellucid punctate, the

largest I collected 6 cm. long and 2 cm. broad. The absence of leaves from the upper part of the stem gives the plant a very straggling, naked appearance. When the lateral heads occur they are in pairs, and frequently run together so as to appear but one. A head that I measured was nearly 2 cm. in diameter.

We first named this *G. pulchella*, Mart., but we are indebted to Mr. N. E. Brown, of Kew, for a revision of the determination.

**Frœlichia lanata**, Moq., l. c., 422.

Pilcomayo River (850). December. = Balansa 1947.

Herbaceous, with slender, scapose stems, several rising from the same root, 25–35 cm. high. Nearly all the leaves are in a radical tuft, 1 or 2 occurring upon the lower part of the stems. They are oblanceolate, acute at the apex, sloping into a long petiole, glabrous and opaquely dotted above, lanate beneath, 3–9 cm. long and 8–10 mm. wide at the summit. Scapes more or less lanate. Flowers in terminal spikes, the lower remote; perianth scarious-bracted and its segments very woolly as in all the species. On the campo near the railroad between Luque and Paragua, 12 or 15 miles northeast of Asuncion.

#### CHENOPODIACEÆ.

**Chenopodium anthelminticum**, L., Sp. Pl., 220.

Pilcomayo River (909 and 1543). January–February.

Our Guarani peons on the Pilcomayo River attributed great medicinal virtue to the Roman Wormwood, which grows profusely along the banks. I frequently saw them gathering the spikes and stripping the flowers and fruit into tin cups for the purpose of steeping them into tea.

**Chenopodium glaucum**, L., Sp. Pl., 220.

Pilcomayo River (918). January–February.

**Chenopodium Tweedii**, Moq., D.C. Prod., xiii, pt. 2, 63.

Pilcomayo River (1005). April.

**Salicornia Gaudichaudiana**, Moq., l. c., 145.

Pilcomayo River (887). January.

Fond of salt soil like all its relations, as it was growing only on the borders of a saline pool at the Laguna de las Palmas.

**Boussengaultia baselloides**, H. B. K., Nov. Gen., vii, 196.

Asuncion (623); Pilcomayo River (994). March–April.

A very slender vine twining over bushes and shrubs. The flowers are greenish-white, sometimes a dark maroon color, minute, spreading rotately in anthesis, in numerous, very slender axillary racemes, the racemes solitary or panicle. Leaves alternate, entire, glabrous, pointed at the apex, subcordate, petioled, the largest blades collected 6 cm. long by nearly as broad at the base.

#### PHYTOLACCACEÆ.

**Rivina humilis**, L., Sp. Pl., 121.

Asuncion (263 and 748); Pilcomayo River (1544). December–June.

**Petiveria alliacea**, L., Sp. Pl., 342.

Between Villa Rica and Escoba (530); Asuncion (770); Pilcomayo River (948). January–May.

This plant, also occurring in South Florida, has a curious provision for the dissemination of its seed which is worthy of notice. The linear-cuneate achenium has at the blunt apex 4–6 little knees from which project as many weak spines, at first somewhat erect, afterwards hardening and becoming reflexed and appressed,  $\frac{1}{2}$  as long as the achenium, or some 3 or 4 mm. in length. As the fruit is easily drawn out of the enveloping sepals and these spines readily catch upon passing animals, an excellent means of dispersion is afforded.

**Microtea debilis**, Sw., Prod., 53.

Caballero (471). January.

**Seguiera Paraguayensis**, Morong, n. sp.

A tree 14–17 m. or more in height, with a rather slender trunk and dark gray bark, the branches smooth and with lighter colored bark. Found only in fruit. Leaves oval, entire, coriaceous, glabrous, obscurely but hardly reticulate-veined, the margins with a callous edge, emarginate and mucronate, rounded at the base, the largest blades collected 6 cm. long and 4 cm. wide; petiole about 1 cm. long. Stipules tuberculiform or a minute straight spine. Samara 2–2½ cm. long, thickened at the base and expanding into an obtuse wing 8–10 mm. broad, the wing angled, thickened and nearly straight on the upper side, and very thin, cristate and curved on the lower side, nerved on the faces, the nerves sloping towards the lower margin and often branching.

Seeds round, flattened, with a black membranaceous testa, 4 mm. long. Fruit in axillary or terminal and paniced racemes, on capillary pedicels 5–8 mm. long.

Roadsides east of Asuncion (690). May.

**Seguiera coriacea**, Benth., Trans. Lin. Soc., xviii, 235. Ex descr.

Asuncion (645 and 660). April.

A half-climbing shrub, diffusely branched at the summit,  $2\frac{1}{2}$ –3 dm. high, striate, glabrous below, the young branches and inflorescence tomentose. The samara, which has not been described, is 2– $2\frac{1}{2}$  cm. long, the wing narrow at the lower part and much expanded above, rounded at the apex and 10–12 mm. broad, many and closely nerved on the faces. Seeds round, flattened, reddish colored, 5 mm. long. The stipules are straight, stout thorns, thick at the base, often 2 cm. long. The branches of the panicle are also frequently subtended by a thorn. It has ample panicles of white flowers, and produces samaras profusely. Common in thickets.

#### POLYGONACEÆ.

**Polygonum punctatum**, Ell., Bot. S. C. and Georg., i, 455.

*P. acre*, H. B. K., Nov. Gen., ii, 179, not Lam.

Asuncion (88); Pilcomayo River (1033). November–May.

Abundant in the lowlands on the river-side at Asuncion, and also occurring in the waters of the great laguna on the Pilcomayo River.

**Polygonum acuminatum**, H. B. K., l. c., 178, var. *microstemon*, Meisn. in Mart. Fl. Bras., v. 14, t. 4, f. 2.

Pilcomayo River (1060). June.

Leaves of this species are linear-lanceolate, some of them over 20 cm. long, appressed-pubescent on both sides, sessile or subsessile. Fruit lenticular, black and shining. Ochreæ long and setosely ciliate, the bristles nearly 1 cm. long. Stem terete, perfectly glabrous, except at the top, where it is hairy. Spikes thick, cylindrical. Flowers white.

**Polygonum hispidum**, H. B. K., l. c., 178.

Pilcomayo River (1026). May.

This species differs from no. 1060 in having a very hispid stem, ovate or lanceolate, acuminate and black punctate-dotted leaves, and the ochreæ hypocrateriform, with shorter ciliæ. The spikes are thick and cylindrical, red like those of our Prince's Feather;

flowers rose-tinged; seeds flattish, almost oval, dark colored, not so smooth or shining as in *P. acuminatum*. Many of the stem hairs are glandular.

Not only on the banks, but often growing in the water. It was plentiful in the great laguna.

**Muhlenbeckia sagittæfolia**, Meisn., D.C. Prod., xiv, 148.

Pilcomayo River (1038). May.

A twining plant with glabrous stems and numerous long, loose spikes of small, greenish-white flowers, the spikes solitary, leafless, 6-15 cm. in length. Leaves with small capillary auricles or subhastate at the base, the highest linear, lowest oblong or cordate-ovate. Style short, trifid; stigmas fimbriate. Fruit glabrous, obtusely 3-angled. The sepals turn red in fruit.

The plant from which my specimens were gathered was growing on the top of an old palm stump which stood in the water of the great laguna on the Pilcomayo River, and at its root was nesting a colony of small red ants. How they got there through such an expanse of water was a mystery.

**Coccoloba Paraguayensis**, Lindau in Eng. Bot. Jahr., xiii, 218.

Asuncion (197 a). November-April. = Balansa 2000.

My specimens differ a little in some points from those of Balansa as described by Lindau. A shrub 1-2 m. in height, canescent; the branches glabrous, striate, rising at an angle more or less acute. Leaves of a tawny color, elliptical, coriaceous, entire, obtuse at the apex, narrowed and subcordate at the base, 5-10 cm. long and 2-4 cm. wide, strongly reticulate-venose, the veins prominent beneath, the lateral curving just before reaching the margin and running for some distance along the edge. Petioles about 1 cm. long, glabrous, canaliculate. Flowers white, alternate, in slender axillary racemes 5-10 cm. long, the rachis angular; pedicels  $1\frac{1}{2}$  mm. long. Ochreae caducous. Ochreolæ scarcely 2 mm. long, lax, cup-shaped, bilobed. Bracts 1 mm. long, acute, decurrent. Fruit obtusely 3-angled, conical, truncate at base, 5 mm. long and 5 mm. broad, rather loosely invested by the persistent sepals. Seeds fuscous, shining, smooth.

**Coccoloba spinescens**, Morong, n. sp.

A small tree with silvery gray bark, glabrous, 5-7 m. high, the young branches striate. Quite thorny, the thorns consisting of the sharp, indurated



ends of the short branches or branchlets. Branches at right angles to the stem. Leaves coriaceous, veined and colored like 197 a, but sometimes oval as well as elliptical, small, only 2-2½ cm. long and 1-1½ cm. broad, rounded or barely subcordate at the base, obtuse at the apex, on nearly capillary, downy, plane petioles 2-4 cm. long. Flowers minute, greenish-yellow, alternate, in nearly capillary racemes 3-4 cm. long, the rachis sharply angled, pedicels 1 mm. long. Ochreæ caducous. Ochreolæ and bracts as in no. 197 a, but scarcely ½ mm. long. Perianth segments reflexed. Style short, 3-divided, curling downwards over the ovary: stigmas 3, capitate. Fruit ovoid, attenuate at both ends, 5 mm. long and 3-4 mm. in diameter, obtusely 3-angled, the persistent enclosing sepals closely appressed. Seeds black, shining.

Deep woods on the banks of the Pilcomayo River (882). January.

**Coccoloba microphylla**, Morong, n. sp.

A small tree, much branched, with dark, rugose bark, 5-8 m. high, glabrous, the young branches striate and lighter colored. Leaves oblong-elliptical, coriaceous, glabrous, dark green, obtuse at the apex, narrowed at the base, on glabrous, canaliculate petioles 5 or 6 mm. long, the blades 3-9 cm. long and 1½-2½ cm. broad. Flowers white, in axillary racemes 5-8 cm. long, not over 5 mm. high, commonly 2 contained in the same ochreola, mostly crowded on all sides of the rachis; pedicels 2-3 mm. long. Ochreæ about 5 mm. long. Ochreolæ 3-lobed, 2 mm. long. Bracts obtuse. Styles 3, erect; stigmas 3, capitate. Fruit ovoid, obtusely 3-angled, 5-8 mm. long.

This, like the preceding species, grows in dense thickets on the banks of the Pilcomayo (899). = Balansa 2059. January.

ARISTOLOCHIACEÆ.

**Aristolochia Giberti**, Hook., Bot. Mag., t. 5345.

Near Luque (714). May.

A very handsome climbing vine, clambering over trees. The large round-cordate, glaucous leaves are on petioles 3-5 cm. long, having rounded, foliaceous, sessile stipules in their axils. The flowers are solitary, conspicuous for their shape and color. The 2 projecting lobes stand out of the inflated body at right angles, giving the flower the look of a duck or swan swimming in the water. For this reason it is popularly called *patito*, or little duck. Flowers greenish, striped or spotted with purple. The pods are cylindrical, 4 cm. long, 2 cm. in diameter, truncate at both ends, filled with thin, flat, obovate seeds.

## PIPERACEÆ.

Named by M. Casimir DeCandolle.

**Piper fulvescens**, C. D.C., ined.

Asuncion (760). June.

A rather succulent, much branched suffrutescent plant, growing in large clumps in swampy places. Stem glabrous, angular, 1–2 m. high. The cylindrical spikes are numerous, 5 to 10 cm. long. Flowers white. Leaves succulent, alternate, broadly cordate-ovate, abruptly acute at the apex, palmately veined, the blades some of them 20 cm. long and nearly as broad; petioles 1–5 cm. long.

**Piper Gaudichaudianum**, Kunth., D.C. Prod., xvi, pt. 1, 277.

Asuncion (705). May.

A shrub 3–4 m. high, with greenish, downy, brittle stems, swollen at the nodes. Leaves minutely pellucid-punctate, lanceolate, obtusely acuminate, rough on the upper surface, 10–12 cm. long and 4 or 5 cm. broad, on short thick petioles. The lateral nerves, 3–5 on a side, arise from the midrib, sunken above and downy and prominent beneath. The rat-tail spikes are 8–10 cm. in length. Flowers androgynous, the staminate and pistillate mixed in various ways on the same spike. Woods at Villa Morra near Asuncion.

**Piper medium**, Jacq., Icon. Rar., i, 2, t. 8.

Asuncion (692). May.

Much like the preceding species in appearance, but differs in having broad elliptical leaves, which are 5–7 nerved from the base, 10–12 cm. long, 6 or 7 cm. broad, and glabrous on both sides. Spikes thicker. In thickets with no 705.

**Peperomia Barbarana**, C. D.C., Mem. Soc. Phys., xxvii, t. 11.

Caballero (393). January.

A small, branching, succulent plant, 15–25 cm. high. Spikes of minute flowers 10–12 cm. long. Growing in damp woods.

**Peperomia nummulariæfolia**, H. B. K., Nov. Gen., i, 66.

Caballero (392). January.

A delicate vine, climbing by rootlets upon old trees. Leaves small, orbicular, 5 mm. in diameter, diaphanous. Flowers in slender spikes.

**Peperomia pseudo-Dindygulensis**, C. D.C., l. c., t. 1.

Pilcomayo River (955). March.

A low succulent plant 20–30 cm. high, with downy stems and leaves. Spikes very slender, 4–8 cm. long, very numerous. This plant has a white rootstock, fibrously rooting at the joints, and with buds here and there from which new plants spring, running for a long distance under the leaves. It grows in deep woods under the shade of large trees. It differs from the preceding species in having a thicker and downy stem, elliptical, downy, 3 nerved leaves, sloping at the base, 3–7 cm. long, while no. 393 is smooth throughout, stems and leaves diaphanous, the leaves rounded and 5 nerved,  $1\frac{1}{2}$ – $2\frac{1}{2}$  cm. long.

**Peperomia radicans**, C. D.C., l. c., t. 2.

Pilcomayo River (1545). March.

Growing with 955 and much like that. It differs in being much smaller, the stems rising from an erect rhizome, leaves elliptical or oval,  $1\frac{1}{2}$ – $2\frac{1}{2}$  mm. long and 6–12 mm. broad, and with stems and leaves more densely villous.

## LAURINEÆ.

**Ocotea acutifolia** (Nees), Mez., Jahr. Bot. Kön. Bot. Gart. Berl., v, 340.

Near Asuncion (758). June.

A small tree 3–7 m. in height, with grayish bark, glabrous, the young branches and inflorescence downy, with a yellowish-green tint. Leaves shining green above, lighter and slightly downy beneath, entire, elliptical, obtusely pointed at the apex and sloping at the base into a petiole 12–18 mm. long, the largest blades collected 10–16 cm. long and 4–6 cm. broad. Flowers in large, loose terminal panicles, light yellow, or yellowish-green, fragrant.

Growing by water-courses or in damp woods.

**Ocotea laxiflora** (Meissn.), Mez., l. c., 370.

Asuncion (152). November.

A shrub 3 or 4 m. in height, with yellowish-green branches. Flowers much like those of no. 758, but in more branched and laxer axillary panicles. Leaves glabrous, coriaceous, and shining as in that, but smaller, oblong-elliptical, the blades 7–10 cm. long and  $2$ – $2\frac{3}{4}$  cm. broad, the lateral nerves scarcely visible. Thicket.

## LORANTHACEÆ.

**Loranthus cordatus**, Hoffmans. in Schultes Syst. vii, 128.

Gran Chaco near Asuncion (352). December.

A parasite growing in large bunches upon *Piptadenia rigida*, Benth. Leaves thick, opposite, coriaceous, lanceolate, obtuse, cordate-amplexicaul. Flowers in terminal clusters, dark red, tubular, 5 cm. long, the tube short, splitting into 6 linear lobes above, at length much longer than the tube. Stamens 6 on the corolla, and about as long, and they with the style exerted in anthesis. A singular and very handsome species. The host is sometimes called the Timbo, but is not the true Timbo, which is *Enterolobium contortisiliquum*.

**Phoradendron acinacifolium**, Mart. Fl. Bras., v, pt. 2, 117.

Pilcomayo River (1546). March.

A species which is distinguished by its oblong berries, 4-6 mm. in length. The leaves are obovate or often shaped like a cimeter, whence the specific name.

Parasitic on the Quebracho colorado.

**Phoradendron Perottetii** (D. C.), Eich. in Mart. Fl. Bras., v, pt. 2, 112.

Gran Chaco near Asuncion (358); Pilcomayo River (954). December-March.

A large mistletoe which occurs in the Gran Chaco opposite Asuncion on *Piptadenia* and on the Pilcomayo River on the Quebracho colorado. It has very large, thick, elliptical leaves; the flowers arranged in jointed spikes along the stems.

**Phoradendron rubrum** (L.), Griseb. Flor. Brit. W. Ind., 314.

Asuncion (618). March.

Found only in fruit. Parasitic on *Lycium Morongii*. Leaves linear-oblongate, 3-8 cm. long and 1-1½ cm. wide, sessile or minutely petioled. Berries red, pulpy, mucilaginous.

**Phoradendron obovatifolium**, Morong, n. sp.

Branches alternate or sometimes opposite, tetragonous, striate, ancipital, strongly flattened beneath the nodes; older stem becoming free from striæ and more or less terete. Leaves opposite, obovate, sometimes orbicular-obovate, rounded, obtuse, and mucronate, sometimes slightly emarginate at

the apex, narrowing and with the margins recurved at the base; the blades 12-17 mm. long, 8-15 mm. broad, 3-nerved, the nerves obscure or obsolete above, the midrib prominent below for the whole length of the blade, and the lateral nerves distinct or obscure; petiole 1-3 mm. long, ancipital with the decurrent midrib. Spikes solitary, axillary, 8-12 mm. long, bearing 3-4 verticils of flowers, the flowers 3 or 4 pistillate and 1 or 2 smaller staminate in a verticil. Berries ovoid, verrucose, about 2 mm. long. The cataphyllary sheaths slightly bifid, the teeth obtuse and ciliolate; bracteal sheaths nearly or quite truncate, not ciliolate.

This species is apparently closely related to *P. Ottonis*, Eichler (Flor. Bras., v, pt. 2, 119), but differs from it in several particulars, and still more from *P. emarginatum*, Mart., with which Eichler associates *P. Ottonis*.

Growing with no. 358 upon *Piptadenia* in the Gran Chaco, opposite Asuncion (1582). December.

#### EUPHORBIAEÆ.

**Euphorbia heterophylla**, L., Sp. Pl., 453.

Pilcomayo River (867 and 1547). January.

Growing on the campo at a wood-cutting station on the lower Pilcomayo, known as Obraje de Pedro Gill. Broad oval-shaped leaves.

**Euphorbia pulcherrima** (Graham), Willd.; Boiss. in D.C. Prod., xv, pt. 2, 71.

Asuncion (742).

This fine plant is cultivated largely in the flower-gardens of Paraguay. I do not think, however, that it grows wild in the country. It is a native of Mexico and Central America. It is conspicuous for the large showy red floral leaves, and sometimes grows  $2\frac{1}{2}$  m. high. It flowers nearly the entire year round.

**Euphorbia serpens**, H. B. K., Nov. Gen., ii, 41.

Pilcomayo River (881). January. = Balansa 1686.

**Euphorbia thymifolia**, L., Sp. Pl., 454.

Asuncion (64). November.

A small spreading, prostrate plant, growing in grassy grounds. Leaves opposite, oblong, obtuse, nearly or quite equilateral at the base, 1-nerved, glabrous or puberulent, 5-7 mm. long; petioles about 1 mm. long. Flowers minute; glands 4, small, concave,



stipitate. Capsules pubescent, about 1 mm. long; seeds in my specimens tetragonus, with even sides and no furrows of any kind.

**Euphorbia hypericifolia**, L., Sp. Pl., 454.

Asuncion (372); Pilcomayo River (932). November–February.

The plants vary considerably. The stems and capsules, generally glabrous, are sometimes pubescent. Leaves occasionally linear, falcate, acute and entire, but usually they are well marked, and the seeds are entirely of this species. The plant often grows in the streets of Asuncion as well as in the suburbs. On the campo along the Pilcomayo it sometimes attains a height of 1 or  $1\frac{1}{2}$  metres.

**Phyllanthus orbiculatus**, L. C. Richard, Act. Soc. Par. 1792, p. 113.

Asuncion (678). April.

Growing in old cultivated fields. Stem erect, slender, 15–20 cm. high. Juice watery, not milky as in *Euphorbia*. Flowers white, minute, axillary; pedicels in fruit reflexed and 2 mm. long. Leaves orbicular, alternate, glabrous, about 1 cm. in diameter. Capsules depressed-globose, smooth, 6-seeded; seeds pitted on the convex back.

**Phyllanthus Chacoensis**, Morong, n. sp.

A tree 8–12 m. high, with crooked, straggling limbs, which begin near the ground and are often much crowded and horizontal, 3–4 dm. in diameter at the base, with much broken, shaggy gray bark; the wood very hard. Leaves pinnate, with 5 or 6 subopposite leaflets, the leaflets oval or nearly orbicular, entire, coriaceous, glabrous, shining, slightly cordate at base, 2–7 cm. long and  $2-3\frac{1}{2}$  cm. wide, nearly sessile. Flowers moncecious, about 2 mm. high, and on a pedicel of the same length, all on the old wood and appearing before the new leaves, in very slender racemes, which are usually densely crowded, and from 3 to 6 cm. long. Glands of the disk wanting. Perianth segments normally 4, purple and white or sometimes greenish, obovate, fringed at the apex. Staminate flowers normally with 4 free stamens opposite the segments. These, however, vary very much, and they and the perianth segments are 4, 6 and 7 in number, the segments separate or sometimes partly united. Pistillate flowers with a 2- or 3-celled ovary, each cell 2-ovuled. Style short, 2-divided, each division splitting into 2–4 stigmas, which curl downwards over the ovary. Fruit a small bluish, 2-celled drupe, which, when dry, has a thick corky putamen, oval, 5 or 6 mm. long.

In the Gran Chaco, opposite Asuncion (355). = Balansa 1712, and Fendler Panama 140 and 323. September–January.

**Jatropha vitifolia**, Mill., Dict.

Trinidad (794). October. = Balansa 1720.

Soft stemmed, suffruticose, with copious milky juice,  $\frac{1}{2}$ –1 m. high. Stem and lower surface of leaves beset with straight, transparent, 1–2 celled spines, which are about 1 cm. long, pulvinate at the base. Leaves alternate, palmately 3–5 nerved, the nerves prominent beneath, 5–7 lobed, the lobes cut-incised and spiny at the apex, on white spiny petioles 5–8 cm. long, the blades 8–14 cm. long and about as wide. The upper surface of the leaf smooth, green, white spotted. Flowers white, tube shorter than the 5 spreading lobes. At first the perianth is greenish below and spiny, afterwards becoming pure white and glabrous, large ( $2$ – $2\frac{1}{2}$  cm high). Stamens numerous, in a column as if Malvaceous, with several series, one above the other. Style 2-divided, each division with several thread-like stigmas. Ovary spiny.

This very spinous plant is rather a dangerous thing to handle, notwithstanding its clusters of handsome flowers, for its needle-like spines can inflict a severe and smarting wound.

**Jatropha gossypiifolia**, L., var. **breviloba**, Morong, n. var.

Differs from the type as described in Fl. Bras. in having the leaves shortly 3–5 lobed, the ovary and exterior of the perianth laciniaë, and all parts of the plant, including the inflorescence, glabrous.

I append a fuller account of this species than has ever been given. It is usually a shrub 2–3 m. high, but sometimes when used as a shade tree, as it often is in Asuncion, it attains a height of 5–7 m. Leaves broad-ovate or orbicular in outline, palmately veined and subcordate, acute-aristate at the apex and on the sharp lobes. The stipules are peculiar, being setose, dichotomously divided, each branch tipped with a small round gland, often 1 cm. or more in length. The margins of the leaves, bracts, and laciniaë are setaceous ciliate and tipped with glands. Flowers in small terminal cymes, monœcious; staminate flowers with 5 petals yellowish-green on the margins, brownish-red in the middle, purple-striped below on the outside, spreading in anthesis, 5 mm. long; stamens 8, united below, dimorphous, 5 short and 3 long, the shorter ones shedding their pollen before the others open. Styles 3, united below, persistent, with 3 capitate stigmas. Fruit  $1\frac{1}{2}$  cm. long by 1 cm. broad, truncate at the apex. Seeds flattened-cylindrical, boat-shaped on one face and angled on the other, glabrous, brownish in color, with

a large lobed caruncle at the lower end. When cut the stem exudes a copious watery milk.

One of the most striking plants on the lowlands near the river at Asuncion (71). November–December. = Balansa 1718.

**Croton glandulosus**, L., Sp. Pl., Ed. 2, 1425.

Asuncion (113).

Common in waste grounds, and flowering from November to June.

**Croton lobatus**, L., Sp. Pl., 1005.

Pilcomayo River (939). February.

Herbaceous. Stems glabrous, dichotomously branched, 4–6 dm. high. Leaves 3–5 lobed. Petioles 1–4 cm. long, with numerous minute glands at the summit.

**Croton migrans**, Casar., Nov. Stirp. Bras., Dec., 88.

Caballero (518). January. = Balansa 1650.

A shrub about 3 m. high, with dark lepidote stem, much branched. Leaves scattered, numerous, dark green and glabrous above, silvery white lepidote below from base to apex, the minute scales dark, ciliate, with closely appressed, radiating silky white hairs; petioles 3 or 4 mm. long; the blades linear,  $2\frac{1}{2}$ –4 cm. long and 2–4 mm. wide, keeled beneath, and with no appearance of lateral nerves. Racemes 2–4 cm. long, mostly staminate above, with 2–4 pistillate flowers below. Staminate flower 2 mm. high; stamens 9. Pistillate flower a little larger; styles 5. Fruit globular, 3 or 4 mm. long; seeds black, shining, lenticular.

Growing in swampy grounds.

**Croton rhamnifolius**, H. B. K., Nov. Gen., ii, 75.

Caballero (503). January.

A shrub 3–7 m. high, with a tawny-haired stem. Leaves lanceolate, with tawny, stellate tomentum beneath, dark green and soon glabrate above, the lateral nerves distinct, blades 3–6 cm. long and 1–2 or more cm. wide; petioles 3–5 mm. long. Flowers in terminal racemes, 5–14 cm. long, the staminate above and pistillate below. Stamens about 15. Fruit globose, about 5 mm. long, stellate-tomentulose; seeds smooth, fuscous, flattish on one side. The whole inflorescence covered by a hoary, stellate tomentulum.

**Croton Urucurana**, Baill., Obs. Bot., iv, 325.

Asuncion (218); Villa Rica (612). December-February.

A shrubby plant 1-3 m. high, covered in all its parts, except the upper surface of the leaves, with stellate, hoary tomentum. Leaves broadly cordate-ovate, acuminate, entire or minutely and remotely denticulate, 6-18 cm. long and 4-12 cm. broad at the base; petioles 4-6 cm. in length. Flowers greenish-white, in long (20 or more cm.) terminal racemes. Stamens upwards of 15, much exserted. Capsule  $4\frac{1}{2}$  mm. long and  $5\frac{1}{2}$  mm. broad, containing 3 shining black seeds which are angled and furrowed longitudinally on the sides. The leaves of this plant are strongly aromatic when bruised.

**Croton vulnerarius**, Baillon, l. c., 328.

Asuncion (1548). June.

A shrub similar to nos. 218 and 612. Leaves not so large, denticulate. Racemes shorter (10-12 cm.). Seeds very different, being nearly flat, several ribbed on both sides and yellowish-brown in color, not shining.

**Croton sparsiflorus**, Morong, n. sp.

A low shrub  $\frac{1}{2}$ -1 m. in height. Stem fuscous, branching irregularly, angular, lepidote, the scales deeply cut by 15-20 appressed radiating hairs. Leaves dark green, alternate, ovate-lanceolate, acute at the apex, cuneate at base, serrate, penni-nerved, smooth above, sparsely lepidote beneath, with 2 patelli-form glands  $\frac{3}{4}$  mm. broad at the base; blades 3-6 cm. long and 1-3 cm. wide; petioles 1-2 cm. long. Stipules mere subulate points, caducous. Flowers in slender terminal racemes, 6-12 cm. long, the flowers continuous, pistillate below and staminate above, the pistillate much fewer. Staminate flowers scattered along the rachis, about 2 mm. high, the perianth segments 5, the outer ovate and glabrous, the interior white and smaller, woolly at base inside; stamens about 13. Perianth segments of the pistillate flower lanceolate, ciliate; inner segments none; ovary tomentose; styles 3, each 2-divided. Capsule angular-globose, 5 or 6 mm. long and 4 mm. broad, sparsely lepidote; seeds flattened-cylindrical, obtusely 2-angled, with a furrow on one side, truncate at either end, glabrous, slightly mamillate-asperous, shining, 5 mm. long, the caruncle conspicuous. The young branches and petioles are densely white lepidote.

This plant is common in the waste grounds and streets of Asuncion, and also occurs on the campos along the Pilcomayo River.

Asuncion (43); Pilcomayo River (940). November-March. = Balansa 1732 and Gibert 97.

**Julocroton Gardneri**, Muell., Arg. in Mart. Fl. Bras., xi, pt. 2, 276.

Asuncion (349); Pilcomayo River (1017). December–April. = Gardner 2724, and Balansa 1646.

Shrubby,  $\frac{1}{2}$ –1 m. high, glabrous below and stellately pubescent above and on the branches. Leaves crowded at the summit of the stem and branches, alternate, subopposite or sometimes in 3s, obovate, entire, palmately 3–5 nerved, minutely pubescent on both sides with stellate scales, pellucid-punctate, the largest blades collected 8 cm. long and 5 cm. wide; petioles 1–3 cm. long. Stipules setaceous, hairy. Flowers in dense terminal clusters, sessile, or the staminate on a short spike and nearly hidden by the crowded floral leaves. The stem and leaves have a grayish tint.

**Julocroton Brittonianum**, Morong, n. sp.

A shrub 5–10 dm. high. Stem branched, pubescent below, stellately tomentose above and on the branches. Foliage light colored, with a yellowish tinge. Leaves alternate or occasionally subopposite, ovate, acute at the apex, obtuse at the base, 3–5-nerved, serrate towards the apex, pubescent above and stellately tomentose beneath, 3–5 cm. long, 1–3 cm. broad; petioles stellately tomentose, 1–2 $\frac{1}{2}$  cm. long; stipules setaceous, hairy, caducous. Inflorescence densely tomentose, many of the hairs long and stellately tipped. Flowers inconspicuous, in loose terminal clusters, monœcious. Staminate flowers about 3 cm. high; calyx deeply divided, with 5 ovate lobes, on pedicels 2–3 mm. long; stamens 10, much exserted, densely pilose on the filaments, the alternate filaments with a small strap-shaped petal or petaloid appendage attached to them on the outside near the base. Pistillate flowers larger, sessile, the segments of the perianth long, lanceolate; styles long, 3-divided, each division split into 3 hairy stigmas; ovary large, 3-carpelled; seeds brownish-black when mature, rough, about 3 mm. long, convex on the back, obtusely angled on the face, marked by a large white caruncle at the hilum.

Differs from *J. Gardneri* in being more widely branched, with lighter colored foliage, smaller and serrate leaves, and otherwise, and from *J. pycnophyllus* in having the flowers in loose clusters instead of dense heads, smaller leaves, as well as in other respects.

Obraje de Pedro Gill, Pilcomayo River (864). January.

**Julocroton pycnophyllus**, Muell. Arg. in D.C., Prod., xv, pt. 2, 706.

Between Villa Rica and Escoba (593). January. = Balansa 1665.

A tall, branching, shrubby plant. Stem and branches compressed-angled, clothed with long ferruginous hairs which are stellate at the top. Leaves elliptical, undulate, palmately 5-nerved, densely clothed with ferruginous stellate pubescence on both sides, on petioles 5–10



mm. long; the blades 7–10 cm. long and  $2\frac{1}{2}$ –4 cm. broad. Floral leaves linear-lanceolate. Flowers in dense, compact terminal spikes, which are cylindrical, narrowing at the apex, 3–5 cm. long and 1–2 cm. in diameter.

The whole plant has a yellowish appearance.

**Argythamnia Montevidensis** (Diedr.), Muell. Arg., *Liunæa*, xxxiv, 147.

Pilcomayo River (996). April.

A shrub about 4 dm high, with many stems springing from a procumbent, contorted base. Stem strict, scarcely branched, pubescent with straight, appressed hairs. Leaves alternate, narrow elliptical, more or less serrulate, with scattered hairs like those of the stem beneath, 3–5 cm. long and  $1-1\frac{1}{2}$  broad, sessile or the lowest on minute petioles. Flowers monœcious, the 2 kinds together in axillary clusters. Inner lacinia of the perianth light yellow. Fruit a 3-carpelled capsule, the carpels looking like 3 little nuts joined together, 5 mm. broad, about 3 mm. long, villous. Seeds globose, obtusely 3-angled, a little wrinkled, nearly 3 mm. in diameter.

**Caperonia palustris**, St. Hil., *Pl. Remarq.*, 245.

Asuncion (382); Pilcomayo River (1047); Caballero (438). January–May.

This genus differs principally from the preceding Euphorbiaceous genera in having its fruit in united triplets, the 3 cocci generally hispid or echinate. The species here noted is a coarse plant 6–9 dm high, the stems beset with spreading, translucent setæ, each tipped with a minute oblong head. Nos. 382 and 1047 have broad oval crenate-serrate leaves, while the leaves of 438 are long, narrow lanceolate and sharply serrate. The last differs so greatly from the other forms that it might almost be considered a distinct species.

Some specimens of 1047 were distributed as *C. castaneæfolia*, St Hil., which very closely resembles this species.

**Manihot Aipi**, Pohl., *Pl. Bras.*, i, 29.

Asuncion (390).

Cultivated extensively and sometimes spontaneous in Paraguay. Known as *Mandioca dulce*, or the sweet or innocuous Manioc. A shrubby plant with smooth stems and deeply 6–7-parted leaves,  $1-1\frac{1}{2}$  m. in height. The roots are greatly esteemed as vegetables, looking when boiled for the table something like parsnips. They

are also used for feeding cattle. The meal made by grinding them and drying the pulp, called farina, forms the principal subsistence of the common people. A delicious bread known as chipa is manufactured from it, and it serves as many purposes as wheat flour does in this country. It may be grown most of the year.

**Manihot utilissima**, Pohl., l. c., 32.

Asuncion (391).

So strongly resembles the preceding species that an unpractised eye cannot tell them apart. The natives, however, readily distinguish them by small differences in color and position of the leaves on the stem. In properties they are opposites, for the juice of this species is a deadly poison. It is known as *Mandioca brava*, and is cultivated to some extent in Paraguay. When the juice is expressed from the grated pulp, and that is dried over the fire or in the sun, it becomes a wholesome article of food. Indeed, some persons expressed to me a preference for the meal made of this species, but I never could discover any difference in taste between the two.

Grown the year round.

**Bernardia pulchella**, Muell. Arg. in Mart. Fl. Bras., xi, pt. 2, 392.

Caballero (607). January. = Balansa 1688.

A tall shrub or small tree. The fruit as in *Caperonia* in 3 cocci, but these are only minutely pubescent. The staminate flowers are in slender spikes 3-4 cm. long, usually on a different stem or another part of the stem from the pistillate; stamens 8-12. Pistillate flowers few or solitary. Leaves elliptical, narrowed at both ends, sessile, serrate on the upper half, 6-13 cm. long and 2-4 cm. wide, appressed-pubescent on the nerves beneath.

**Acalypha communis**, Muell. Arg., Linnæa, xxxiv, 23.

Pilcomayo River (1549). February.

**Acalypha communis**, Muell. Arg., var. *hirta*, Muell. Arg. in Mart. Fl. Bras., xi, pt. 2, 350.

Asuncion (189). November.

Suffruticose, usually not quite a metre in height, but sometimes growing into a shrub 2-2½ m. high. A very variable species as to pubescence, shape of leaves, length of petioles, and thickness of the spikes. The form growing in old fields and by the wayside at

Asuncion (var. *hirta*, Muell. Arg.) has lanceolate leaves, acute at the apex, rounded or slightly cordate at the base, crenate-serrate, sparsely pubescent, 5–9 cm. long and 1–2 cm. broad, on petioles 1–3 cm. long; stems covered with long spreading hairs and also a close retrorse tomentum. The form on the Pilcomayo has broad ovate leaves, cuneate or rounded at base, and petioles sometimes 8 cm. long; stems with long, scattered, spreading hairs. Staminate spikes slender, 2–6 cm. long, usually on the stem below the pistillate, both kinds numerous. Pistillate spikes and flowers much larger than the staminate. The long exserted, rose-red and thread-like fringed styles are quite ornamental, and lend a beauty to this rough weed which it would not otherwise possess.

**Acalypha hederacea**, Torrey, Bot. Mex. Bound. Survey, 200.

Luque (345). December. = Balansa 1691.

A small creeping plant, occurring among grasses and underbrush. Leaves ovate or orbicular, 1–1½ cm. long. Staminate flowers in long, slender spikes, and the pistillate solitary or 1 or 2 in the axils of the leaves or at the base of the staminate spikes. In Texas and Mexico, as well as in Paraguay.

**Acalypha ruderalis**, Mart.

This was brought back from Kew under the name here given, but we have been unable to find any work in which it is so named or cited.

Caballero (460). January.

Inflorescence as in no. 345, but the stems are erect, 3–4½ dm. high, and the leaves ovate or elliptical, crenate, acute at either end, pubescent on both sides, 2–6 cm. long and 1½–3 cm. wide; petioles 1–1½ cm. long.

**Acalypha agrestis**, Morong, n. sp.

Suffruticose, 3 dm. to 1 m. in height, the stem and young branches hispid with spreading hairs mingled with a close tomentum, sulcate and more or less compressed above. Leaves alternate, ovate-lanceolate, rounded and subcordate at base, acuminate at apex, crenate-dentate, 5–7 palmately nerved, appressed pubescent above, softly villous beneath, the hairs lying along the nerves in an appressed fringe; blades 6–10 cm. long and 3–5½ cm. wide; petioles hispid, 2–4 cm. long. Stipules setaceous, hispid, much shorter than the petioles. Staminate spikes erect, with compactly crowded flowers, axillary, about 2 mm. thick and 3–4 cm. long, on short peduncles; floral bracts

long ciliate; segments of perianth 5, minutely pubescent, not  $\frac{1}{2}$  mm. high. Pistillate spikes terminal, thicker, 6–8 cm. long; floral bracts 7–8 divided nearly to the base, glabrous; perianth segments 3, ovate; ovary tawny-hirsute; style parted shortly above the base into 15–18 much exserted purple threads. Fruit not seen.

A species nearly related to *A. communis*, Muell. Arg.

Central Paraguay (1578). March.

***Ricinus communis*, L., Sp. Pl., 1007.**

Asuncion (121).

The Castor-oil Bean is very common on the river banks and in the woods around Asuncion. It frequently grows into a small tree 5 or 6 m. high, and may be found in flower or fruit the greater part of the year.

***Tragia Sellowiana*, Muell. Arg., Linnæa, xxiv, 178.**

Near Asuncion (709). May.

A climbing herb, suffruticose below, with very slender fuscous-haired stems. Leaves far apart, ovate, cordate, acute, dentate, palmately nerved, 5–10 cm. long, sparsely white pubescent on both sides, on petioles 3–6 cm. long. Flowers monœcious, in biparted racemes, the branches of distinct sexes; the common peduncle naked. Stipules lanceolate, small. Fruit of 3 silky-haired, globose cocci; seeds globose, yellow or brownish spotted, nearly 4 mm. in diameter. In thickets.

***Stillingia sylvatica*, L., var. *Paraguayensis*, Morong, n. var.**

Varies very decidedly from the Florida form (Chap. Flor., 404). A tree 5–8 m. high. Stem single, alternately branched, with smooth gray bark. Juice milky. Leaves willowy, alternate, glabrous, lanceolate, acute at either end, 4–10 cm. long, 8–15 mm. wide, crenate-serrulate, the serratures appressed and ending in a gland, often biglandular at the base of the blade; petioles 5 or 6 mm. long. Stipules very small, ovate, scalelike. Spikes terminal, monœcious, sometimes all staminate, or again with only a few pistillate flowers at the base, 6–8 cm. long. Glands not cup-shaped at all, but flat, 1–2 mm. wide. Bracts yellowish-green, broader than long, sometimes fimbriate. Style short; stigmas 3, longer, curled downwardly, stigmatic on the upper side. Fruit a large 3-celled capsule, each cell containing a single flattish, black, smooth seed enveloped in a scarlet pulp, the seed about 5 mm. long.

In flower at Asuncion, October, November; in fruit on the Pilcomayo River, January (814). = Balansa 1711.

**Sapium glandulosum** (L.), Morong.*Hippomane glandulosa*, L., Sp. Pl., 1191.*Hippomane biglandulosa*, L., Sp. Pl., Ed. 2, 1431.*Sapium biglandulosum*, Muell. Arg., Linnæa, xxxii, 116.

Asuncion (196). November–December.

A tree some 13 or more m. in height, with ashen-gray bark much roughened and broken into lines on the trunk. The milky juice is so copious that it is shed all over the ground when the leaves are bruised by the wind. Leaves willow-like, alternate, the blades deep green, coriaceous, serrulate, 10–16 cm. long and about 2 cm. wide, biglandular at the base; on petioles 5–20 mm. long. Stipules small, round, membranous, with ciliate or jagged edges. Flowers in spikes at the ends of the branches, small, yellow, monœcious and diœcious; when monœcious the pistillate flowers are at the base of the staminate spikes. Staminate flowers with a perianth deeply 2- or 3-divided, when 2-divided with 2 stamens, when 3-divided with 3 stamens. Fruit a fleshy capsule, 2-celled, containing 2 large seeds. In fields, suburbs of Asuncion.

**Sebastiania brachyclada**, Muell. Arg. in D.C. Prod., xv, pt. 2, 1178.

Banks of the Tebicuary River (500). January.

A very leafy shrub about 5 m. high, the short lateral branches ending in stiff, sharp thorns. Leaves coriaceous, glabrous, obovate, oval or elliptical, entire or here and there with minute serrulations, slightly revolute, the blades 2–4½ cm. long and 1–2 cm. wide, on petioles about 5 mm. long. Flowers monœcious, the staminate small, yellowish, 1–3 under broad, somewhat dentate bracts, in spikes 1–2 cm. long at or near the ends of short branches. Pistillate flowers among the leaves on the stem, solitary or several together in a cluster, on a peduncle 1–2 cm. long. Capsule pedicelled, glabrous, depressed-globose, 3-carpelled, with a thick, hard shell, about 8 mm. broad; seeds nearly ovoid, glabrous, brownish, about 4 mm. long, with a small, black, peltate caruncle at the base.

**Sebastiania corniculata** (Muell. Arg.), Baillon Obs. Bot., 1. c.

Asuncion (154). November.

Herbaceous, or subligneous at base, much branched, about 6 dm. high. Leaves numerous, alternate, narrowly elliptical, bristly serrulate, glabrous and silvery dotted above, pubescent beneath, rounded at base, acute and mucronulate or sometimes obtuse at apex, 2½–4 cm. long and 6–16 mm. broad, on petioles 2–5 mm. long. Staminate flowers minute, red, distichous, in setaceous spikes along



the stems. Pistillate flowers larger, solitary, near the base of the staminate spike. Fruit a 3-carpelled capsule 4 mm. long and about as broad, nearly glabrous, each carpel with 2 minute horns at the top; seeds flattish, glabrous, dark colored, about 3 mm. long, with a white peltate caruncle at the base.

**Actinostemon Luquense**, Morong, n. sp.

An unarmed shrub 3-4 m. in height, with brownish-warty or black-spotted, fissured bark. Leaves glabrous, elliptical, apparently exstipulate, crenulate-serrate, the teeth with callous points, furnished with small glands near the midrib above and with scattered glands beneath, more or less revolute on the margins, the largest blades collected about 7 cm. long by 3 cm. wide; petioles 5 or 6 mm. in length. Bracts decurrent, biglandular at the base. Staminate flowers small, yellow or greenish-yellow, in slender terminal spikes 5-10 cm. long, 1-3 flowers from a single bract; calyx of several minute scales or wanting; stamens 3-10; anthers broader than long, 2-celled, opening longitudinally. Rachis of the spikes sharply angular, fuscous. Pistillate flowers much larger, 1-3 at the base of the spike, apparently without a calyx; ovary often 3-angled, glabrous, armed about half-way up by several irregularly dentate and sharp-toothed scales, slightly spreading at the top; styles thick, connate at the base, 3-divided above, the divisions curling down over the ovary and longer than that. Fruit a very hard, thick-shelled, glabrous, globose capsule, 3-carpelled, 7 or 8 mm. long, containing 1 seed in each cell; seeds glabrous, globose, fuscous, 3 or 4 mm. in diameter, with a small peltate caruncle at the base.

Thickets, near Luque (720). May.

URTICACEÆ.

**Celtis Tala**, Gill., Ann. Sci. Nat., 1848, p. 410.

Pilcomayo River (1045 and 816). October-May. = Mandon 1096 from Bolivia.

A spiny shrub 3-5 m. or more in height, with smooth, ashen-gray bark and flexuous branches. Leaves numerous, simple, oval, serrulate near the top, mucronulate, subcordate, the veins white and prominent beneath, 3-nerved, 3-5 cm. long and 2-3 cm. broad; petioles 3 or 4 mm. long. Flowers white or greenish-white, minute. Fruit a yellow, pulpy, 1-seeded berry. In thickets.

**Trema micrantha** (Sw.), Blume, Mus. Bot., ii, 58.

Asuncion (213). November-December.

A tree of moderate size. Young branches pubescent. Leaves in 2 ranks, or nearly so, ovate-lanceolate, acuminate and mucronate, cordate at base, 3-nerved, serrulate, rough to the touch above and

soft pubescent beneath, the largest about 10 cm. long and 4 cm. wide, on petioles about 5 mm. long. Flowers greenish, very small, in short cymes along the branches, polygamous. Fruit a small yellow 1-celled, 1-seeded drupe.

This tree generally grows in open fields, and bears crowded branches and leaves. It is ungraceful in appearance.

**Morus alba**, L., Sp. Pl., 986.

Asuncion (787).

One of the many forms of the white mulberry, bearing dark purple fruit. Not a native of Paraguay, but introduced and growing freely into a fine large tree. Like most other people, the Paraguayans have tried experiments in manufacturing silk, and this tree was introduced for the purpose of feeding the silk-worm, but a manufacture of that kind, even if all the requisite means were easy to be obtained, would never suit such an indolent, unenterprising race, and the industry soon perished. Some of the trees, however, are left and are found here and there in the country. In fruit August.

**Ficus Radula** (Miq.), Morong.

*Pharmacosyia Radula*, Miq. in Hook. Lond. Jour. Bot., vii, 64.

Asuncion (245).

A noble tree, often growing nearly 25 m. in height. Bark grayish, very smooth. Leaves alternate, simple, entire, coriaceous, glabrous on both sides, oval, entire, the margins slightly revolute, abruptly acute at the apex, narrowed at the base, the blades 8-18 cm. long and 5-8 cm. broad; petioles  $1\frac{1}{2}$ -5 cm. long. Receptacle on a short peduncle, about the size of a pea, becoming in fruit a syconium nearly 2 cm. in diameter, and filled with small white seeds which are marked with a prominent raphe. The wood is hard, and the whole tree abounds with milk, which often exudes copiously of its own accord in the hot sunshine. Once when botanizing in the woods near Asuncion I heard the pattering of what seemed to be rain-drops. Surprised at this, as the sun was shining brightly, I followed the sound, and found that the noise proceeded from milk-drops, falling one by one from this tree. The ground was fairly white beneath its boughs. Fruit only found. December-January.

**Ficus**, Sp.

Asuncion (1550). = Balansa 1986.

Foliage only collected.

**Coilotalpalus peltata** (L.), Britton.*Cecropia peltata*, L., Amœn. Acad., v, 410.

Near Luque (717). May-June.

One of the most striking and beautiful trees in the forests of Paraguay, the umbrella-like head and the large peltate silvery-lobed leaves showing finely against the green foliage of its companions. It has a naked columnar stem, rising to a height of 10-15 m. Leaves orbicular in outline, 20 cm. or more in breadth, deeply 9-11 lobed, the lobes green and somewhat rough above, and with a silvery-white tomentum beneath, on petioles 15-20 cm. long. Flowers diœcious, in cylindrical spikes, sunk in the surface of the rachis; the pistillate spikes generally 4 on the same peduncle, and about 10 cm. long and 1-1½ cm. thick; the staminate smaller, 10 or more together, 5 cm. long and 3 or 4 mm. thick. The large spathe-like stipules which enclose the buds, also white tomentose, are very conspicuous.

Ants are very fond of the fresh flowers of this tree, and I nearly always found them running over it in great numbers.

**Urtica spathulata**, Sm. in Rees Cyc., no. 17.

Buenos Aires (11). October.

I did not see this nettle in Paraguay, but it is very abundant about Montevideo and Buenos Aires, and doubtless occurs farther north also. It is a small prostrate or ascending plant, with numerous small orbicular incisely dentate leaves. The prickles are very numerous and exceedingly irritating, leaving a stinging sensation which lasts for hours.

**Urera baccifera** (L.), Gaudich. Bot. Voy. d'Uranie, 497.

Near Pirayu (663). April.

A tall, succulent-stemmed shrub, 3-5 m. in height, with a copious watery milky juice. Leaves very large, round-ovate, slightly cordate at base, abruptly acute at the apex, sinuate-dentate, rugose above, very rugose and veiny below, armed with stinging hairs, 30-40 cm. long and 15-20 cm. broad, on armed petioles 10-15 cm. long. Flowers diœcious in axillary, widely branching panicles. Fruit a small, round, watery, white, berry-like utricle, containing a single flat seed. The stem is armed near the base with short, broad thorns, and naked to the inflorescence which bears many small stinging prickles.

**Urera Caracasana** (Jacq.), Weddell, D.C. Prod., xvi, pt. 1, 89.

Asuncion (120); Pilcomayo River (873). November–May.

A climbing shrub, often prostrate or hanging over banks for 2 or more metres. It has a rather slender stem, and is armed more or less on the leaves and inflorescence with small stinging hairs. Leaves coarse, cordate, ovate, crenate-dentate, 10–15 cm. long and 8–10 cm. broad, on short petioles. Flowers in rather small axillary cymes. The red berry-like utricles which it bears abundantly are the most noticeable part of the plant, and are often seen in thickets or hanging over the banks along the Paraguay River at Asuncion. Common also on the Pilcomayo River, supported by other shrubs.

**Parietaria debilis**, Forst., Flor. Ins. Austr. Prod., no. 387.

Pilcomayo River (1052). June.

Looks much the same as our Southern plant, and found in similar situations in shady woods.

#### SALICINEÆ.

**Salix Chilensis**, Molina, Sag. Stor. Nat. Chil., i, 169 (1782).

*Salix Humboldtiana*, Willd., Sp. Pl., iv, 657 (1806).

Asunción (788); Pilcomayo River (1061). June–September.

This willow is popularly called Sauce real in Paraguay, and grows from the Amazon to Patagonia on both sides of the Andes. Generally it is little more than a shrub 5–8 m. in height, but on the banks of the Pilcomayo, I saw large trees at least 15 m. high. Leaves linear acuminate, glabrous, the midrib prominent below, with a fine lateral nerve on each side near the margin, serrulate, 5–14 cm. long and 5 or 6 mm. wide.

#### HYDROCHARIDEÆ.

**Limnobium Sinclairi**, Benth., Bot. Voy. Sulphur, 175.

Ponds near Asuncion (1559). = Mandon 596 a, from Bolivia. November–December.

A small plant, with round oval leaves, floating on the surface of the water. The leaves are covered on the upper surface with rows of small tubercles.

## ORCHIDEÆ.

Named by R. A. Rolfe.

**Pleurothallis**, Sp.

Caballero (394). January.

An epiphyte clinging to the bark of trees. Leaves very thick, 6–8 cm. long and  $1-1\frac{1}{2}$  cm. broad, somewhat keeled, many-nerved, black spotted on the upper surface, on jointed petioles rising from the rootstock, and 10–12 cm. long.

**Eulophia maculata**, Reichb. f.

Pilcomayo River (968). March.

Scapes stiff, erect, sparsely bracted, 4–5 dm. high, from thick, white, cottony, granulated roots. Leaves radical, elliptical, very thick, light green, blotched with deeper green, somewhat channelled in the centre, spiny pointed, sheathed at the base by several bracts, the largest over 3 dm. long and about 5 cm. wide. Flowers 2 cm. high, 5–15 in the spike, 1 or 2 spikes springing from the same bract, 1 longer than the other; lip larger than the other segments of the corolla, with 2 small rounded lobes at its base, the lobes purple-striped inside and whitish outside, the upper portion curved downwards, with 2 spots of reddish-purple inside, whitish outside; spur curved, clavate. Ovary enlarging to 3 cm. in fruit. In deep, damp woods.

**Catasetum fimbriatum**, Lindl.

Pilcomayo River (875). January.

Scapes slender, bracted, 4–5 dm. high. Flowers purple, in a terminal raceme, each on a bracted pedicel 3 or 4 cm. long, the perianth 5 or 6 cm. long and 4 or 5 cm. broad; petals and sepals narrow, oblong, acute, greenish and covered with minute purple dots, the lateral sepals reflexed; lip large, inflated, expanding into a broad and fringed apex, which curves over itself; spur large, blunt. The flower of this orchid is exceedingly interesting in its contrivances for securing insectivorous agency in its fertilization. They are similar to those of a related species described by Darwin in his *Fertilization of Orchids*, p. 322. Wet grounds.

**Oncidium** ?

Caballero (397). In fruit January.



**Oncidium?**

Caballero (394 a); banks of the Tebicuary River (510); Pilcomayo River (1551). January.

An epiphyte very common on trees in moist woods in many parts of Paraguay, throwing up scapes from 10 to 20 cm. high, with many lateral racemes of flowers. Flowers small, purple, sessile. Found mostly in fruit. Pod oblong, about 5 mm. in length. The leaves are very thick, elliptical, keeled, 4–12 cm. long and 12–20 mm. broad, many-nerved, acute at either end.

The plant forms large bunches of roots, leaves, and stems on the trunks and limbs of trees.

**Ornithocephalus, Sp.**

Caballero (510 a). January.

**Campylocentrum, Sp.**

Pilcomayo River (1552). January.

Common on trees in the Pilcomayo forests. The stems run along the trunk, throwing out long roots, lateral flowering branches, and other stems at intervals. Leaves narrow lanceolate, 4–7 cm. long. Flowers in lateral spikes, 2-ranked, each under a small bract; the ovary slender, 6–8 mm. long, surmounted by a purplish perianth about 2 mm. long, the segments acute; the spur short, blunt, upturned. Many of the long white-corticated roots dangle in the air for 10–18 cm., giving a strange, straggling appearance to the plant.

**Habenaria Gourlieana, Gill., Lindl. Gen. and Sp. Orch.**

Pilcomayo River (861). January.

Stem 4 or 5 dm. high. Leaves lanceolate, 15–20 cm. long, running into acute, sheathing bracts above. Flowers pale yellow, numerous, in a short raceme at the summit of the stem; ovary very long and slender; sepals broad ovate; petals much longer, almost capillary; lip about as long and narrow as the petals, 3-lobed, the middle lobe much the longest; spur over 10 cm. in length, clavate at the tip, the lower end generally hidden under the long, acute floral bracts. The ovary is about 3 cm. long, and on a pedicel about the same length. Flowers somewhat nodding, the very narrow and projecting petals and lip, together with the extraordinarily long and slender spur, giving them a peculiar appearance. In moist, open woods.

## SCITAMINEÆ.

Named by J. G. Baker.

**Maranta arundinacea**, L., Sp. Pl., 2.

Caballero (401); Pilcomayo River (1553). January.

The well-known Arrowroot, a reed-like plant growing in damp or marshy open woods. Stems very smooth and glabrous, with long internodes, widely and dichotomously branching, 5-8 dm. high. Leaves lanceolate, rounded or slightly cordate at base, acute at apex, the largest collected  $3\frac{1}{2}$  dm. long and 7 cm. broad, on sheathing petioles as long as the blade. Inflorescence much forked. Perianth with 3 green separate calyx-like outer segments, enclosing a bluish corolla. Capsule about 1 cm. long, crowned with the persistent calyx and without corolla. The flowers easily drop off, and it is hard to preserve them. The root out of which the farinaceous substance known as Arrowroot is made is a large, hard, somewhat tuberous rhizome. It is not common enough in Paraguay to be of much service to the people.

**Thalia geniculata**, L., Sp. Pl., 1193.

Asuncion (555). February.

Stems reed-like, very smooth and glaucous, about 3 m. high. Leaves solitary or few, 3-5 dm. long, on long, sheathing petioles. Flowers in long, lax, terminal panicles, a pair enclosed in a 2-valved spathe 15-17 mm. long; inner segments of the corolla 1 white and membranous and longer, and the other 2 red, the 3 outer red; sepals minute, membranous, very light purple, striped.

**Canna glauca**, L., Sp. Pl., 1.

Asuncion (378); Pilcomayo River (847 and 1554). December-May.

No. 378 has deep red flowers, and 847 and 1554 yellow flowers, as we find them in our flower-gardens. The two are considered as belonging to the same species, but as I found them growing wild in Paraguay, I was led to question whether they are identical. They occur in different localities, never in the same clump. The red-flowered form usually has smaller flowers, the corolla rarely exceeding 6 cm. in length, while those of the other are sometimes 10 cm. long; the petals too, as a general rule, are narrower and the floral bracts larger than in the yellow-flowered form. I found the floral

bracts of the red-flowered form often broadly obtuse at the apex and covered with a white mealy or waxy substance, peculiarities which I never saw in the other. Still these differences may not hold in other regions. The plants grow both in wet grounds and on dry banks.

## BROMELIACEÆ.

Named by J. G. Baker.

**Bromelia Pinguin**, L., Sp. Pl., 285.

Asuncion (341). December.

This plant has an immense rosette of numerous spine-tipped leaves pointing in all directions, and bristling like so many lances, some of them  $1\frac{1}{2}$  m. in length, beset down the sides with upwardly hooked spines, forming a barrier which neither man nor beast attempts to break through. The central part of this rosette is of a deep scarlet color, and can be seen from a long distance. Flowers purplish or bluish, closely arranged about a fleshy caudex, 10–12 cm. thick and 15–20 cm. high. Fruit a succulent, edible berry, 3 or 4 cm. long and 2 or 3 cm. in width, looking somewhat like a fig. The plant is known under the native name *Caraguata*, and is often called the wild pine-apple. It is a noted object in Paraguay, as the leaves have been used time out of mind by the natives for making fishing-nets and lines, and a coarse, strong cloth is woven out of the fibres. It has also been used in recent years in the manufacture of paper. The plants often cover the ground for acres.

**Ananas sativus**, Lindl., var. *microcephalus*, Baker, Handb. Bromel., 23.Trinidad (831); Pilcomayo River (1555). November–January.  
= Balansa 609.

The basal rosette very similar to that of no. 341, but the leaves are fewer in number, and none of them scarlet colored as in that, or so long. Flowers on a thick central stem, which is scurfy dotted below, 3–6 dm. high, bearing smaller leaves like those of the rosette. Flowers in a thick oval head 8–10 cm. long, each subtended by a pink-colored, spine-edged bract. Sepals reddish; petals purplish. The fruit is harsh and unpalatable. This without much doubt is the original wild form of the cultivated pine-apple. The leaves are used like those of no. 341 in textile manufactures. Found in similar situations as that, but rarer.

***Echmea bromeliaefolia*** (Rudge), Baker in Benth. and Hook. Gen. Pl., iii, 664.

Caballero (523). January.

Growing as an epiphyte upon trees in damp woods at Caballero. It is a very large plant, with a rosette of 12–20 silvery-green leaves at the base, which with the stem reach a height of 1–1½ m. Leaves 3 dm. long and 5–8 cm. wide, the margins unarmed, bluntly pointed at the apex. Peduncle about 3 dm. long. Flowers purplish, in a cylindrical or somewhat conical spike, 5–8 cm. long and 2½ cm. thick, imbedded in a white cottony tomentum. The peduncle bears 5 or 6 foliaceous, acuminate bracts, 8 or 10 cm. long, which are somewhat silvery woolly. A striking plant.

***Echmea distichantha***, Lem., Jard. Fleur., t. 269.

Asuncion (741); Pilcomayo River (1556). February–May.

Leaves 15–20, like those of no. 341 in a large rosette, about 4–5 dm. long and 3–5 cm. broad, armed with sharp, curved, black spines on the margins and a large straight spine at the apex. Flowers in a dense oblong panicle 10–18 cm. long, on a bright red peduncle 3–9 dm. high, the 3 sepals red and the 3 petals bright blue, longer than the sepals. The peduncle is beset with leaves passing upwards into foliaceous bracts. Fruit a dry, indehiscent, 3-celled berry, containing many small seeds in each cell. This plant occurs abundantly on porphyritic ledges 2 miles east of Asuncion, and also on the banks of the Pilcomayo River. Though it is neither epiphytic nor parasitic, yet it often grows high up on the trunks and limbs of trees. Like the *Bromelia* and *Echmea* already noted, the leaves of this species furnish excellent material for textile fabrics and cordage. They show, however, none of the scarlet tint by which the leaves of the former are made so conspicuous.

***Tillandsia bryoides***, Griseb., Symb. Flor. Arg., 334.

Between Villa Rica and Escoba (492); Pilcomayo River (1086). January. = Balansa 617 a.

A small epiphyte, with densely tufted leafy stems which have the look of a moss. Leaves linear-subulate, densely scaly. Flowers small, numerous, racemed, on short scapes, rose colored.

***Tillandsia dianthoidea***, Rossi, Cat. Modoc., 1825, t. 1.

La Plata, Arg. Republic (35). October.

A small epiphyte with lilac flowers, occurring in the Argentine Republic, but not found in Paraguay by me.

**Tillandsia glutinosa**, Mart., R. and S., Syst., vii, 1225.

Caballero (513). January.

A fine large epiphyte on trees near the Tebicuary River at Caballero. The plant is 1 or  $1\frac{1}{2}$  m. high; the stem about 12 mm. thick, clothed with silvery leaves 3–6 dm. in length. Peduncle 4 or 5 dm. long, very branching, covered with bracts 3–5 cm. long, and each flower under a similar bract. Flowers spicate, all erect, large, yellow. The plant very showy.

**Tillandsia Hilaireana**, Baker, Handb. Brom., 199.

Between Villa Rica and Escoba (493). January.

A beautiful epiphyte about 20 cm. high, with densely tufted, rigid, channelled, long pointed, silvery, lepidote leaves which are about 10 cm. long. Flowers spicate, on a scape 10 or 12 cm. high. Petals red. This occurs with no. 492, but is larger and more showy. It is also abundant on the Pilcomayo River, and our party frequently gathered the flowers, and hung them upon the posts of our camp and along the cabin sides of our steamer for ornament.

**Tillandsia Lorentziana**, Griseb., Pl. Lor., 223.

Pilcomayo River (902). April. = Balansa 4744.

A conspicuous epiphyte on the trees along the upper Pilcomayo. Leaves rigid, coriaceous, 10–20 cm. long, channelled, 2 cm. broad at the base, long acuminate and curling up at the end like a pig's tail, striate, densely white lepidote, about 20 on the short, thick stem. Flowers in lateral spikes on a peduncle nearly 7 dm. in length. Petals blue and purple striped, rounded and recurved at the apex, white in the interior of the tube,  $2\frac{1}{2}$  cm. high and 2 cm. broad when expanded; calyx, if so called, of 3 reddish parts closely appressed to the tube of the corolla.

**Tillandsia recurvata**, L., Sp. Pl., Ed. 2, 410.

Gran Chaco opposite Asuncion (292 b); between Villa Rica and Escoba (492 a); Pilcomayo River (876 and 1085). January–May.

One of the most common epiphytes growing in Paraguay. It appears to be very widespread, occurring all the way from Florida to Chile and the Argentine Republic. It is a small, densely caespitose plant, with subulate, channelled, white lepidote leaves, and solitary or 1–3 olive-colored flowers on capillary peduncles. It sometimes covers the trunks and limbs of trees so densely that the bark can scarcely be seen.



**Tillandsia usneoides**, L., Sp. Pl., 287.

Pilcomayo River (886). January–May.

This is common on some parts of the Pilcomayo, but not so abundant nor so luxuriant as in our Southern States. A lichen growing by its side rivalled it in length.

**Tillandsia vernicosa**, Baker, Jour. Bot., 1887, p. 241.

Gran Chaco, near Asuncion (554). January.

Leaves in a dense rosette, ensiform, acuminate, 7–20 cm. long, channelled, pale green, glossy, finely lepidote, very thick and rigid in texture, the outer spreading widely. Spikes densely crowded on scapes 15–20 cm. high. Flowers white, or at least the petals.

## IRIDEÆ.

**Cypella gracilis** (Klatt), Baker, Jour. Lin. Soc., xvi, 129.

Named by J. G. Baker.

Between Trinidad and Asuncion (277). = Balansa 536.

It is difficult to convey any idea of the very irregular and beautiful flower of this little bulbous plant. The outer segments of the perianth are oblong, about  $2\frac{1}{2}$  cm. in length, with a basin-shaped base which is stiffer than the upper part, yellow, slightly purple-tinged at the base inside. The 3 inner segments are much shorter, clawed, incurved at the apex in a fold which is rolled inwardly and pointed, purple blotched. Stamens 3; filaments stout and thick; anthers black on the cell margins, cohering to the stigma at the top. Stigmas appendaged much as in *Iris*. Stems slender, about 20–25 cm. high, 2-leaved, and with several acute bracts above. Pedicels bracted. Flowers spreading when open. Abundant on the campos northeast of Asuncion.

**Sisyrinchium Chilense**, Hook., Bdt. Mag., t. 2786.

Buenos Aires (13). October.

I did not see this species in Paraguay, but as it is common in Chile and about Montevideo and Buenos Aires, it may be looked for northwards. The stem is glabrous, somewhat stout, 3–4 dm. high, ancipital. Leaves linear-ensiform, acuminate, 3–10 cm. long. Flowers several from the same spathe, on capillary pedicels, small, bluish-purple, with darker purple stripes, the 3 outer segments with 5 and the 3 inner with 3 stripes; a yellow eye at base of the corolla

tube inside. Petals oblong, subspatulate, retuse, mucronate, and with the ovary and pedicels slightly glandular pubescent.

**Sisyrinchium micranthum**, Cav., Diss., vi, 144, t. 191, f. 2.

Asuncion (63). October–November. = Balansa 552, 552 a, and 556.

A small species 7–12 cm. high, with many stems from the fibrous roots, very glabrous. Leaves linear ensiform, 3–5 cm. long and 1–2 mm. broad. Perianth 6 mm. long, the segments obtuse and cuspidate at the apex, yellow, with 3–5 light purple sunken lines within, and 2 small purple spots at the base. Stamens united for their whole length, the anthers enclosing the 3 stigmas. Flowers on capillary pedicels, 3–7 springing from the same spathe. Abundant in grassy plats near the Recoleta Cemetery at Asuncion.

**Sisyrinchium vaginatum**, Spreng. Syst., i, 166.

Caballero (468). January.

Stem very slender, 25–30 cm. high, dichotomously branching, bearing only sheathing bracts 10–15 mm. long. Spathes 1-flowered. Flowers yellow, glabrous; pedicels capillary, scarcely as long as the spathe, glabrous. Among grass on the campo.

#### AMARYLLIDEÆ.

**Zephyranthes Bakeriana**, Morong, n. sp.

A delicate plant rising from an underground tunicated bulb. Bulb ovoid,  $1\frac{1}{2}$ –2 cm. in diameter, the tunics fuscous and the neck 5 mm. long. Scape and leaves from a pair of membranous radical sheaths, which are fuscous and warty at the tips. Leaves 1–4, much longer than the scape, produced with the flowers, linear, 2 mm. broad. Scapes 10–12 cm. high, glabrous, slender, erect or slightly declined. Flowers solitary, large and showy; tube none or minute; perianth segments 3–4 cm. long, elliptical, about equal, pointed at the apex, membranous, yellowish-white, with many purple stripes. Stamens 6, 3 scarcely more than one-half as long as the others; filaments separate to the base and epigynous; anthers versatile, curved upwardly when dry, the cells confluent. Style longer than the stamens, slightly dilated at the apex and divided into 3 stigmas. Capsule obovoid, scarcely lobed. Pedicel nearly or quite 2 cm. long. Spathe about  $2\frac{1}{2}$  cm. long, tubular in the lower half, the upper open part bifid.

On the Gran Campo, about 5 miles east of Asuncion (254). December–January.

**Fourcroya Cubensis**, (Jacq.), Haw., Syn. Pl. Succ., 73.

Asuncion (805).

This Cuban plant is not unfrequent on the borders of gardens and in hedges at Asuncion, where its tall flower stalks in full blossom make a great display. It bears a large rosette of rigid green glabrous leaves, 30 or more in number and 2 m. or more in length, margined by large deltoid, hooked spines. The flower stalk is from 3 to 5 m. high, covered with large, fragrant, bell-like blossoms, the corolla white externally and greenish inside. It seems to be propagated exclusively by bulblets, which are large and numerous, often beginning to sprout while still on the stalk. The fibre, like that of the Caraguata, is employed in the manufacture of textile fabrics.

In flower March–April. Bulblets collected in October.

No. 998, from the Pilcomayo River, April 11, 1890, collected only in fruit, is probably of this order, but is not identified.

#### DIOSCOREÆ.

**Dioscorea pedicellata**, Morong, n. sp.

Twining over shrubs for 3–6 m. The whole plant very glabrous. Stems slender, rarely branching, strongly angular. Leaves alternate, entire, cordate-ovate, the sinus broad and the lobes rounded, abruptly acute and aristate at the apex, 7–9-nerved, the 2 lowest nerves bifid or sometimes trifid, 10–12 cm. long and nearly as broad at the base; petioles 4–6 cm. long. Staminate racemes axillary, 1–2 in an axil, usually simple but sometimes once divided, 7–10 cm. long, the rachis nearly capillary and strongly angular like the stem. Staminate flowers alternate, solitary, on pedicels 2–5 mm. long, the pedicels subtended by 1, sometimes 2, or even 3 minute, lanceolate membranaceous bracts. Perianth about 3 mm. high, the tube not half as long as the lobes, the lobes oblong, obtuse, greenish-purple in color, spreading open rotately in anthesis. Stamens 6, of minute, sessile anthers, central in the bottom of the perianth. Pistillate flowers and fruit not seen.

Deep woods on the banks of the Pilcomayo (975). March.

#### LILIACEÆ.

**Smilax Assumptionis**, A. D.C., Monog. Phan., i, 132.

Lympio (733); Pilcomayo River (1557). January–May.

A tendril-climber running over trees and shrubs; spines few, stout and straight. Leaves coriaceous, elliptical-ovate, subcordate,

obtuse and mucronate at the apex, largest collected 10 cm. long and 4 cm. wide. Staminate flowers greenish-yellow, sometimes brownish-purple, red in the bud. Berries 4 or 5 mm. in diameter, dark red, on pedicels 5 or 6 mm. long.

**Nothoscordum flavescens**, Kunth., Enum., iv, 459.

Luque (715).

A small bulbous plant 8–15 cm. high, the bulbs small, ovoid, deep underground. Leaves narrowly linear, surpassing the scapes, appearing with the flowers. Flowers in small umbels, 2–5 in an umbel, the pedicels unequal, capillary, 10–18 mm. long. Perianth 6–8 mm. high, with a short tube; the 6 lanceolate lobes somewhat longer, yellow, 1-nerved, the nerve green on the inside and purplish outside. Spathe white, membranous, tubular below, bifid on the open portion above, much shorter than the pedicels.

This pretty little flower decorates the sandy campos east of Asuncion nearly all the year round.

#### PONTEDERIACEÆ.

**Pontederia cordata**, L., Sp. Pl., 288.

Villa Rica (490); Luque (301); Pilcomayo River (1040). December–May.

As common in water and miry places throughout Paraguay as in the United States. Called Aguapi in the native tongue.

**Piaropus crassipes** (Mart.), Britton.

*Pontederia crassipes*, Mart., Nov. Gen., i, 9, t. 4.

*Eichornia crassipes*, Solms-Laubach in D.C. Mon. Phan., iv, 527.

Trinidad (265). December–January.

A showy aquatic common in pools near Asuncion and other parts of Paraguay. A long running stem rooting in the mud throws up at intervals leaves or scapes. Sometimes a set of leaves and a scape grow erect from a large body of fibrillate roots. Leaves of a firm texture, like those of *Pontederia cordata*, various in shape, broadly obovate or subreniform, sloping abruptly into the petiole, or occasionally subcordate, the blades 3–5 cm. long,  $3\frac{1}{2}$ –6 cm. broad; petioles 6–20 cm. long, frequently with an oval inflated sac near the middle, or plane for their whole length, sheathing at the base. Scape somewhat longer than the leaves, with a foliaceous bract

just under the flowers. Flowers large, spicate, 5–15 on the spike. Perianth with a closed, slightly recurved tube about 2 cm. long, 6-lobed, the lobes as long as the tube, of a fine bluish-purple tint, rounded or obovate, the 3 exterior somewhat larger, the uppermost marked by a round yellow eye in the centre; 3 of the stamens longer than the other 3, inserted near the sinuses of the lobes; anthers dark blue. Style longer than the stamens in all the specimens that I collected; stigma capitate, hairy. Glandular on the perianth lobes and also on the tube, style, and filaments. This plant is popularly known as Aguapi, and also as Camalote, names which appear to be applied indiscriminately to all the species of *Eichornia* and *Pontederia* in Paraguay.

Some of this was distributed as *E. azurea*.

**Piaropus azureus** (Sw.), Raf. Fl. Tell., Part 2, 81.  
*Eichornia azurea*, Kunth., Enum., iv, 129.

Pilcomayo River (859 and 964). March.

**Heteranthera reniformis**, R. and P., Fl. Peruv., 43.

Asuncion (320). December.

#### XYRIDEÆ.

Named by Mr. Heinrich Ries.

**Xyris tortula**, Mart., Flora, xxiv, Bibl. 2, p. 55.

Caballero (520). January.

A species about 3 dm. high, with slender terete, twisted scapes and small, ovoid, 6–10 flowered heads. Leaves about half as long as the scapes, twisted spirally, rigid, erect, sulcate, 1 mm. or less in width. Scapes and leaves rising from a compact, dense tuft of black bracts.

**Xyris communis**, Kunth., Enum., iv, 12.

Luque (329). December. = Balansa 562 a.

Scape 3 to 6 dm. high, slightly 2-winged above, 1-angled below, a little rough on the angles and wings. Heads somewhat conical,  $1\frac{1}{4}$ – $1\frac{3}{4}$  cm. long and 1 cm. broad. Scales orbicular, obtuse, fuscous on the edges and with a cinereous rasped space in the centre near the apex. Lateral sepals with showy fringes on the keels. Leaves



one-third as long as the scapes, 5–7 mm. wide, bluntly acute, many and irregularly nerved. Wet grounds.

Seubert in Fl. Bras., iii, pt. 1, p. 220, regards this as only a variety (v. *procera*) of no. 582.

**Xyris laxifolia**, Mart., Flora, l. c.

Villa Rica (582). January. = Balansa 563.

Similar to no. 329, but with more numerous and larger leaves, at least in the specimens collected. Scapes 6–8 dm. high. Heads conical,  $1\frac{1}{2}$ –2 cm. long. Leaves 5–15 mm. broad. Superficies of scapes and leaves often marked with purple-fuscous lineolæ. Growing in bogs. The probability is that both this and no. 329 are forms of *X. communis*, Kunth.

#### MAYACACEÆ.

**Mayaca Sellowiana**, Kunth., Enum., iv, 32.

Villa Rica (498). January. = Balansa 2364.

With erect stem, 3–6 cm. high. Peduncles capillary, 1–3 cm. long. Flowers solitary, rose-colored. Leaves 3 or 4 mm. long, almost setaceous. Capsules 6-seeded. In bogs.

#### COMMELINACEÆ.

**Commelina platyphylla**, Seub., var. *Balansai*, Clarke in D.C., Monog. Phan., iii, 177.

Asuncion (239). December–January. = Balansa 593.

A branching herbaceous plant, 8–20 cm. high, with pure white flowers. Stems angular, somewhat compressed above, more or less pubescent. Leaves numerous, somewhat crowded, oblong, usually obtuse, amplexicaul, the lowest often eared at the base, 4–10 cm. long and 1–2 cm. broad. Spathes 1–2 cm. long, complicate, obtuse, sometimes 3 cm. or more broad. Varies from the type in having obtuse leaves and oblong seeds. Common in shady places along the railway track.

**Commelina Virginica**, L., Sp. Pl., Ed. 2, 61.

Asuncion (54). November–January.

**Tradescantia Fluminensis**, Vell., Flor. Flum., 140, t. 152.

Buenos Aires (15). October.

I collected this plant at Buenos Aires, but it also occurs in Paraguay. Stems decumbent, much branched, sulcate, compressed, glabrous, 4 or 5 dm. high. Leaves sessile, ovate-lanceolate, acuminate, 3–5 cm. long. Sepals scabrous-pubescent, or glabrous on the back. Flowers white.

**Tradescantia glandulosa**, Seub. in Mart. Fl. Bras., iii, pt. 1, 253.

Asuncion (261). December.

A small plant with striate, glabrous, or glandular-pubescent stems,  $1\frac{1}{2}$ – $4\frac{1}{2}$  dm. high. Leaves elliptical, mucronate, with long white ciliæ at the amplexicaul base, and glandular ciliate above, 3–5 cm. long and 2–3 cm. broad. Flowers very small, in umbellate clusters at the summit of the stems and branches, the sepals and pedicels glandular hairy. Flowers about 3 mm. high, the petals white, the sepals greenish. When fresh the stems are a little succulent and nearly or quite terete, becoming angular and compressed in drying. In shady or moist grounds.

#### PALMÆ.

**Acrocomia sclerocarpa**, Mart., Palm. Bras., 66, t. 56 et 57.

Asuncion (233).

One of the most common palms in Paraguay, popularly called Coco. It is a monœcious tree growing 8–12 m. high, armed on the trunk with many rows of long spines (some of them 10 cm.), which, as the tree ages fall off, often leaving the trunk nearly bare. The fronds are pinnate, from 1 to  $1\frac{1}{2}$  m. long; pinnæ green, coriaceous, in 2 opposite rows, 1–2 cm. apart, 3–4 dm. long and about  $1\frac{1}{2}$  cm. wide; rachis triangular, armed with sharp spines 2–4 cm. long. Staminate flowers in numerous long aments or spikes above; pistillate few, sessile at the base of the branches; spathe single, long, and husk-like. Drupe globular, 3 cm. or more in diameter, surrounded by a thin separable rind, inside of which is a soft yellow, edible pulp; seed an exceedingly hard nut containing an edible meat which tastes like that of the coconut.

This is a valuable tree, the nuts yielding an excellent oil, and the meat forming a favorite article of food among the Paraguayans. Piles of the extracted kernels are offered for sale in the Asuncion

market; and many mills for expressing the oil are seen in the country. The pinnæ are used as in many other palms in the manufacture of hats, chair bottoms, and other domestic articles.

Flowering in October and November; fruiting in December and January.

**Cocos australis**, Mart., Hist. Nat. Palm., iii, 289.

Asuncion (233 a).

Equally common with no. 233, and popularly known as the Pindo, but entirely unarmed. It resembles the Coco in height and general appearance, but has longer drooping fronds, and is altogether a handsomer tree. Fruit smaller, oblong-ellipsoidal, 2-2½ cm. long and about 1½ cm. in diameter, with a fibrous husk on the outside and a hard, crustaceous nut within, the kernel tasting like the meat of the cocoanut. The nuts yield oil equal to that of no. 233, but are rarely used for that purpose. It makes a beautiful shade tree and is a great ornament in parks and gardens. The fronds are largely used in the decoration of dwelling-houses and churches on festive occasions. On Palm Sunday crowds may be met on the streets bearing the green fronds in their hands.

Flowers in January; fruit May-July.

**Phoenix dactylifera**, L., Sp. Pl., 1188.

Near Trinidad (803).

The Date Palm is occasionally seen in cultivated grounds around Asuncion, but although it seems to grow vigorously, it never, so far as I know, perfects its fruit. In flower October.

**Copernicia cerifera**, Mart., Orbig., 41, t. 1, f. 3.

Pilcomayo River (1073).

Commonly known in Paraguay as *Palma negra*, and in Brazil as *Caranda*. This tree abounds in great numbers along the banks of the Pilcomayo River and throughout the Gran Chaco. It has a straight slender trunk 10-15 m. high, 12-13 cm. in diameter. When young the stem is covered below with the bases of the petioles, but these fall off at maturity leaving the trunk bare and smooth. Wood black, dense, and hard, forming a valuable timber, which is used all over Paraguay for roof timbers and fence posts. Leaves erect, plaited, fan-shaped, the surface covered with a whitish waxy substance, which is scraped off and made into the well-known

Carnauba wax. The leaves are 7 or 8 dm. in length and about as broad, split nearly to the middle into slender rays, on stout hemispherical petioles armed with strong straight or hooked spines. Flowers small, white, in large, branching panicles, the staminate above and the pistillate below. Drupe ellipsoidal, pointed at the base, about  $1\frac{1}{2}$  cm. long and 1 cm. in diameter, smooth and olive colored at maturity.

This is considered with good reason one of the most valuable trees in Paraguay. Not only does it furnish strong, durable timber and wax, but its berries are eaten by the Indians, the tender vertex of the caudex makes an admirable cabbage, and its leaves are employed for various purposes, such as thatching, making fans, straw-braid, thread, fishing-lines, cordage, and the like.

In flower January; fruit April–May.

**Copernicia alba**, Morong, n. sp.

This palm is very similar in general appearance to *C. cerifera*, but is quite distinct in several characters. Stem low, frequently not over 3 m. high, and seldom reaching a height of 10 m., the diameter 15–18 cm., clothed nearly to the summit of the trunk with the bases of the old leaf stalks. The head is much larger than that of *C. cerifera*, containing many more leaves. In the inflorescence the two do not vary essentially, except that *C. alba* has a more densely woolly tomentum on the flowers and rachis. The flowers are smaller, and the floral bracts much longer and more acute. The fruit of this species is obtuse at the base, that of *C. cerifera* distinctly pointed, in other respects the same. In the wood of the two lies the principal difference, and this is very striking. The wood of *C. cerifera* has a very close, compact grain, making a solid log, when first cut slightly brown, afterwards becoming black, and hence called Palma negra; that of *C. alba* soft and spongy, very loose and cellular in grain, and absolutely unfit for timber, white in color and hence popularly known as Palma blanca. The roots of the two exhibit a structural difference as remarkable as that of the stems. The brown wrinkly cuticle of Palma negra encloses a thick, very dark colored, loosely cellular cortex, a separable heart wood of parenchymatous tissue and minute, black woody bundles pressed compactly together, entirely without open spaces or air-cells. In Palma blanca, the cuticle is whitish in color and smooth, the cortex thick, friable and yellowish in color, while the heart wood is composed of white parenchymatous tissue penetrated by many large open spaces or air-cells. Nothing shows the difference between the white and black palms more perfectly than this structural dissimilarity.

Common with no. 1073 on the banks of the Pilcomayo (1079). Flower January; fruit April–May.

**Copernicia rubra**, Morong, n. sp.

Intermediate in characters between *C. cerifera* and *C. alba*, but decidedly different from both. Stem 10-13 m. high, and 18 cm. or more in diameter, clothed nearly to the top of the trunk with the bases of the old leaf stalks, never smooth as in *C. cerifera*, and always much thicker. The head is large and rotund in outline like that of *C. alba*. The inflorescence is very similar to that of the other two species, except that the tomentum is of a more rusty tinge. The drupes are larger and globular or slightly oval in shape, obtuse at both ends, instead of being ellipsoidal as in the others. The wood is reddish-colored, and more compact than in *C. alba*, but never hard and solid as in *C. cerifera*, hence popularly known as Palma colorada. It is seldom used as timber.

The peons of our party distinguished these 3 species of palms at a glance, though they were mingled in the groves upon the banks of the Pilcomayo. Palma negra, however, is much the most numerous, *P. colorada* being rather rare.

Pilcomayo River (1078); Central Paraguay (738). Flower January; fruit April-May.

## TYPHACEÆ.

**Typha angustifolia**, L., Sp. Pl., 971.

Between Villa Rica and Escoba (532); Pilcomayo River (1025). January-May.

No. 1025 has unusually broad leaves for the species, being from  $1\frac{1}{2}$  to 2 cm. wide. The spikes in some cases are 2 cm. in diameter and 9 dm. in length, the pistillate and staminate flowers occupying nearly equal spaces on the rachis. This was growing in vast numbers in the great laguna on the Pilcomayo River, and was one of the weeds which so densely choked the stream that we were unable to force our boats through.

## AROIDEÆ.

**Pistia Stratiotes**, L., Sp. Pl., 963.

Asuncion (180). November-December.

The form called by Engler in Flor. Bras. *cuneata*, with obversely triangular leaves, rounded and commonly emarginate at the apex. Common in pools about Asuncion.



**Xanthosoma Riedelianum**, Schott., *Est. Bot. Zeit.*, 1865, p. 33. Ex descr.

Luque (294). December.

Named by N. E. Brown.

A large showy bog plant 6–9 dm. high. Leaves light green, the blades somewhat panduriform and sagittate, 4–5 dm. long and 1–2 dm. broad, obtusely pointed, the basal lobes about  $\frac{1}{6}$  as long as the leaf and rounded, the sinus usually broad; primary lateral nerves 5–7, curving into a common marginal nerve, which runs at unequal distances from the margin. Petiole rounded below and flat above, much longer than the blade. Flowers solitary, on scapes shorter than the leaves; spathe 25 cm. long, the lower part greenish and convolute, the upper half spreading open and pure white; spadix one-half or two-thirds as long as the spathe, the pistillate flowers at the base, occupying about one-quarter of the length, the perfect staminate flowers at the apex, and a space of abortive staminate flowers between the two. The flowers reminded me of our common house *Calla* when I first looked at them, though not spreading open so widely, and the spadix being slate-colored instead of golden. In miry bogs or water at Luque.

#### LEMNACEÆ.

**Lemna minor**, L., *Sp. Pl.*, 970.

Pools in the vicinity of Asuncion (1558).

#### ALISMACEÆ.

**Sagittaria Montevidensis**, C. and S., *Linnæa*, ii, 156.

Asuncion (177). November–January.

The common *Sagittaria* of southern South America. It resembles our *S. sagittæfolia* in habit and aspect, but is at once distinguished by the deep purple spot at the base of the flower inside. The leaves are almost as variable as those of our species, but are sometimes enormously large. I met with specimens 1–1 $\frac{1}{2}$  m. high, having leaves 6 dm. or more in length and as broad at the base. The spikes are sometimes 5 dm. long, bearing 12–15 verticils of flowers. Pistillate flowers in 2 or 3 verticils at the base of the spike, with shorter and much thicker peduncles than the staminate, recurved in fruit. Veins of the leaves prominent and often rough with erect glands. In water or miry bogs.

**Echinodorus grandiflorus** (C. and S.), Mich. in D.C. Monog. Phan., iii, 57.

Caballero (508); Pilcomayo River (853). December–January.

A bog plant with scapes 7–9 dm. high, striate, rough with glandular tubercles. Leaves ovate or oval, cordate, obtuse at the apex, prominently 9- or 10-nerved, glabrous, largest about 15 cm. long and 13 broad, on petioles similar to the scapes, 20–30 cm. long. Flowers white, in 8–10 remote whorls, 5–7 in the whorl; the 3 exterior bracts separate, many and strongly nerved, ending in a long subulate summit, as long as or longer than the pedicels. Pedicels 10–15 cm. long. Rootstock creeping; roots fibrous. A very variable plant as to size, smoothness, and number of verticils.

No. 508 was collected in dry and rather dusty ground near the railway track at Caballero, and 853 in pools between Paragua and Luque.

**Echinodorus subalatus** (Mart.), Griseb., Cat. Pl. Cub., 218. Ex descr.

Pilcomayo River (1039). May.

Growing in water in the great laguna on the Pilcomayo River. Scapes 6 dm. to 1 m. or more high, striate and with 3 sharp angles, which become subulate among the inflorescence. Inflorescence simple or branching below. Flowers 4–7 in a verticil; the 3 exterior bracts slightly coalescent below, lanceolate, ending in a long subulate point, longer than the pedicels. Pedicels 5–10 cm. long. Sepals with a broad membranous margin. Petals white, obtuse at the apex, 2–3 cm. in diameter when expanded. Stamens about 20, at length contorted. Leaves elliptical, glabrous, attenuated at either end, 3–7 nerved, 10–25 cm. long and 4–8 cm. broad, marked by pellucid lineolæ, which are often obscure or obsolete. Petioles angled like the scapes, and nearly as long, the striæ when young sometimes minutely glandular pubescent. Rootstock thick and hard, with many long fibrous roots, the rootlets often bearing many small white tubers.

**Limncharis nymphoides** (Willd.), Mich., l. c., 91.

Trinidad (266). December–February.

An aquatic with very beautiful light yellow flowers, but so delicate are the petals that I never succeeded in preserving any in the dried specimens. Flowers solitary, on a long scape rising from a

joint of the rhizome. Sepals 3, green, oblong, one-half as long as the petals. Petals broad and obtuse at the apex, cuneate at the base, 3 cm. long, with a darker yellow tint at the base inside. Stamens numerous in several series, very dark purple; anthers black-purple. Styles 6, enlarged at base, whitish below, black-purple above; stigmas 2-lobed. Leaves on a long petiole similar to the scape, the blade nearly orbicular, entire, subcordate or sloping into the petiole, 3-6 cm. in diameter. The plant has a long rootstock running in the mud beneath the water or floating, rooting at the nodes and throwing up flower stems and leaves from the joints, growing in shallow pools 3-4 dm. deep. Juice milky.

#### NAIADACEÆ.

***Lilæa subulata***, H. and B., Pl. Æq., 1, 221.

Buenos Aires (20). October.

***Ruppia maritima***, L., Sp. Pl., 127.

Pilcomayo River (903). January-February.

Abundant in the bed of the upper Pilcomayo on a sandy mud bottom, in brackish water, the plant 6-9 dm. long.

#### ERIOCAULEÆ.

***Dupatya caulescens*** (Poir.), Kuntze, Rev. Gen. Pl., 745.

Luque (331). December.

Stem 3-5 cm. high, from the summit of which numerous scapes spring, 3-10 cm. high. Scapes 3 ribbed, glabrous. Leaves rather loose, linear,  $1\frac{1}{2}$ -2 cm. long, 2-4 mm. broad, acuminate or slightly mucronate, when young puberulent, glabrescent with age. Heads about 4 mm. in diameter. Involucral bracts and the segments of the outer perianth glabrous, acute, silvery-white. Sheaths about as long as the leaves, obliquely fissured.

This little plant grows in miry places, not very common. It is the only one of the order that I found in Paraguay, though many others must occur along the northern borders of the country.

CYPERACEÆ.

**Cyperus bromoides**, Link., Jahrb., iii, 85.

Between Escoba and Caballero (416). January.

**Cyperus Balansæ**, Maury, Mem. Soc. Phys. Gen., xxxi, 130, t. 39.

Named by C. B. Clarke.

Central Paraguay (1560).

Stout, 1 m. high; stems triquetrous, glabrous. Umbels simple. Heads sessile or on rays 2-7 cm. long. A tall, conspicuous marsh sedge.

**Cyperus cinereus**, Maury, l. c., 127, t. 361.

Caballero (433). January.

**Cyperus Concepcionis**, Steud., Syn. Pl. Glum., pt. 2, 42.

Caballero (565). January. Named by C. B. Clarke.

**Cyperus elegans**, L., Sp. Pl., 68.

Luque (297 b). December.

**Cyperus esculentus**, L., Sp. Pl., 67.

Gran Chaco (1561). October.

Common in wet cultivated fields.

**Cyperus flavus** (Vahl.), Boeckl., Linnæa, xxxvi, 384.

Asuncion (123); Caballero (123 b); Villa Rica (578). January.

**Cyperus ferax**, Rich., Act. Soc. Hist. Nat. Par., i, 106.

Asuncion (243). December.

**Cyperus giganteus**, Rottb., Gram., 38?

Asuncion (353 and 562). December.

A very conspicuous species with stout, terete, leafless stems 2-3 m. in height. Flowers in a dense, compound, leafy head at the summit of the stem, 3 or 4 dm. high, spreading as widely. Primary rays 40-50 or more, 10-20 cm. long, triquetrous, glabrous, the secondary 1-2 cm. in length. Spikes narrow, flat, 2-3 cm. long, and 5 mm. wide, 3 or 4 small flowers in a spikelet, all much overtopped by the long acuminate, erect bracts. Involucral bracts 5-15 mm. broad at the base, not sheathing, erect, 3-3½ dm. long, striate,

rough on the margins, tapering to an acuminate point; involuclers narrower, about one-half as long. Sheaths of the rays about 3 cm. long, reddish at the apex, obliquely fissured. The spikes are almost buried out of sight among the bracts, which look like a broom.

The two numbers referred to this may represent different species, and I am uncertain whether either of them is the true *C. giganteus*, Rottb.

**Cyperus Haspan**, L., Sp. Pl., 66.

Villa Rica (580); Luque (297 a). December–January.

**Cyperus Jenmani**, C. B. Clarke, ined.

Pilcomayo River (1069). January–April. = Spruce 6418. Named by C. B. Clarke.

An elegant species with slender, glabrous, triquetrous stems  $4\frac{1}{2}$ –6 dm. high, many from the same root. Flowers straw-colored, in compound umbels. Spikes 5–18 in a cluster, flat, 1–2 cm. long, sessile or on rays 2–10 cm. long and raylets 4–5 mm. long, 10–30 flowers in a spike. Involucral bracts not sheathing, narrow, rough on the margins, tapering to a long acuminate point, 1 or 2 of them much longer than the flowers, in some cases nearly half as long as the stems.

This very strongly resembles *C. Capitinduensis*, Maury, l. c., 129, t. 38.

**Cyperus Luzulæ**, Rottb., Gram., i, t. 13, f. 2.

Asuncion (244). December. Collected also at Cordoba by Hieronymus.

**Cyperus nodosus**, Willd., Enum., i, 72.

Asuncion (364). December–January.

Stem slender, rather weak, obscurely triquetrous, glabrous, with 2 or 3 short sheathing leaves near the base, 6–6 $\frac{1}{2}$  dm. high, from a hard tuberous rootstock. Flowers in loose simple umbels, the rays filiform, unequal, 1–4 cm. long. Spikes 3–7, linear, unequal, 1–2 $\frac{1}{2}$  cm. long, 10–30 flowered. Fruit chestnut-colored.

**Cyperus Olfersianus**, Kunth., Enum., ii, 10.

Asuncion (86 and 567). November.



**Cyperus polystachyus**, Rottb., Descrip. Icon., 39, t. 2, f. 1.

Asuncion (84 a, 84 b, and 566). December.

**Cyperus prolixus**, H. B. K., Nov. Gen., i, 206.

Caballero (432). January.

Stems stout, triquetrous, rough near the bracts, 3-4 dm. high, branching at the summit into a long decomposed umbel. Rays triquetrous, 8-10 or more, 12-24 cm. long, and again branching into 2-6 raylets, which are 6-10 cm. long. Flowers in densely crowded panicles. Spikelets loosely 5- or 6-flowered, on bracted pedicels 2 or 3 mm. long, the rachis flexuous. Glumes 5-8-nerved on the back, membranous on the margins, 3-4 mm. long. Involucral bracts foliaceous, not sheathing, 7 or more, 1 or 2 of them longer than the inflorescence; involucels shorter than the raylets. The plant forms a very large, widely spreading inflorescence.

**Cyperus radiatus**, Vahl., Enum., ii, 369.

Pilcomayo River (1068). January-April.

Stems several, glabrous, striate, triquetrous below, compressed above, 6-7 dm. high. Leaves nearly or quite as long as the stems. Inflorescence in simple umbels, the spikes numerous and crowded, radiating from the summit of the rays. Rays unequal. Spikes somewhat cylindrical,  $1\frac{1}{2}$ -2 cm. long. Spikelets 2-3 mm. long, 10-14-flowered, on peduncles of about the same length; flowers minute, crowded, the glumes squarrosely spreading. Bracts numerous, foliaceous, much longer than the flowers. Stems and leaves straw-colored when dry, and the flowers yellowish-green.

**Cyperus Surinamensis**, Rottb., Descrip. Icon., 35, t. 6, f. 5.

Asuncion (244 a and 564); Pilcomayo River (1562). December-January.

**Cyperus**, Sp.

Central Paraguay (83).

Related to *C. Surinamensis* and *C. Luzulæ*. Appears to be the same as a plant collected by Schweinitz in Surinam.

**Kyllingia odorata**, Vahl., Enum., ii, 289.

Asuncion (60). November.

**Kyllingia obtusata**, Presl, Reliq. Hænc., i, 183.

Asuncion (95 a). November.

**Eleocharis acicularis** (L.), R. and S., Syst. Veg., ii, 154.

Asuncion (87). November. Named by C. B. Clarke.

**Eleocharis capitata** (Willd.), R., Br. Prod. Flor. Nov. Holl., 225.

Asuncion (87 a). November.

**Eleocharis geniculata** (L.), R. and S., l. c., 224.

Pilcomayo River (862 and 1036). January–May.

An elegant species, 1–1½ m. high, with many stout stems from the same root, the sheaths at the base red, and the pure white feathery looking heads 2–4 cm. long. This forms a conspicuous object among the grasses which choke the waters of the great laguna.

**Eleocharis mutata** (L.), R. and S., l. c., 155.

Luque (298); Villa Rica (499). December–January.

**Eleocharis nodulosa** (Roth.), Schultes, Mant., ii, 87.

Luque (298 b); Pilcomayo River (1084). December–January.

**Eleocharis sulcata** (Roth.), Nees in Mart. Fl. Bras., i, 98.

Asuncion (249). December. Named by C. B. Clarke.

**Dichromena ciliata**, Vahl, Enum., ii, 240.

Between Villa Rica and Escoba (474). January.

**Fimbristylis capillaris** (L.), A. Gray, Man. Ed. v, 567.

Asuncion (94 b and 130); Caballero (130 b, 561, and 568). November–January.

**Fimbristylis complanata** (Retz.), Link, Hort., ii, 292.

Asuncion (94); Luque (296). December.

Stems 3–6 dm. high. Leaves and bracts sheathing, some of them half as long as the stem, 3–5 mm. broad. Umbels 2 or 3 times compound. Wet grounds.

**Fimbristylis diphylla** (Retz.), Vahl, l. c., 289.

Luque (299 a); Caballero (299 b). December–January.

**Fimbristylis monostachya** (L.), Hassk. Pl. Jav. Rar., 61.

Gran Chaco (863). January–March.

**Fimbristylis squarrosa**, Vahl, l. c., 289.

Asuncion (357); Pilcomayo River (879). January.

**Scirpus Cubensis**, Poepp. and Kunth, in Kunth Enum., ii, 172.

Asuncion (563). December.

**Scirpus robustus**, Pursh., Fl. Am. Sept., i, 56.

Pilcomayo River (927). February.

**Fuirena incompleta**, Nees, Mart. Fl. Bras., ii, 107.

Luque (328). December.

A tall species. Stem simple, soft, triquetrous,  $4\frac{1}{2}$ –6 dm. high, sheathed by 3 or 4 leaves. Leaves keeled, revolute on the margins, with a closed sheath which has a membranous ligule at its top that throws the blade nearly at right angles to the stem. Flower heads in clusters, which are sessile or in umbels. Scales 3-nerved below the awn. Wet grounds.

**Platylepis Brasiliensis**, Kunth, l. c., 269.

Asuncion (95). November–January.

A genus not found in our country. It is distinguished by having terminal spikes, and the stipitate flowers and fruit enclosed in a flat or triquetrous scale which exceeds the glumes, and the absence of setæ. The species here noted is a small, slender plant 15–20 cm. high, with the narrowly linear leaves crowded at the base and shorter than the culms. Spikes closely crowded in a globose or ovoid head, 7–10 cm. long, subtended by 2 spreading bracts much longer than the head. Scale compressed, broadly and membranously winged, tipped with an awn about one-third of its length. Nutlet dark, oblong, slightly angled on one side, tipped with the remains of the style, 1 mm. long.

This little plant, with its small white heads, dots the grass lands about Asuncion and Villa Rica in large numbers.

**Rynchospora Amazonica**, Poepp. and Kunth, in Kunth Enum., ii, 292.

Near Lympio (1564); Caballero (1563). January–May. Named by C. B. Clarke.

With slender stems 2-6 dm. high. Spikelets in lateral axillary clusters on long peduncles, or in terminal long peduncled panicles, 3-5 in a cluster, ovoid. Glumes chestnut-colored. Radical leaves one-third as long as the stem or shorter.

**Rynchospora corymbosa** (L.), Britton, Trans. N. Y. Acad. Sci., xi, 84.

Villa Rica (559). January.

Stems triquetrous, 20 cm. or more in height, having at the summit a large, loosely spreading 2 or 3 times compound panicle of spikelets, twice as long as the stem and spreading for 25 or 30 cm. This is composed of 2 or 3 fascicles of umbels 4-6 cm. apart; the uppermost the largest, its rays 10-15 cm. in length; raylets 3-5 cm. long, and often again divided into shorter branches. Fascicles subtended by 1-4 foliaceous bracts, 1 of them 10-40 cm. long. Spikelets 2 or 3 in a cluster, at the ends of the ultimate divisions. Glumes chestnut-colored. A very striking plant. In wet places.

**Rynchospora glauca**, Vahl, l. c., 233.

Luque (300). December. Named by C. B. Clarke.

**Rynchospora scaberrima**, Beck., Fl., 1860, p. 452.

Luque (311); Gran Chaco (1565). December-February. Named by C. B. Clarke.

Spikelets in several compound umbelled fascicles along the stem, the uppermost largest, all with numerous umbels, and subtended by foliaceous bracts much larger than the flowers. Leaves firm, 8-13 mm. wide and longer than the culm, very rough. A coarse species with rough, triquetrous stems 3-12 dm. high. Spikelets narrow lanceolate, acute, 3-5 mm. long, 3-12 or more in a cluster, dark chestnut-colored.

**Rynchospora tenuis**, Link, Jahrb., iii, 76.

Luque (1566). December.

**Rynchospora Urbani**, Bockl., Cyp. Nov., i, 26.

Luque (560). December. Named by C. B. Clarke.

**Scleria hirtella**, Sw., Fl. Ind. Occ., i, 93.

Caballero (424). January.

***Scleria pratensis***, Lindl. in Nees, l. c., 179, t. 23.

Asuncion (246). Named by C. B. Clarke.

Culms 5-7 dm. high, triquetrous, rough on the angles. Stem leaves 8-30 cm. in length, long-sheathed, 3-nerved, 5-8 mm. wide. Flowers shortly pedicelled, on long, branching peduncles, the staminate and pistillate in separate spikelets. Glumes grayish margined, with a dark chestnut centre, broad-ovate, mucronate. Nutlets globose, white and shining, 2 or 3 mm. in diameter.

Wet places at Asuncion, Villa Rica, and in the Chaco opposite Asuncion.

***Carex Bonariensis***, Desf. in Poir. Lam. Encyc. Supp., iii, 250.

Pilcomayo River (1076). February. Named by L. H. Bailey.

With very long weak culms, often recurving or nearly reclined, rough on the angles, 3-5 dm. high. Leaves nearly as long as the culms, 1-3 mm. wide. Spikes 2 or 3, closely crowded in small terminal heads.

In the woods and among grass on the campo.

***Carex involucrata***, Boott, Illus. Car., ii, 77, t. 210.

Luque (316). December. Named by L. H. Bailey.

The spikes 3 or 4, disposed as in no. 1076. Culm a little stouter and not so high as in that. Leaves as long as or longer than the culm, 2-4 mm. broad. In dry grounds, old fields, among grass. Common at Luque and Trinidad. These 2 carices are the only species which I found growing in Paraguay.

#### GRAMINEÆ.

***Paspalum barbigerum***, Kunth, Gram., i, 24.

Pilcomayo River (962). March.

***Paspalum conjugatum***, Berg, Act. Helv., vii, 129, t. 8.

Asuncion (247). December.

***Paspalum distichum***, L. Syst., Ed. 10.

Asuncion (548); Trinidad (1567). November-December.

***Paspalum erianthum***, Nees, Agrost. Bras., 38.

Gran Chaco near Asuncion (557 a).

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**Paspalum fasciculatum**, Willd. in Flügge, Mon., 69.

Gran Chaco near Asuncion (535). December–January.

Culms tall and stout, growing 1– $\frac{1}{2}$  m. high. It has a long tough root, and is very difficult to eradicate in clearing fields. It is, however, valued as a pasturage grass when young.

**Paspalum inæquivalve**, Raddi, Agrost. Bras., 28.

Asuncion (248). December. = Fr. Miller no. 72.

This species spreads over the ground in long running culms, sometimes forming mats, throwing up erect or ascending stems here and there which are 15–25 cm. high. Spikes few, short, and some distance apart. It occurs in shady places or wet grounds.

**Paspalum intermedium**, Munro in Herb. Kew.

Pilcomayo River (1019). May.

Culms stout, glabrous, 1– $1\frac{1}{2}$  m. high. Spikes in a long (15–25 cm), closely crowded, terminal raceme, purplish in color, 2–6 cm. long. Leaves nearly as long as the culm, sharply keeled, rough on the margins, covered with a mealy granulation when fresh. Common in clumps on the campos along the Pilcomayo River.

**Paspalum lividum**, Trin., ex Schl., Linnæa, xxvi, 383.

Pilcomayo River (1584). January.

**Paspalum ovatum**, Nees, l. c., 43.

Between Villa Rica and Escoba (549). January. = Balansa 110.

**Paspalum paniculatum**, L., Sp. Pl., Ed. 2, 81.

Between Villa Rica and Escoba (553). January.

**Paspalum plicatulum**, Mx., Fl. Bor. Am., i, 45.

Near Asuncion (1580). December.

**Paspalum repens**, Berg, Act. Helv., vii, t. 7.

Asuncion (282). November.

An aquatic grass, creeping by running rootstocks on the bottom, and sending up many floating stems. The sheaths are inflated and seem to act as floats. Spikes narrowly linear, terminal. Cattle are so fond of this grass that they will wade far into the water to get a bite of it.

**Paspalum simplex**, Morong, n. sp.

Culm slender, simple, 7–10 dm. high, striate, glabrous. Sheaths glabrous, open, and with long silky hairs at the mouth. Blade of the leaf linear,

glabrous, rough on the margins, tapering to a long acuminate point, 12-30 cm. long, 2-5 mm. broad; ligule short, fuscous. Spikes 4-10 at the summit of the culm, linear, 3 or 4 cm. long, scarcely 2 mm. broad, with long silky hairs at the base; rachis glabrous. Spikelets 2 mm. long, on minute pedicels. Empty glume only 1, strongly 3-nerved, boat-shaped, as long as the flowering glume, translucent; flowering glume 3-nerved. Grain slightly rough under the lens.

Pilcomayo River (1583). February.

**Paspalum virgatum**, L., Sp. Pl., Ed. 2, 81.

Caballero (516); Asuncion (557); Pilcomayo River (969). January-June.

This grass in Paraguay grows sometimes nearly 2 m. in height. It has a stout stem and long, broad leaves. On account of their sharp cutting edge the people call it *Paja corta dura*, or grass that cuts. It is largely used for thatching houses, and I was told that if well laid it would shed the rain perfectly and last ten years.

**Eriochloa punctata** (Lam.), Hamilt., Prod., 5.

Asuncion (283); Pilcomayo River (971). December-March.

**Panicum amplexicaule**, Rudge, Pl. Guian., i, 21, t. 27.

Luque (541); Pilcomayo River (1030). December-May.

Growing in miry places or in water. Culms glabrous. Stem leaves amplexicaul, 1-3 cm. broad at the base, 14-30 cm. long, tapering to a sharp acuminate point. In young plants before the culms appear the leaves sheath each other at the base. Panicle narrow, of many densely flowered spikes, the spikes cylindrical, some of them 20 cm. or more in length, the panicle 30 cm. or more long. Glumes strongly rough-awned, and rough on the mid-nerve.

**Panicum auriculatum**, Willd. in Spreng. Syst., i, 322.

Caballero (515); Asuncion (693). January-May.

No. 515 is referred here with hesitation. No. 693 = Balansa 114.

Growing in miry places or in water, stout, 1-1 $\frac{1}{4}$  m. high. Stem leaves short, auriculate, and very broad (sometimes 4 cm.) at the base. Panicle close, 3-5 cm. broad and 2 $\frac{1}{2}$ -4 dm. long, composed of many rather loosely flowered cylindrical spikes 2-10 cm. long.

**Panicum capillare**, L., Sp. Pl., 58.

Pilcomayo River (1568). February.

**Panicum chloroticum**, Nees, in Trin. Diss., ii, 236.

Named by N. E. Brown.

Pilcomayo River (1002). April.

Some of this was distributed as *P. elephantipes*, Trin.

An aquatic species, with floating culms 2-3 m. Sometimes nearly 5 m. in length. Stem leaves 13-25 cm. long. Panicle widely spreading, 2-5 dm. long, the branches rising singly or 2-3 from the main rachis, and 15-25 cm. long, many forked. Spikelets much scattered, solitary, on short pedicels along the ultimate branches. It was mainly owing to this grass that we could not get our little steamer through the great laguna on the Pilcomayo, and so were compelled to abandon our voyage and return to Asuncion. It choked the channel of the river with an impenetrable mass of vegetation.

**Panicum Crus-Galli**, L., Sp. Pl., 56.

Pilcomayo River (963); Asuncion (743 and 539). January-May.

**Panicum demissum**, Trin., Sp. Gram., t. 319.

Caballero (519). January.

A small grass with very slender erect or nearly prostrate stems 8-12 cm. high. Leaves 1-2 cm. long, lanceolate, acute. Spikelets in a loose, spreading, terminal panicle  $1\frac{1}{2}$ -3 cm. long, each on a pedicel 3-7 mm. long.

**Panicum glutinosum**, Sw., Prod., 24.

Caballero (405 a). January. = Balansa 1.

Apparently so named because the roots are tubercled and glutinous, causing the sandy soil in which the plant grows to adhere to them. The inflorescence and general appearance of the plant much like those of our *P. virgatum*. This, however, grows in shady woods.

**Panicum insulare** (L.), Meyer, Fl. Esseq., 60.

*P. leucophæum*, H. B. K., i, 97.

Asuncion (176); Pilcomayo River (983). November-April.

**Panicum latifolium**, L., Sp. Pl., 58.

Asuncion (755, 780, and 641); Pilcomayo River (1569). January-April.

This is a very different plant from the species commonly called

*P. latifolium* in this country, which should be *P. Walteri*, Poir. It is really a cane, often growing 3 or 4 m. high, the culm with hollow joints, glabrous, and nearly as thick as the thumb, with a dark ring at the joints, leaning downwards at the summit. Leaves rounded and with a tuft of silky hairs at the junction with the sheath, lanceolate, long acuminate, 6–15 cm. long, 1–3 cm. broad in the middle, more or less pubescent on the blade and sheaths. Panicle with divergent lateral branches, 5–20 cm. long. Spikelets solitary on short pedicels, 3 or 4 mm. long, the lower empty glume half as long as the upper, puffed outwardly as if inflated, 5-nerved, the upper as large as the flowering glume, 5–7-nerved, both glumes with a tuft of down at the apex. The fruit when ripe becomes perfectly black, very smooth and shining, and dropping off at a touch. A striking plant, occurring usually in swampy thickets.

***Panicum laxum*, Sw., Prod., 23.**

Gran Chaco near Asuncion (537); Pilcomayo River (977). March.

A delicate weak-culmed grass 1–1¼ m. high. Panicle loose, 25 cm. or more in length. Spikelets hardly 1 mm. in length, loosely strung along the capillary rachis; the glumes whitish; pedicels hardly 1 mm. long. Wet places in woods.

***Panicum megiston*, Schultes, Mant., ii, 248.**

Gran Chaco near Asuncion (813); Pilcomayo River (1072). October–June.

A fine grass, growing with stout, glabrous culms, 1–1¼ m. high. Stem leaves 10–15 cm. long, 18–28 mm. broad, tapering to a sharp acuminate apex, sparsely hairy and rough on the sheaths with minute tubercles. Panicle 3–4 dm. long, 5–18 simple, drooping branches rising together in whorls from the main rachis and 10–12 cm. in length. Spikelets solitary or 2 or 3 together, about 3 mm. long, sessile or on minute pedicels, strung along on the rachis at some distance from each other. Upper empty glume as large as the flowering glume, strongly 5–7-nerved. Occurs in deep woods or on their borders, and forms a most excellent pasturage grass for cattle.

***Panicum Numidianum*, Lam., Encyc., 49.**

*P. barbinode*, Trin., Act. Petrop., 1835, p. 256.

Asuncion (779 a).

This species is more common in Brazil than in Paraguay. It is cultivated in fields at Asuncion under the name Paja Angora,

Angora grass, and used as green fodder for horses. In good soil it yields fine crops, being cut down in sections as wanted, and growing all the year round. It attains a height of 1-1½ m., and is softly pubescent, the panicle 8-20 cm. long and mostly glabrous.

***Panicum paucispicatum***, Morong, n. sp.

Culm geniculate, striate, pubescent, especially on the branches, 2-6 dm. high. Branches spreading. Sheaths striate, downy, marked with a dark ring at the top. Blade of the leaf lanceolate, acute, or acuminate, cordate and amplexicaul at the base, ciliate, pubescent, many nerved, 4-7 cm. long, 9-18 mm. broad at the base; ligule short, fimbriate. Spikes few and distant, 2-4 cm. long; rachis triquetrous, the angles sharp, very downy. Pedicels with a ring of projecting hairs just under the spikelets. Spikelets about 8 mm. long; empty glumes downy, pointed, strongly 3-7-nerved, the lowest half as long as the flower. Sterile flower hyaline, nerved. Flowering glume tipped with a sharp awn-like projection which is 1 mm. long.

Similar in appearance to *P. zizanioides*, but differing from that in its marked pubescence, the size and numbers of the spikelets, number of nerves on the glumes, and especially in the peculiar projection at the apex of the flowering glume.

Wet grounds in the Chaco opposite Asuncion (1573). January.

***Panicum polygonatum***, Schrad. in Schultes, Mant., ii, 256?

Pilcomayo River (1574).

***Panicum Potamium***, Trin., Diss., ii, 239.

Caballero (441); Luque (534). December-January.

***Panicum proliferum***, Lam., Encyc., iv, 747.

Caballero (543). January.

***Panicum recalvum***, Kunth, Gram., i, 39.

Pilcomayo River (1570). June. = Balansa 144.

***Panicum rivulare***, Trin., Diss., ii, 213.

Caballero (517); Pilcomayo River (517 a). January.

A tall coarse grass, growing in bogs at Caballero. Also collected at the ford on the Tebicuary River on the road between Villa Rica and Escoba. Culm 1¼-2 m. high, glabrous. Panicle large, loose, and spreading, 3½-8½ dm. long, 15-20 cm. broad. Spikelets small, crowded on the branches of the panicle. Leaves 6-10 cm. or more in length, with a very rough cutting edge, tapering to an extremely long acuminate point.



**Panicum sanguinale**, L., Sp. Pl., 57.

Asuncion (558). November–January.

**Panicum spectabile**, Nees, Agrost. Bras., 262.

Pilcomayo River (1070). April. = Balansa 156.

Growing in water. A thick culmed grass, 4 or 5 dm. high. Leaves rough on the edges with minute bristles and sometimes with small tubercles also, 3–5 dm. long and 1–2 cm. broad, the uppermost much longer than the panicle. Panicle close, 15 cm. long and  $2\frac{1}{2}$  cm. broad. Spikes simple, erect, disposed alternately around the rachis, about 3 cm. long. Main rachis strongly angled, hispid with short hairs, and with longer ones just under the spikes. Spikelets 5 or 6 mm. long, sessile, disposed closely and in several rows about the rachis of the spike. Flowering glume 5–7-nerved, with a long hispid awn, and hispid on the nerves.

**Panicum sulcatum**, Aubl., Pl. Guian., i, 50.

Caballero (444); Pilcomayo River (1572). January–February.

Culms terete, pubescent, sulcate,  $1-1\frac{1}{4}$  m. high. Leaves, especially on young plants, very beautiful, being nearly glabrous, strongly striate longitudinally or even plicate, 3–6 dm. long and  $2\frac{1}{2}$ –5 cm. broad in the middle, the blades bright green in color; sheaths downy, with long white hairs in a tuft at the summit and along the margins. Spikes in a close panicle 3–4 dm. long, very bristly with upwardly barbed setæ 1–2 cm. long which rise from the base of the pedicels.

**Panicum trichanthum**, Nees, Agr. Bras., 210.

Named by N. E. Brown.

Luque (317); Pilcomayo River (1571). December–January. = Balansa 46 and 46 a.

**Panicum vestitum**, Kunth, Gram., i, 39.

Between Villa Rica and Escoba (552). January.

Cæspitose. Stems strict, 2–3 dm. high; panicle short; the glumes 3–4 mm. long, clothed with long silky hairs. Rising from a hard, somewhat tuberous base, and fibrous roots. Leaves narrowly linear, half as long as the culm; the culm mostly naked.

On the open campo between Villa Rica and Escoba.

***Panicum virgatum***, L., Sp. Pl., 59.

Caballero (405); Gran Chaco near Asuncion (538). January.

***Panicum zizanioides***, H. B. K., Nov. Gen., i, 100.

Gran Chaco near Asuncion (536); Pilcomayo River (1001).  
January–April.

Grows in masses along the edges of water-courses, in the water and on the banks. It is an open, spreading plant, creeping at the base,  $3\frac{1}{2}$ –8 dm. high. Leaves 7–13 cm. long, amplexicaul at the base of the blade. Panicle 10–13 cm. long, with several, unequal, nearly erect spikes. Spikelets scattered along the rachis, usually 2 together, 1 on a pedicel 1 mm. long, and the other on a pedicel 5 mm. long. Lowest glume  $\frac{3}{4}$  as long as the spikelet, 3- or obscurely 5-nerved, infolding the spikelet at the base. All the glumes glabrous. Whole plant glabrous except on the margins of the leaf sheaths.

***Panicum***, sp.

Caballero (521). January.

***Oplismenus setarius*** (Lam.), R. & S., Syst. Veg., ii, 481.

Asuncion (248 a); Luque (315). December.

***Chamæraphis caudatus*** (Lam.), Britton.

*Panicum caudatum*, Lam., Encycl., iv, 2.

Pilcomayo River (1575). January–February.

Cæspitose. Culms numerous from a hard base, strict, slender, angular, mostly glabrous. Leaves narrowly linear, glabrous, revolute, nearly as long as the culms. Panicle spiciform, simple or subsimple, 4–8 cm. long. Spikelets whitish, 2 mm. long. Longest setæ about 1 cm.

In hard soil on the campos of the Pilcomayo River.

***Chamæraphis glauca*** (L.), Kuntze, Rev. Gen. Pl., 767.

Near Asuncion (540). December–April.

***Chamæraphis Italica*** (L.), Kuntze, l. c.?

Asuncion (207). November–December.

**Chamæraphis setosa** (Sw.), Kuntze, l. c., 768.

*Setaria macrosiachya*, H. B. K., Nov. Gen., i, 110.

Between Villa Rica and Escoba (546); Asuncion (658); Pirayu (673); Pilcomayo River (1574). January–April.

A grass striking in appearance and of common occurrence in Paraguay. The culms are sometimes nearly 3 m. high, and the leaves 30–45 cm. long and 2–3 cm. broad, strongly sulcate, almost plicate. Panicle 20–30 cm. long and 3–4 cm. broad, branches single, 1–1½ cm. long, the inflorescence looking as though it were all bristles. Setæ very numerous, 1–2½ cm. long. Spikelets 2–2½ mm. long.

**Chamæraphis paucifolia**, Morong, n. sp.

Culm terete, glabrous or slightly rough, striate or nearly smooth, 1–2 m. high, with a dark ring at the nodes; internodes 15–25 cm. long. Leaves few, striate, with the sheaths minutely rough, nearly as long as the stem, revolute, running to a long acuminate point. Ligule reduced to delicate white hairs. Panicle terminal, spiciform, densely cylindrical, 10–20 cm. or more in length, and about 1 cm. wide, on naked peduncles 3–5 dm. long. Spikelets sessile or on minute pedicels, on the rachis or on very short lateral branches, closely crowded, glabrous, about 3 mm. long, acute, slightly recurved and spreading. Empty glumes white, the lowest about 1 mm. long, the second a little longer, 5-nerved, both barely pointed and having a curiously puffed appearance. The flowering glume as long as the flower, acute, 5-nerved, whitish. Palea wrinkled transversely, very thick and hard, purplish when mature. Setæ 1 or 2 under each spikelet, 10–12 mm. long. This plant usually grows in tufts. The culms are often branched below, and the branches flower-bearing.

On the campo at Caballero (418), and on the Pilcomayo River (982). January–April.

**Cenchrus echinatus**, L., Sp. Pl., Ed. 2, 1150.

Asuncion (96). November.

**Cenchrus myosuroides**, H. B. K., Nov. Gen., i, 115.

Asuncion (214). November–December.

A fearful thing to encounter when the burs are ripe, as the plant is nearly as high as one's head, and the thickly crowded spike is sometimes 25 cm. long. I have had my clothes so completely covered with the burs that it took me nearly an hour to pick them off.

Old fields in the vicinity of Asuncion.

**Pennisetum purpurascens**, H. B. K., Nov. Gen., i, 113.

Pilcomayo River (1576). March–April.

A handsome species. Culms sometimes 1 cm. in diameter at the base, hard and hollow-jointed like a cane, glabrous, and as much as 3 m. in height. Leaves numerous, 3–5 dm. long, 1–2 cm. broad. Spikes often reddish or purple in color, sometimes 25 cm. or more in length, frequently recurved. Spikelets densely crowded. Setæ very numerous, 10–15 mm. long.

**Pennisetum setosum** (Sw.), L., in Pers. Syn., i, 72?

Asuncion (208 a); Pilcomayo River (991). February–April.

A fine grass, much valued for pasturage when young. Culms 1–2½ m. high. Inflorescence in a long, plumose spike (15–25 cm.), which has a rich yellow or purplish tint, frequently recurved. Spike 1–1½ cm. wide. Similar to no. 1576, but much more graceful, and with shorter and narrower spikes. It presents a beautiful appearance when standing on the banks of the Pilcomayo River, where it is very common.

This was first determined and distributed as *P. Sieberi*, Kunth.

**Olyra pauciflora**, Sw., Fl. Ind. Occ., i, 125.

Caballero (505). January.

A genus of grasses with 1-flowered, monœcious spikelets, the staminate in the lower part of the panicle, or rarely in a distinct panicle, and with a single glume. Pistillate flowers 3-glumed. The species here noted is, according to Swartz, an inhabitant of the island of Jamaica. It has a culm 2 or 3 dm. high. Leaves ovate, acute, rounded or truncate at base, 4–6 cm. long and 2½–3 cm. broad at the base, on a minute pedicel, the sheaths closely involute. Panicle 6–8 cm. long, the branches in verticils of 6–10, the lowest ⅔ as long as the panicle. Glumes aristate. Leaves very green, striate, glabrous, shining on the upper surface.

**Pharus latifolius**, L., Sp. Pl., Ed. 2, 1408.

Between Villa Rica and Escoba (449). January–March.

This seems to be the plant described in Chap. Fl. Supp., p. 661, but it certainly is not aquatic as he declares his plants to be, as it grows in the woods, often in very dry woods. It occurs abundantly in the monte on the banks of the Pilcomayo, as well as in Central Paraguay. The panicle is small, not over 10 cm. long, the branches

widely spreading. It is a bad thing to handle, as the fruit-bearing glume is densely covered with small hooked hairs, and the fruit adheres to everything it touches, even to the drying-paper, so that it is very difficult to preserve complete specimens.

**Tripsacum dactyloides**, L., Sp. Pl., Ed. 2, 1378.

Pirayu (675). April.

**Luziola Peruviana**, Pers., Syn., ii, 575.

Asuncion (195). November.

**Luziola Spruceana**, Benth. in Mart. Fl. Bras., ii, pt. 2, 18.

Near Asuncion (556). February. = Spruce 536.

An aquatic with long sheathing leaves, the sheaths much inflated, and the leaves much longer than the culms. Monœcious. Staminate panicle terminal, 5-6 cm. long, loose and spreading, on culms almost filamentous, about 20 cm. long. Pistillate panicle below, much larger, the branches setaceous, dichotomous.

**Oryza latifolia**, Desv., Journ. Bot., 1813, 77.

Pilcomayo River (949). February.

An aquatic occurring in pools in deep woods on the Pilcomayo River. Culms  $1\frac{1}{2}$ -2 m. high. Leaves 3- $3\frac{1}{2}$  dm. long,  $1\frac{1}{2}$ -4 cm. broad at the base, midnerve white and prominent, dark purple at the junction of blade and sheath, otherwise green, rough on the margins, otherwise glabrous; sheaths 20-25 cm. long, closely investing the culm. Panicle 25 cm. long, composed of simple erect branches 8-10 cm. long, rising 1-4 together from the rachis, with a tuft of silky hairs at the base of each cluster. Spikelets white, 6 or 7 mm. long; empty glumes subulate, 3 mm. long; flowering glume keeled and laterally 2-nerved. Keel and nerves green, hispid, with a very long hispid awn; palet similar, apiculate.

**Arundinella Martinicensis**, Trin., Diss., ii, 62.

Between Villa Rica and Escoba (544). January.

A strong, rank grass 3-9 dm. high, with rigid revolute acuminate leaves 2-3 dm. long. Panicle close, 2- $3\frac{1}{2}$  dm. in length, 3-5 cm. wide, the branches 6-12 cm. long. Spikes crowded. Spikelets geminate, on unequal pedicels, 3 mm. long, 1-flowered; upper empty glume longer than the lower and longer than the flower, 5-nerved, keeled, slightly recurved. Palet with a tuft of hairs at the base,



awned, the awn delicate, bent at the summit, the lower half chestnut-colored like the palet, and white above.

On the campos between Villa Rica and Escoba.

**Saccharum Cayennense** (Beauv.), Benth., Jour. Linn. Soc., xix, 66.

Between Caballero and Escoba (417). January.

Culms stout,  $1\frac{2}{3}$ – $2\frac{1}{2}$  m. high, yellowish, shining, glabrous, except at the joints, which are enclosed in a ring of long white hairs. Leaves linear, 2–3 cm. long, 6–8 mm. wide, fuscous pubescent on both sides, strongly nerved, midnerve large, becoming 5 or 6 cm. long above. Sheaths longer than the blades, pubescent above. Panicle spiciform, nearly cylindrical, interrupted, 10–25 cm. long, about 2 cm. wide. Branches 1–2 cm. or less in length, glomerate, densely crowded, solitary or 1–3 branched, the racemes subglobose. Spikelets about 4 mm. long. Glumes 4, the outer one oblong, white, shining, coriaceous, densely ciliate at the base and apex and on the margins with rufous hairs longer than the spikelet, indistinctly 3–4-nerved near the apex; the other glumes chartaceous and smaller, the second slightly pilose. One of the most interesting grasses in Paraguay. The long, fluffy, bronze-colored, soft and velvety haired panicle is exceedingly beautiful. In bogs near the railroad track between Escoba and Caballero.

**Saccharum holcoides** (Nees), Hack. in Mart. Fl. Bras., ii, pt. 3, 254.

Luque (327). December.

This species differs from the preceding more in habit than in the floral characters. Culms slender, glabrous, fringed with a ring of white hairs at the joints, about 6 dm. high, with 2 or 3 nodes. Leaves shorter than the culm, glabrous, except on the upper margins of the sheath, revolute. Panicle flattish, not cylindrical, 8–12 cm. long; branches 2–3 cm. long, simple or nearly so, spreading. Spikelets 4 mm. long, ciliate with bronze-colored hairs like no. 417, but the hairs not so dense and shorter than the spikelet. Outer glume bare of hairs on the back, pointed and minutely bidenticulate at the apex, with 4 green nerves which run the whole length of the glume. Near wet rocks with the water dripping upon it from above.

Some of this was distributed as *S. Cayennense*.

**Pappophorum macrostachyum**, Schrad. in Schultes Mant., ii, 342.

Pilcomayo River (1071). April.

Culms stout, sulcate, glabrous, 10–15 dm. high. Leaves  $4\frac{1}{2}$ –7

dm. long, glabrous, sulcate, the margins setulose-rough; sheaths glabrous or a little pilose at the mouth, as long as the blades; nodes 2 or 3. Panicle at first enclosed in a foliaceous bract as long as itself, the largest 8 dm. long and 6 cm. broad, tapering to an acuminate apex, more or less nodding; branches very numerous and crowded, simple or compound. The 2 lower glumes silvery-white, papyraceous, 1-nerved, 3 or 4 mm. long, apiculate, much surpassed by the setæ of the palets. Lower palet divided into about 13 setæ. Caryopsis elliptical. A fine grass, the long silvery-white panicles very showy.

**Andropogon condensatus**, H. B. K., Nov. Gen., i, 188.

Asuncion (206). November–December.

Common in old fields at Asuncion. Culms rigid, about 1 m. high. Panicle spreading widely at the summit, 10–15 cm. long. Racemes much exerted from the spathes. Flowers white and fleecy.

**Andropogon lateralis**, Nees, Agrost. Bras., 329.

Asuncion (230). December.

A harsh slender-stemmed grass, 10 or 12 dm. high. The flowers are borne along the stem at intervals in small, long-peduncled panicles, 2–3 branched. Spikes 4–6 cm. long. Hairs on the spikelets rather scanty. Awns twisted at the base, slender, bent about  $\frac{1}{4}$  of the way up. The culms are cæspitose, with a tuft of short leaves at the base.

**Andropogon leucostachys**, H. B. K., Nov. Gen. i, 187.

Caballero (469). January. = Balansa 279.

Regarded by Hackel as a form of *A. Virginicus*, L., but differing in having much longer spikelets and with shorter hairs on the callos base of the first glume. It seems to me also to have much larger panicles and longer racemes. Usually 3–4 panicles of fleecy flowers at long intervals on the stem. Culm 4–5 dm. high. Common on the open campo around Caballero and Villa Rica.

**Andropogon Minarum** (Nees), Kunth, Enum., i, 507.

Between Villa Rica and Escoba (488 a). January.

Culms rather stout, 5–9 dm. high. Panicle densely spiked, oblong-ovate, 12–28 cm. long and 4 or 5 cm. broad, the branches somewhat verticillate. Distinguished by its chestnut-colored, twisted, hairy awns, 4–6 cm. long. These are very conspicuous, and seem

to occupy the whole panicle. Glumes white, with a sharp, slightly curved, callous, white-hairy point at the base. These cling close to the fruit and have the remarkable hygrometric property of untwisting in wet weather and retwisting when dry, so that the sharp point bores its way into the earth. Persons who keep sheep complain that these sharp-pointed seeds actually bore their way into the sides of the animals.

**Andropogon Neesii**, Kunth, Enum., i, 491.

Near Caballero (423). January.

**Andropogon nutans**, L., Sp. Pl., 1045.

Between Villa Rica and Escoba (545, 547); Pilcomayo River (926). January–February.

No. 547 is nearly the ordinary *A. nutans* of the United States. It has light yellow panicles, and occurs on the campo near Villa Rica. Nos. 545, 547 belong to the form called by Häckel (Mon. Phan., vi, 529) *β. agrostoides*, with spikelets about 4 mm. long; awns 4–7 mm. long, deep yellowish-brown in color. All of them are exceedingly handsome when in flower. On the campos near Villa Rica and the Pilcomayo River.

**Andropogon saccharoides**, Sw., Fl. Ind. Occ., 205, var. *laguroides* (D.C.), Hack. in Mart. Fl. Bras., ii, pt. 3, 293.

Luque (326); Pilcomayo River (1083 and 1008). December–April.

This grass sometimes grows to a height of 4 m. in Paraguay, with a panicle over 30 cm. long. The spathe-like floral bract is very rigid, and rarely fully opens till the flowers are dropping off.

**Andropogon Sorghum** (L.), Brot., Fl. Lus., i, 88.

Asuncion (203). November.

Not exactly *Sorghum vulgare*, but the form called by Häckel *corymbosus*. It runs wild in fields in the vicinity of Asuncion. Culms 2–2½ m. high. Panicle 30–40 cm. long, very lax, the lowest branches drooping. Spikelets obovate, very hairy, or at maturity the glumes shining, interruptedly hairy, brownish-red or black, 5 or 6 mm. long. Awns 5–8 mm. long, bent about half-way up. The leaves are sometimes 7 dm. long and 6 or 7 cm. broad. It was probably introduced into Paraguay by immigrants, but it seems to thrive very well as a naturalized grass.

**Rottbœllia Balansæ**, Hack., in Mart. Fl. Bras., ii, pt. 3, 312.

Near Villa Rica (542). January. = Balansa 291.

Culms hard and dry,  $1-1\frac{2}{3}$  m. high, growing in tussocks on the campo near Villa Rica. This is one of the most common grasses upon the plains of Paraguay, and usually presents a stiff, harsh aspect, affording but little nutriment for cattle, except when very young.

**Rottbœllia compressa**, L. f., Suppl., 114.

Pilcomayo River (874). January. = Balansa 646.

**Aristida implexa**, Trin., Act. Petrop., 1836, 48.

Between Villa Rica and Escoba (488). January.

Culms nearly or quite glabrous, 1 m. or more in height, cæspitose. Leaves as long as or longer than the culms, narrowly linear, very revolute, appearing nearly cylindrical when dry. Panicle close, 25–30 cm. long. Empty glumes  $2-2\frac{1}{2}$  cm. long, bluish, rough on the keel and with a rough bristle. Awns of the flowering glume nearly 10 cm. long, straight, much twisted. A strawy-looking species among the hills and woods.

**Aristida complanata**, Trin., l. c., 1829, 85. Ex descr.

Asuncion (648). April.

A slender species with nearly glabrous compressed culms 5 or 6 dm. high. Leaves narrowly linear, 2 mm. broad, nearly or quite glabrous, tapering to a long, hair-like point, very revolute. Panicle contracted, 15–20 cm. long,  $1-1\frac{1}{2}$  cm. wide, with 3 or 4 branches. Empty glumes purplish, membranous, barely bristle-pointed, the lower 1-nerved or obscurely 3-nerved at base, 12 mm. long. Awns 20–25 mm. long, very slender, not twisted, straight. A delicate, cæspitose plant, occurring in old fields.

**Sporobolus Indicus** (L.), R. Br., Prodr., i, 170.

Asuncion (365); Caballero (551). December–February.

**Chloris distichophylla**, Lag., Gen. et Spec., Nov. 4.

Asuncion (142). November.

**Chloris polydactyla** (L.), Sw., Prodr., 26.

Pilcomayo River (1586). April. Named by Dr. Geo. Vasey.

A very handsome species growing along the borders of the Pilco-

mayo. Culms 1-1 $\frac{1}{4}$  m. in height. Distinguished by its numerous finger-like, soft-haired spikes which are 10-15 cm. in length. Sometimes as many as 25 of these spring from the apex of the stem. The fleecy hairs and the needle-like awns of the flowering glume and palet impart a fuzzy appearance to the spikes.

**Trichloris fasciculata**, Fourn., Enum. Mex. Pl. Gram. 142.

Pilcomayo River (984). April. = C. Wright, Texas 764.

This grass occurs in Mexico and crosses the boundary into Texas. It is quite common along the banks of the upper Pilcomayo. The flowers are in densely crowded verticillate spikes at the top of the culm. The plant appears in the Paraguayan form to have much longer spikes (12-18 cm.) and a stouter and taller (1 $\frac{1}{2}$ -2 $\frac{1}{2}$  m.) culm than in any of the Mexican specimens that I have seen. The very slender awns are sometimes 15 mm. long.

**Eleusine Indica** (L.), Gærtn., Fruct et Sem., i, 8.

Asuncion (61). November-January.

**Eleusine Indica** (L.), Gærtn., var. *brachystachya*, Trin., Sp., t. 72.

Asuncion (68).

Both of these forms grow in the streets of Asuncion, as well as in grassy places in the suburbs. The variety has much shorter and broader panicles, the spikelets closely crowded, and 1-3 spikes, while the type has 3-5 narrowly linear spikes. Sometimes erect and 20-30 cm. high, but usually prostrate with ascending culms 6-15 cm. high.

**Leptochloa virgata**, (L.), Beauv., Essay., 71.

Asuncion (211, 211 a); Caballero (440); Pilcomayo River (970). January-April.

This grass has a hard, smooth, reed-like culm 1-1 $\frac{1}{2}$  m. high. Panicle 15-30 cm. in length. Spikes drooping, slender, 5-12 cm. long, 1-3 rising together from the rachis. Glumes and palets often purple-tinged. Culm occasionally branching, thickened at the branch nodes. Panicle sometimes on long naked peduncles, sometimes sheathed by a leaf.

**Tricuspis latifolia**, Griseb., Pl. Lorentz., 211.

Near Pirayu (674); Pilcomayo River (928). February-April.

This grass grows abundantly on the edges of the monte on the overhanging banks of the Pilcomayo. Culms with hard, smooth,



hollow joints like a reed, often as much as 3 m. high. Leaves somewhat shorter than the culm, 2-3 cm. wide. Panicle very large, loose and spreading, 20-40 cm. long. Spikes on long branches, rising 1-3 or more together from the rachis, beginning to flower half-way up. These branches are filiform, 10-20 cm. in length, gracefully drooping. The specimens from Pirayu (674) had a closer panicle, presenting a more compact and bristly appearance than those of the Pilcomayo.

**Diplachne verticillata**, Nees.

Pilcomayo River (981). April-June.

Very common on the low grounds near the Pilcomayo River. It grows 1-1 $\frac{1}{4}$  m. high. Panicle strikingly glaucous, sometimes over 30 cm. long, bearing from 35 to 50 slender spikes 5-10 cm. long, rising singly or several together from the rachis. Panicle rigid, 6-8 cm. broad; spikes nearly erect. Spikelets 1 $\frac{1}{2}$  cm. long, appressed, on the upper side of a rachis scarcely  $\frac{1}{4}$  mm. wide, 4-8 flowers in a spikelet. Culm quite brittle at the joints, often branched below and sending up several flower stems.

This is very similar to, if not identical with, *D. imbricata* of Texas and Mexico.

**Gynerium argenteum**, Nees, Agrost. Bras., 462.

Pilcomayo River (950). March-April.

The well-known Pampas grass. It grows in large clumps all along the Pilcomayo River and down the Paraguay to Uruguay. The culms sometimes measure 2-2 $\frac{1}{2}$  cm. in diameter at the base, and attain a height of 4 $\frac{1}{2}$  m. The plumes are 5-7 dm. in length, generally of a silvery-white, but frequently of a delicate rose tint. The leaves are narrowly linear, running into a long sharp apex,  $\frac{1}{2}$ -1 $\frac{1}{2}$  m. in length, rising in a rosette about the base of the culms and gracefully curving over towards the ground. Usually several culms grow together in a tussock.

The masses of this showy grass impart a wonderful beauty to the solitudes of the Pilcomayo forests, looking like plumed sentinels guarding the entrance to nature's treasures.

**Gynerium saccharoides**, H. B. K., Pl. Æquin., ii, t. 215.

Pilcomayo River (1065). June.

Much inferior to no. 950 in beauty, but equally conspicuous. Culms 3-5 m. high, over 2 $\frac{1}{2}$  cm. thick at the base, not hollow, but

filled with a rather tough pith. Leaves distichous, numerous, 70 cm. or more long and 5 cm. or more in breadth at the base, giving one the idea of a large cornstalk. Panicle often over 14 dm. long, composed of numerous branches, some of which are over 5 dm. long, beginning to bear flowers 4-7 cm. from the base. The long branches of the panicle blow out on one side in the wind like a banner, and this and the large, close-veined leaves impart a strange as well as gigantic appearance to the plant. Guarani name "*Cuygua*."

**Arundo Donax**, L., Sp. Pl., 81.

Asuncion (680); Pilcomayo River (1064). June.

Culm smooth, hollow and jointed like a reed, 13-20 mm. thick at the base, and 3-4½ m. high. Leaves 2-ranked, the largest 5 dm. or more in length and 4-5 cm. broad at the base, acuminate, glabrous on the margins as well as on the surface. Flowers in a dense, contracted panicle 5½-8 dm. in length, composed of numerous closely disposed capillary branches, arranged on all sides of the rachis, and bearing innumerable spikes and spikelets. Outer glumes chestnut-colored, bristle-tipped, 10-12 mm. long; the inner clothed with white silky hairs. This grass is commonly known in Paraguay as "*Caña Castilla*" and is the native *Caña*, but it would be impossible to get juice from the culms like that of the sugar-cane, which is the true *Caña*. It may have been named *Castilian* sugar-cane in derision of the Spaniards, who are not loved in Paraguay.

**Eragrostis Bahiensis**, Schultes, Mant., ii, 318.

Asuncion (256). December.

A caespitose grass with slender culms 3-5 dm. high. Leaves very short. Panicle laxly branched, 10-16 cm. long, the branches drooping; the spikes containing from 10 to 25 lead-colored spikelets. Panicle on naked peduncles 15-25 cm. long. This grass occurs in dry grounds, and is highly valued for pasturage.

**Eragrostis hypnoides** (Lam.), B. S. P., Prel. Cat. N. Y., 69.

Near Asuncion (356). December.

**Eragrostis Neesii**, Trin., Act. Petrop., 1831, p. 405.

Luque (338). December-January.

Dwarf, 15 cm. high at the most. Leaves short, in a radical tuft, or 1 or 2 at the base of the culm, covered with long, spreading white

hairs. Panicle close, 3 or 4 cm. long, with 3-5 short branches below; 5-7 flowers in the flat spikelets; glumes and palets mixed purple and white. One of the feeding grasses for cattle on the Gran Campo, about 5 miles east of Asuncion.

**Poa airoides** (Nees), Kunth, Enum., i, 360.

Asuncion (550). January.

Growing in dry open thickets in the Chaco opposite Asuncion. Culms 3-5 dm. high. Panicle very diffuse, as long as or longer than the culms. One I measured was 7 dm. in length, with numerous branches, some of them 15 cm. long, 1-4 rising together from the rachis. Flowers minute, 1 or 2 in a spikelet; the spikelets on capillary peduncles, and greatly scattered. Nerves of the flowering glume nearly or quite obsolete. Glumes lead-colored and scantily hairy at the base. A fine grass for mantel ornamentation.

**Bromus unioides** (Willd.), Nees, Agrost. Bras., 470.

La Plata, Argentine Republic (21). October.

**Chusquea tenella**, Nees, Linnæa, ix, 492?

Near Asuncion (755 a). June.

Without flowers or fruit. Found with no. 755 in swampy woods near Asuncion. A lower and more slender culm than 755; leaves short, glabrous, nerved, lanceolate, rounded or semicordate at base, on a short petiole; the sheaths slightly open, hairy fringed at the mouth. Short branches and leaves fascicled at the nodes, the culms often tapering into a long, very slender termination, and the nodes much longer than the leaves, sometimes 20 cm. A *Chusquea* without doubt, and corresponding, so far as these specimens go, to *C. tenella*, as described in Flor. Bras.

#### EQUISETACEÆ.

**Equisetum giganteum**, L., Sp. Pl., Ed. 2, 1517.

Pilcomayo River (1000). April.

#### SALVINIACEÆ.

**Salvinia auriculata**, Aubl., Pl. Guian., ii, 969.

Asuncion (289, 1579). December. = Balansa 1122.

## FILICES.

Named by Elizabeth G. Britton.

***Alsophila atrovirens***, Presl., Tent. Pter., 61.

Between Villa Rica and Escoba (478). January.

The only tree fern that I met with in Paraguay, though there must be other species. The stem is 1-1 $\frac{1}{4}$  m. high, and 7-12 cm. thick.

This was first determined as *A. armata*, Presl., and so distributed. We are indebted to Mr. J. G. Baker for the correction.

***Dicksonia cicutaria***, Sw., Flor. Ind. Occ., iii, 1965.

Between Villa Rica and Escoba (571). January.

***Adiantum thalictroides***, Willd.; Schlecht. Adumbr., 53.

Between Villa Rica and Escoba (447). January.

***Cheilanthes chlorophylla***, Sw., Vet. Acad. Handl., 1817, p. 76.

Asuncion (169); between Villa Rica and Escoba (572, 572 b, 781). November-May.

***Cheilanthes microphylla***, Sw., var. *elongata*, (Willd.), Baker.

Asuncion (232). = Balansa 359.

***Cheilanthes radiata*** (L.), J. Smith in Hook. Journ. Bot., iv, 159.

Caballero (569). January.

***Pteris denticulata***, Sw., Prod., 129.

Asuncion (284, 698). May.

***Pteris pedata***, L., Sp. Pl., 1532.

Caballero (170). January.

This grows in deep woods on the banks of the Pilcomayo River as well as in similar places about Asuncion and Caballero.

***Blechnum Brasiliense***, Desv., Berl. Mag., v, 330.

Luque (309). December.

***Blechnum occidentale***, L., Sp. Pl., 1534.

Between Villa Rica and Escoba (1577). January.

**Asplenium Gibertianum**, Hook., Sp. Fil., iii, 199.

Asuncion (739). May.

A handsome little plant. Fronds 10–15 cm. in length, bipinnate below or the pinnæ bipinnatifid above, ending at the apex in a long linear projection, which roots at the tip and throws up a new plant. Deep damp woods near Asuncion.

**Asplenium lunulatum**, Sw., Syn. Fil., 80.

Between Villa Rica and Escoba (386). January.

**Dryopteris aculeata** (L.), Kuntze, Rev. Gen. Pl., 812.

Between Villa Rica and Escoba (573). January. = Balansa 323 a.

The form of the species referred by Mr. Baker (Mart. Fl. Bras., i, pt. 2, 462) to *Aspidium aculeatum*, var. *phegopteroides*.

**Dryopteris Martinicensis** (Spreng.), Kuntze, l. c.

*Aspidium macrophyllum*, Sw., Syn. Fil., 43.

Between Villa Rica and Asuncion (385). January.

**Dryopteris parasitica** (L.), Kuntze, l. c., 811.

*Aspidium molle*, Sw. in Schrad. Journ., ii, 34.

Luque (307). December.

**Dryopteris unita** (L.), Kuntze, l. c.

Asuncion (250). December.

**Dryopteris villosa** (L.), Kuntze, l. c., 814.

Near Asuncion (783). May.

**Polypodium angustum**, Mett., Polyp., 90.

Caballero (395). January.

**Polypodium incanum**, Sw., Syn. Fil., 35.

Between Villa Rica and Escoba (533); Pilcomayo River (1088). January–February.

**Polypodium latipes**, Langsd. & Fisch., Icon. Fil., 10, t. 10.

Between Pirayu and Yaguaron (784); near Asuncion (828). April.

The fronds of this fern exhale a delicious aroma when drying, something like that of Melilot. I was consulted by natives in



Paraguay anxious to know if the plant could not be used in making perfume.

**Polypodium lycopodioides**, L., Sp. Pl., 1542.

Caballero (396). January.

Climbing upon the trunks of trees for a distance of 3-5 m. in damp woods. Found with nos. 511 and 574, which have a similar habit. Dead prostrate trees are often completely covered with these plants, which seem to derive abundant sustenance from the decaying bark.

**Polypodium geminatum**, Schrad. in Gött. Gel. Anz., 1824, p. 667.

Ex descrip.

Caballero (511). January.

**Polypodium Plumula**, H. B. K., Nov. Gen., i, 8.

Caballero (524); near Asuncion (726). January-May.

**Polypodium vacciniifolium**, Langsd. & Fisch., Icon. Fil., 8, t. 7.

Caballero (574). January.

**Gymnogramme calomelanos** (L.), Kaulf., Enum. Fil., 76.

Luque (308). December.

**Gymnogramme trifoliata** (L.), Desv., Berl. Mag., v, 305.

Near Luque (312). December.

A golden fern, with trifoliate or binate leaves. The pinnæ are linear-lanceolate, 4-8 cm. long, on a short pedicellate rachis. I saw this rarely in the streets of Asuncion, and it is abundant in dry or wettish grounds.

**Gymnogramme tomentosa** (Lam.), Desv., l. c., 304.

Pilcomayo River (1087). February-March.

**Ancimia Phyllitidis**, Sw., Syn. Fil., 155.

Between Villa Rica and Escoba (782). January.

**Ancimia tomentosa**, Sw., Syn. Fil., 157.

Asuncion (234). December.

**Lygodium venustum**, Sw. in Schrad. Journ., 1801, 303.

Between Villa Rica and Escoba (483). January.

MUSCI.

Named by Elizabeth G. Britton.

**Campylopus introflexus** (Hedw.), Mitt. Journ. Linn. Soc., xii, 84.

Falkland Islands (1398).

**Tortula serrulata**, Hook. and Grev., Brewster's Edinb. Journ., i, 291,  
t. 12.

Falkland Islands (1399).

**Tortula læta**, Kunze in C. Muell. Syn., i, 574.

Central Paraguay (1397).

**Barbula pallido-viridis**, C. Muell.

Central Paraguay (1391). = Balansa 3562. Named by E. Bescherelle.

**Barbula muricola**, Hampe.

Central Paraguay (1372). = Glaziou, Brazil, 7454.

**Macromitrium phyllorhizum**, C. Muell.

Central Paraguay (1378). = Balansa 59.

**Bryum membranaceum**, C. Muell.

Central Paraguay (1382). = Balansa 74.

**Rachopilum tomentosum** (Hedw.), Mitt., l. c., 333.

Central Paraguay (1389). = Balansa 3677.

**Hookeria subdepressa**, Besch., Rev. Bryol., xii, 19.

Central Paraguay (1386). = Balansa 3689.

**Erpodium Paraguense**, Besch.

Central Paraguay (1385). = Balansa 3644.

**Ectropothecium rutilans** (Brid.), Mitt., l. c., 519.

Central Paraguay (1388). = Glaziou 7453.

**Plagiothecium Villa Ricæ**, Besch. Named by C. H. Wright.

Central Paraguay (1371). = Balansa 1210.

**Hypnum tenuirostre** (Schwæg.), Mitt., l. c., 547, var. **Pariguariense**, C. Muell.

Central Paraguay (1374). = Balansa 3687.

**Hypnum turgidicaule**, C. Muell., Rev. Bryol., xiv, 57, name only.

Central Paraguay (1376). = Balansa 3680.

**Hypnum microphyllum**, Hedw., Sp. Musc., t. 69.

Central Paraguay (1383).

**Lasia coronata**, Mont., var. **tenuis**, C. Muell.

Central Paraguay (1377). = Balansa 3669. Named by E. Bescherelle.

**Hypnum subnudum**, C. Muell., Rev. Bryol., xiv, 57, name only.

Central Paraguay (1373). = Balansa 3679 a.

**Raphidostegium Kegelianum**, C. Muell., Linnæa, xxi, 198.

On trees at the junction of the El Dorado (1380). = Burchell 2575.

**Sematophyllum circinale** (Hampe), Mitt., l. c., 486.

Central Paraguay (1390). = Balansa 3692.

**Fissidens subcrispus**, Besch., Rev. Bryol., xii, 17.

Central Paraguay (1392). = Balansa 69.

**Fissidens Hornschuchii**, Mont., Ann. Sci. Nat. (II), xiv, 342.

Central Paraguay (1394). = Gardner 18.

#### CORRECTIONS.

Page 48. Before **Castalia Gibertii**, insert the ordinal heading—**NYMPHÆACEÆ**.

Page 56. For **Sida pandiculata**, read **Sida paniculata**.

Page 69. Before **Zanthoxylum Naranjillo**, insert the ordinal heading—**RUTACEÆ**.

Page 205. 15th line, for Paraguay read Paragua.

### III.—*Coleopterological Notices.*

#### V.

BY THOS. L. CASEY.

Read Oct. 2, 1893.

In bringing together a number of short studies of our North American Coleoptera under the above title, the methods and objects held in view in the other parts of the present series are continued. The systematic revisions do not pretend to approach completeness, and are merely efforts to indicate the probable interrelationships of the species, based upon such material as it has been found possible to gather together. New forms are continually being brought to light, which sometimes tend to alter previously formed conceptions of specific limits, or to destroy or modify the value of characters assumed as the bases and criteria of classification. This is the natural outcome of all endeavors to evolve the laws of complicated affinities from inadequate data, but, at the same time, it is not always necessary or advisable to defer the announcement of such apparent truths as we have been able to discover with the material at our disposal; if carefully conducted, I believe that they may, and generally do, lead onward and upward.

Having before us a confused mass of material which it is proposed to classify and arrange generically and specifically, the problem is to record all the genera and species, but neither more nor less. This problem is frequently more difficult than any which can confront us in the domain of the exact or physical sciences, because the accidental and variable factors cannot be determined. We might illustrate the process by imagining an exact circle finely drawn on paper, and then trying by free hand to retrace it with a blacker pencil. It will be found that a portion of the dark line is outside the circle, a portion within, and another truly on the line. The portion without represents an excess of units or species, that within those which we have overlooked, as shown by subsequent and fuller evidence. The

hand cannot follow the circle exactly, and in like manner is it impossible for the human brain to correctly interpret nature; we can only approximate. It would of course be perfectly easy to strike a circle wholly within the circumference of fact, but this would be analogous to the rule of thumb by which an engineer may make a structure many times too strong, in order to avoid laborious calculations. It may answer in a certain way, but is not in the spirit of true scientific inquiry.

NEW YORK, Sept. 7, 1893.

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## STAPHYLINIDÆ.

### ALEOCHARINI.

It is unfortunate, having in view the optical means of investigation usually employed, that the Aleocharini are so small in size, for, from all points of view taxonomic and etiologic, they are one of the most interesting groups of little animals on the earth. The extraordinary diversity of structure and specialization of type observable among the termitophilous inquilines, are, in a measure, characteristic of the entire tribe, and it is this diversity alone which has given rise to the multitude of generic names which have been proposed. It is impossible to estimate just what proportion of these names is really necessary, but the number of true genera is without doubt proportionally much greater than in any other tribe of Staphylinidæ, possibly excepting the Omalini. This diversity and specialization bespeaks a greater geological antiquity for the Aleocharini than for the other tribes of Staphylinidæ, and this is indicated again by the fact that nearly all the associates of the termites,—known to be more ancient than the Coleoptera,—are taken from the tribe under consideration, or the closely related Tachyporini.

The study of the subarctic Aleocharini of North America has been almost completely neglected thus far, but the species are without much doubt as plentiful here as in any other part of the world, and seem to follow the general rule with regard to the Staphylinidæ in being more abundant and diversified than in Europe. This is somewhat remarkable, in view of the superior development in that continent of several other large families of Coleoptera, and, as I have before suggested (*Col. Not.* II, p. 326), seems to point to a



greater age for the Staphylinidæ than for some other families of Coleoptera.

The following detached studies are merely intended as a beginning, and in drawing up the generic diagnoses, I have employed to some extent the differential characters suggested by Rey in the "Brévipennes" of France; so that one familiar with that work can refer the genera to their most probable positions in the European scheme. It is to be regretted, on the score of simplicity, that it has been found necessary to propose so many new genera, but I feel quite sure that those here described are really essential. In fact several species now referred to *Leptusa*, *Oxypoda* and *Rheochara*, will ultimately have to form distinct genera. This matter of generic subdivision is, however, becoming an important one from the mere standpoint of numbers, and, in the *Aleocharini*, if we go beyond *Aleochara*, *Myrmedonia*, *Bolitochara* and others, as determined by the number of tarsal and antennal joints, it is difficult to tell just where to draw the line. One good rule to follow in such cases, is to avoid defining new genera unless there be at least three or four important structural differences; facies, however, here as elsewhere, frequently goes far as a guide, and is much more important than any single organic structural peculiarity.

There is one important point concerning the nomenclature of the *Aleocharini*, which should be continually borne in mind. *Homalota* Mann. was founded upon a single definitely stated species, the *Aleochara plana* of Gyllenhal, which was subsequently found by Rey to have but four intermediate tarsal joints. This necessitates the complete abandonment of all our old ideas of *Homalota* as extended by Erichson, and the true and only *Homalota* is the genus named *Epipeda* by Rey. In future, therefore, when we think of the Erichsonian *Homalota*, we should have in mind *Atheta*, *Colpodota*, *Amischa*, *Liogluta* and a score or so of other genera.<sup>1</sup> When

<sup>1</sup> This is set forth with sufficient clearness in the recent catalogue of Heyden, Reitter and Weise. I cannot agree with the authors of that work, however, in changing certain family names by reason of the rehabilitation of Geoffroy's genera. For instance, under *Mylabris*, Geoff., p. 331, I am unable to find a single species named by Geoffroy. Genera are and must be founded upon species, and if no species were described by Geoffroy under Latin names, it follows that that author had not adopted a proper binomial nomenclature when he founded his genera. We are compelled to assume some definite beginning, and that beginning is the date when the names of species were first published under the true binomial form. It is possible that some genera

there is the least doubt, a name long established in connection with certain species should not be changed, but in a case of this kind, where there can be no doubt whatever, the sooner we overcome our conservatism and adopt what is manifestly proper and right, the easier it will be for the generations of systematists who are to come into the world during the next few hundreds or thousands of years. It is our duty to lay as immovable a foundation as possible in the nomenclature of all sciences. The time, be it greater or less, during which we have become accustomed to a certain status or condition, will count as a mere nothing in future ages.

#### ALEOCHARIDES.

Antennæ 11-jointed; tarsi 5-5-5-jointed.

#### MASEOCHARA Sharp.

Of this interesting genus we have four species. First, a large form with red elytra, which is without much doubt *semivelutina* Solsky; second, a similar species, having the base of the prothorax equally rounded with the sides, but with the elytra black, described by LeConte under the name *valida* (= *californica* Csy.). Third, a rather smaller and notably more slender species with black elytra, having the basal angles of the prothorax distinct, recently made known by Dr. Sharp under the name *opacella*, and fourth, the following very small species allied to *gracilis* Shp.

**M. puberula** n. sp.—Black, each elytron feebly suffused with rufopiceous toward—but not attaining—the suture; legs throughout and antennæ toward base dark rufopiceous; integuments alutaceous, the elytra rather more shining, the abdomen strongly shining; head and pronotum feebly and sparsely punctate, the elytra more closely and a little more distinctly, the abdomen rather strongly but not densely, the impressed basal areas impunctate; pubescence rather long, coarse and plentiful, conspicuous, though much less so on the abdomen. *Head* orbicular, rather longer than wide, the eyes at fully their own length from the base; antennæ fully as long as the head and prothorax, feebly incrassate, second and third joints equal, tenth one-half wider than long. *Prothorax* one-fourth to one-third wider than long; sides parallel, broadly, evenly arcuate; basal angles obtuse but very distinct,

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founded upon undescribed species may have been more recently accepted, but this would scarcely be a case in point, since the adoption of them took place long after the binomial system was firmly established. To establish a system is quite another matter, and requires the rigorous fulfillment of certain conditions.

scarcely blunt; base broadly arcuate, slightly wider than the truncate apex; disk very obsoletely impressed along the median line throughout. *Elytra* strongly transverse, at base subequal to the prothorax, but, at apex, quite distinctly wider; sides feebly divergent from the base, broadly arcuate; disk externally scarcely as long as the prothorax, the suture much shorter than the median line of the latter, broadly, feebly depressed toward the suture; humeri broadly rounded to the base of the prothorax. *Abdomen* one-half longer than the anterior parts, about equal in width to the elytra; sides parallel, feebly convergent toward apex; first two tergites strongly, widely impressed at base, the third very feebly so; fifth just visibly longer than the fourth. Basal joint of the hind tarsi one-third longer than the second; two to four exactly equal; fifth a little longer than the preceding two together. Length 4.0–5.0 mm.; width 0.85–1.25 mm.

#### Arizona (Benson).

The male above described, has six small slender teeth along the apex of the sixth tergite, but instead of being disposed in two sets of three, with a wider interval in the middle as in the other species, they are here equidistant. The coloration seems to be constant, and the largest and smallest specimens in my series are both females. The rufous cloud on each elytron is extremely feeble.

#### BARYODMA Thoms.

**B. sculptiventris** n. sp.—Rather narrow, parallel, convex, black, a narrow apical margin of the elytra almost imperceptibly rufescent; legs scarcely paler, the tibiae and tarsi dark piceo-rufous; basal joint of the antennae piceous; integuments moderately shining, the abdomen polished; head coarsely and rather closely punctate, the pronotum very finely but deeply, extremely densely and evenly so; elytra more distinctly but still rather finely, very densely and subasperately so; abdomen very coarsely deeply and densely punctured, the coarse punctures of the basal depressions longitudinally coalescent, forming fine strong ridges; pubescence of the pronotum and elytra fine, subrecumbent, very dense and distinct, of the abdomen longer but fine, sparse and very inconspicuous. *Head* orbicular, as long as wide, three-fifths as wide as the prothorax; antennae feebly incrassate, slightly longer than the head and prothorax, third joint obconical, elongate, two and one-half times as long as wide and much longer than the second, tenth scarcely one-half wider than long. *Prothorax* broadly ovoidal, one-half wider than long; sides broadly, strongly arcuate, becoming distinctly convergent in apical half; base broadly, strongly arcuate, much wider than the apex which is feebly arcuate; basal angles obtuse and blunt; disk broadly, evenly convex, without trace of impression. *Elytra* distinctly transverse, slightly wider than the prothorax and about as long as the latter; sides subparallel and broadly arcuate; humeri not distinct. *Abdomen* much longer than the anterior parts, very slightly narrower than the elytra; sides parallel and straight; first three

segments very strongly impressed at base through about one-half of their length; fourth and fifth equal in length. *Legs* rather short; posterior tarsi very much shorter than the tibiæ, with the first joint distinctly shorter than the next three. Length 4.0–4.2 mm.; width 1.2 mm.

New York (Catskill Mts.); North Carolina.

The middle coxæ are moderately distant, the mesosternal process extending nearly to the apex, with its sides becoming parallel, the apex transversely truncate with the angles right and not rounded, the apical margin just visibly bisinuate, the fine acute median carina extending to the tip, the space between the carina and side margins broadly concave. This species is about twice as large as the European *morion* Grav., and has much longer antennæ.

**B. thoracica** n. sp.—Stout, thick, parallel, polished, black, the lateral limbs of the pronotum feebly rufescent from diaphaneity; elytra, tip of the abdomen, legs and basal joint of the antennæ clear pale rufous; head extremely minutely, scarcely visibly, remotely punctate; pronotum very finely, sparsely, uniformly so; elytra strongly, rather closely and asperately; abdomen sparsely, unevenly, subrugosely sculptured; pubescence rather short, not very dense, stiff, inconspicuous, long and sparse on the abdomen. *Head* strongly deflexed, oval, longer than wide, less than one-half as wide as the prothorax, convex; eyes well developed; antennæ long, distinctly incrassate, extending fully to the middle of the elytra, third joint feebly obconical, nearly three times as long as wide, longer than the second, tenth very slightly wider than long. *Prothorax* large, transversely suboval, three-fifths wider than long; sides broadly, strongly arcuate, convergent anteriorly becoming gradually parallel in basal half; base broadly, rather strongly arcuate, much wider than the more feebly arcuate apex; basal angles very obtuse and rounded but not obliterated; disk evenly, strongly convex, without trace of impression. *Elytra* very short, twice as wide as long, not in the least wider than the disk of the pronotum and scarcely more than two-thirds as long as the latter; sides just visibly divergent and arcuate from the base; disk not impressed, the apex transverse. *Abdomen*—when contracted—not longer than the anterior parts, at base as wide as the elytra; sides subparallel, becoming feebly convergent toward apex; first three segments narrowly, deeply impressed along the base; fifth distinctly longer than the fourth. *Legs* rather long; posterior tarsi very long and slender, only slightly shorter than the tibiæ, with the basal joint fully as long as the next three combined. Length (contracted) 3.0 mm.; width 1.1 mm.

Canada (Grimsby).

The abdomen is reflexed from the base. The middle coxæ are moderately distant, the mesosternal process extending nearly to their apices where it is as usual superposed on the tip of the short metasternal projection; the sides of the process are feebly conver-



gent, the apex transversely sinuato-truncate with the angles not rounded, and, along its surface there is a low rounded ridge, extending to the apex and occupying one-third of its entire subapical width. The differences between this and the preceding species are almost certainly subgeneric; the general appearance of *thoracica* is not unremindful of *Oxygoda*.

**B. bipartita** n. sp.—Stout, subfusiform, rufo-piceous in color, the head and abdomen darker and blackish; elytra scarcely visibly clouded with blackish along the suture and toward the flanks; legs pale flavate throughout; antennæ fuscous, paler toward base, the eleventh joint also paler except toward its base; integuments strongly shining, the head finely, strongly, not very densely, the pronotum finely, strongly, evenly and extremely densely punctate; elytra finely, still more densely, subasperately punctate, the abdomen much more coarsely, very densely and subrugosely; pubescence coarse, stiff, dense, short, pale fulvous and distinct, finer darker sparser and inconspicuous on the abdomen. *Head* small, orbicular, not as long as wide, scarcely more than one-half as wide as the prothorax, the eyes large, elongate, at much less than one-half their length from the base; infralateral carina strong, entire; vertex evenly convex; antennæ short but only slightly incrassate, not quite as long as the head and prothorax, the second and third joints equal in length, the first longer and stouter, fourth but little wider than long, six to ten equal, slightly though distinctly transverse, eleventh subconical, rather acute, somewhat longer than the two preceding. *Prothorax* not quite twice as wide as long, the sides strongly convergent, very evenly and moderately arcuate from base to apex; base strongly arcuate, four-fifths wider than the apex, which is less strongly arcuate; basal angles very obtuse, rounded; apical equally obtuse but less broadly rounded; flanks greatly deflexed, the disk completely unimpressed, the fine basal bead distinct. *Elytra* at base equal in width to the prothorax, which is widest at its base, toward apex quite distinctly wider than the prothorax, equal in length, strongly transverse, the humeri concealed; sides feebly divergent, evenly and unusually strongly arcuate throughout; disk flattened toward the middle. *Abdomen* quite distinctly longer than the anterior parts, at base equal in width to the elytral apex; sides feebly convergent and straight to the apex; first two segments only feebly impressed but not more coarsely punctured at base; fifth distinctly longer than the fourth; border thick, moderately deep. *Legs* short; posterior tarsi slightly shorter than the tibiæ, the basal joint barely as long as the next two and slightly longer than the last. Length 3.7 mm.; width 1.3 mm.

Texas (Galveston).

The mesosternal process is moderate in width and extends to the very apex of the coxæ, the apex subtruncate with rounded angles, the median carina entire, strongly elevated and finely compressed. This species greatly resembles an *Oxygoda* in outline. The contrast



between the fine dense punctuation of the anterior parts, and the coarser, beautifully regular sculpture of the abdomen, is very marked.

### RHEOCHARA Rey.

The species described below is assigned provisionally to this genus, although the outer joints of the antennæ are strongly transverse, the first three tergites gradually less strongly impressed at base, the posterior tarsi much shorter than the tibiæ, and the anterior tibiæ entirely devoid of spinules. It will probably form a genus distinct from *Rheochara*, but at present it is not advisable to separate it, as I have no representative of *Rheochara* with which to compare it.

**R. lucifuga** n. sp.—Slender, moderately convex, pale ochreous-yellow, the head piceous and the abdomen with a large very feeble piceous cloud near the apex; apices of the three basal segments paler than the base; surface feebly shining, the abdomen polished; pubescence rather coarse, decumbent, moderately dense, sparser on the abdomen. *Head* ovulate, longer than wide, three-fifths as wide as the prothorax, evenly convex, finely, sparsely punctate; eyes moderate, before the middle; infralateral ridge very strong; ligula with a short thick simple and membranous deflexed process bearing two setæ; terminal supplementary palpal joint distinct; antennæ as long as the head and prothorax, thick, the first three joints gradually decreasing in length, four to ten transverse, increasing greatly in size, the tenth rather strongly transverse, eleventh large, feebly pyriform, as long as the two preceding, outer joints somewhat perfoliate. *Prothorax* one-fourth wider than long, sides subparallel, broadly arcuate, distinctly convergent only in apical third; base broadly arcuate, much wider than the apex; basal angles very obtuse but not obliterated; disk widest just behind the middle, broadly, feebly convex, finely feebly and somewhat closely punctate, not in the least impressed, the edges, except at apex, finely beaded; hypomera slightly visibly from the sides, subhorizontal. *Elytra* one-half wider than long, not distinctly wider and a little shorter than the prothorax; sides subparallel, feebly arcuate; humeri rounded, slightly exposed; disk rather finely but strongly, somewhat closely, subasperately punctate; suture strongly margined, scarcely impressed. *Abdomen*—when extended—not quite twice as long as the anterior parts, very slightly narrower than the elytra; sides just visibly convergent behind the middle; fourth segment a little shorter than the fifth, the latter very remotely punctate; basal impressions not more densely or coarsely punctate. *Legs* moderate; posterior tarsi much shorter than the tibia, slender, with the basal joint fully as long as the next two. Length (extended) 4.8 mm.; width 0.9 mm.

Kentucky (Lexington). Prof. H. Garman.

The mesosternal process is long, extremely slender and acutely pointed, extending to and over the acute apex of the mesosternal

process at about two-thirds the coxal length. This interesting species is said to inhabit caves, but as the eyes are well developed, it probably only seeks their seclusion and darkness during the day.

The genus *Rheochara* seems to be distinct from *Aleochara*, with which it is united in the recent European catalogue.

**POLISTOMA** Steph.

There is considerable variation in the form of the mesosternal process in this genus, the apex being more truncate in the European species, but as the Californian species are intermediate in this respect between them and *maritima*, I have no doubt that the genus *Emplenota* Csy. will have to be suppressed; I have used the name *Polistoma* however, as *Polystoma* is preoccupied. The North American species in my cabinet may be readily separated as follows:—

Basal joint of the hind tarsi short, only slightly longer than the second.

Head very coarsely and conspicuously punctured. Atlantic coast.

**maritima**

Head more finely and sparsely punctured; form broader. Pacific coast.

**arenaria**

Basal joint of the hind tarsi much longer, equal to the next two combined; form still broader, the head and prothorax more transverse, the latter more strongly rounded at the sides; pubescence sparser; antennæ more incrassate; deflexed apical angles of the prothorax very broadly rounded. Pacific coast.....**pacifica**

The species of *Polistoma* throughout the world are remarkably homogeneous in general appearance.

**P. arenaria** n. sp.—Parallel, rather depressed, black, the elytra sometimes with a subquadrate rufescent cloud not attaining the base; antennæ black; legs rufo-piceous toward tip; head and pronotum opaque, extremely densely and minutely granulato-reticulate, rather finely, feebly, sparsely but distinctly punctate; elytra rather less opaque, more strongly and closely punctured; abdomen polished, sparsely finely and unevenly punctate; pubescence rather coarse, long, not dense but conspicuous, arranged transversely on the pronotum. *Head* orbicular, as long as wide, fully four-fifths as wide as the prothorax, parallel and broadly arcuate at the sides; antennæ feebly incrassate, one-half longer than the head, the outer joints not more than one-half wider than long. *Prothorax* feebly transverse, subquadrate, one-fourth wider than long; sides parallel, broadly, feebly arcuate; base and apex equal, the former evenly and very strongly, the latter feebly, arcuate; apical angles strongly deflexed, narrowly rounded; basal extremely obtuse but distinct; disk evenly, feebly convex, somewhat flattened in a broad median area toward

base. *Elytra* moderately transverse, slightly longer and much wider than the prothorax, parallel; humeri distinctly exposed at base; disk flat, deflexed at apex except laterally. *Abdomen* slightly narrower than the elytra, as long as the anterior part of the body, parallel and straight at the sides; border strong; segments subequal. Length 3.6–4.0 mm.; width 0.9–1.1 mm.

California (San Diego and San Francisco).

Easily distinguishable from *pacifica* by the narrow, more parallel form and more conspicuous pubescence. Moderately abundant.

It at first seemed probable that this species might be the same as *Homalota litoralis* of Mäklin, since the elytra are frequently rufous with the base and external sides black, this being the described coloration of *litoralis*; but the phrases “thorace . . . posterius ante basin latissime transversim impresso, confertim subtilissime punctulato” do not find the remotest correspondence, there being no trace of a transverse subbasal impression; the width, also,  $\frac{1}{3}$  line—about  $\frac{3}{4}$  mm.—is not sufficient for *arenaria*.

**P. pacifica** n. sp.—Parallel, moderately depressed, black, the legs rufo-piceous; antennæ picescent toward base; elytra, except laterally, feebly rufo-piceous; sculpture and punctuation as in *arenaria*, the pubescence much sparser and less conspicuous. *Head* much wider than long, scarcely more than three-fourths as wide as the prothorax; eyes at rather more than their own length from the base; antennæ strongly incrassate, the outer joints fully twice as wide as long, one-half longer than the head, shorter and thicker than in *arenaria*, the second joint distinctly shorter than the third. *Prothorax* transverse, nearly one-half wider than long; sides parallel, evenly, strongly arcuate; apex broadly, strongly arcuate; apical angles strongly deflexed, very broadly arcuate; basal extremely obtuse and almost completely obliterated; disk very feebly flattened toward the median line from base to apex. *Elytra* transverse, only slightly wider and longer than the prothorax; sides subparallel, straight; humeri strongly rounded to the prothorax; disk flat, feebly deflexed at apex in the middle. *Abdomen*, when contracted, distinctly shorter than the anterior parts combined, nearly as wide as the elytra; sides parallel and straight; border strong, rather deep; first three segments impressed at base; fifth longer than the fourth. Length (contracted) 3.4 mm.; width 1.15 mm.

California (Sta. Barbara).

The elongate basal joint of the hind tarsi will readily enable one to identify this species. A single specimen taken by Mr. G. W. Dunn.

#### OXYPODA Mann.

The types here assigned to *Oxygota* cannot all be retained as such, for those species having the antennal joints abruptly enlarged

from the fourth, forming a long compact cylindrical club, have the metasternal process between the middle coxæ long and acute, while the others, with slender or feebly incrassate antennæ, have this process either entirely obsolete, or else in the form of an extremely short broad cusp. The former may or may not be congeneric with the European *Mycetodrepa*, of which I do not possess a representative at present, but in any event the three here brought to notice differ greatly among themselves in somewhat important characters. The genus will prove to be very extensive in North America, and I have simply selected at the present time a number of hitherto undescribed forms, for the most part illustrative of groups; these may be known among themselves as follows:—

Antennæ more slender, gradually and generally feebly incrassate toward tip.

Third antennal joint distinctly longer than the second, the antennæ long; abdomen parallel, narrowed slightly at the fifth segment; prothorax widest before the base, the basal angles almost completely obliterated; basal joint of the hind tarsi as long as the next three .....**congruens**

Third antennal joint equal in length to the second, both elongate; antennæ much shorter; elytra distinctly longer than the prothorax.

Prothorax widest before the base; abdomen narrowed from base to apex; basal joint of the hind tarsi as long as the next three...**convergens**

Prothorax widest at base; abdomen parallel, narrowed near the tip; basal joint of the hind tarsi but slightly longer than the next two.

**impressa**

Third antennal joint distinctly shorter than the second.

Elytra longer than the prothorax.

Elytra pale, clouded with black toward the scutellum and toward each flank; abdominal punctures not so dense.....**nubifer**

Elytra uniform in coloration or very nearly so; sides of the elytra perfectly parallel; integuments subopaque .....**saxatilis**

Elytra shorter than the prothorax.

Prothorax subconical, widest at or near the base, where it is a little wider than the elytra.

Abdomen blackish, the apices of the segments narrowly paler.

**glenoræ**

Abdomen rufous, with a large blackish cloud occupying most of tergites three to five; form very slender; size small.....**nigriceps**

Prothorax with the sides perfectly parallel and broadly, evenly arcuate from base to apex, not wider than the elytra; body very small and narrow, piceous and black in color.....**lineata**

Antennæ rapidly enlarged from and including the fourth joint, forming a long, compact, claviform mass.

Antennæ, except near the base, completely devoid of erect setæ, clothed uniformly with excessively minute even pubescence, almost perfectly cylindrical from the fifth joint .....**hudsonica**



Antennæ with short erect setæ as usual, rapidly enlarged from the fourth to the sixth or seventh joints.

Rufo-testaceous, the head and a large subapical abdominal cloud blackish.

**fustiger**

Black; elytra slightly picescent, much paler at the humeri.

**californica**

I have been unable to recognize *sagulata* Er., which is a species apparently allied to *convergens*, but having pale antennæ, with the apical joint obtuse, and a subparallel abdomen, and *minuta* Sachse, which is small, piceous, with the antennæ toward base, legs, elytra and anterior parts of the abdomen testaceous; the latter is probably allied to *nigriceps*, but in that species the pronotum is very pale and the elytra dark. The species described by me as *Oxypoda insignis* is placed further on in the genus *Anepsiota*, allied to *Atheta*, the anterior tarsi being four-jointed.

**O. congruens.**—Moderately stout and convex, parallel, brown, the head and abdomen black, the segments paler at apex above and beneath; legs and antennæ brown, the latter still paler toward base; integuments alutaceous, excessively minutely, densely punctate throughout, the pronotum slightly less densely so and more shining toward base; pubescence throughout very short, fine and dense, subsericeous. *Head* orbicular, rather longer than wide, but little more than one-half as wide as the prothorax, evenly convex; eyes moderate, distant from the base; antennæ long, fully attaining the middle of the elytra, gradually and feebly incrassate, the second joint shorter than the first or third, the latter nearly as long as the next two, tenth joint not distinctly wider than long, eleventh acutely conoidal, barely as long as the two preceding. *Prothorax* transversely suboval, the base moving freely above the elytra, fully three-fourths wider than long, the sides broadly arcuate, becoming convergent and straighter in apical half, the base much wider than the truncate apex, broadly, strongly arcuate, the basal angles almost completely obliterated; apical but slightly deflexed, broadly rounded; disk feebly impressed in the middle before the basal margin. *Elytra* moderately transverse, at base narrower than, at apex equal in width to, the prothorax, slightly longer than the latter; sides distinctly divergent, broadly arcuate, especially near the base; humeri concealed; disk very indefinitely and widely impressed in the middle toward base. *Abdomen* but slightly narrower than the elytra, much longer than the anterior parts; sides straight and parallel to the apex of the fourth segment; first three tergites impressed at base, successively less strongly; fifth slightly longer than the fourth. Length 3.4 mm.; width 1.0 mm.

Montana (Helena); Michigan.

The elytral humeri are frequently a little paler than the other portions of the disk. This species, which appears to be widely dif-



fused, differs from the European *spectabilis* in its much smaller size and far less distinct basal angles of the prothorax.

**O. convergens.**—Rather broad, subfusiform, black; four basal joints of the antennæ and the legs throughout pale; pronotum gradually rufescent toward base; elytra and apices of all the ventral segments pale brownish-rufous; integuments alutaceous, extremely finely feebly and densely punctate throughout, the head and pronotum rather the least densely punctate and more shining; pubescence short, very dense throughout, sericeous on the abdomen, the latter bristling with stiff setæ toward apex. *Head* wider than long, orbicular, evenly convex, scarcely more than one-half as wide as the prothorax; eyes rather large, extending to within one-half their length of the base; antennæ feebly incrassate, as long as the head and prothorax, the first three joints equal in length, fourth subquadrate, five to ten subequal, a little wider, slightly transverse, eleventh rather acutely conoidal, barely as long as the two preceding. *Prothorax* fully two-thirds wider than long, the sides strongly convergent, broadly evenly and strongly arcuate from base to apex; base fully three-fourths wider than the apex, broadly, strongly arcuate, the apex transversely truncate; basal angles obtuse and rather blunt but distinct; disk just visibly wider at basal third than at base, not distinctly impressed. *Elytra* at base slightly narrower, at apex a little broader, than the prothorax, distinctly longer than the latter; sides perceptibly divergent and feebly arcuate from base to apex; humeri completely concealed; external apical sinuations narrow and deep; disk scarcely at all impressed. *Abdomen* at base distinctly narrower than the elytra, at the apex of the fifth segment one-half as wide as the latter; sides perfectly straight; border gradually thicker and deeper from apex to base; two basal tergites very feebly impressed along the basal margin; fifth nearly as long as the third and fourth together. Length 3.0 mm.; width 0.9 mm.

New York (Catskill Mts.).

The abdomen is evenly narrowed from base to apex, and the fifth segment is unusually long. This species cannot be very closely allied to *sagulata*, although it approaches that species, according to description, closer than any other form here described.

**O. impressa.**—Moderately wide and convex, black throughout, the elytra extremely indistinctly picescent; antennæ black; legs rufo-piceous; ventral plates slightly and narrowly pale at apex; integuments but feebly shining, the head, pronotum and elytra finely and densely but rather distinctly punctate, the abdomen much more minutely feebly and excessively densely so; pubescence rather coarse, dense, semi-erect anteriorly, excessively minute and dense on the abdomen, each tergite, in addition, with a transverse apical series of long setæ. *Head* orbicular, evenly convex, nearly as long as wide, slightly more than one-half as wide as the prothorax; eyes rather large, at less than one-half their length from the base; antennæ moderate in length, slightly longer than the head and prothorax, rather slender and feebly in-

crassate, the first three joints subequal in length, fourth slightly longer than wide, outer joints distinctly transverse, the tenth less so than the ninth, equal in width but a little longer, eleventh short, acutely conoidal, not as long as the preceding two. *Prothorax* fully three-fourths wider than long; sides broadly, evenly arcuate and distinctly convergent from base to apex; base fully three-fourths wider than the apex, broadly, strongly arcuate; apex subtruncate; basal angles obtuse and blunt but definite; disk extremely obsolete impressed along the median line, with a large rounded and distinct impression in the middle before the base. *Elytra* slightly transverse, at base exactly equal in width to the prothorax and at apex slightly wider, fully one-third longer; humeri not exposed; disk but feebly, indefinitely and broadly impressed in the middle toward base. *Abdomen* at base distinctly narrower than the elytra, the sides parallel and straight to the apex of the fourth segment; fifth very much longer than the fourth. Length 2.75 mm.; width 0.75 mm.

British Columbia (Glenora). Mr. Wickham.

Readily distinguishable from *congruens* by its smaller size, smaller prothorax with more distinct basal angles, shorter antennæ, longer fifth ventral segment and many other characters.

**O. nubifer.**—Somewhat narrow, subparallel, pale rufo-testaceous, the head piceous; abdomen piceous, broadly pale at tip and at the apices of all the segments; legs pale; antennæ dusky, pale toward base; integuments strongly shining, extremely feebly sculptured; head and pronotum finely and closely but feebly and not conspicuously punctate, the elytra scarcely so densely but more distinctly so, the abdomen minutely, feebly and moderately densely; pubescence short, decumbent, moderately dense. *Head* orbicular, evenly convex, as long as wide, a little more than one-half as wide as the prothorax; eyes at nearly their own length from the base; antennæ short, feebly incrassate, not quite extending to the base of the prothorax, the second joint a little longer than the first and distinctly longer than the third, fourth subquadrate, feebly obconical, five to ten subequal, distinctly wider than long, eleventh long, obtusely ogival, rather longer than the two preceding. *Prothorax* widest at base, two-thirds wider than long, the sides strongly convergent and feebly, evenly arcuate from base to apex; base and apex equally, moderately arcuate, the former two-thirds wider than the latter; basal angles—viewed laterally—very obtuse and blunt but not obliterated, the apical moderately defined, broadly rounded; disk perfectly even, without trace of impression. *Elytra* at base scarcely as wide, but at apex fully as wide, as the prothorax, just visibly longer, slightly transverse; sides subparallel; humeri concealed; apex strongly sinuate near the sides, the edge thence to the inner angles feebly, anteriorly oblique and straight; disk unimpressed, with a black cloud near the scutellum and another longitudinal near the flanks, not attaining base or apex. *Abdomen* just visibly narrower than the elytra, not longer than the anterior parts; sides parallel, the fifth segment slightly narrowed, distinctly longer than the fourth; border thick; posterior edges of tergites

two to four broadly, feebly sinuate. *Legs* rather short; basal joint of the hind tarsi as long as the next two and equal to the fifth. Length 2.5 mm.; width 0.7 mm.

Utah (southwestern).

The trimaculate elytra, pale coloration, feeble punctuation and conical prothorax, with the base rather loosely fitted over the base of the elytra, are distinguishing characters of this rather isolated species.

**O. saxatilis.**—Rather narrow and subparallel, blackish-piceous, the abdomen black, the apices of all the segments paler; legs pale throughout; antennæ dark, pale toward base; integuments densely opaque, finely, very densely punctate, the abdomen not less densely so, the elytra more distinctly; pubescence fine, short, recumbent, extremely dense throughout, the abdomen without longer setæ toward apex. *Head* a little wider than long, well inserted, three-fifths as wide as the prothorax, the eyes moderately large, approaching the base within one-half of their length; antennæ slender, feebly incrassate, loosely articulated, about as long as the head and prothorax, the second joint much longer than the first and nearly as long as the next two, four to six slightly increasing in width, six to ten subequal, slightly transverse, eleventh acutely ogival, as long as the preceding two. *Prothorax* two-thirds wider than long, the sides convergent and distinctly arcuate from base to apex; base broadly arcuate, two-thirds wider than the subtruncate apex; basal angles obtuse but evident; disk not distinctly impressed. *Elytra* throughout the length exactly equal in width to the prothorax, one-third longer; sides parallel, nearly straight; humeri concealed; disk with a small and just visible impression behind the scutellum. *Abdomen* at base slightly narrower than the elytra, at the apex of the fifth segment three-fourths as wide as the latter, distinctly longer than the anterior parts; sides straight and just visibly convergent from base to apex; border rather thick; tergites two to four very feebly sinuate at apex; fifth one-half longer than the fourth. *Legs* slender; posterior tarsi filiform, the basal joint slightly longer than the next two and much longer than the fifth. Length 2.5 mm.; width 0.6 mm.

Colorado (Cañon City). Mr. Wickham.

Readily recognizable by the parallel elytra, very nearly as long as wide, and by the opaque integuments.

**O. glenoraë.**—Narrow and elongate, pale brownish-testaceous, the head darker, rufo-piceous; abdomen blackish, the apices of the segments paler; legs pale throughout; antennæ piceous, paler toward base; integuments feebly shining, extremely minutely and densely punctate throughout, scarcely more distinctly on the elytra; pubescence minute, extremely dense throughout, the abdomen also with a few stiff bristles toward apex. *Head* slightly wider than long, well inserted, evenly convex, not quite two-thirds as wide as the prothorax; eyes moderate, at nearly their own length from the base; antennæ

slender, very feebly incrassate, barely as long as the head and prothorax, the second joint subequal in length to the first and one-third longer than the third, the latter nearly as long as the next two, four to six slightly increasing in width, six to ten subequal, slightly transverse, eleventh acutely ogival, fully as long as the two preceding. *Prothorax* rather large, subconical, the base loosely fitted over the base of the elytra, three-fifths wider than long; sides distinctly convergent and very feebly arcuate from the rather broadly rounded basal angles to the apex; base broadly arcuate, much wider than the apex; disk broadly and extremely obsolete impressed along the median line in about basal half. *Elytra* transverse, at base distinctly narrower, at apex barely as wide as, the elytra, distinctly shorter than the latter; sides divergent and nearly straight from base to apex; humeri completely concealed; disk with a small impression behind the scutellum. *Abdomen* one-half longer than the anterior parts, at base scarcely at all narrower than the elytra, at the apex of the fifth segment three-fourths as wide as the latter; sides almost straight; border rather thick and deep; fifth segment much longer than the fourth. *Legs* moderate; posterior tarsi scarcely at all shorter than the tibiæ, with the first joint almost as long as the entire remainder; two to four short and equal. Length 2.9 mm.; width 0.7 mm.

British Columbia (Glenora). Mr. Wickham.

The extremely elongate basal joint of the hind tarsi and large conical loosely fitted prothorax, will readily lead to the identification of this species, which may possibly be referred to the subgenus *Sphenoma*.

**O. nigriceps.**—Slender, subfusiform, convex, the head and antennæ black, the latter pale toward base; pronotum pale flavo-testaceous throughout; elytra much darker, piceous; abdomen with the two basal segments dark rufo-testaceous, the remainder black, with the apices narrowly paler; integuments moderately shining, the head polished, rather coarsely, not very densely punctate; pronotum more finely, very densely, the elytra more distinctly but finely, subasperately and extremely densely, the abdomen minutely densely subasperately and less distinctly; pubescence fine, extremely short, rather dense but inconspicuous, the abdomen bristling with long setæ toward tip. *Head* slightly wider than long, scarcely three-fifths as wide as the prothorax, evenly, strongly convex, the eyes moderate, at about their own length from the base; antennæ short, rather slender, feebly, gradually incrassate and rather compact, not more than one-half longer than the head, the first two joints subequal in length, the second distinctly longer than the third, fourth to tenth feebly, gradually increasing in width, the latter nearly twice as wide as long, eleventh short, obtusely ogival, about as long as the two preceding. *Prothorax* large, rather more than one-half wider than long, the sides strongly convergent and feebly arcuate from base to apex; base broadly arcuate, much wider than the apex, the basal angles obtuse and rather broadly rounded; disk with an extremely obsolete impression in the middle before the base. *Elytra* distinctly shorter than the prothorax, and, throughout the length,



visibly narrower; sides subparallel and feebly arcuate; humeri wholly concealed; disk feebly, transversely convex. *Abdomen* fully one-half longer than the anterior parts, at base nearly as wide, and at the apex of the fifth segment two-thirds as wide, as the elytra; sides straight; border rather thick; fifth segment two-thirds longer than the fourth. *Legs* rather short and thick, the hind tarsi much shorter than the tibiæ, with the first joint a little longer than the next two. Length 2.0 mm.; width 0.45 mm.

Rhode Island (Boston Neck).

Readily separable from *minuta* Sachse, by the pale prothorax and dark elytra. The antennæ are unusually short.

**O. lineata.**—Narrow and sublinear, convex, black, the pronotum piceous-black, the elytra feebly rufescent; antennæ pale at base; legs pale flavo-testaceous throughout; integuments feebly shining, the pronotum and abdomen extremely minutely and excessively densely punctate, the elytra equally densely but rather more strongly and subasperately, the head a little less finely and more sparsely; pubescence extremely minute, dense, the abdomen as usual with an apical fringe of longer hairs on each tergite, but having only a very few longer setæ toward apex. *Head* as long as wide, evenly convex, fully three-fourths as wide as the prothorax; eyes moderate, at more than their length from the base; antennæ rather long, loose, feebly incrassate, extending to basal third of the elytra, the third joint elongate, only slightly though visibly shorter than the second, joints increasing only very slightly in width toward apex, six to ten quite distinctly wider than long, the eleventh rather large, ogival at tip, fully as long as the two preceding. *Prothorax*—from above—only one-third wider than long, the sides parallel and evenly, broadly arcuate, widest at the middle; base and apex equal, feebly arcuate, the former fitted rather closely to the elytral depression; basal angles obtuse and blunt but very evident; disk not distinctly impressed. *Elytra* short and transverse, quite distinctly shorter than the prothorax, at base as wide as the prothorax, and, at apex, just visibly wider; sides perceptibly divergent and straight from base to apex; humeri not exposed; disk broadly, feebly impressed along the suture in more than basal half. *Abdomen* nearly one-half longer than the anterior parts, at base distinctly narrower than the elytra; sides subparallel, narrowed toward apex; border moderate; fifth segment one-half longer than the fourth; sixth greatly visible, a little narrowed and parabolic but as long as the fifth. *Legs* moderate in length, slender, the hind tarsi but slightly shorter than the tibiæ, with the first joint a little longer than the next two. Length 2.1 mm.; width rather more than 0.4 mm.

Rhode Island.

This species is rather aberrant, not only in the subquadrate form of the prothorax, but in the total absence of the infralateral carina of the head. I cannot see, however, that it differs otherwise from *Oxypoda*.



**O. hudsonica.**—Moderately stout, subparallel, convex, pale flavo-testaceous throughout, the abdomen more rufous and less flavate, with a small dark cloud occupying about the fourth tergite; integuments polished, the head and pronotum minutely and sparsely punctate, the elytra finely, densely, feebly but subasperately, the abdomen rather coarsely, strongly, distinctly and not very densely; pubescence rather coarse, moderately dense, denser on the elytra. *Head* longer than wide, evenly convex, a little more than one-half as wide as the prothorax, the eyes moderate, black, at more than their own length from the base; antennæ very thick, cylindrical, scarcely longer than the head and prothorax, the third joint but slightly shorter than the second but strongly, evenly obconical, not twice as long as wide, four to six very short and transverse, gradually wider, seven to ten equal, cylindrical, gradually a little longer but not wider, strongly transverse, eleventh obtuse at apex, fully as long as the preceding two. *Prothorax* two-fifths wider than long, the sides feebly convergent, evenly and distinctly arcuate from the broadly rounded basal angles to the apex; base and apex broadly arcuate, the former perceptibly the wider; disk very strongly, evenly convex, without trace of impression. *Elytra* moderately transverse, at base distinctly narrower, but at apex just visibly wider than, the prothorax, distinctly shorter; sides slightly divergent, broadly arcuate toward base; humeri concealed; disk with a small sutural impression behind the scutellum. *Abdomen* one-half longer than the anterior parts, at base but slightly narrower than the elytra, and, at the apex of the fifth segment, almost four-fifths as wide; sides nearly straight; border rather thick; fifth segment but slightly longer than the fourth. *Legs* somewhat stout; hind tarsi slightly shorter than the tibiæ, with the basal joint as long as the next three. Length 2.7 mm.; width 0.75 mm.

New York (near the city).

The infralateral carina of the head is fine but strong and entire, and the facets of the eyes are rather larger and more convex than usual. The thick antennæ, with their very peculiar and excessively minute dense vestiture, totally devoid of erect setæ, render this species quite aberrant.

**O. fustiger.**—Subparallel, convex, polished throughout, pale testaceous, the head piceous; abdomen more rufous, blackish behind the second segment except at tip; head finely, sparsely, the pronotum finely, rather less sparsely, feebly but subasperately punctate, the elytra more strongly, subrugosely but not more densely, the abdomen rather strongly, subasperately and not densely so; pubescence coarse, inclined, not very dense, longer and still sparser on the abdomen, the latter without subapical bristles. *Head* wider than long, three-fifths as wide as the prothorax; eyes normal, at nearly their own length from the base; antennæ short, very thick, scarcely as long as the head and prothorax, the basal joint oblong-oval, nearly as long as the next two, second thinner, one-half longer than wide and perceptibly longer than the third, which is slightly elongate and obconical, fourth wider, strongly transverse, fifth similar but wider, sixth to tenth longer than the fourth or fifth, compact,

very strongly transverse, eleventh short, not longer than wide, obtusely and obliquely ogival, scarcely as long as the two preceding, outer joints with short erect setæ in addition to the minute pubescence. *Prothorax* three-fifths wider than long; sides distinctly convergent, evenly and rather strongly arcuate from base to apex; base broadly, strongly arcuate, much wider than the truncate apex; basal angles obtuse, blunt but very evident; disk strongly, evenly convex, without impressions. *Elytra* throughout equal in width to the prothorax, distinctly longer, nearly quadrate; sides subparallel, almost straight; humeri not exposed. *Abdomen* about as long as the anterior parts, at base almost as wide as the elytra; sides feebly convergent from base to apex and just visibly arcuate; fifth segment but slightly longer than the fourth; under surface sparsely, deeply and coarsely punctate and sparsely clothed with long coarse hairs. Length 2.3 mm.; width 0.7 mm.

California (Humboldt Co.).

Differs from the preceding species in the gradually wider and sparsely setose outer joints of the antennæ, and in the structure of the basal joints. A single specimen of undetermined sex.

**O. californica.**—Somewhat fusiform, convex, highly polished throughout, black, the elytra piceous, testaceous at the humeri and along the suture near the apex; abdominal tip scarcely at all paler; legs pale; antennæ black, pale toward base; head and pronotum minutely feebly and sparsely punctate, the elytra finely but a little more strongly and still more sparsely so; abdomen finely, scarcely distinctly and sparsely; pubescence somewhat long, subrecumbent, coarse and sparse. *Head* orbicular, as long as wide, evenly convex, nearly three-fourths as wide as the prothorax, the eyes at less than their length from the base; antennæ fully as long as the head and prothorax, stout, feebly setulose and finely pubescent, the first joint small, elongate-oval, longer than the second, the latter twice as long as wide and distinctly longer than the third, fourth and fifth very short and transverse, increasing in width, sixth to tenth subequal in length and width, longer than either the fourth or fifth and not more than twice as wide as long, eleventh short, obtusely and obliquely ogival, about as long as the two preceding. *Prothorax* rather small, three-fourths wider than long, the sides convergent and arcuate from the broadly rounded and almost obsolete basal angles; base and apex broadly arcuate, the former much the wider; disk evenly, strongly convex, unimpressed, the basal bead strong. *Elytra* large, but slightly wider than long, one-fourth wider and rather more than one-half longer than the prothorax; sides subparallel; humeri quite distinctly exposed, rounded; disk strongly and widely impressed on the suture in more than basal half. *Abdomen* as long as the anterior parts, at base much narrower than the elytra, and, at the fifth segment, one-half as wide as the latter; sides feebly convergent from base to apex and just visibly arcuate; fifth segment distinctly longer than the fourth. *Legs* rather long, very slender; femora unusually narrow; hind tarsi two-thirds as long as the tibiæ, with the first joint longer than the next two but shorter than the fifth. Length 1.9 mm.; width 0.7 mm.

California.

The antennæ are not as stout as in *fustiger*, and have the outer part more cylindrical, and, in addition, the prothorax is much smaller, the elytra larger and the coloration wholly different. This is the most sparsely punctate and polished species of *Oxypoda* which I have seen.

**ACHROMOTA** n. gen.

Body fusiform, moderately convex. Head small, but feebly constricted at base, not inserted deeply in the prothorax; eyes well developed; infralateral carina almost obsolete. Antennæ long and slender, scarcely perceptibly incrassate, setose, the first three joints elongate. Mentum rather large, trapezoidal, broadly sinuate at apex. Maxillary palpi well developed, the third joint slightly longer than the second; fourth very slender, unusually long, oblique, more than one-half as long as the third, simple at apex. Ligula imperfect in the type. Prothorax transversely suboval, the hypomera broad, strongly inflexed and invisible from the side posteriorly, but becoming horizontal anteriorly. Elytra well developed. Abdomen gradually narrowed almost from the base; border rather deep; first tergite broadly impressed at base, shorter than the second, the others completely unimpressed at base; fifth just visibly longer than the fourth. Coxæ large, the intermediate very approximate but not contiguous, the mesosternal process not extending behind the middle. Metasternum not advanced between the coxæ, the fine beaded line merely feebly arcuate opposite the intercoxal space, the surface thence to the mesosternum transversely convex, the parapleuræ rather wide, parallel to the elytra, the epimera not projecting behind the elytra. Legs rather long and slender; tarsi slender, 5-5-5-jointed, the posterior slender but much shorter than the tibiæ, with the first four joints slightly elongate and as nearly as possible perfectly equal, the fifth very long, longer than the two preceding combined; claws moderately long, slender, evenly arcuate.

It seemed possible at first that the type of this genus might enter *Oxypoda* as an aberrant member or subgenus, but the tarsal structure is so radically different that it is impossible to place it there. In fact there is no European genus near *Oxypoda* which has the posterior tarsi constituted in any way approximating this, but for the present it may be considered as allied to *Thiasophila*. The anterior tarsi are five-jointed, apparently without the slightest

doubt, which will prevent us from placing the genus among the allies of Colpodota.

**A. fusiformis** n. sp.—Rather stout, black, the elytra just visibly rufopiceous; legs and antennæ throughout pale; integuments finely but not strongly reticulate, rather shining, the head very sparsely, obsoletely punctate, more coarsely so toward the sides and base; pronotum finely, not densely and obsoletely, the elytra strongly, closely and asperately punctate, the abdomen more sparsely, feebly and subasperately, very sparsely so toward apex; pubescence short, coarse, decumbent, moderately distinct, sparser on the abdomen, the latter bristling with long erect setæ toward apex. *Head* orbicular, wider than long, about three-fifths as wide as the prothorax, strongly, evenly convex; eyes not prominent, at rather less than their own length from the base; antennæ long, slender, fully attaining the middle of the elytra, the fourth and fifth joints longer than wide, about two-thirds as long as the third, outer joints rather loosely connected, very feebly increasing in width, the tenth not distinctly wider than long, eleventh pointed, as long as the two preceding. *Prothorax* three-fourths wider than long; sides broadly arcuate, subparallel toward base, becoming straighter and distinctly convergent in apical half; base broadly, strongly arcuate, much wider than the truncate apex, becoming feebly subsinuate near the basal angles, which are obtuse and slightly rounded; apical angles only feebly deflexed, rounded; disk transversely, strongly convex, very obsoletely impressed along the median line toward the middle, the posterior margin strongly beaded. *Elytra* two-fifths wider than long, at base scarcely as wide as the pronotal disk, but at apex distinctly wider, about one-third longer; sides distinctly divergent, subarcuate; humeri concealed; disk rather strongly, indefinitely impressed on the suture behind the scutellum. *Abdomen* equal in length to the anterior parts, at base slightly narrower than the elytra, the apex of the fifth segment scarcely more than one-half as wide as the elytral apex; tergites, except the first, perfectly even, not impressed, broadly, feebly convex toward the abdominal apex. Length 2.1 mm.; width 0.75 mm.

New York (near the city). Mr. H. H. Smith.

The single specimen in my cabinet has no sexual marks of prominence; the sixth tergite is feebly exerted, much narrower than the fifth, with its apex feebly, evenly sinuato-truncate.

#### **THIASOPHILA** Kraatz.

The American species of this genus resemble the European *angulata* Er., in all essential points of structure, sculpture and vestiture, but have the prothorax a trifle wider near the base, and the abdomen more parallel and much more distinctly narrower than the elytra. The genus is widely diffused throughout the subarctic



portions of the continent. The three species here brought to notice may be readily distinguished as follows:—

Elytra but slightly longer than the prothorax, the apical angles of the latter blunt but rather distinct; antennæ shorter and less incrassate.

Abdomen less elongate, slightly narrower than the elytra, strongly distinctly and moderately densely punctate, the dorsal plates strongly transverse.

**laticollis**

Abdomen longer, much narrower than the elytra, very finely densely and indistinctly punctate, the dorsal plates less than twice as wide as long.

**angustiventris**

Elytra decidedly longer than the prothorax, the apical angles of the latter more broadly rounded; abdomen nearly as in *laticollis*, but differing conspicuously in coloration; size small.....**asperata**

I am unable at present to say anything about the habits of these insects, but in Europe they are generally inquilinous with ants.

**T. laticollis** n. sp.—Rather stout and convex, dark piceo-rufous, the abdomen uniformly blackish but pale at the apex; legs and antennæ rufotestaceous, the latter just visibly clouded toward the middle; head finely but strongly, the pronotum more finely and very densely, the elytra strongly densely and subsparately punctate; abdomen with imbricate sculpture, gradually disappearing behind, the punctures fine but strong, isolated and distinct, sparse toward tip; pubescence very short, stiff and rather dense. *Head* orbicular, not as long as wide, but slightly more than one-half as wide as the prothorax; eyes large, prominent, at less than their own length from the base; tempora convergent and broadly rounded behind them; antennæ a little longer than the head and prothorax, rather slender, feebly incrassate, the joints somewhat compactly united, the first and third subequal, longer than the second, fourth and fifth slightly longer than wide, tenth scarcely visibly wider than long, eleventh as long as the two preceding, pointed, constricted just beyond the middle. *Prothorax* transverse, not quite twice as wide as long, the apex subtruncate, about three-fourths as wide as the base, the latter broadly, feebly arcuate, distinctly sinuate near the basal angles, which are nearly right though slightly blunt; sides convergent and feebly arcuate in apical two-thirds, just visibly convergent in basal third; disk even. *Elytra* transverse, at base quite distinctly narrower than the prothorax, slightly longer than the latter; sides just visibly arcuate; disk rather convex, feebly, indefinitely impressed on the suture toward base. *Abdomen*—when contracted—scarcely as long as the anterior parts, parallel, slightly but distinctly narrower than the elytra, the border thick; first three segments feebly and gradually less distinctly impressed at base; fourth and fifth equal. Length 2.7 mm.; width 0.8 mm.

New York.

The single specimen is of undetermined sex; it represents a larger broader and more distinctly sculptured species than the following.



**T. angustiventris** n. sp.—Rather convex, dark red-brown, the abdomen darker with the apex pale; legs and antennæ throughout pale brownish-flavate; anterior parts rather dull, finely, extremely densely but somewhat distinctly, subasperately punctate, the elytra a little less densely and subrugosely; abdomen more shining, minutely, much less closely punctulate; pubescence very short but somewhat coarse and close, distinct, long and sparsely fimbriate at the apices of the abdominal segments. *Head* wider than long, three-fifths as wide as the prothorax; antennæ much longer than the head and prothorax, moderately incrassate. *Prothorax* fully three-fourths wider than long, the sides very feebly convergent from base to apex, broadly, nearly evenly arcuate from above, widest just behind the middle; apex broadly sinuate; apical angles deflexed, obtuse, not rounded; basal obtuse, rather prominent, not in the least rounded; base broadly arcuate, just visibly sinuate near the basal angles; disk broadly, evenly convex. *Elytra* one-half wider than long, broadly, deeply emarginate at apex, very slightly longer than the prothorax and equally wide; sides subparallel, very feebly arcuate; base equal to the pronotal base; humeri not in the least visible; disk transversely convex, just visibly impressed behind the scutellum. *Abdomen* at base much narrower than the elytra, much longer than the anterior parts; sides parallel and straight but convergent toward apex; border thick. Length 2.0–2.4 mm.; width 0.6 mm.

Rhode Island; Florida; Iowa.

Readily identifiable by the wide convex pronotum and elytra and abruptly narrow parallel abdomen; the prothorax is less strongly narrowed anteriorly than in *laticollis*.

**T. asperata** n. sp.—Subparallel, somewhat convex, red-brown; legs and antennæ throughout pale, flavescent; head piceous; abdomen brighter red, with the fourth segment piceous-black; head and abdomen very minutely, sparsely punctulate; pronotum and elytra strongly, asperately, densely and equally punctured; pubescence short, stiff, subrecumbent, rather dense and distinct, sparse on the abdomen. *Head* orbicular, as long as wide, three-fifths as wide as the prothorax; antennæ moderately incrassate, much longer than the head and prothorax, outer joints slightly transverse. *Prothorax* rather more than three-fourths wider than long, throughout nearly as in *angustiventris*, but with the apical angles distinctly rounded when viewed laterally, and the basal obtuse and just visibly blunt. *Elytra* scarcely as wide as the prothorax and fully one-third longer, the apex transversely truncate, just visibly sinuate toward the middle and deeply so near each external angle; sides parallel and almost straight; humeri not in the least exposed; base equal to the pronotal base; disk not distinctly impressed and but slightly more than one-third wider than long. *Abdomen* only slightly but distinctly narrower than the elytra, scarcely longer than the anterior parts; sides straight and parallel, feebly convergent toward apex; first five segments exactly equal in length. *Legs*, coxæ and tarsi as in *angustiventris*. Length 2.0 mm.; width 0.5 mm.

California (Lake Tahoe and Truckee).

A much smaller species than *laticollis*, with more rounded apical angles of the prothorax and somewhat longer elytra; the pronotal sculpture is coarser than in *angustiventris*.

**ISOGLOSSA** n. gen.

Body rather stout, subfusiform, convex. Head small, not at all constricted at base, well inserted, the eyes large, sparsely setose, at less than their own length from the base; labrum very short, transversely arched and feebly produced in the middle in a rounded lobe; infralateral carina strong. Antennæ long, very feebly incrassate, the first three joints long, subequal in length; fourth feebly obconical, longer than wide; outer joints moderately close, scarcely visibly wider than long; eleventh conoidal, pointed, barely as long as the two preceding. Mentum large, transversely trapezoidal, truncate; ligula with a slender deflexed and simple terminal process; labial palpi slender, three-jointed. Maxillary palpi normal, the fourth joint long and distinct. Prothorax feebly transverse, the basal angles rounded; hypomera subhorizontal, in part visible from the side. Elytra large and well developed. Abdomen feebly narrowed from the base, the first three segments impressed at base; fifth longer than the fourth. Anterior coxæ very large; intermediate almost completely contiguous. Metasternum large, the side-pieces moderate in width, parallel, not extending beyond the elytra. Legs long; tibiæ densely clothed with even and equal stiff inclined setæ, not in the least spinulose; tarsi 5-5-5-jointed, slender, the posterior distinctly shorter than the tibiæ, with the basal joint very long, equal to the last and rather longer than the next two together; claws long, slender, feebly arcuate.

The feeble inflexion of the hypomera seems to ally this genus to *Thiasophila* and *Stichoglossa*, particularly the latter, but the antennæ are much more elongate and the sculpture and facies very different.

**I. arcuata** n. sp.—Stout, polished throughout, dark piceous-brown, the antennæ concolorous but paler toward base; abdomen black, with the apices of the first three segments slightly pale; legs pale flavate throughout; head and pronotum very minutely, extremely sparsely punctate, the elytra rather more reticulate, the reticulations transverse, more strongly, rather closely punctate; abdomen finely, not densely punctate, the punctures extremely remote toward apex; head, pronotum and abdomen coarsely, extremely sparsely pubescent, the elytra more finely and decidedly densely so. *Head* barely

three-fourths as wide as the prothorax, distinctly transverse; antennæ much longer than the head and prothorax combined, the eleventh joint not paler. *Prothorax* transversely subelliptical, one-half wider than long; sides subparallel, a little more convergent anteriorly, strongly arcuate from above; base slightly wider than the apex, strongly, evenly arcuate throughout, not at all sinuate near the basal angles, which are very obtuse and distinctly rounded; apical angles strongly deflexed, even somewhat inflexed, broadly rounded; disk strongly convex, with the median line very feebly impressed and a large rounded and rather strongly impressed dent in the middle just before the base. *Elytra* large, but slightly wider than long, one-fifth wider and nearly one-half longer than the prothorax, at base fully as wide as the pronotal disk; humeri very slightly visible, rounded; sides subparallel, slightly arcuate; apex subtruncate, the lateral sinuations distinct; disk subconvex, broadly, strongly impressed along the suture, especially toward base. *Abdomen* quite distinctly shorter than the anterior parts, not more than three-fourths longer than the elytra when moderately contracted, at base slightly narrower than the elytra; sides convergent and just visibly arcuate to the apex, the apex of the fifth segment barely two-thirds as wide as the first; border strong. Length 3.0 mm.; width 0.95 mm.

California (Lake Tahoe).

The large elytra, transversely elliptical and polished pronotum, with the pronounced rounded subbasal indentation and long antennæ will readily distinguish this species.

#### **OCYUSA** Kraatz.

The following species agrees satisfactorily in form and structural characters with *O. procidua*, but has a totally different system of sculpture; there appears, however, to be considerable disparity among the European species, which have been separated into subgenera by Rey.

**O. asperula** n. sp.—Subparallel, rather stout, compact and convex, black, the legs and basal parts of the antennæ dark rufo-testaceous, polished, the punctures of the head and pronotum fine, not very dense and strongly granuliform, of the elytra sparse, strongly asperate, of the abdomen coarser, nearly normal, not dense but coarser and very dense on the fourth and fifth segments toward base; pubescence fine, sparse but rather long. *Head* transversely orbicular, distinctly shorter and narrower than the prothorax; sides parallel and rounded; eyes at rather more than their own length from the base; antennæ nearly as long as the prothorax and elytra, thick toward apex, second joint fully one-half longer than the third, the latter obconical, twice as long as wide, fourth obconical, slightly longer than wide, four to ten subequal in length but evenly, perfectly gradually and conspicuously increasing in width, the tenth strongly transverse, eleventh ogival, obtuse. *Prothorax*

large and evenly, strongly convex, nearly one-half wider than long, widest just before the middle, the sides feebly convergent and nearly straight thence to the base, broadly rounded to the apex which is broadly arcuate; base arcuate, rather wider than the apex; basal angles obtuse and slightly rounded. *Elytra* strongly transverse, slightly shorter than the prothorax, at base just visibly narrower than the latter but equal at apex, the sides very feebly divergent, nearly straight. *Abdomen* a little longer than the anterior parts, as wide as the elytra; sides subparallel but convergent behind; border thick toward base; first three segments impressed at base; fifth longer than the fourth. *Legs* moderate; tarsi all distinctly five-jointed, the posterior slender, distinctly shorter than the tibiæ, the first joint fully as long as the next two; middle coxæ very slightly separated, the mesosternal process acute, prolonged for nearly two-thirds their length, with the apex slightly free. *Ungues* long, very slender, feebly and evenly arcuate. Length 1.6–1.75 mm.; width 0.6 mm.

Iowa; Rhode Island.

Rather abundant and probably occurring in moss. The infra-ocular ridge is very strong and well developed, the hypomera feebly inflexed and visible from the side.

#### PHLÆOPORA Erichs.

A specimen before me labeled "North Carolina," agrees very well with the original description of *latens* Er., but has the elytra gradually paler from base to apex and the body rather smaller, measuring only 1.8 mm., while Erichson gives the length as "1¼ lin.;" the first four segments of the abdomen are almost equally impressed at base. The following is a larger, more linear species, altogether different in facies, but having all the principal structural features of *Phlæopora*:—

**P. ferruginea** n. sp.—Pale yellowish-ferruginous, the head a little darker; abdomen brighter rufous, with a subapical piceous cloud; legs pale; antennæ fuscous, pale toward base; head and pronotum finely, densely reticulate and dull, very minutely, indistinctly punctate, the latter almost opaque; elytra a little less dull, very minutely, densely but quite distinctly punctate, the abdomen shining, finely, subasperately, rather closely punctate, with the pubescence long, sparse but distinct; pubescence of the anterior parts fine, short, dense and distinct but not conspicuous. *Head* much shorter and narrower than the prothorax, the antennæ as long as the head and prothorax, not very stout; eyes at their own length from the base. *Prothorax* fully one-third wider than long, widest just before the middle, the sides broadly, evenly rounded to the apex which is broadly and feebly arcuate, distinctly convergent and very feebly sinuate to the base, the latter broadly arcuate and slightly wider than the apex; basal angles obtuse; disk evenly convex. *Elytra* distinctly wider than long, scarcely perceptibly wider and longer than



the prothorax; sides subparallel, very feebly arcuate; humeri slightly exposed; disk indefinitely impressed along the suture toward base. *Abdomen* long, very much longer than the anterior parts, slightly narrower than the elytra; sides straight and parallel; border thick; dorsal plates scarcely twice as wide as long. Length 2.3 mm.; width 0.5 mm.

#### Pennsylvania.

The large opaque prothorax, about as wide before the middle as the elytra, and long testaceous abdomen with subapical cloud, will render the identification of this species at all times easy. It is probable that *ferruginea* will be regarded as forming a subgenus of *Phlœopora*, and I therefore give below some of its more important structural characters:—

Body linear, thick and convex. Head parallel at the sides, rounded and constricted behind, not deeply inserted, the neck not quite two-thirds as wide as the head; eyes moderate, before the middle; infralateral carina obsolete. Antennæ short, slender, very feebly incrassate, the second joint about as long as the next two; third obconical, twice as long as wide; outer joints strongly transverse, not very densely pubescent and with intermixed short stiff setæ; eleventh small, compressed, conoidal, as long as the two preceding. Mentum moderate, transverse, trapezoidal. Maxillary palpi normal. Ligula with a cylindrical process, which is extremely minutely cleft at apex. Pronotal hypomera feebly inflexed and distinct viewed laterally, narrowed but not obsolete near apex and thence widening and distinct along the oblique apical parts to the neck. Abdomen with the first four segments equally and rather strongly impressed at base; fifth very slightly longer than the fourth. Intermediate coxæ very narrowly separated. Metasternum ample, the episterna moderate, parallel; epimera nearly as wide behind as the episterna, disappearing under the elytra at the middle. Legs rather short, femora noticeably stout; tibiæ slender; tarsi 5-5-5-jointed, the posterior very slender, three-fourths as long as the tibiæ, with the first joint as long as the next two, the fifth as long as the first two together.

#### **NASIREMA** n. gen.

. Body slender, parallel, rather convex. Head orbicular, feebly constricted at base, the neck very wide; eyes small, at twice their length from the base; infralateral carina very feeble, not entire; labrum short and transverse. Antennæ strongly thickened toward



apex, distant at base, the second joint much longer than the third, the latter strongly obconical, not twice as long as wide; third to tenth very short, perfoliate and transverse; eleventh oblong, not compressed, obtuse at apex, rather longer than the two preceding; pubescence toward tip very short dense and uniform, without trace of erect setæ. Maxillary palpi moderate, normal; second and third joints equal in length; fourth oblique, distinct. Mentum very short and transverse, trapezoidal, truncate. Ligula with an acutely triangular median process; labial palpi small, very slender, three-jointed, the last joint as long as the two preceding. Prothorax small, the hypomera feebly inflexed, distinct when viewed laterally, terminating at apical fourth. Elytra well-developed. Abdomen parallel, the first three segments equally and strongly impressed at base; fifth much longer than the fourth; second not longer than the first. Mesosternal process extending between the narrowly separated coxæ for nearly two-thirds of their length, with the apex slightly blunt. Metasternum large. Legs short, rather stout, hairy; tarsi 5-5-5-jointed, the posterior short, very much shorter than the tibiæ, the first joint not longer than the next two together, the fifth longer than the preceding two; ungues long, slender, simple and feebly arcuate.

This genus is closely allied to *Phlœopora*, but differs in its less depressed body, thicker and non-setulose antennæ, much more abbreviated hypomera, smaller eyes, broader neck, and in having only three of the abdominal segments deeply impressed at base.

**N. humilis** n. sp.—Narrow, rufo-ferruginous, the head and abdomen except at apex darker, more piceous; antennæ throughout and legs flavate; integuments feebly shining, finely, moderately densely, subasperately punctate, distinctly and rather densely pubescent, the hairs subrecumbent, and, on the pronotum, streaming transversely from the median line. *Head* small, nearly as long as wide, much smaller than the prothorax, convex, even, the antennæ as long as the prothorax and elytra. *Prothorax* small, but slightly wider than long, widest just before the middle, the sides broadly arcuate and feebly convergent anteriorly to the apex, feebly convergent and slightly sinuate behind the middle to the basal angles, which are obtuse and slightly blunt; base broadly, feebly arcuate; disk evenly, rather strongly convex, very obsoletely, transversely impressed near the base before the scutellum. *Elytra* slightly wider than long, two-fifths longer and fully one-third wider than the prothorax; sides parallel, very feebly arcuate; humeri distinctly exposed at base. *Abdomen* longer than the anterior parts, in the middle subequal in width to the elytra; sides parallel, slightly arcuate; border thick; surface transversely convex, more shining. Basal joint of the hind tarsi not as long as the next two. Length 2.0 mm.; width 0.5 mm.

## Pennsylvania.

The single representative is probably a female, but the species is very easily recognizable by reason of the peculiar form of the prothorax, and the disposition of its vestiture.

**N. parviceps** n. sp.—Slender, thick, convex, black, the legs and antennæ throughout dark rufo-testaceous; integuments rather shining; pubescence fine, somewhat long, subrecumbent and conspicuous; punctuation minute, moderately close, not conspicuous. *Head* small, orbicular, evenly convex, much shorter and distinctly narrower than the prothorax; eyes moderate, at nearly twice their length from the base; antennæ stout, nearly as long as the prothorax and elytra; second joint as long as the next two, third strongly obconical, longer than wide, four to ten forming a long, evenly cylindrical, subperfoliate club, transverse, eleventh oblong, obtuse; joints from the fourth clothed with minute dense and even pubescence, without sparse setæ. *Prothorax* very nearly as long as wide, widest at apical third, thence broadly arcuate around the entire apex, feebly convergent and nearly straight to the obtuse basal angles; base broadly arcuate; disk evenly convex, the pubescence oblique. *Elytra* parallel, slightly wider than long, one-third longer and nearly one-half wider than the prothorax; humeri distinctly exposed and transverse at base; disk strongly impressed just behind the scutellum. *Abdomen* parallel, slightly but noticeably narrower than the elytra, subequal in length to the anterior parts, the first three segments deeply, the fourth very feebly impressed at base; fifth a little longer than the fourth. *Legs* moderate; basal joint of the hind tarsi as long as the next two combined. Length 2.0 mm.; width 0.6 mm.

## Rhode Island.

Readily distinguishable from the preceding by its entirely black coloration, slightly less slender form, much longer prothorax, widest more anteriorly, and by many other characters.

**OCALIA** Erich.

The species here brought to notice resembles the European *puncticollis* in general habitus, but differs apparently in the extremely short and broadly angulate metasternal process behind the middle coxæ.

**O. vancouveri** n. sp.—Moderately narrow, convex, black, the legs and basal parts of the antennæ rufo-testaceous; integuments polished; head and pronotum very finely and rather sparsely punctate, the elytra more coarsely and decidedly densely so, the abdomen very finely and sparsely; pubescence short, decumbent, moderately close, very sparse on the abdomen. *Head* orbicular, as long as wide, slightly shorter and narrower than the prothorax, convex; eyes at a little more than their length from the base; antennæ long and

slender, very slightly incrassate, rather more than attaining the middle of the elytra, the first three joints elongate, subequal, the first slightly the stoutest, fourth distinctly longer than wide, tenth just visibly wider than long, eleventh small, conoidal, pointed, not as long as the two preceding. *Prothorax* but slightly wider than long, widest just before the middle, the sides broadly arcuate and distinctly convergent anteriorly, much more feebly convergent and distinctly sinuate to the base which is broadly arcuate and much wider than the apex; apical angles greatly deflexed and rounded; basal obtuse and distinctly rounded; disk strongly convex, very obsoletely impressed along the median line, with a feeble rounded impression in the middle just before the base. *Elytra* large, quadrate, two-fifths wider and longer than the prothorax; sides subparallel; humeri broadly exposed at base; surface strongly, broadly impressed just behind the scutellum; suture excessively finely margined. *Abdomen* rather longer than the anterior parts, distinctly narrower than the elytra; sides parallel, becoming feebly convergent near the apex; border rather deep; first three segments strongly, the fourth feebly, impressed at base; fourth and fifth subequal; sixth exposed, rounded. *Legs* moderate in length, slender; posterior tibiæ very slender, nearly equally thick throughout, the tarsi much shorter, filiform, the basal joint rather longer than the next two and fully as long as the last. Length 4.0 mm.; width 0.95 mm.

Vancouver Island. Mr. Wickham.

The middle coxæ are large oblique and narrowly separated, the acetabula deep and acutely limited on all sides except the long isthmus, which separates the acute apex of the prosternal process—extending two-thirds the length of the coxæ—from the extremely short obtuse metasternal process, the latter scarcely entering at all between the coxæ. The neck is much wider than in *puncticollis*.

#### CALLICERUS Grav.

It is difficult to understand just why this genus is still placed among the allies of *Atheta*, for in my specimen of *rigidicornis* from the Caucasus, the anterior tarsi are as distinctly five-jointed as in any species of *Aleochara*; the facies also indicates its affinity with *Ilyobates*.

**C. puberulus** n. sp.—Subparallel, moderately stout, convex, slightly shining, the abdomen polished, dark brown, the elytra, apices of the tergites, legs and basal parts of the antennæ paler, obscure rufous; punctuation of the head rather strong and moderately sparse, of the pronotum finer, very dense and rather feeble, of the elytra coarser, rather close and subasperate, of the abdomen moderately sparse but distinct, subasperate, extending to the base of the segments; pubescence rather long, dense and conspicuous, sparse on the abdomen. *Head* orbicular, longer than wide, only slightly but distinctly narrower than the prothorax, even, convex; eyes at much more than their own

length from the base; antennæ long, feebly incrassate, rather loose, extending almost to the end of the elytra, the basal joint a little longer and thicker than the second or third, the latter similar, subequal and elongate, four to ten feebly obconical, very slightly increasing in width, the latter barely perceptibly wider than long, eleventh not wider, as long as the two preceding together; ligular process slender, elongate, apparently simple; labial palpi well developed, the two basal joints subequal in width and strongly united. *Prothorax* but slightly wider than long, widest near apical third where the sides are broadly subangulate, feebly convergent and rounded to the apex, equally convergent and straight to the base, the latter broadly, strongly arcuate and as wide as the subtruncate apex; apical angles deflexed, narrowly rounded; basal obtuse but distinct; hypomera greatly visible from the side, not extending to the apex; disk transversely convex, very broadly, feebly impressed in the middle toward base. *Elytra* large, slightly wider than long, one-half wider and nearly one-half longer than the prothorax; sides parallel, very feebly arcuate; humeri broadly exposed at base; disk evenly convex, not impressed, the suture strongly margined. *Abdomen* distinctly narrower than the elytra but wider than the prothorax, much longer than the anterior parts; sides perfectly straight and parallel from the base to the apex of the fifth segment, the latter fully one-half longer than the fourth; first four strongly impressed at base. *Legs* long, slender; posterior tarsi long, a little shorter than the tibiæ, the first joint as long as the next two and rather longer than the fifth. Length 4.7 mm.; width 1.2 mm.

New York.

The middle coxæ are narrowly separated, the mesosternal process very long and slender, subacute at apex, the metasternal short, but slightly prolonged, rounded at tip and not attaining the apex of the mesosternal, the isthmus short. This species appears to be congeneric with *rigidicornis*, but the antennæ are much less incrassate and the terminal joint is more slender.

#### **ECHIDNOGLOSSA** Woll.

In conformity with the views of Mr. Fauvel, I have placed the species previously described under the name *Colusa* Csy., in Wollaston's genus, although it is difficult to understand the statement under the original diagnosis of *Echidnoglossa*, to the effect that the elytra are "greatly abbreviated," if the two genera are identical. Rey introduced some confusion, which seems to be still maintained in the European catalogues, by placing the Corsican representative in a hypothetical *Echidnoglossa*, having four-jointed anterior tarsi and allied to *Falagria*; the tarsi in the American species are all five-jointed without the slightest doubt, and they are so described also by Wollaston for the type-species occurring in the Island of Teneriffe.



In the United States the genus, whatever it may prove to be, is somewhat widely diffused and diversified in species, extending from the Pacific coast to the Great Lakes; I have not yet seen it from the Atlantic regions however, although it possibly occurs here.

The characters employed in my former tabular statement are variable and difficult to observe, and the species may be much more conveniently distinguished as follows:—

Abdomen strongly narrowed toward base.

Tarsi with two long slender divergent claws.

Elytral suture much longer than the pronotum.

Antennæ long, very much exceeding in length the head and prothorax combined.

Larger and stouter, very densely punctate species, the first two ventral plates densely and strongly cribrate.....**valida**

Smaller and more slender, the abdomen beneath finely and sparsely punctate, only the basal segment more coarsely so (*exilis* Csy.).

**eximia**

Antennæ short and slender, not longer than the head and prothorax, the outer joints strongly transverse; species small ...**brevicornis**

Elytral suture scarcely perceptibly longer than the pronotum.

Body rather less slender, the head semi-circularly rounded behind.

Michigan.....**lacustris**

Very slender, the head narrower and more parabolic behind from eye to eye. Pacific coast.....**gracilis**

Tarsi with a single claw, composed of two somewhat shorter claws closely united or connate, the dividing suture fine but distinct throughout the length; body slender, the elytral suture scarcely visibly longer than the pronotum.....**brendeli**

Abdomen much wider, very feebly narrowed toward base.

Punctuation normal, the abdomen sparsely pubescent; prothorax normal, fully as long as wide.

Antennæ longer, slender; head finely, rather sparsely punctate.

**monticola**

Antennæ shorter and more incrassate, but slightly longer than the head and prothorax; head finely but densely and strongly cribrate throughout.....**lativentris**

Punctuation of the upper surface excessively fine and dense throughout, the abdomen extremely minutely, densely pubescent; prothorax larger, wider than long.....**grandicollis**

*Exilis* cannot be maintained as a distinct species, and there appears to be very noticeable sexual variation in the size of the prothorax and color of the body, the former being relatively larger in the male, and the female often being paler. The following species of the above table are believed to be hitherto undescribed:—



**E. brevicornis.**—Somewhat stout, convex, black; legs and basal parts of the antennæ paler, dark rufous; integuments polished, very minutely, sparsely punctate, the elytra rather more strongly and closely so; pubescence moderate in length, sparse on the abdomen. *Head* fully as wide as the prothorax, the neck two-fifths as wide as the width across the eyes, the latter rather large, at rather more than their own length from the base; antennæ short, the first joint slightly shorter than the second, the latter more than twice as long as wide and distinctly longer than the third, which is obconical, four to ten subequal in length but greatly increasing in width, the latter twice as wide as the fourth and nearly twice as wide as long, eleventh as long as the two preceding. *Prothorax* as long as wide, widest at two-fifths from the apex, where the sides are strongly rounded and rather prominent, thence rapidly convergent to the neck and feebly convergent and very slightly sinuate to the base, the latter very feebly arcuate; disk strongly convex, even, with a slight transverse impression near the base. *Elytra* large, quadrate, three-fourths wider and nearly one-half longer than the prothorax, the sides parallel and straight, convergent and rounded near the apex; humeri rounded, prominent and widely exposed; disk strongly, broadly impressed on the suture behind the scutellum. *Abdomen* moderate in length, at base three-fifths, and at the apex of the third segment four fifths, as wide as the elytra; segments equal in length, the first three very strongly impressed and coarsely, densely sculptured at base. *Legs* and tarsi normal. Length 2.0 mm.; width 0.55 mm.

California.

The smallest species of the genus and decidedly aberrant, not only in its shorter antennæ but much broader neck and truncate median parts of the base of the head. A single specimen.

**E. lacustris.**—Slender, convex, dark rufo-piceous or paler, the last two segments of the abdomen blackish; legs pale rufo-testaceous; antennæ slightly paler toward base; punctures fine and well separated but strong and distinct, more asperate on the elytra, finer and very sparse on the abdomen except in the basal impressions, which are coarsely and closely sculptured as usual; pubescence rather long, subrecumbent, not very dense. *Head* as long as wide, fully as wide as the prothorax, the neck slightly exceeding one-third of the width at the eyes, the latter small, at much more than twice their length from the base; antennæ long and slender, although distinctly incrassate, extending nearly to the middle of the elytra, the first three joints elongate, subequal in length, four to ten shorter, subequal in length, the first much longer than wide, the latter very slightly transverse, eleventh gradually pointed toward apex, barely as long as the two preceding. *Prothorax* fully as long as wide, widest at two-fifths from the apex, where the sides are narrowly rounded, thence rapidly convergent to the neck and feebly convergent, broadly and distinctly sinuate to the base, the latter subtruncate, fully twice as wide as the apex; disk strongly, evenly convex, not impressed, the punctures more densely crowded toward the median line as usual. *Elytra* one-half wider and slightly longer than the prothorax, the sides parallel, nearly straight, con-

vergent and arcuate in posterior third; humeri rounded to the prothorax, exposed, each elytron very feebly, obliquely sigmoid at apex, the external angles prolonged as usual; disk convex, feebly, narrowly impressed on the suture behind the scutellum. *Abdomen* not as long as the anterior parts, at base three-fourths as wide as the elytra, and, at the tip of the third segment, fully as wide as the latter. *Legs* long, slender, the posterior tarsi short, the basal joint elongate. Length 3.0 mm.; width 0.7 mm.

#### Michigan.

The description is taken from the male, which, throughout the genus, has the sixth ventral plate relatively small and acutely triangular in form. The female is paler, rather stouter and somewhat more densely punctate. In both sexes, but especially in the female, the pronotum is extremely obsoletely impressed along the median line. The posterior tarsi, as usual, are about three-fifths as long as the tibiæ, with the basal joint fully as long as the next two, the following three equal among themselves.

**E. brendeli.**—Slender, convex, piceous-black, the abdomen feebly rufescent toward base; legs throughout and antennæ toward base dark rufous; integuments polished, finely, somewhat strongly, rather closely punctate, the abdomen very sparsely so except at the base of the segments, the elytra strongly and conspicuously but not very densely punctate; pubescence rather long and distinct, extremely sparse on the abdomen. *Head* fully as long as wide, rather longer than the prothorax, the neck one-third as broad as the width across the eyes, the latter moderate, at scarcely twice their length from the base; antennæ long, the three basal joints subequal in length, the first slightly thicker, fourth much longer than wide, tenth about as long as wide. *Prothorax* nearly as in *lacustris*, the disk feebly impressed and more densely punctate along the median line. *Elytra* two-fifths wider and scarcely perceptibly longer than the prothorax; sides parallel, convergent and rounded toward apex; humeri rounded, exposed; disk strongly convex, strongly impressed on the suture behind the scutellum. *Abdomen* nearly as long as the anterior parts, at base three-fourths as wide as the elytra, fully as wide as the latter at the apex of the third segment. *Legs* long and slender; tarsi normal, the first joint of the posterior fully as long as the next two; claws connate throughout their length, rather shorter than usual. Length 3.0 mm.; width 0.65 mm.

Iowa (Cedar Rapids). Dr. E. Brendel.

The extraordinary character relating to the tarsal claws is confirmed by a careful examination of all the twelve tarsi of the two males in my cabinet; otherwise, the species is perfectly normal, differing from *lacustris* only in its more slender form, smaller prothorax, smaller and especially shorter elytra, and relatively larger

head, showing that connate tarsal claws are of even less taxonomic significance here than in some parts of the Barini.

**E. monticola.**—Somewhat stout, convex, black, shining; abdomen subrufescent toward base; legs dark rufous; antennæ rufo-piceous toward base; punctuation fine and very dense, a little coarser on the elytra, sparser on the abdomen, fine and not extremely dense on the head; pubescence rather long, dense and conspicuous, sparser on the abdomen, where it is however closer than in the preceding species. *Head* rather longer than wide, the neck one-third of the width, rather wider than the prothorax, convex; eyes very distant from the base, well developed; antennæ extending to the middle of the elytra, slender, feebly incrassate, the first three joints elongate, subequal in length, tenth scarcely visibly wider than long. *Prothorax* fully as long as wide, widest at two-fifths from the apex, the sides there strongly rounded, rapidly convergent to the neck, and rather strongly convergent and nearly straight to the base, the latter feebly arcuate and distinctly more than twice as wide as the apex; disk strongly convex, with a rather strong subquadrate impression in the middle before the base. *Elytra* large, quadrate, two-thirds wider and one-third longer than the prothorax; sides parallel and straight except very near the apex; humeri very widely exposed; disk strongly impressed on the suture behind the scutellum. *Abdomen* much shorter than the anterior parts, at base four-fifths as wide as the elytra, and, at the apex of the third segment, fully as wide as the latter, coarsely, densely punctate in the three basal impressions as usual. *Legs* long, slender; tarsi and claws normal, the latter long, slender, feebly arcuate and moderately divergent. Length 3.25 mm.; width 0.8 mm.

#### Colorado.

Readily distinguishable from the preceding species by the broader, less narrowed abdomen, which is however only a difference of degree; in generic structure it agrees perfectly with the others. A single male.

**E. lativentris.**—Broader, black throughout; antennæ scarcely piceous toward base; legs dark rufo-piceous, the tarsi paler; integuments polished, rather sparsely but strongly punctate, the punctures of the entire upper surface of the head, and of the pronotum toward the median line, coarser, very deep, dense and perforate, on the abdomen fine and sparse except in the impressions; pubescence rather sparse but distinct, still sparser on the abdomen. *Head* rather longer than wide with the neck one-third as wide, rather wider than the prothorax; eyes moderate, before the middle as usual; antennæ extending to about basal third of the elytra, incrassate toward apex, first three joints elongate, subequal in length, tenth quite distinctly wider than long. *Prothorax* about as long as wide, formed as in the preceding species, the sides broadly sinuate as well as convergent in basal three-fifths. *Elytra* not quite as long as wide, two-thirds wider and about one-fourth longer than the prothorax, the sides parallel and feebly arcuate; humeri widely exposed;

disk convex and impressed throughout on the suture. *Abdomen* much shorter than the anterior parts, at base four-fifths as wide as the elytra, but, near the apex, only slightly wider than at base. *Legs* moderate; tarsi normal, the first joint of the posterior fully as long as the next two; two to four equal, or the second rather shorter than the fourth; fifth longer than the first. Length 2.9 mm.; width 0.8 mm.

Montana (Mullan). Mr. H. F. Wickham.

Allied to *monticola*, but differing in its shorter, more sparsely punctured elytra, smaller prothorax, without the deep subbasal fovea and with merely a feeble transverse erosion, more coarsely deeply and densely punctured head and rather shorter antennæ.

#### MYRMEDONIIDES.

Antennæ 11-jointed; tarsi 4-5-5-jointed.

This is the largest, and by far the most complex and difficult division of the Aleocharini.

#### TINOTUS Sharp.

This remarkable genus greatly resembles *Deinopsis* in the outline of the body, but has the pronotum very strongly convex and deeply indented in the male. The individuals vary greatly in size. The two species known to me may be readily separated as follows:—

Abdomen with elongate punctures; head broadly, deeply excavated nearly throughout its width in the male ..... **caviceps**  
 Abdomen with coarsely and regularly imbricate sculpture; head in the male broadly, evenly convex and normal..... **imbricatus**

The sculpture of the integuments is strong, pronounced and beautifully regular.

**T. caviceps** n. sp.—Rather broad, subfusiform, thick, flattened above, the pronotum very convex; integuments feebly shining, black, the legs throughout and antennæ toward base dark rufo-testaceous; pubescence short, recumbent, moderately dense, very coarse, pale fulvous and distinct, sparser on the abdomen, each segment with a long porrect fringe at apex; anterior parts finely, strongly reticulate, the abdomen polished; punctures of the head and pronotum fine, of the elytra rather coarse and rugose, not very dense, of the abdomen not dense, each composed of two long deep parallel striæ united anteriorly at the point of attachment of the hair. *Head* small, three-fifths as wide as the prothorax; eyes moderate, at nearly their own length from the base; antennæ rather longer than the head and prothorax, somewhat thick,



the second and third joints equal, the latter obconical, more than twice as long as wide, fourth slightly wider, quadrate, fifth to tenth transverse, the latter nearly twice as wide as long, eleventh conoidal, slightly compressed, nearly as long as the three preceding. *Prothorax* nearly twice as wide as long, transversely subelliptical in outline, strongly convex, with a large deep median dent which does not differ at all in the nature of its pubescence. *Elytra* rectangular, parallel, three-fifths wider than long, equal in length and width to the prothorax, broadly, strongly emarginate at base in circular arc. *Abdomen* much longer than the anterior parts, at base nearly as wide as the elytra; sides feebly arcuate, evenly, feebly convergent from the base; border thick and strong; surface nearly flat; first and second segments deeply, transversely impressed, the third more feebly; fifth a little longer than the fourth; under surface convex, finely, densely punctate. *Legs* rather slender, the posterior tarsi distinctly shorter than the tibiae. Length 1.8–2.5 mm.; width 0.6–0.85 mm.

Nevada (Reno).

The female differs from the above-described male in its slightly larger size and more robust form, unexcavated head, and in having a simple, equal, broadly and feebly impressed line along the middle of the pronotum from base to apex.

**T. imbricatus** n. sp.—Nearly similar in form to *caviceps*, piceous-black, the legs, base of the antennae and apices of the abdominal segments paler; head and pronotum dull, very minutely reticulate, strongly and densely so in the pronotal dent; elytra more coarsely reticulate, more shining and more strongly, rather densely punctate; abdomen polished, finely punctate and evenly imbricate; pubescence of the anterior parts short, coarse, rather dense, very dense, longer and conspicuous in the pronotal indentation, sparse on the abdomen. *Head* small, scarcely three-fifths as wide as the prothorax, feebly, evenly convex; eyes large, at less than their length from the base; antennae barely as long as the head and prothorax, feebly incrassate, second and third joints equal, the latter obconical, three times as long as wide, as long as the next two, eleventh conoidal, not longer than the preceding two. *Prothorax* twice as wide as long; sides evenly convergent from base to apex, broadly, evenly arcuate; base much wider than the apex, broadly arcuate; basal angles obtuse but not blunt, very distinct; disk convex, with a large abrupt median excavation occupying one-third of the width, extending from the base nearly to the apex. *Elytra* very slightly longer and wider than the prothorax; sides subparallel, broadly arcuate. *Abdomen*—extended—nearly twice as long as the anterior parts, at base nearly as wide as the elytra; sides gradually convergent from the base; border thick but not very deep; surface nearly flat; first three segments moderately impressed at base; fourth broadly emarginate at apex and much shorter than the fifth; middle coxae widely separated, the mesosternal process broadly truncate. Length 1.6–2.4 mm.; width 0.55–0.7 mm.



New York (Catskill Mts.).

The description is taken from the male; in the female the pronotum is almost perfectly even, without an impressed median line but with two large feeble and approximate impressions near the base before the scutellum, and, apparently, an extremely obsolete median impression near the apical margin. I place with this species a single male from Austin, Texas, which is very similar but a little more robust and with more finely and densely punctate elytra.

The evenly imbricate sculpture of the abdomen above and beneath is a very striking feature.

**MICRODONIA** n. gen.

Body parallel, rather depressed. Head broadest behind the eyes, the latter situated at their own length from the base, convex and rather prominent, the tempora rounded, slightly more prominent than the eye; neck moderate in width, the occiput adjacent to the pronotum nearly throughout. Labrum short, broad, truncate. Antennæ rather long, incrassate, inserted in small foveæ very near the eyes. Mentum large, flat, trapezoidal, truncate at apex. Maxillary palpi normal, the fourth joint subulate, oblique, distinct. Ligula with two minute slender parallel and approximate processes at apex, the labial palpi distinct, the two basal joints cylindrical, the second the shorter, third nearly as long as the two preceding, very slender, arcuate near the base. Infraocular carina completely wanting. Prothorax nearly flat, rather abruptly declivous at the sides, the acute lateral line very feeble; hypomera moderately inflexed and greatly visible from the side. Abdomen parallel, the basal segment alone transversely impressed and impunctate at base; second a little longer than any of the others; fourth and fifth nearly equal. Intermediate coxæ moderately but distinctly separated, the mesosternal process very short, parabolic, indefinitely limited at apex, the metasternal also short but acute, separated from the mesosternal by quite a long polished transversely convex isthmus; middle acetabula apparently deep and sharply defined. Metasternum well developed, the episterna wide, parallel, the epimera large, broad behind and extending slightly behind the elytra, gradually attenuate anteriorly and disappearing under the elytra at the middle of the latter. Tibiæ rather long, the anterior very slender, not at all spinose, the terminal spurs small and slender; tarsi with 4-5-5 joints, the posterior very long and slender, as long as the

tibiæ, with the first joint greatly elongate; ungues small, slender, arcuate, simple and divergent.

*Microdonia* belongs evidently to the subgroup *Myrmedoniates* of Rey, as shown by general organization and by the great development of the metasternal epimera, but is immediately distinguishable from any of the genera known to me by the small parallel and depressed body, subtriangular head, complete absence of infraocular carina and many other characters.

**M. occipitalis** n. sp.—Reddish-brown, the elytra paler, more flavate; abdomen with a large blackish cloud occupying segments three, four, the apex of two and base of five; anterior parts dull, the abdomen shining. *Head* subtriangular, rather coarsely, densely, evenly punctate, the punctures round, very shallow, distinctly defined but variolate and slightly umbilicate; antennæ rather longer than the prothorax and elytra, second joint longer than the third, the latter strongly obconical, one-half longer than wide, outer joints transverse and perfoliate, the tenth fully one-half wider than long, eleventh nearly as long as the preceding three, conoidal, compressed. *Prothorax* distinctly wider than the head, punctured like the latter, two-fifths wider than long, the sides very feebly convergent from near the apex to the base and very nearly straight; base broadly, evenly arcuate; basal angles obtuse and slightly blunt; disk broadly impressed toward each side except anteriorly, also in the middle before the scutellum. *Elytra* just visibly longer but distinctly wider than the prothorax, rectangular, nearly one-half wider than long, flat, more finely and rather less densely punctate. *Abdomen* as long as the remainder of the body, slightly narrower than the elytra, parallel and straight at the sides, feebly convex, the border strong; punctures fine, rather distinct, somewhat close though very sparse toward tip. Length 2.3 mm.; width 0.6 mm.

Texas (Austin).

The pubescence of the anterior parts of the upper surface is very minute, stiff, recumbent and rather dense but not conspicuous, of the abdomen sparser but longer and more visible. A single specimen, perhaps somewhat immature; the singular impressions near the sides of the pronotum are however probably normal.

#### **DINOCORYNA** n. gen.

Parallel, rather stout. Head well inserted, nearly as in *Myrmedonia*, the eyes well developed, the tempora rapidly convergent behind them; infralateral carina wholly obsolete. Antennæ stout, the first joint very large, robust, constricted at base, as long as the next three; second very small, barely longer than wide, as long as

the third but scarcely more than one-half as wide; third rapidly obtrapezoidal, as wide at apex as joints four to ten, which form a compact cylindrical mass, each joint twice as wide as long and deeply received in the excavated apex of the preceding, the sides almost parallel; eleventh conical, compressed, at base not quite as wide as the tenth, as long as the preceding three. Mentum nearly as long as wide, trapezoidal. Maxillary palpi well developed, the third joint very much longer and thicker than the second; fourth distinct. Ligula with a long slender, apparently almost simple process, the palpi rather slender, three-jointed, the first joint longer than the second and subequal to the more slender third. Prothorax transverse, the anterior margin transverse and deeply bisinuate, the median lobe narrowly rounded, the apical angles somewhat anteriorly prominent; hypomera moderately inflexed, visible from the side, broadly triangular, not attaining the apex. Elytra large and well developed. Abdomen parallel, with the sides strongly, evenly arcuate; border moderate; first two segments very large, together constituting three-fifths of the abdomen, the first slightly the larger; three to five very short; sixth abruptly extremely narrow and but slightly exposed. Coxæ all large, the intermediate distinctly but not very widely separated, the metasternal process extending anteriorly for nearly one-half their length, narrowly subtruncate at tip and separated from the apex of the mesosternal,—which cannot be clearly seen in the unique type,—by a short depressed isthmus. Legs short, stout, covered with long stiff subdecumbent pubescence, the tarsi filiform but stout, somewhat compressed, long, 4-5-5-jointed, the posterior about as long as the tibiæ, with the first joint elongate, the first four rapidly decreasing in length, the fifth somewhat longer than the first; ungues very long, extremely slender, feebly, evenly arcuate and but slightly divergent.

This remarkable genus is evidently myrmecophilous, or still more probably, termitophilous, and is allied to *Myrmedonia*. The basal tergite is broadly, deeply impressed and polished at base, the others without trace of impression.

**D. bisinuata** n. sp.—Moderately short and stout, subparallel, pale flavo-testaceous throughout, the elytra rather albescent; integuments polished, not in the least reticulate; head and pronotum coarsely, sparsely punctate, the elytra very minutely sparsely and indistinctly so, the abdomen subimpunctate, except along the apices of the tergites, where there is a row of close-set, elongate, tubercular punctures bearing very long stiff setæ, the under surface

covered throughout with long coarse hairs; pubescence very sparse and inconspicuous, the abdomen bristling with long setæ; there are also a few long erect setæ toward the sides of the pronotum and elytra, and near the base of the latter. *Head* large, transverse, four-fifths as wide as the prothorax, the occiput feebly impressed in the middle; antennæ extending fully to the middle of the elytra, the club nearly one-third as wide as the head, not compressed. *Prothorax* four-fifths wider than long, widest at the apex, the sides rather strongly convergent and broadly arcuate to the basal angles, which are extremely obtuse, rather indistinct; base much narrower than the apex, subtruncate; marginal line of the flank extremely fine; disk without trace of marginal bead, the edges convex, broadly impressed along the middle. *Elytra* transverse, slightly wider and one-half longer than the prothorax; sides subparallel, nearly straight; humeri moderately exposed at base. *Abdomen* at base much narrower, in the middle slightly narrower, than the elytra, shorter than the anterior parts; sides parallel and strongly arcuate; surfaces of tergites two to five broadly, feebly reflexed toward apex. Length 1.7 mm.; width 0.7 mm.

#### Florida.

The sex of the type cannot be clearly distinguished, and the abdomen seems to be exerted in its basal parts but drawn in toward apex, which may account in part for the great preponderance in length of the two basal segments.

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The genera more or less resembling *Myrmedonia*, which are represented by the material in my cabinet, may be defined as follows:—

Mesosternal process very short, not extending between the coxæ for more than one-third of their length, more or less broad at apex and separated from the metasternal process by a short broad isthmus, which is on the same level and not depressed ..... **Myrmedonia**

Mesosternal process longer, extending to the middle of the coxæ.

Mesosternal process broad, very broadly rounded at apex, the latter soldered to the apex of the metasternal by a short broad undepressed isthmus; front before the line of the antennæ abruptly and strongly declivous to the subhorizontal clypeus; eyes as in *Myrmedonia*, large and near the base; occiput thrown up in a strong transverse ridge..... **Nototaphra**

Mesosternal process narrow, very acute, not in the least blunt at apex, the latter free and detached from connecting isthmus; head long, oval; front normal; eyes small, distant from the base..... **Anepsiota**

In all of these genera the side-pieces of the metasternum are broad, the epimera greatly developed and extending posteriorly behind the elytra.



**MYRMEDONIA** Erichs.

Even within our own faunal limits, this interesting genus varies wonderfully in the degree of separation of the intermediate coxæ, which is usually a character of considerable taxonomic value. It is only a striking example, however, of the fact frequently observed in large groups of arthropods, that characters unquestionably of general significance in defining genera may, in certain parts of the series, abruptly and unexpectedly lose all such weight.

The few species known to me may be distinguished by the following characters:—

Punctures of the pronotum extremely fine.

Apex of the mesosternal process moderate in width.

Basal joint of the antennæ large, extremely robust and pyriform; prothorax strongly transverse; middle coxæ rather narrowly separated (*Platyusa* Csy.).....**sonomæ**

Basal joint of the antennæ more slender, sometimes moderately constricted at base; middle coxæ more widely separated.

Prothorax transverse, the sides not at all sinuate toward base.

**caliginosa**

Prothorax but slightly wider than long, the sides broadly sinuate toward base.

Third antennal joint greatly elongated, nearly as long as the next two; tenth but slightly wider than long .....**fauveli**

Third joint much shorter, but slightly longer than the second; tenth very strongly transverse; eleventh large, nearly as long as the preceding three combined .....**angustula**

Apex of the mesosternal process extremely wide, straight, truncate and rather wider than the distance separating the antennæ.....**loricata**

Punctures of the pronotum normal but coarse and sparse, somewhat as in *Zyras haworthi* but less remote and more even in distribution ....**obliqua**

Punctures of the pronotum sparse, strong and tuberculiform, at least in the male.

Elytral punctures very coarse, deep and rather sparse; abdomen coarsely sparsely and unevenly punctate, testaceous in color .....**rudis**

Elytral punctures fine and dense; abdomen subimpunctate .....**planifer**

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“Confertim subtilissime punctata, fusca, antennarum basi, thoracis lateribus, pedibus elytrisq[ue] testaceis, his sutura, basin versus latius, angulisq[ue] apicalibus oblique late infuscatis; thorace transverso, obsoletius canaliculato, basi leviter transversim foveolato. Long.  $1\frac{1}{2}$  lin. Lat.  $\frac{2}{3}$  lin. Peninsula Kenai.” .....**angularis**



I have not been able to identify *angularis* Mäkl., and transcribe the original short diagnosis; it is evidently a species allied to *caliginosa*, but differing in the pale sides of the prothorax. *Fauveli* Shp. is abundant throughout the United States from Pennsylvania to Los Angeles, Cal.; I have taken it at Galveston and Waco in Texas. *Rudis* Lec. is a large and very distinct species, with extremely coarse and rugose pronotal sculpture.

**M. caliginosa** n. sp.—Parallel, black, the legs and antennæ toward base dark rufo-testaceous; apices of the two or three basal tergites sometimes very briefly pale; elytra fusco-testaceous, feebly, triangularly clouded toward base and toward the lateral apical angles with piceous; head and pronotum minutely reticulate, alutaceous, extremely finely and not very densely punctate; elytra and abdomen polished, the former finely but distinctly, densely punctate, the latter impunctate, with the exception of a few fine punctures near the apical margins; pubescence fine, extremely short and inconspicuous, each tergite with a sparse apical fringe of longer hairs. *Head* slightly wider than long, fully three-fourths as wide as the prothorax, constricted at base; eyes very large, at less than one-half their length from the base; antennæ rather compressed, separated at base by the length of the eye, thick, moderately incrassate, a little longer than the head and prothorax, basal joint moderately thick, as long as the next two, third obconical, barely twice as long as wide, four to nine equal in length, gradually much wider, loosely perfoliate, the latter twice as wide as long, tenth equal in width but a little longer, eleventh conoidal, pointed, rather longer than the two preceding. *Prothorax* fully three-fourths wider than long, the sides subparallel, broadly arcuate, becoming straight and feebly convergent toward base, the basal angles very obtuse and blunt; the apical rounded; base broadly arcuate, about as wide as the apex; disk even, with a very fine, frequently entirely obsolete, impressed line, without antebasal impression. *Elytra* transverse, slightly but distinctly wider and longer than the prothorax; humeri somewhat exposed; suture not impressed. *Abdomen* subequal to the anterior parts, very slightly narrower than the elytra; sides subparallel, feebly arcuate; first three segments deeply equally and not very widely impressed at base; fifth shorter than the fourth. *Legs* slender; posterior tarsi long but much shorter than the tibiæ, the first joint as long as the next two. Length 3.0 mm.; width 0.85 mm.

New York (Catskill Mts.); Indiana.

A somewhat common species, resembling a stout *Atheta* and easily recognizable by the large prominent eyes. •

**M. angustula** n. sp.—Narrow, parallel, convex, polished throughout, dark piceous; pronotum slightly paler and rufescent; elytral humeri and a narrow apical margin, first three abdominal segments except at base, legs and antennæ pale flavate; head, pronotum and elytra extremely minutely, evenly,

rather sparsely and not distinctly punctate; abdomen impunctate, excepting a widely spaced series bearing longer setæ along the apex of each segment; pubescence fine and rather inconspicuous above, longer and more distinct on the under surface of the abdomen. *Head* wider than long, slightly narrower than the prothorax, convex; eyes moderate, at nearly their own length from the neck; tempora moderately convergent, broadly arcuate; antennæ extending fully to the middle of the elytra, the basal joint elongate, oval, not as long as the next two, outer joints rapidly wider, rather closely connected, strongly transverse, eleventh long, pointed. *Prothorax* but slightly wider than long, widest at apical third, where the sides are rounded and moderately convergent to the apex, distinctly convergent and broadly sinuate thence to the basal angles, which are nearly right and only slightly blunt; base a little narrower than the apex, both broadly, equally arcuate; disk rather strongly, evenly convex, not distinctly impressed. *Elytra* one-half wider than long, two-fifths wider than the prothorax but not distinctly longer than the latter; humeri broadly exposed at base; surface not impressed. *Abdomen* in the middle about as wide as the elytra; sides parallel and quite distinctly arcuate; basal segments only finely impressed along the basal margins; fifth shorter than the fourth. *Legs* moderate in length, slender; posterior tarsi very long and filiform but shorter than the tibiæ, the basal joint as long as the next two. Length 2.3 mm.; width 0.6 mm.

Florida.

This species resembles *fauveli* in general appearance, but is smaller and narrower, and may be known by its much more transverse penultimate joints of the antennæ.

**M. loricata** n. sp.—Parallel, rather convex, dark blackish-castaneous, the antennæ dark rufo-piceous, paler toward base; abdomen black, the apices of the three basal segments paler; legs piceous, the tarsi pale; head and pronotum very finely, the former sparsely, the latter more closely, punctate; elytra finely but strongly and distinctly, not densely punctate, the punctures becoming dense toward the inner basal angles; abdomen impunctate, except sparsely along the apices; integuments strongly shining, the abdomen highly polished; pubescence fine, rather short, distinct. *Head* wider than long, four-fifths as wide as the prothorax, the occiput rather tumid; eyes large, prominent; antennæ extending nearly to the middle of the elytra, strongly incrassate, feebly compressed, rather compact, the outer joints contiguous, basal joint slender, as long as the next two, third elongate, obconical, twice as long as the second and as long as the next two, the latter equal, as long as wide, five to ten gradually increasing in length and greatly in width, the tenth nearly parallel, two-fifths wider than long, eleventh conical, not as long as the two preceding. *Prothorax* one-fourth wider than long, widest at apical third where the sides are very broadly, feebly arcuate, feebly convergent and slightly sinuate in basal half; base broadly, strongly arcuate, subequal to the apex, which is transverse, becoming feebly sinuate near the sides; basal angles slightly obtuse, strongly marked, not at all blunt; disk convex, the

median line finely and feebly impressed throughout. *Elytra* transverse, one-third wider but not at all longer than the prothorax; sides feebly arcuate; humeri broadly rounded and exposed; disk broadly, feebly impressed at base. *Abdomen* at base much narrower than the elytra and as wide as the prothorax; sides subparallel, broadly arcuate; border thin and deep; first three segments finely, deeply impressed; fifth shorter than the fourth; under surface sparsely, coarsely pubescent, finely punctate. *Legs* moderate; posterior tarsi long but much shorter than the tibiæ, the basal joint somewhat thicker than usual and very long, nearly as long as the next three. Length 3.6 mm.; width 1.0 mm.

Canada (Grimsby); Ohio.

The distinguishing character of this species is the very wide truncate sternal piece between the coxæ, much exceeding in width that of any other known to me. The degree of separation of the middle coxæ bears no relation whatever to the width of the body, for, in *sonomæ*, which is a very much stouter species, the coxæ are unusually narrowly separated.

**M. obliqua** n. sp.—Stout, subparallel, polished, black, the antennæ red-brown, paler toward base; elytra pale rufous, clouded with blackish in a basal subtriangular area and also broadly toward the external apical angles; apices of all the tergites and the legs throughout pale flavate; head distinctly but extremely remotely, the pronotum strongly, rather coarsely and decidedly sparsely, punctate; elytra rather coarsely, roughly but not densely so, the punctures becoming however very dense toward the scutellum; abdomen finely, sparsely punctate throughout, with the pubescence long and fine, coarser and more evident beneath; pubescence anteriorly coarse and somewhat long but sparse, closer and more evident on the elytra. *Head* as long as wide, three-fourths as wide as the prothorax, the eyes moderate, at their own length from the base; tempora feebly convergent to the base; antennæ longer than the head and prothorax, the basal joint slightly thick, not as long as the next two, third elongate, one-half longer than the second, not as long as the next two, fourth quadrate, four to ten very evenly and moderately increasing in width, the tenth rather shorter than the ninth, one-half wider than long, eleventh thick, obtusely ogival, as long as the preceding two. *Prothorax* fully two-fifths wider than long, widest at apical third, where the sides are rather strongly rounded and convergent to the apex, somewhat strongly convergent and nearly straight in basal half; base and apex subequal, the former strongly, the latter feebly arcuate; basal angles very obtuse but evident, not distinctly blunt; disk with a smooth, impunctate but unimpressed median line and a small deep impression in the middle before the base. *Elytra* one-half wider than long, two-fifths wider but only slightly longer than the prothorax; sides feebly divergent and slightly arcuate from base to apex; humeri obliquely, strongly rounded to the prothorax, not becoming transverse; disk scarcely at all impressed. *Abdomen* broad, as wide as the elytra; sides parallel and just visibly arcuate; border thick and not very

deep; first three segments finely impressed at base, the impressions becoming almost obsolete near the sides; fifth a little longer than the fourth. *Legs* moderate; posterior tarsi long, filiform, shorter than the tibiæ, with the first joint not thicker but distinctly longer than the next two. Length 3.8 mm.; width 1.3 mm.

New York.

A fine species, somewhat suggestive of the subgenus *Zyras*, but with much less coarse and dispersed elytral sculpture. One specimen, apparently female.

**M. planifer** n. sp.—Moderately stout, subparallel, polished throughout, rufo-piceous, the elytra darker except near the humeri; abdomen black, the first two segments in great part, and the third narrowly at the margin, pale; legs pale throughout; antennæ fuscous, pale toward base; head finely, sparsely, the pronotum still more finely sparsely and obsoletely, punctate, the latter with the flattened median area sparsely but strongly and asperately so; elytra finely but strongly, sparsely, subasperately punctate, more strongly but scarcely more densely toward the scutellum; abdomen subimpunctate, except very obsoletely and remotely along the apical margins; pubescence fine, sparse, rather more distinct on the under surface of the abdomen. *Head* much wider than long, four-fifths as wide as the prothorax; eyes moderate, at nearly their own length from the base; antennæ stout, strongly incrassate, longer than the head and prothorax, the basal joint stout, nearly as long as the next two, third longer than the second, obconical, twice as long as wide, four to seven increasing in width, seven to ten subsimilar, rather compact, subparallel, nearly one-half wider than long, eleventh conical, as long as the two preceding. *Prothorax* transverse, three-fifths wider than long, widest at apical third where the sides are distinctly rounded to the apex, plainly convergent and straight—from above—in basal two-thirds; base and apex equal, the former strongly, the latter very feebly, arcuate; basal angles obtuse but not blunt; disk with a large flattened median region, the median line finely but distinctly impressed. *Elytra* transverse, two-fifths wider but only just visibly longer than the prothorax; sides feebly divergent and arcuate from the humeri, which are rather broadly exposed; disk slightly impressed near the sides behind the middle. *Abdomen* rather longer than the anterior parts, quite distinctly narrower than the elytra; sides parallel, slightly arcuate behind; border thin and deep; first two segments widely and deeply impressed at base, the third finely and very feebly so; fourth and fifth subequal. *Legs* slender; posterior tarsi much shorter than the tibiæ, with the basal joint as long as the next two. Length 3.2 mm.; width 1.0 mm.

North Carolina (Asheville).

The description is evidently drawn from the male, and in the female the asperate flat median area of the pronotum is probably wanting in great part; the male has, in addition, the sixth tergite feebly emarginate and unevenly serrulate, a somewhat more isolated



median projection having three short teeth. This species is evidently allied to some of the Mexican forms described by Dr. Sharp.

**NOTOTAPHRA** n. gen.

Body rather narrow, thick and subparallel. Head somewhat as in *Myrmedonia*, constricted at base throughout the width, the occiput transversely prominent; eyes moderate; infralateral carina not distinct. Antennæ long, loose, subparallel from the fourth joint, not incrassate, pilose, but devoid of erect setæ. The gular sutures diverge toward the base of the maxillæ, and from between them there extends forward a large flat plate, gradually narrowed toward the truncate apex; this plate is the mentum and its support fused in one and without trace of transverse suture. The lobes of the maxillæ are very long and slender. Ligula rather short, the terminal process small, gelatino-membranous, easily distorted but seemingly bilobed at apex. Labial palpi apparently two-jointed, the basal joint thick, cylindrical, less than twice as long as wide, the second a little shorter, slender and affixed obliquely. Prothorax narrowed and sinuate to the base, the hypomera feebly inflexed and in part visible from the side. Elytra well developed. Abdomen with the side margins thin and extremely deep. Middle coxæ distant, the mesosternal process broadly rounded at apex, the metasternal acutely angulate but widely separated at tip from the mesosternal. Legs slender; tarsi 4-5-5-jointed, slender, the posterior shorter than the tibiæ, with the first joint more or less elongate.

If my interpretation of the structure of the labial palpi be correct this genus is really very isolated; the structure of the front before the antennæ, of the mentum and its support, and the more prolonged mesosternal process will however, in any event, readily distinguish it from *Myrmedonia*. It seems to have some relationship also with the comparative giants described by Dr. Sharp under the name *Platonica*. Our two representatives may be readily separated as follows:—

Basal joint of the hind tarsi as long as the next two; blue-black, the prothorax and first three segments of the abdomen very pale yellowish-red.

Basal joint of the hind tarsi but slightly longer than the second; black, the elytra slightly picescent ..... **lauta**  
**lugubris**

**N. lauta** n. sp.—Rather slender, parallel, convex, minutely reticulate and rather alutaceous throughout, the elytra dullest; pale rufo-flavate, the



head rufo-piceous; elytra and abdominal apex black; legs very pale; antennæ feebly infusate toward tip; punctures throughout extremely minute, dense but scarcely visible, rather more distinct on the elytra; pubescence consisting of extremely short fine appressed hairs, distributed thickly over the entire surface including the abdomen, becoming sparse toward the apex of the latter. *Head* as long as wide, not quite as wide as the prothorax, deflexed; eyes moderate, prominent, at one-half their length from the base; depressed epistoma polished, glabrous; antennæ extending nearly to the tip of the elytra, rather thick, loose, cylindrical, pubescent but without bristling setæ, basal joint small, stout, pyriform, third longer than the second, obconical, not twice as long as wide, its apex oblique, four to ten somewhat asymmetrically obconical, tenth as long as wide, eleventh small, conoidal, not as long as the two preceding. *Prothorax* transverse, three-fourths wider than long, widest at apical third where the sides are strongly rounded, becoming parallel and straight in basal half; base and apex equal, broadly arcuate; basal angles obtuse and slightly blunt; disk rather abruptly declivous laterally, the median half from base to apex occupied by a very large deep indentation, which does not differ in sculpture or vestiture. *Elytra* large, one-half wider than long, one-half wider and one-half longer than the prothorax; sides feebly divergent and straight; humeri broadly exposed. *Abdomen* much narrower than the elytra, parallel, the three basal segments broadly, deeply impressed, polished and glabrous at base; fifth shorter than the fourth. Length 2.8 mm.; width 0.8 mm.

#### New York.

The male, from which this description is taken, has the posterior part of the first tergite broadly, feebly swollen. The second bears a large strongly elevated tubercle, occupying median third, the posterior wall of which is vertical, clothed with longer hair and having its face furrowed from summit to base; the anterior wall is likewise vertical and its foot is at the margin of the impression. The third segment also has a strongly elevated abrupt elevation, occupying a little more than median third and apical two-thirds, the upper surface of which is flat and declivous posteriorly throughout, its anterior wall vertical and deep. I have not seen the female.

**N. lugubris** n. sp.—Moderately stout and convex, somewhat shining; punctures throughout almost invisible; pubescence extremely minute, moderately dense; body black, the elytra feebly piceous; legs piceous-black, the tarsi slightly paler; antennæ dark red-brown. *Head* as long as wide, deflexed, nearly as wide as the prothorax; eyes moderate; antennæ thick, extending to the middle of the elytra, the basal joint thick and pyriform, much shorter than the next two, second small, a little longer than wide, third large, rather wider than long, asymmetric, four to ten scarcely differing in width and about as wide as the apex of the third, tenth more than one-third wider than long, eleventh moderate, conoidal, not quite as long as the two preceding. *Pro-*

*thorax* two-thirds wider than long, widest just before the middle where the sides are broadly, evenly arcuate, becoming convergent and straight in basal half; base and apex equal, the former feebly arcuate, the latter truncate; basal angles obtuse; disk with a large and very deep oval excavation, occupying more than median third and extending from base to apex. *Elytra* large, nearly one-half wider and longer than the prothorax, the humeri broadly exposed. *Abdomen* distinctly narrower than the elytra, the sides straight, just visibly convergent from the base, the fourth and fifth segments equal in length. Length (abdomen strongly contracted and reflexed) 2.1 mm.; width 0.9 mm.

#### Colorado.

The abdomen is strongly reflexile in both of these species, and the male described above has large discal processes on the second and third segments, almost precisely similar to those of the preceding species. So close a resemblance in these peculiar sexual marks is indeed singular, in view of the great differences in antennal and tarsal structure and coloration of the body. I think that these large tuberosities may possibly have some function in limiting the reflexibility of the abdomen.

#### **ANEPSIOTA** n. gen.

Body parallel, moderately stout and rather feebly convex. Head oval, longer than wide, well inserted but borne on a neck which is not more than one-half as broad as the width across the eyes, the latter small, at nearly twice their length from the base, the tempora broadly rounded and convergent behind them. Antennæ long, moderately incrassate, loose, the erect setæ extremely short, the basal joint slightly longer and thicker than the second; third rather longer than the second, both elongate, obconical and similar; fourth to tenth increasing in width, the former longer than wide, the latter slightly wider than long; eleventh long, ogival, finely pointed, barely as long as the two preceding. Mentum moderate, trapezoidal, the transverse suture at its base almost obsolete but better marked at the sides because of the lateral impressions of the mentum. Ligula stout, short, the apical process well developed, split to its base, the two lobes subparallel, long and moderately slender. Labial palpi three-jointed, the basal joint stout, cylindrical, long, more than twice as long as the second, which is a little narrower and not longer than wide; third slender, oblique, not as long as the first. Maxillary palpi long and well developed, the third joint obconical, a little longer than the second. Infralateral carina obso-

lete except near the base. Prothorax rectangular, the hypomera feebly inflexed, wide and greatly visible from the side. Elytra rather short and transverse. Abdomen wide, the segments short and equal, the first two finely impressed at base. Metasternal epimera large, extending distinctly behind the elytra. Legs short, the tarsi 4-5-5-jointed, the posterior very long, almost as long as the tibiae, with the basal joint not as long as the next two, although elongate, the second fully as long as the last.

The acute mesosternal process, extending one-half the length of the coxæ with its apex free, the smaller eyes, more distant from the prothorax, narrower neck and many other structural characters necessitate a separation of this genus from *Myrmedonia*, although it is apparently somewhat allied; it is more closely allied, however, to *Atheta*, Thoms. *Quadricollis* is the type of the genus.

**A. quadricollis** n. sp.—Parallel, polished throughout, pale rufo-testaceous, the head piceous; abdomen blackish except indefinitely toward base and at apex; legs pale throughout; antennæ black, testaceous toward base; head and pronotum very finely sparsely and indistinctly punctate; elytra more distinctly and closely, subasperately so; abdomen throughout finely, subasperately and moderately closely punctate; pubescence short stiff and sparse, longer on the abdomen, where it is still denser beneath. *Head* rather narrow, two-thirds as wide as the prothorax, the occiput declivous at base but not prominent; antennæ attaining the apices of the elytra. *Prothorax* transversely rectangular, two-fifths wider than long; sides parallel, broadly arcuate anteriorly, broadly sinuate behind the middle; basal angles obtuse and rounded; base distinctly wider than the apex, broadly arcuate, the apex truncate, the angles rather broadly rounded; disk broadly, feebly convex, slightly impressed in the middle before the base. *Elytra* two-thirds wider than long, slightly shorter than the prothorax, and, at apex, just visibly wider than that part; sides feebly convergent to the base, the humeri not exposed at base, obliquely, feebly rounded; disk impressed on the suture behind the scutellum. *Abdomen*—contracted—not quite as long as the anterior parts, at base fully as wide as the elytra and behind the middle somewhat wider; sides parallel, very slightly arcuate; border moderately thick, not very deep. Length 3.0 mm.; width of abdomen 0.9 mm., of the elytra 0.8 mm.

Vancouver Island.

The deep emargination at the base of the first tergite, with its connecting membrane largely exposed when in a horizontal position, shows that the abdomen is strongly reflexile. I can observe no sexual marks about the single type specimen, which is probably a female.

The two following species are provisionally attached to *Anepsiota*

although the posterior tarsi are decidedly shorter with the four basal joints differing much less in length.

**A. insignis** Csy.—Bull. Cal. Acad. Sci., I, p. 310 (Oxypoda).

This species is allied rather closely to *wickhami*, but differs conspicuously in the wider and deeper impressions of the abdomen, the impression of the second tergite, for instance, occupying more than basal third, while in *wickhami* it is very narrow and feeble along the basal margin; in *insignis* the prothorax is relatively smaller and shorter and more strongly punctate, the elytra longer, and the antennæ rather shorter and less incrassate.

**A. wickhami** n. sp.—Compact, parallel, somewhat stout, feebly convex, minutely reticulate but strongly shining, the abdomen polished; dark piceous-brown, the head and abdomen throughout black; legs pale, yellowish; antennæ black, testaceous toward base; head and pronotum finely, very feebly and remotely punctulate; elytra finely but more distinctly, subsparately and rather closely so; abdomen finely, feebly and remotely punctulate throughout; pubescence rather long, decumbent and sparse. *Head* nearly circular, fully three-fourths as wide as the pronotum, strongly convex, feebly, coalescently biimpressed just behind the line of the antennæ, and also with a small impression at the center of the vertex between the eyes, the latter moderate, at more than their length from the base; antennæ attaining the middle of the elytra, moderately incrassate, the basal joint thicker and much longer than the second, the latter as long but not quite as thick as the third, both elongate, fourth a little longer than wide, tenth scarcely visibly wider than long, eleventh ogival, pointed, as long as the two preceding. *Prothorax* subquadrate, nearly one-half wider than long; sides parallel, feebly arcuate, becoming straight in basal half, distinctly convergent and broadly rounded toward apex; base broadly arcuate, distinctly wider than the truncate apex; basal angles obtuse and blunt; disk scarcely impressed. *Elytra* one-half wider than long, slightly longer than the prothorax, and, at apex, nearly one-fourth wider; sides distinctly divergent and nearly straight from the humeri, which are broadly rounded and oblique but not much exposed at base; disk broadly impressed on the suture throughout. *Abdomen* a little longer than the anterior parts, fully as wide as the elytra, the sides parallel and nearly straight; first three segments distinctly, subequally but rather narrowly impressed transversely at base; fourth and fifth equal in length. *Legs* moderate; first joint of the anterior tarsi much shorter than the second. Length 3.7 mm.; width 0.95 mm.

British Columbia (Stickeen River Cañon). Mr. H. F. Wickham.

In this species the elytra are much more developed than in *quadricollis*; it also has a more distinctly athetoid appearance. The mesosternal process is acute, prolonged to the middle of the coxæ and free at apex; the metasternum is not produced at all between



the coxæ, and its anterior line is only very feebly arcuate behind the narrow intercoxal space. The surface between the metasternum and the mesosternal process is occupied by a large and long subtriangular isthmus, moderately compressed anteriorly, where it extends under the apex of the latter, and subtubercularly elevated at its centre. This is probably the structure also in *quadricollis*, but in the type of that species these parts are concealed.

#### TARPHIOTA n. gen.

Body subparallel, moderately wide, flattened above, opaque. Head well inserted, very slightly constricted at base, the eyes rather large and somewhat convex; labrum transverse, truncate; infralateral carina completely wanting. Antennæ slender, filiform, scarcely visibly enlarged near the apex, setose, moniliform, the joints generally held slightly asunder by the narrow cylindrical basal peduncles; first three joints rapidly decreasing in length, the first thicker; four to six equal in width, the former slightly elongate-oval, the latter subglobular; seven to ten feebly transverse and just visibly increasing in width; eleventh as long as the two preceding, conoidal, compressed at tip. Mentum ample, trapezoidal, the apex rather broadly, feebly produced and feebly sinuato-truncate in the middle. Ligula with a deeply bifid process and two discal setæ, the labial palpi three-jointed, the first and last joints longer than the intermediate. Maxillary palpi with the third joint a little longer than the second; fourth distinct, rather stout, bulbous at base and apparently with an excessively minute bisetose apical appendage. Prothorax transversely subquadrate, narrower than the elytra, the hypomera feebly inflexed, broadly triangular and greatly visible from the side. Elytra greatly developed. Abdomen linear, the first four tergites impressed at base, the first two rather more strongly; fifth just visibly longer than the fourth. Coxæ moderately large, the intermediate extremely approximate but not contiguous, the mesosternal process long, finely acute and attenuate, extending two-thirds of their length, the metasternal process acutely produced beneath the mesosternal, the coxæ well imbedded. Metasternum large, the side-pieces narrow, the inner margin arcuately approaching close to the elytra posteriorly. Legs rather short, somewhat stout; anterior and middle tibiæ strongly spinose externally; tarsi 4-5-5-jointed, the posterior three-fourths as long as the tibiæ, with the first four joints slightly elongate and



exactly equal, the fifth longer than the two preceding; ungues long, rather strongly, almost evenly arcuate, divergent and irregular, being strongly compressed toward the middle, with the inner edge thinned out and very acute.

This interesting genus is probably more closely related to *Alianta* Thoms. than any other, but differs in its spinulose tibiæ, longer and compressed tarsal claws, much more finely acuminate mesosternal process, less incrassate antennæ and many other characters. From *Heterota*, Rey, it differs greatly in antennal structure, in the short basal joint of the hind tarsi, as well as in several features enumerated under *Alianta*. From *Halobrectha* Thoms. it differs in its almost filiform antennæ and other characters. It is confined to the sea-beaches of the Pacific coast.

**T. pallidipes** n. sp.—Moderately depressed, intense black throughout, the antennæ piceous-black, paler at base; legs extremely pale and uniformly flavate throughout; integuments opaque, finely and strongly granulato-reticulate, the abdomen less strongly, more coarsely so and somewhat shining; anterior parts finely and extremely obsolete, though rather densely, punctulate, the punctures of the elytra almost wholly obsolete, the abdomen more strongly and distinctly, evenly and somewhat closely punctate; pubescence short, rigid, dense, cinereous and conspicuous, longer, finer and less distinct on the abdomen. *Head* as long as wide, slightly but distinctly narrower than the prothorax, the eyes convex, at rather more than one-half their length from the base; tempora behind them feebly convergent and arcuate to the base; antennæ slender, extending to basal fourth of the elytra. *Prothorax* scarcely more than one-third wider than long; sides subparallel, broadly, feebly arcuate anteriorly, slightly convergent and nearly straight in basal half; basal angles slightly obtuse but scarcely at all rounded; base broadly arcuate, distinctly wider than the truncate apex; disk widest slightly before the middle, broadly flattened toward the middle, the median line sometimes obsolete impressed. *Elytra* large, quadrate, about as long as wide, one-third wider and three-fifths longer than the prothorax; sides subparallel; humeri rather broadly exposed at base. *Abdomen* distinctly narrower than the elytra and slightly wider than the prothorax, as long as the anterior parts; sides parallel and nearly straight; border moderately thick. Length 2.9 mm.; width 0.75–0.8 mm.

California (San Francisco to San Diego).

This is one of the characteristic aleocharinides of the southern California sea-beaches, and the large series in my cabinet indicates scarcely any variation. It is allied to the Alaskan *Tachyusa fucicola* Mäkl.,—afterwards referred to *Homalota* Er. nec Mann.,—but differs in its clear and uniform flavate legs, *fucicola* having the legs piceous, with the knees and tarsi paler.

Besides these two species, the genus will probably include *Homalota geniculata* Mäkl., specimens of which, or of an extremely closely allied form, I have taken abundantly at San Francisco and San Diego; it probably follows the general rule, as observed in *Motschulskium sinuatocolle*, *Aleochara sulcicollis* and several other well-known species, and extends along the entire coast from Alaska to Lower California. This distribution of sea-beach species is exactly what might be expected, as the cold inshore current from the north maintains the water at practically the same temperature throughout. I am at a loss to understand the reference of *geniculata* to *Eudera* Fvl. in our most recently published check-list; it does not remotely resemble the representatives of that genus, which are related closely to *Falagria*.

#### **EURYPRONOTA** n. gen.

Body rather broad, convex. Head moderately inserted, the nuchal constriction concealed; eyes moderate, not prominent, at more than their own length from the base, the tempora parallel, nearly straight; labrum short, transverse, truncate. Antennæ inserted in small foveæ at a noticeable distance from the eye, feebly incrassate, the basal joint compressed; second and third subequal, the latter obconical, more than twice as long as wide; tenth about as long as wide; eleventh conoidal, as long as the preceding two. Maxillary palpi moderate, the third joint much longer than the second; fourth oblique, slender, one-half as long as the third. Ligula with a slender apical process forked at apex, the labial palpi apparently three-jointed, with the third joint long and slender. Infralateral carina obsolete. Mentum trapezoidal, the apex feebly emarginate. Prothorax very large, transversely orbicular, the hind angles very broadly rounded; hypomera strongly inflexed, not visible from the side. Elytra moderate, much narrower than the prothorax. Abdomen with the basal segment alone impressed; second longer than the first or third; fifth longer than the fourth. Mesosternal process acute, extending slightly beyond the middle of the coxæ, the latter contiguous, with the acetabula apparently shallow and ill-defined. Metasternum ample; the episterna parallel; epimera not extending beyond the elytra, moderate, the suture almost obsolete, disappearing under the elytra behind the middle. Legs short; tibiæ moderate, pubescent; tarsi short, 4-5-5-jointed, the basal joint of

the posterior very short, three-fourths as long as the second; fifth fully as long as the two preceding; unguis small, arcuate, simple.

The anterior tarsi seem at first sight to be five-jointed, which would place this singular genus among the Oxypodates of Rey, where its very short basal joint of the hind tarsi would completely isolate it. There can be but little doubt, however, that the apparent fourth joint of the anterior tarsus is rigidly connected with the fifth, of which it forms the troublesome basal node, and that Eurypronota is more appropriately placed in the vicinity of Colpodota, from which it is readily distinguishable by its very large prothorax and short basal joint of the tarsi.

**E. discreta** n. sp.—Black, the pronotum, elytra, legs and antennæ toward base pale testaceous; integuments polished, sparsely pubescent, the abdomen bristling with long setæ toward apex. *Head* wider than long, suborbicular, three-fifths as wide as the prothorax, finely, sparsely punctate; antennæ nearly one-half as long as the body, joints five to eleven equal in width. *Prothorax* large, transversely subelliptical in form, nearly one-half wider than long, the base broadly, evenly arcuate, nearly continuous in curvature with the sides; apex truncate, the angles very obtuse and rounded; disk evenly, broadly convex, with feeble trace of a fine longitudinal impressed line toward the middle, finely feebly and sparsely punctate. *Elytra* more closely and strongly punctate, transverse, parallel, broadly emarginate at base, much narrower than the prothorax and with the suture scarcely more than three-fourths as long as the latter. *Abdomen* as long as the anterior parts, as wide as the elytra, parallel, feebly narrowed toward apex, finely, very sparsely punctate, more closely so toward base; border moderate. Length 1.7–1.9 mm.; width 0.45–0.5 mm.

Iowa (Cedar Rapids). Dr. E. Brendel.

Readily recognizable by the very large prothorax, which is visibly larger in the male than in the female. The European *Colpodota fungi* Grav., possesses some structural features nearly similar to those of the present species, the pronotum for example being transversely subelliptical, with nearly obsolete hind angles, but the basal joint of the hind tarsi is much longer, the prothorax not wider than the elytra, and the fourth and fifth abdominal segments equal.

**E. scopula** n. sp.—Moderately slender and convex, pale flavo-testaceous, the head black; elytra slightly less pale and more brownish; abdomen with a blackish spot occupying the fourth segment more or less; integuments shining, finely subasperately and closely punctate, the head a little more sparsely and the elytra rather more densely and strongly than the pronotum; abdomen moderately closely punctate; pubescence dense, moderately long, even and erect, longer sparser and decumbent on the abdomen, the latter bristling

with long black sparse setæ toward tip. *Head* wider than long, three-fifths as wide as the prothorax; eyes moderate, at their own length from the prothorax; infralateral carina fine and entire; antennæ slender, feebly incrassate, as long as the prothorax and elytra, bristling with long sparse setæ, first joint a little longer and thicker than the second, the latter slightly longer than the third, which is nearly twice as long as wide, four to ten feebly obconical, the latter slightly wider than long, eleventh ogival, as long as the two preceding. *Prothorax* large, three fourths wider than long, widest at basal third, the sides broadly arcuate, gradually convergent toward apex; base slightly wider than the apex, both broadly arcuate; basal angles obtuse and rounded but not obliterated; disk evenly convex, without trace of impression. *Elytra* as long as the prothorax and distinctly narrower, one-half wider than long; sides very feebly divergent from the base, scarcely visibly arcuate; disk slightly impressed on the suture behind the scutellum. *Abdomen* a little longer than the anterior parts, slightly narrower than the elytra; sides subparallel, becoming gradually convergent behind; first segment impressed at base, the second feebly, the third unimpressed; fifth a little longer than the fourth. Length 1.6 mm.; width 0.4 mm.

Rhode Island (Boston Neck).

This species is apparently congeneric with the preceding, although the vestiture is erect and not decumbent, and the posterior tarsi shorter, with the two basal joints subequal in length.

#### COLPOSURA n. gen.

Body narrow, elongate, rather convex, with a somewhat pronounced longitudinal development of abdomen. Head triangular, widest behind, not inserted, borne on a distinct but somewhat wide and very short neck, the base nearly in contact with the pronotum throughout; eyes moderate; infralateral carina completely wanting. Antennæ rather short, very feebly incrassate, the three basal joints more or less elongate. Gular sutures straight, convergent from the base nearly to the support of the mentum, then divergent to the sides of the buccal opening. Mentum small, transversely trapezoidal, truncate. Ligula with a small rounded thick median lobe, apparently perfectly simple, the labial palpi three-jointed, with the middle joint shortest. Maxillary palpi with the second joint rather small, slender, the third much longer, thicker, oval, constricted at base; fourth small, subulate. Prothorax parallel, the hypomera moderately inflexed, partially visible from the side. Elytra well developed. Abdomen long, the first tergite rather widely but feebly, the second and third narrowly and obsolete, impressed at base, the fifth much longer than the fourth; sixth



segment large and greatly exposed, the ventral plate folded over dorsally for an unusually great distance; seventh with rather complex lateral lobes. Coxæ moderate in size, the intermediate large, approximate but not contiguous, the mesosternal process short and broadly triangular, advancing for one-half their length, the point free, extremely fine and attenuate. Metasternum ample, not produced at all between the coxæ, there being simply a very feeble arcuation opposite the coxal opening, the space thence to the mesosternum transversely convex. Legs short; tibiæ rather slender; tarsi 4-5-5-jointed, the posterior distinctly shorter than the tibiæ, with the first joint moderately elongate, the first four decreasing distinctly and uniformly in length; ungues small, arcuate and simple.

The general structure of this genus allies it intimately with *Amischa* Thoms., from which it differs in the more elongate abdominal segments, much more developed sixth segment, and, especially, in the structure of the metasternum between the middle coxæ, which in *Amischa* is produced and acute. It is confined apparently to the arid mountain regions of the west. The three species described below may be thus distinguished among themselves:—

Elytral suture not in the least longer than the pronotum.

Head at base but slightly narrower than the pronotum.....**prælonga**

Head scarcely two-thirds as wide as the pronotum.....**parviceps**

Elytral suture slightly longer than the pronotum .....**angusta**

In reality only the first of these species can be regarded as the type of *Colposura*, *parviceps* and *angusta* having the metasternum finely produced between the coxæ; these therefore are much closer still to *Amischa*. I have attached them provisionally to *Colposura*, however, because of their general resemblance to *prælonga*, and because they differ from *Amischa* in their absolutely contiguous middle coxæ and more elongate ventral segments.

**C. prælonga** n. sp.—Narrow, parallel, pale ochreous-yellow throughout, the head piceous; first five tergites blackish except at apex; anterior parts finely reticulate, moderately shining, finely, feebly, rather closely but almost imperceptibly punctate, the abdomen more shining, coarsely but feebly, subimbricately sculptured; pubescence throughout fine short and decumbent. Head triangular, not quite as long as wide, the neck scarcely two-fifths as wide as the subbasal width, the latter but slightly, though distinctly, less than the prothorax; base subtruncate; basal angles rather narrowly rounded; sides



thence convergent, the eyes at one-half more than their own length from the base; antennæ very slightly longer than the head and prothorax, cylindrical, rather slender and loose, the first two joints elongate, subequal, the third shorter, obconical, strongly constricted at base and longer than wide, fourth wider, slightly transverse, five to ten still a little wider, equal, moderately transverse, eleventh suboval, barely as long as the two preceding, the apex obliquely obtuse and asymmetrically pointed. *Prothorax* one-third wider than long; sides parallel, feebly, evenly arcuate; apical angles rounded; apex strongly oblique to the neck; basal angles very obtuse and blunt; base broadly arcuate; disk feebly convex, with a rather large and feeble impression in the middle before the base. *Elytra* slightly transverse, just perceptibly wider and longer than the prothorax; sides subparallel; humeri scarcely at all exposed; disk transversely, feebly convex, not impressed. *Abdomen* much longer than the anterior parts, very slightly narrower than the elytra; sides perfectly parallel and straight to the apex of the fifth segment, the latter as densely sculptured as the others. Length (abdomen strongly exerted) 2.8 mm.; width 0.4 mm.

Wyoming (Cheyenne). Mr. H. F. Wickham.

The antebasal abdominal tergite is exerted, corneous and well developed in this species. A single specimen, probably the female, the anal segment having an ogival median lobe and quite complex lateral alæ.

**C. parviceps** n. sp.—Slender, dark brown, the head and abdomen blackish except at the apices of the segments; antennæ toward base and legs pale; anterior parts densely reticulate and feebly shining, the head and pronotum rather densely but feebly and indistinctly punctate, the elytra more distinctly but finely, very densely, granularly punctate; abdomen more shining, closely, imbricately punctate; pubescence very short, fine, rather dense. *Head* small, as long as wide, two-thirds as wide as the prothorax, widest at base, the neck deeply, acutely constricted across the dorsal surface at the base of the occiput; eyes before the middle; antennæ scarcely longer than the head and prothorax, the third joint scarcely perceptibly shorter than the second, evenly, strongly obconical, twice as long as wide, outer joints scarcely increasing in width, loosely connected, distinctly transverse, eleventh subquadrate, as long as the two preceding, obliquely, asymmetrically acuminate at apex. *Prothorax* one-half wider than long; sides subparallel, broadly evenly and feebly arcuate; base broadly arcuate, rather wider than the apex; basal angles distinct but rounded; disk broadly, strongly convex, broadly flattened in the middle toward base, just before which there is a distinct subtransverse impression. *Elytra* wider than long, just visibly wider and slightly longer than the prothorax; humeri not exposed at base. *Abdomen* much longer than the anterior parts, distinctly narrower than the elytra; sides straight and parallel to the apex of the fifth segment. Posterior tarsi very slender, only slightly shorter than the tibiæ. Length 2.4 mm.; width 0.5 mm.

Washington State (Spokane). Mr. Wickham.

Distinguishable readily from the preceding by its broader form, more transverse prothorax, smaller and slightly less triangular head, relatively longer third antennal joint, and darker color. The type seems to be a female, and the sixth segment is, on the median line, very nearly as long as the fifth.

**C. angusta** n. sp.—Slender, dark brown, the head and abdomen darker except at the apices of the segments; legs and antennæ pale, the latter slightly infusate toward tip; anterior parts finely, densely reticulate and somewhat dull, the head and pronotum finely and very indistinctly punctulate, the elytra more distinctly but still very finely and densely so; abdomen uniformly and closely, imbricately sculptured throughout, more shining; pubescence fine, short and close, less dense on the abdomen. *Head* nearly as long as wide, only slightly but distinctly narrower than the prothorax, gradually narrowed anteriorly from the rounded basal angles, the neck only feebly constricted at the base of the occiput; eyes before the middle; antennæ distinctly longer than the head and prothorax, in structure similar to the preceding species, the third joint scarcely visibly shorter than the second, outer joints equal in width, distinctly transverse. *Prothorax* one-third wider than long; sides parallel, broadly, feebly, evenly arcuate; base broadly arcuate, equal in width to the apex; basal angles distinct but rounded; disk convex, not flattened in the middle, but with a deep transversely oval impression before the base. *Elytra* scarcely visibly wider but distinctly longer than the prothorax, wider than long, the sides nearly parallel and straight; humeri obliquely, feebly rounded, not exposed at base; disk feebly impressed behind the scutellum. *Abdomen* much longer than the anterior parts, distinctly narrower than the elytra, the sides parallel and straight. Length 2.0 mm.; width 0.4 mm.

Nevada (Elko). Mr. Wickham.

This species is smaller than the others and the elytra are longer, the antennæ are also more elongate.

### **TRICHIUSA** n. gen.

Body stout, compact, convex, bristling with long sparse hairs. Head rather small, deflexed, the eyes well developed, at their own length from the base; labrum transverse, truncate with rounded angles. Mandibles moderate, the apices very slender and extremely acute, simple. Infralateral carina obsolete. Antennæ incrassate, bristling with very long setæ, the basal joint thicker and very much longer than the second, the latter distinctly larger and longer than the third, both the latter constricted at base; four to ten gradually wider, transverse; tenth nearly twice as wide as long; eleventh

very obtuse, barely as long as the two preceding; outer joints somewhat distant and perfoliate. Mentum ample, trapezoidal, truncate. Maxillary palpi with the third joint very much longer and thicker than the second; fourth small, very slender, oblique. Ligula with two minute and subparallel slender processes descending subvertically from the apex, also with two long setæ; labial palpi distinctly three-jointed, the first stouter and much longer than the second; third slender, nearly as long as the first two. Prothorax rather small, transverse, the hypomera strongly inflexed but in part visible from the side. Elytra wide, well developed, transverse. Abdomen broad, parallel, the first three dorsals narrowly and deeply impressed at base, fourth and fifth equal. Middle coxæ very widely separated, the mesosternal process scarcely more than one-third as wide as the interval separating them, gradually, feebly deflexed, abruptly and obtusely pointed or narrowly rounded at apex, extending through three-fourths of the coxal length, with its apex superposed upon the broadly rounded apex of the very short and wide metasternal process. Metasternum well developed, the sidepieces parallel, the epimera projecting slightly behind the elytra. Legs short but slender, the tarsi short, slender, distinctly 4-5-5-jointed, the four basal joints of the posterior equal, the fifth longer than the preceding two combined; unguis rather long, slender, feebly arcuate.

The wide vacant space separating the middle coxæ from the sides of the mesosternal process is probably a constant feature. This genus belongs near *Hoplandria*, from which it differs in habitus, in the parallel sides and distinct basal angles of the prothorax, much longer antennæ with a longer basal joint, entire absence of the terminal appendage of the fourth palpal joint, and, especially, in the form of the ligula, which in *Hoplandria* has a long slender almost simple terminal process; it also differs in its narrow, obtusely pointed mesosternal process and parallel abdomen.

Several of the South and Central American species described under the name *Brachida*, will probably have to be referred to *Trichiusa*; in fact the tuberculate external apical angles of the elytra in *Brachida batesi* Shp., points almost unmistakably to a relationship with *Hoplandria*.<sup>1</sup> In the European representative of

<sup>1</sup> In this connection the small tubercles near the inner apical angles of the elytra in *Brachida notha* are remarkable, in view of the four-jointed middle tarsi.

*Brachida nolha* before me, the middle tarsi are clearly four-jointed, but they are equally plainly five-jointed in *Trichiusa*, and the two genera differ completely in the form and relations of the intermesocoxal sclerites.

Although most closely allied to *Hoplandria*, the species of *Trichiusa* bear a striking resemblance to *Gyrophæna*, having the same stout compact form, but may be known by the long hirsute vestiture and the distinctly five-jointed middle tarsi. Of the following five species, the first is to be considered the type; they are however all congeneric:—

Antennæ strongly incrassate and stout from the fourth joint, which is strongly transverse.....**compacta**

Antennæ not so thick, more gradually and feebly incrassate, the fourth joint subglobular and only slightly transverse.

Body black throughout.

Prothorax at base nearly as wide as the elytra, the humeri scarcely at all exposed.

Deflexed apical angles of the prothorax obtuse but only very narrowly rounded; elytral vestiture shorter, coarser and subdecumbent, a few long erect setæ bristling along the sides of the body.....**setigera**

Deflexed apical angles rounded; vestiture throughout the body consisting of long equal closely placed and erect hairs, without longer bristling setæ along the sides.....**pilosa**

Prothorax at base narrower than the elytra, the humeri distinctly exposed; vestiture rather long but decumbent; lateral setæ subobsolete.

**robustula**

Body pale rufo-testaceous throughout, with a small piceous spot toward the middle of the fourth tergite; prothorax small; humeri broadly exposed; vestiture very long, sparse but shaggy.....**parvicollis**

The species appear to be rather numerous, and others are perhaps known at present in cabinets.

**T. compacta** n. sp.—Stout, subparallel, convex, shining, the elytra polished, black, the antennæ toward base, elytra, apical parts of the first three tergites and legs paler, rufo-testaceous; head and pronotum very minutely sparsely punctate, the former with some larger punctures, the latter with a few scattered large punctures toward base; elytra rather coarsely, sparsely and somewhat irregularly punctured; abdomen sparsely, minutely granulato-punctate, the impressed parts subimpunctate; pubescence rather long, sparse and coarse. *Head* three-fourths as wide as the prothorax, wider than long, with a feeble central impression, the antennæ longer than the prothorax and elytra, strongly incrassate. *Prothorax* a little less than twice as wide as long; sides subparallel, arcuate; base and apex broadly, strongly arcuate; apical angles moderately deflexed, broadly rounded; basal



obtuse but distinct, not blunt; disk strongly convex, finely beaded at the sides and base, very obsoletely impressed in the middle before the base. *Elytra* much wider than long, one-fourth wider and two-fifths longer than the prothorax; sides parallel, feebly arcuate; humeri slightly exposed. *Abdomen* longer than the anterior parts, very nearly as wide as the elytra; sides parallel, just visibly arcuate; border moderate; under surface densely, coarsely fulvo-pubescent. *Legs* clothed sparsely with long hairs, the upper sides of the femora and trochanters polished, impunctate and glabrous. Length 2.0 mm.; width 0.7 mm.

District of Columbia.

One of the three specimens has the pronotum also rufous, and another has the pronotum and elytra black; this latter specimen has the prothorax somewhat smaller, the elytra fully one-third wider than that part, and with longer, more erect pubescence. It is probably a variable species, with considerable sexual disparity also, although the sexual marks at the apex of the venter are apparently very feeble, and there are none on the tergum in the examples before me.

**T. setigera** n. sp.—Moderately stout and convex, thick, subparallel, black, the legs and antennæ toward base pale, flavescent; integuments feebly reticulate throughout but polished, the head and pronotum finely, sparsely punctate, the elytra more strongly but simply and not very densely so, the abdomen sparsely and asperately; pubescence long and conspicuous. *Head* wider than long, only slightly but distinctly narrower than the prothorax; eyes rather prominent; tempora equal to them in length and feebly convergent and arcuate to the base; surface flattened; antennæ strongly setose, feebly, gradually incrassate, about attaining basal third of the elytra, the first joint much longer than the second, the latter thicker and a little longer than the third, fourth slightly wider than long, subquadrate, tenth twice as wide as the fourth and rather strongly transverse. *Prothorax* transversely subrectangular, nearly two-thirds wider than long; sides parallel, broadly arcuate; base and apex subequal, broadly, strongly arcuate; basal angles slightly obtuse and distinct; disk strongly, evenly convex, very feebly impressed in the middle toward base. *Elytra* transverse, about one-fourth wider and nearly one-half longer than the prothorax; sides quite perceptibly divergent from the base; disk feebly convex. *Abdomen*, at the middle, as wide as the elytra, but at base distinctly narrower, a little longer than the anterior parts; sides parallel and arcuate; segments short, transverse, all equal in length, the first three strongly, subequally impressed at base; border strong. Length 1.65 mm.; width 0.6 mm.

New Jersey.

Smaller and rather more slender than *compacta*, to which it is perhaps most strongly allied, and with strikingly different antennal structure.



**T. pilosa** n. sp.—Suboval, convex, polished, black throughout; legs and antennæ toward base pale; integuments finely, rather strongly reticulate throughout; head and pronotum subimpunctate; elytra finely, very feebly, rather closely so, the abdomen finely, very sparsely and granularly; pubescence even in length, long, erect, moderately dense, conspicuous. *Head* nearly as long as wide, small, not more than two-thirds as wide as the prothorax; eyes prominent; tempora longer than the eye, feebly convergent and straight behind them, rounded at base; surface broadly, strongly impressed in the middle; antennæ stout, bristling, but slightly longer than the head and prothorax, the first joint distinctly longer than the second, the latter much longer than the third, which is scarcely at all longer than wide, constricted at base, fourth a little wider than long, four to six differing but little, seven to ten larger, more pubescent, increasing more rapidly in width, tenth about twice as wide as long, eleventh scarcely as long as the two preceding. *Prothorax* fully two-thirds wider than long, sides strongly convergent and arcuate from base to apex; base very much wider than the apex, both strongly arcuate; basal angles very obtuse but distinct; disk strongly convex, with three extremely obsolete parallel median longitudinal impressions, and a very obsolete transverse impression before the base. *Elytra* wider than long, one-third wider and nearly one-half longer than the prothorax; sides perceptibly divergent from the base and broadly arcuate; disk impressed behind the scutellum. *Abdomen* in the middle as wide as the elytra, at base very slightly narrower, as long as the anterior parts. Length 1.4 mm.; width 0.5 mm.

Rhode Island (Boston Neck).

A very interesting species, wholly different from the preceding in the form of the prothorax, and from *robustula* in its narrower form, erect hirsute vestiture and other structural characters. Two specimens. The impressions of the pronotum are extremely feeble, and join the transverse subbasal impression; in one of the specimens the longitudinal impressions are obsolete, and at best they can be only faintly seen.

**T. robustula** n. sp.—Rather stout and convex, suboval, black, the legs and antennæ toward base pale; integuments densely and strongly reticulate and alutaceous, the head and abdomen less strongly so and shining; head subimpunctate; pronotum very minutely and feebly so, the elytra more strongly densely and subasperately but still very finely, the abdomen sparsely, extremely finely and subasperately; pubescence rather long, decumbent, conspicuous, ashy in color, very sparse on the head and abdomen. *Head* rather small, convex, impressed in the centre, scarcely three-fourths as wide as the prothorax, wider than long; eyes at somewhat more than their own length from the base, not very prominent, the tempora perfectly parallel and straight behind them, then broadly rounded to the base; antennæ attaining basal third of the elytra, the basal joint longer than the second, the latter as long as the next two, fourth slightly wider than long, outer joints gradually

strongly transverse and perfoliate. *Prothorax* transversely oval, three-fourths wider than long, the sides rounded and convergent anteriorly, becoming parallel and nearly straight in basal half; base slightly but distinctly wider than the apex, both strongly arcuate; basal angles obtuse and blunt; disk strongly convex, the median line feebly impressed and with a feeble transverse impression before the base. *Elytra* transverse, nearly one-half wider and two-fifths longer than the prothorax; sides slightly divergent and arcuate from the humeri, the latter narrowly rounded, rather broadly exposed at base; disk convex, very broadly, feebly impressed near the scutellum. *Abdomen* short, when moderately contracted not as long as the anterior parts, as wide as the elytra; border rather strong and thick. Length 1.35 mm.; width 0.55 mm.

Iowa (Cedar Rapids). Dr. E. Brendel.

The large series before me exhibits scarcely any variation, even in size. A specimen which I took at Galveston, Texas, differs but very slightly and is probably conspecific.

**T. parvicollis** n. sp.—Oblong, convex, pale rufo-testaceous throughout, with the exception of a small piceous cloud on the fourth tergite; integuments strongly shining, the head and pronotum subimpunctate, the elytra very minutely, rather closely but scarcely distinguishably, the abdomen minutely, rather closely and subsparately; vestiture long, erect, ashy and bristling from every part of the body. *Head* wider than long, strongly impressed in the centre, fully three-fourths as wide as the prothorax, the eyes rather large, at scarcely more than their own length from the base; tempora feebly convergent and arcuate behind them to the very broad neck; antennæ longer, unusually slender, extending to the middle of the elytra, the first joint longer than the second, the latter scarcely longer but thicker than the third, four to six moniliform, subglobular, nearly similar, seven to ten very slightly increasing in width, the tenth slightly transverse, eleventh small, ovoidal, obtusely acuminate, only one-half longer than the tenth. *Prothorax* small, transverse, three-fifths wider than long, the sides strongly convergent, evenly and moderately arcuate from base to apex; base much broader and more strongly arcuate than the apex; basal angles obtuse and blunt; disk strongly convex, feebly impressed along the median line toward base only. *Elytra* strongly transverse, three-fifths wider and two-fifths longer than the prothorax; sides but feebly divergent and slightly arcuate from the humeri, which are right, scarcely rounded and broadly, transversely exposed at base. *Abdomen* scarcely as long as the anterior parts, in the middle as wide as the elytra, but at base distinctly narrower; sides parallel and arcuate; border thick; posterior margins of tergites three and four broadly, feebly sinuate in circular arc throughout the width; fifth distinctly longer than the fourth, transverse at apex. Posterior tarsi two-thirds as long as the tibiæ, the first four joints equal, the fifth as long as the preceding two. Length 1.7 mm.; width 0.65 mm.

Delaware.

This species is somewhat aberrant in its longer, more slender and less incrassate antennæ, and longer fifth ventral segment. It is

however congeneric without doubt. A single specimen of undetermined sex.

**PLATANDRIA** n. gen.

Body rather broad, fusiform. Head well inserted, not constricted at base, the eyes large, oval; infralateral carina strong, entire. Antennæ rather short, slender, becoming gradually strongly incrassate in apical half. Mentum rather large, transversely trapezoidal, broadly sinuato-truncate at apex. Ligula with a slender process which is deeply forked at apex, each lobe bearing at its apex a slender flexible and attenuate appendage. Labial palpi three-jointed, the basal joint thick, long, cylindrical, obliquely truncate at apex; third slender, with a terminal appendage. Maxillary palpi well developed, the third joint slightly longer than the second, the fourth long and distinct, with a slender supplementary appendage. Prothorax nearly as in *Hoplandria*, the hypomera strongly inflexed and invisible from the side. Elytra well developed. Abdomen gradually narrowed from the base; border strong, the two basal tergites strongly but rather narrowly impressed at base, the third finely and very feebly so; fifth much longer than the fourth; sixth distinct and wide. Middle coxæ large, oblique, deeply inserted, narrowly separated, the mesosternal process very long and acutely attenuate, extending very nearly to the tips of the coxæ, with its apex free and overlapping the apex of the rather short but acute metasternal process. Metasternum large, the parapleuræ moderately wide, perfectly parallel, the epimera extending scarcely at all behind the elytra. Legs moderate in length, the tibiæ slender; tarsi long, slender, 4-5-5-jointed, the posterior very nearly as long as the tibiæ, with the basal joint elongate, the first four decreasing rapidly in length, the fifth somewhat longer and much more slender than the first; unguis moderately long, slender, rather strongly arcuate and divaricate.

The paraglossæ are not distinct in the type and appear to be much less developed than in *Hoplandria* and *Platonica*, with which this genus is to be associated. It differs from the first in the form of the ligula and structure of the tarsi, and from the latter altogether in the structure of the mesocoxal sclerites. In *Hoplandria ochracea* the process of the ligula is long and slender, perfectly cylindrical, but bearing at its extreme tip two very minute subparallel and apparently setiform appendages, almost exactly as in the American species of *Echidnoglossa*.

**P. mormonica** n. sp.—Rather broad, somewhat shining, the abdomen polished, dark rufo-piceous in color, the abdomen black throughout; legs dark, rufescent; antennæ black, pale toward base; head and pronotum minutely, not densely, evenly punctate, the elytra hardly less minutely and rather more sparsely, but more distinctly so; abdomen finely, evenly, somewhat closely punctate throughout, and with somewhat well-marked imbricate sculpture; pubescence short, subrecumbent, rather dense but not conspicuous, longer and sparser on the abdomen. *Head* small, nearly as long as wide, slightly more than one-half as wide as the prothorax, the eyes at about one-half of their length from the base; antennæ about as long as the head and prothorax, the first three joints subequal in length, the first stouter, cylindrical, third one-half longer than the fourth which is distinctly longer than wide, fifth subquadrate, joints five to ten gradually and rapidly broader, the tenth twice as wide as long, eleventh as long as the two preceding, moderately pointed at apex. *Prothorax* three-fourths wider than long, the sides rounded and parallel near the base, then strongly convergent and nearly straight to the apex; basal angles very obtuse and blunt; base broadly evenly and strongly arcuate, much wider than the subtruncate apex; disk strongly convex, perfectly even, unimpressed. *Elytra* two-fifths wider than long, at apex about one-fifth wider than the prothorax, nearly one-half longer than the latter; humeri obliquely, feebly rounded externally; disk broadly, indefinitely impressed behind the scutellum. *Abdomen* at base quite distinctly narrower than the elytra, much longer than the anterior parts. Length 2.7 mm.; width 0.8 mm.

Utah (Provo). Mr. H. F. Wickham.

The single type before me is a male, having a long distinct carina on the fifth tergite and another, only slightly shorter, on the sixth; elytral angles and second segment not in the least modified.

#### GNYPETA Thoms.

A genus allied to *Tachyusa* and comprising but few species at present.

**G. atrolucens** n. sp.—Polished, intense black, throughout; base and apex of the tibiæ and tarsi paler; antennæ not paler at base; pubescence not very dense, short, stiff, erect, pale brown in color and not conspicuous. *Head* slightly wider than long, finely, sparsely punctate, the vertex broadly, feebly impressed in the middle; eyes large, somewhat convex, setose, at less than their own length from the base; tempora broadly rounded at base to the very wide neck; antennæ long, slender, feebly incrassate, nearly two-fifths as long as the body. *Prothorax* about one-third wider than long, widest at apical third where the sides are narrowly rounded and somewhat prominent, thence feebly convergent and distinctly sinuate to the basal angles, the latter obtuse but not rounded; base broadly arcuate, wider than the apex; disk convex, feebly impressed in a transversely oval discal area before the scutellum. *Elytra* nearly one-half wider and longer than the prothorax, moderately trans-



verse, parallel, each broadly feebly and obliquely sigmoid at apex; humeri broadly exposed and transverse at base; disk minutely, feebly punctate like the pronotum, broadly impressed behind the scutellum. *Abdomen* parallel, slightly longer than the anterior parts, much narrower than the elytra, rather wider than the prothorax, finely, feebly, almost evenly, not densely punctate, the transverse impressions of the three basal segments equal, strong, coarsely but very sparsely punctate; border thick, not very deep. *Legs* rather long and slender, the tarsi moderate in length. Length 2.6 mm.; width 0.75 mm.

New York.

Closely resembles the European *carbonaria* Mann., but differs in its relatively larger head and smaller prothorax, much more widely exposed elytral humeri and shorter, much less conspicuous pubescence.

#### **ANEUROTA** n. gen.

Body linear and rather depressed. Head large, transverse at base, feebly sinuate in the middle, borne on an extremely short, narrow neck which is less than one-fourth as wide as the base; eyes large, feebly convex, before the middle; tempora long, parallel, feebly arcuate. Antennæ widely separated, feebly incrassate, the second joint nearly as long as the next two; third strongly obconical, nearly twice as long as wide; tenth slightly wider than long. Labrum short, truncate. Infralateral carina completely obsolete; gular sutures distant, parallel. Mentum very short, strongly transverse, trapezoidal, deeply sinuate at apex, the sinus filled with a transparent hypoglottis. Maxillary palpi rather small and slender, the fourth joint minute, oblique. Ligula not distinct, the labial palpi very small, apparently three-jointed. Prothorax small, cordiform, the flanks feebly inflexed and not separated by a fine line; base finely and distinctly margined, the basal angles sharply defined. Elytra well developed. Abdomen much shorter than the anterior parts, the sides straight and almost imperceptibly divergent from base to apex; first three segments deeply impressed and impunctate at base; fourth and fifth equal and a little longer, unimpressed. Prosternum moderately developed before the coxæ. Middle coxæ separated by one-third of their width, the acetabula deep and well-defined; mesosternal process narrowly truncate and extending slightly beyond the middle. Legs short but rather slender; tarsi 4-5-5-jointed, the posterior distinctly shorter than the tibiæ, with the basal joint moderate, not longer than the next two.

The type of this genus is a minute species having a peculiar



linear depressed form. It is allied to *Cardiola*, but differs in its parallel form, in the more elongate second antennal joint, more prolonged mesosternal process, shorter basal joint of the hind tarsi, and in having a fine distinct basal margin of the pronotum with well-defined basal angles. It resembles *Cardiola* in the absence of a dividing line between the pronotum and its inflexed flanks.

**A. sulcifrons** n. sp.—Polished, piceous-black, the antennæ concolorous throughout; elytra and legs dark piceous-brown; punctures very minute sparse and subgranuliform, except on the abdomen, where they are a little larger, more distinct and nearly simple or slightly asperate; pubescence fine and sparse but rather long and distinct. *Head* slightly longer and much wider than the prothorax, the eyes at one-half more than their own length from the base; antennæ about as long as the head and prothorax; surface with a coarse deeply excavated groove extending from the apical margin behind the middle, there becoming finer to the base. *Prothorax* fully as long as wide, widest at apical fourth where the sides are very strongly rounded, thence extremely oblique to the neck and distinctly convergent and nearly straight to the base, the latter truncate; disk transversely convex, with a deep median sulcus extending from base to apex. *Elytra* about as large as the head, distinctly wider and longer than the prothorax, subquadrate, parallel and straight at the sides; humeri broadly exposed at base; disk flat, narrowly impressed along the suture. *Abdomen* at base distinctly narrower than the elytra, but, at apex, subequal in width; border thin, nearly vertical. Length 1.4 mm.; width 0.3 mm.

Florida.

The deep sulcus of the front may be a sexual peculiarity, in part at least.

#### BOLITOCARIDES.

Antennæ 11-jointed; tarsi 4-4-5-jointed.

#### APHELOGLOSSA n. gen.

Body elongate, subparallel and subdepressed. Head rather large, transverse, narrowed toward base but scarcely constricted, the eyes rather large, convex, setose and prominent, at less than their own length from the base; infralateral carina feebly traceable, interrupted and nearly obsolete, antennæ rather long, thick, feebly incrassate, finely pubescent, bristling with long sparse setæ, the basal joint thicker and much longer than the second or third, the latter equal, elongate; fourth subquadrate; tenth one-third wider than long; eleventh ogival, as long as the two preceding. Mentum

large, feebly transverse, trapezoidal, broadly impressed laterally, the apex strongly emarginate throughout the width. Ligula apparently with a small acuminate apical process; labial palpi very long, two-jointed, the second about twice as long as the first, slender, somewhat contorted toward apex. Maxillary palpi normal. Prothorax subparallel, the sides feebly convergent toward base, and, viewed sublaterally, broadly, strongly sinuate before the basal angles; hypomera feebly inflexed, broadly visible from the side, entire, broad behind. Elytra well developed, parallel. Abdomen parallel, the first three segments impressed at base, the fourth and fifth equal. Anterior coxæ moderate; intermediate widely separated, the mesosternal process extending to the middle, flat, broadly rounded at apex, the latter slightly superposed on the tip of the broad metasternal process; acetabula deep, sharply defined. Metasternum large and long, the side pieces moderate in width, parallel. Legs rather short; tibiæ clothed densely and evenly with short stiff inclined setæ, with a very long black seta just behind the middle and another near the tip externally; tarsi 4-4-5 jointed, slender, the last joint of the anterior and intermediate much longer than the basal three; posterior much shorter than the tibiæ, but very slender, the four basal joints exactly equal, fifth very long but distinctly shorter than the first four together; claws very long, slender, feebly arcuate.

This genus appears to be allied to the European *Diestota*, but differs in the subobsolete infralateral carina of the head, longer, less incrassate antennæ, emarginate mentum, more developed prosternum and longer terminal joint of the tarsi. *Diestota funebris* Shp., will probably have to be referred to *Apheloglossa*.

**A. rufipennis** n. sp.—Subparallel, black, basal parts of the antennæ and legs throughout dark rufo-testaceous; elytra rufous, clouded with blackish in a broad subtriangular basal area and externally toward apex; head and pronotum minutely, strongly granulato-reticulate and perfectly opaque, finely, closely but almost imperceptibly punctate; elytra finely reticulate, more alutaceous, minutely, very densely, subasperately but not very plainly punctate, the abdomen shining, finely, closely, distinctly punctate, more sparsely toward tip; pubescence anteriorly short, suberect, dense but not conspicuous, still denser on the elytra, longer but sparse on the abdomen. *Head* transverse, fully four-fifths as wide as the prothorax; antennæ nearly as long as the prothorax and elytra together, very widely distant at base. *Prothorax* transverse, three-fifths wider than long, the sides from above subparallel, broadly, evenly arcuate; apex truncate, just visibly narrower than the base, the apical angles obtuse but distinct from above; base broadly, feebly arcuate; basal angles

obtuse but very distinct, not in the least blunt; disk even, unimpressed, feebly convex. *Elytra* transverse, nearly one-third wider and one-half longer than the prothorax; sides parallel, feebly arcuate; humeri broadly exposed at base; disk flattened, very feebly, broadly impressed on the suture toward base. *Abdomen* distinctly longer than the anterior parts, much narrower than the elytra; sides parallel, nearly straight; border thick; under surface finely, densely punctate and densely clothed with long decumbent pubescence. Posterior tarsi three-fourths as long as the tibiæ. Length 3.3–3.6 mm.; width 0.85 mm.

Arizona (Benson). Mr. G. W. Dunn.

The general appearance of this insect suggests a community of habit with the large *Maseocharæ* of the same regions.

#### PLACUSA Erichs.

The following species perfectly resembles the European *complanata*, but is narrower, with shorter antennæ, and denser and still more obscure sculpture.

**P. tacomæ** n. sp.—Oblong-elongate, strongly depressed, black throughout, the legs and antennæ piceous, the elytra frequently paler; integuments extremely dull opaque and minutely, densely granulato-reticulate, the elytra rather less opaque, the abdomen shining; head and pronotum very minutely, extremely densely and almost undistinguishably punctate, the elytra rather less minutely, extremely densely and more visibly so, the abdomen distinctly but very densely punctate, more sparsely near the apex; pubescence very minute and scarcely noticeable. *Head* large, wider than long, distinctly narrower than the prothorax, the surface flat; antennæ one-half longer than the head, the basal joint a little longer and thicker than the second, the latter longer and much thicker than the third, which is longer than wide and strongly constricted at base, four to ten very strongly transverse, seven to ten equal in width, about twice as wide as long, eleventh obtuse, as long as the preceding two. *Prothorax* twice as wide as long, the sides just visibly convergent from base to apex and broadly, strongly arcuate; base broadly, strongly arcuate, becoming feebly sinuate near the basal angles, which are obtuse but well marked; disk not distinctly impressed. *Elytra* at base a little narrower, at apex somewhat broader, than the prothorax, about one-third longer; sides straight; humeri completely concealed at base; apex transversely truncate; disk flat. *Abdomen* distinctly longer than the anterior parts, evidently narrower than the elytra, the sides subparallel at base, becoming gradually convergent behind; border rather thick, the first tergite very narrowly and feebly, the others not perceptibly, impressed at base; fifth much longer than the fourth; ante-basal infraelytral tergite corneous and frequently exerted. *Legs* short; tarsi long, the posterior evidently shorter than the tibiæ, with the first joint about as long as the next two. Length 1.9 mm.; width 0.7 mm.

Washington State (Spokane).

The male from which the above description is taken, has the apex of the sixth tergite prolonged in the middle in a short broad truncate ligula, and, between this and each side, there is a slender spine as long as the ligula, which is gradually and feebly bent toward the middle. This species was taken by Mr. Wickham, apparently in considerable numbers.

*P. complanata* is said by Mr. Fauvel to occur in Massachusetts; among other differences it has the joints of the antennæ much less transverse than *tacomæ*.

### SILUSA Erichs.

**S. vesperis** n. sp.—Stout, subparallel, rather thick and convex, blackish, the elytra rather more rufo-piceous; legs pale; antennæ dark red-brown, paler toward base; integuments strongly shining throughout, the abdomen highly polished; head and pronotum extremely finely and very sparsely punctate; elytra strongly densely and subasperately punctate, the abdomen finely, sparsely so, almost impunctate toward apex; pubescence rather coarse, not dense but distinct, very sparse on the abdomen. *Head* distinctly wider than long, scarcely four-fifths as wide as the prothorax; eyes moderate, setose, at rather less than their length from the base; antennæ long and rather strongly incrassate, finely pubescent and bristling with long erect setæ, fully as long as the pronotum and elytra, second joint a little shorter than the third, the latter elongate but shorter than the first, fourth and fifth feebly obconical, the former a little longer than wide, the latter as wide as long, tenth about one-third wider than long, eleventh as long as the two preceding. *Prothorax* transverse, three-fifths wider than long, widest at the middle; sides broadly arcuate anteriorly, feebly convergent and slightly sinuate toward base; apex truncate, slightly narrower than the base, the latter broadly, distinctly arcuate, becoming straight or very feebly sinuate near the basal angles, which are obtuse but distinct; disk broadly convex, with a small transverse impression in the middle near the base. *Elytra* nearly one-half wider than long, just visibly wider and distinctly longer than the prothorax; sides parallel, very feebly arcuate; humeri slightly rounded to the pronotum; lateral apical sinuations strong; disk feebly impressed along the suture. *Abdomen* at base slightly narrower than the elytra, as long as the anterior parts; sides subparallel toward base, feebly convergent behind; border rather thick; first three tergites transversely impressed at base; fourth and fifth equal in length. *Legs* moderate; first joint of the hind tarsi slightly longer than the second, the fifth as long as the preceding three; fourth joint of the intermediate rather longer than the other three together. Length 2.8 mm.; width 0.85 mm.



California (Humboldt Co.).

The labial palpi are very long and slender, composed apparently of two closely connected joints, forming an obtuse angle, the second about one-half longer than the first and feebly acuminate toward tip. This species agrees tolerably well in form and size with *rubiginosa*, but the sides of the prothorax are more convergent and sinuate toward base, and the basal angles are much more pronounced; the antennæ, also, are longer, rather looser and more incrassate.

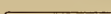
*Silusa gracilis* Sachse, is a more slender parallel and less convex species, with the second joint of the labial palpi much shorter, not longer than the first, and somewhat claviform. I have specimens agreeing very well with the description from Pennsylvania and Iowa. The following is a species more nearly resembling *gracilis*, but much smaller still:—

**S. nanula** n. sp.—Rather narrow, thick, subparallel, moderately shining, the head coarsely, very densely but inconspicuously punctate, the punctures round, very shallow, variolate and somewhat umbilicate; pronotum reticulate, finely densely and granularly punctate; elytra coarsely deeply and densely so, the punctures normal but giving a somewhat rugose appearance; abdomen finely but strongly, granularly and rather densely punctured toward base; pubescence fine, suberect, dense but not conspicuous; abdomen with long bristling pubescence toward apex, especially beneath; color very dark red-brown, the abdomen feebly rufescent toward base, pale at tip; legs pale flavate; antennæ dusky, the basal joints and also the eleventh paler. *Head* transverse, fully three-fourths as wide as the prothorax; eyes moderately prominent, at their own length from the base; antennæ short, feebly incrassate, but slightly longer than the head and prothorax, bristling with long sparse setæ, basal joint much longer and thicker than the second, the latter longer than the third, which is twice as long as wide, fourth subquadrate, outer joints becoming strongly transverse, also more and more obconical and with a corona of dense ashy pubescence, the tenth scarcely twice as wide as long, eleventh large, conoidal, as long as the two preceding. *Prothorax* three-fourths wider than long; sides parallel, almost evenly, distinctly arcuate, becoming straight and convergent in basal half; base and apex subequal, the former more arcuate; basal angles very obtuse but distinct; basal beaded edge conspicuous and rather abruptly defined; disk very obsoletely, broadly flattened in the middle before the base. *Elytra* subquadrate, one-fourth wider and fully one-half longer than the prothorax; sides nearly straight, the humeri slightly visible. *Abdomen* narrower than the elytra but wider than the prothorax; sides parallel and nearly straight; first three segments impressed at base; fifth longer than the fourth. *Legs* moderate; posterior tarsi short, the first two joints oblong, equal. Length 1.7 mm.; width 0.5 mm.



Rhode Island (Boston Neck).

The description is drawn from the male, this sex having a small but rather strong carina near the apex of the fifth dorsal segment, and another, more feeble, near the apex of the sixth.



There is a remarkable and isolated group of genera inhabiting the northern beaches of the Pacific coast, having the elytra extremely short, the tibiae short, completely devoid of lateral spinules, and clothed with long sparse erect hairs, the tarsi very short, thick, 4-4-5-jointed, the first four of the posterior equal or with the first just visibly longer than the second, the prothorax narrowed toward base, with the hypomera feebly inflexed, and the labial palpi two-jointed. They may be defined as follows:—

Metasternum invisible except between the apices of the middle coxæ, which extend to or slightly upon the bases of the posterior; labial palpi greatly developed, the basal joint stout, cylindrical, more than twice as long as the second and as long as the second maxillary; integuments extremely opaque and densely granulato-reticulate throughout.

Body broad, the abdomen inflated, with no segment at all impressed at base, the metasternal side-pieces extending behind the elytra; labrum very strongly transverse, four times as wide as long, truncate; mentum strongly transverse, the apex transversely truncate and with an abrupt shallow emargination occupying median third, with its bottom transverse; ligula with a slender deflexed terminal process, the supports of the palpi separated by a rather wide parallel intermediate piece; mandibles serrulate from the internal submedian tooth nearly to the apex; infralateral carina partially obsolete ..... **Liparocephalus**

Body narrow, the abdomen not inflated although rather broader than the anterior parts, the first three segments transversely impressed at base; metasternal side-pieces not extending behind the elytra; labrum smaller, twice as wide as long, rounded; mentum narrower, more rounded at apex, with a small median emargination in circular arc; process of ligula not visible in the types; supports of the labial palpi very approximate, separated by a slender acute process; mandibles smaller, not serrulate within; infralateral carina feeble but almost entire ..... **Dialota**

Metasternum longer, the apices of the intermediate separated from the bases of the posterior coxæ by a conspicuous interval; labial palpi long but much more slender, the basal joint slightly longer and only very slightly thicker than the second; eyes extremely small, rudimentary; integuments more finely sculptured but dull ..... **Amblopusa**

In these genera the middle coxæ are contiguous and their acetabula indefinitely limited behind; in *Liparocephalus* and *Dialota* the

coxæ are all very large but are much smaller in *Amblopusa*. They would be allied to *Sipalia* if the labial palpi were three-jointed and the middle acetabula sharply defined.

### LIPAROCEPHALUS Mäkl.

Of this singular genus there are two species very closely allied but undoubtedly distinct, as follows:—

Body black throughout; antennæ shorter, barely as long as the head and prothorax, the outer joints slightly wider than long; prothorax slightly transverse, moderately constricted behind, more than twice as long as the elytra.....**brevipennis** Mäkl.

Body black, the head and prothorax rufo-testaceous; antennæ distinctly longer than the head and prothorax, the outer joints not wider than long; prothorax strongly transverse, very strongly constricted at base and not more than twice as long as the elytra.....**cordicollis** Lec.

These differences appear to be independent of sex, the sixth ventral being broadly lobed in the middle in the four specimens which I have examined; these specimens are from Washington State and Queen Charlotte Island.

In placing the genus *Liparocephalus* in the *Pæderini*, Mäklin evidently had in view only the peculiar dull lustre, a characteristic feature in *Lithocharis* and some allied genera; the shape of the head also reminds us of some *pæderides*.

### DIAULOTA n. gen.

Although greatly resembling *Liparocephalus* in general organization, dense granulose sculpture and large coxæ, the species of *Diaulota* can be distinguished readily by their narrow parallel body with undilated abdomen, more convex eyes, shorter antennæ, narrower and more elongate head, much less constricted prothorax and many other characters as given in the table. In my cabinet there are representatives of two species:—

Tibiæ clothed a little more thinly with longer hair; prothorax relatively longer, less narrowed behind and much narrower than the elytra.

#### **densissima**

Tibiæ clothed with shorter hair; pubescence of the upper surface shorter and less conspicuous; prothorax at its widest part fully as wide as the elytra.

#### **insolita**

**D. densissima** n. sp.—Black throughout, the anterior parts densely opaque, the abdomen dull but more alutaceous; pubescence moderately

dense, fine, erect, not very conspicuous. *Head* narrow, elongate, the sides parallel and feebly arcuate; eyes small, rather coarsely faceted, convex, at twice their length from the base; antennæ short, one-third longer than the head, moderately incrassate, the second joint thick, nearly as wide as the first, much thicker than the third, but slightly longer than wide, third strongly obconical, slightly longer than wide, four to ten transverse, gradually wider, eleventh small, conoidal, not as long as the preceding two. *Prothorax* but very slightly wider than the head and about as long, fully as long as wide; sides subparallel, broadly feebly and evenly arcuate, but slightly more convergent toward base than apex; disk evenly convex, widest slightly before the middle; apex broadly arcuate and just visibly wider than the base. *Elytra* short, fully twice as wide as long, one-half as long as the prothorax and nearly one-fifth wider; sides feebly convergent from apex to base and feebly, evenly arcuate. *Abdomen* thick, parallel, fully as wide as the elytra, nearly twice as long as the anterior parts; sides nearly straight; border thick; surface transversely and feebly convex. *Tibiæ* moderate in length; posterior tarsi barely one-half as long as the tibiæ, the first four joints very short, equal; unguis long, slender, evenly and rather strongly arcuate. Length 2.7 mm.; width 0.7 mm.

Alaska (mainland opposite Ft. Wrangel). Mr. H. F. Wickham.

The single specimen serving as the type is apparently a female. The other species is nearly similar, but differs in the following characters:—

**D. insolita** n. sp.—Black throughout and very dull, body narrower. *Prothorax* wider than the head, not quite as long as wide, wider just before the middle where the sides are broadly arcuate to the apex, distinctly convergent but not sinuate to the base, which is noticeably narrower than the apex. *Elytra* barely twice as wide as long, equal in width to the prothorax and rather more than one-half as long. *Abdomen* long, at base as wide as the elytra; sides straight, gradually divergent behind, so that the apex of the fourth segment is fully one-third wider than the elytra; border thick. Length (extended) 2.8 mm.; width 0.6 mm.

Queen Charlotte Island.

The male has the sixth ventral plate prolonged in the middle in a rounded triangular lobe. In both of these species the last three joints of the antennæ form a kind of club, the ninth and tenth being longer as well as wider than those preceding them.

The label states that the type specimen was taken near low water on the beach.

#### **AMBLOPUSA** n. gen.

Body extremely slender, parallel, linear, thick and slightly convex. Head oval, parallel, the sides broadly arcuate; labrum mode-

rately transverse, rounded; infralateral carina obsolete, feebly traceable very near the base. Eyes rudimentary, consisting of five or six coarse facets in a cluster behind the mandibles. Antennæ rather short, moderately incrassate; outer joints subsimilar, strongly transverse; second cylindrical, as long as the next two and about as thick. Mentum large, very slightly wider than long, trapezoidal, the sides feebly sinuate; apex rather more than one-half as wide as the base and evenly sinuate in circular arc throughout the width. Ligula not distinct in the type. Maxillary palpi normal, the third joint longer than the second. Prothorax narrowed toward base, the hypomera scarcely inflexed beyond the vertical, large, evanescent far behind the apex. Elytra very short. Abdomen long, parallel; first five segments equally impressed at base; fifth longer than the fourth; sixth distinct, a little narrower than the fifth but as long as the fourth. Middle coxæ contiguous, the mesosternal process short, triangular, acute, extending barely to the middle. Metasternal side-pieces rapidly widening behind. Legs very short, sparsely hairy, the tibiæ not at all spinulose; tarsi very short, stout, the posterior three-fifths as long as the tibiæ, with the first joint very slightly longer than the second; unguis very small, slender, moderately arcuate.

**A. brevipes** n. sp.—Slender, pale rufo-testaceous throughout, except the abdomen above and beneath, which is piceous-black with the apex pale; integuments dull and minutely, strongly reticulate, the abdomen less strongly so and more shining; anterior parts finely, indistinctly punctate, the abdomen minutely, not densely but more distinctly so; pubescence distinct, rather long and moderately dense. *Head* convex, ovalo-conoidal, a little longer than wide, rather longer than the prothorax and fully as wide or a little wider; antennæ nearly one-half longer than the head. *Prothorax* very slightly wider than long, widest at the apical angles, the sides thence moderately convergent and nearly straight to the basal angles, which are obtuse and slightly blunt; apex broadly evenly and rather strongly arcuate, distinctly wider than the base; disk broadly flattened toward the middle. *Elytra* three-fourths as long as the prothorax, and, at apex, not at all wider; sides convergent and scarcely arcuate from apex to base. *Abdomen* as wide as the elytra, parallel, one-half longer than the anterior parts; sides straight; border moderate, equal; surface transversely and feebly convex. Length 1.7 mm.; width 0.3 mm.

Alaska (Ft. Wrangel). Mr. Wickham.

I have seen only a single specimen, probably a male, the sixth ventral plate being broadly, very obtusely lobed behind.



**THECTUROTA** n. gen.

The body is extremely slender, parallel and subdepressed. Head large, flat, slightly broader toward base, the eyes small, far before the middle and slightly prominent. Antennæ short, feebly incrassate. Mentum small, transverse. Ligula with the apical process short, cylindrical, thin and perfectly simple, the labial palpi three-jointed, with the first joint nearly as long as the next two, cylindrical; second thinner, longer than wide; third still more slender and a little longer than the second. Maxillæ well developed, the cardo large, the lobes very small, short, the palpi small, the third joint but slightly longer than the second, but thick and obconical; fourth distinct, oblique. Gular sutures long, straight and parallel; infralateral carina wholly obsolete. Prothorax slightly narrowed toward base, the hypomera visible from the side. Middle coxæ moderately large, contiguous, the mesosternal process very slender and acute. Metasternum large, the side-pieces rather narrow, parallel anteriorly but with the inner line approaching the elytra posteriorly, becoming very acute and narrow at the elytral apex. Legs very short; tarsi short and stout, plainly 4-4-5-jointed, the first four joints of the posterior equal, short, thick, the last moderate in length; claws moderate, slender, evenly arcuate.

The extremely small and slender forms referred to this genus remind us of *Hydrosnecta* Thoms., but are allied closely to *Thectura*, and resemble the latter in the peculiar posteriorly attenuate met-episterna, but differ in the complete absence of any of the caudal spines so characteristic of that genus. Several of the species have a deep transverse pit at the extreme base of the occiput, and the types of one or two have the head thrown back slightly, obscuring this part, but it is probably a generic character. In *Hydrosnecta subtilissima* the middle tarsi are five-jointed, and the gular sutures converge from the base.

The species of *Thecturota* are among the smallest, and are probably the most slender, of the *Aleocharini*; they will prove to be tolerably numerous, and the four in my cabinet may be separated by the following characters:—

Head gradually perceptibly wider behind, the eyes very small and the upper surface coarsely and distinctly punctured.....**tenuissima**  
 Head parallel or very nearly so, the eyes larger and the surface finely, feebly and very indistinctly punctate.



Head and prothorax equal in width and distinctly narrower than the elytra.  
Elytra distinctly longer than the prothorax; pubescence denser.

**capito**

Elytra not longer than the prothorax; pubescence sparse; body slightly more slender ..... **demissa**

Head and prothorax subequal in width to the elytra; pubescence dense;  
elytra much longer than the prothorax ..... **exigua**

I have not been able to discern any marked sexual modifications.

**T. tenuissima** n. sp.—Linear, strongly shining throughout, dark piceous-brown, the pronotum, tip of the abdomen and legs pale flavate; antennæ dusky, pale toward base; pubescence sparse, moderately long, subrecumbent, coarse, not conspicuous; head coarsely, sparsely, conspicuously but not very deeply punctate, the punctures wanting along the median line; pronotum and elytra very minutely sparsely and inconspicuously punctate, polished, not at all reticulate; abdomen finely, sparsely but more distinctly and subasperately punctured. *Head* large, fully as wide as the prothorax and as long as wide, the sides behind the eyes straight and feebly divergent to basal fourth, then broadly rounded to the wide neck; surface with a small deep elongate impression in the middle just behind the eyes; antennæ one-third longer than the head, feebly incrassate, the basal joint much longer than the second, the latter as long as the next two, obconical and nearly twice as long as wide, fourth to tenth very strongly transverse, close but somewhat perfoliate, feebly increasing in width and also in length, eleventh slightly longer than wide, obtusely rounded at tip, as long as the preceding two. *Prothorax* about one-third wider than long, the sides feebly convergent and straight from near the apex to the obtuse and indistinct basal angles; base scarcely as wide as the apex; disk feebly convex, with a very feeble but entire median impressed line. *Elytra* nearly as long as wide, equal in width to the prothorax and quite distinctly longer; sides straight and parallel. *Abdomen* linear, rather longer than the anterior parts, at base very slightly narrower, but at the apex of the fourth segment somewhat wider, than the elytra; first four segments feebly impressed at base; fifth much shorter than the fourth; sixth large and distinct. Length (abdomen strongly extended) 1.1 mm.; width less than 0.2 mm.

Rhode Island.

The coarse punctures of the large, posteriorly enlarged head, minute size and linear form, will render the identification of this species quite certain.

**T. capito** n. sp.—Piceous to blackish, the legs pale flavate; antennæ dusky, paler toward base; integuments feebly shining, the head somewhat strongly reticulate, very minutely, somewhat closely punctate; pronotum and elytra minutely and more densely punctate; abdomen more asperately; pubescence rather dense, sparse and longer on the abdomen. *Head* fully

as wide as the prothorax, nearly as in the preceding species but rather less dilated behind and with somewhat larger eyes; upper surface broadly impressed in the middle anteriorly, and with a small deep impression near the centre, also with a deep transverse sulcus at the extreme base of the occiput; antennæ nearly as in *tenuissima*, but with the fourth joint less transverse, tenth more than twice as wide as long. *Prothorax* one-third wider than long; sides feebly convergent from apex to base and broadly, feebly arcuate; basal angles very obtuse; disk broadly, feebly impressed along the median line. *Elytra* quadrate, distinctly wider and two-fifths longer than the prothorax; humeri obliquely rounded to the prothorax and slightly visible. *Abdomen* scarcely as long as the anterior parts, very little narrower than the elytra; sides subparallel, the tip of the fourth segment scarcely visibly wider; fifth slightly longer than the fourth; border moderate. Length 1.1 mm.; width 0.2 mm.

Texas (Galveston).

This infinitesimal animal seems to be widely diffused, for I have taken specimens, either of it or of a species so similar as to be almost undistinguishable with my present material, also at Austin and Waco in Texas, and Tucson in Arizona. The transverse sulcus at the occipital base receives the anterior margin of the pronotum when the head is thrown back.

**T. demissa** n. sp.—Minute, slender, rather convex, strongly shining throughout, the abdomen still more polished, black, the pronotum feebly picescent, the elytra still paler, rufescent; antennæ black, piceous toward base; legs pale flavate; anterior parts finely but not strongly reticulate, minutely, subobsoletely punctate, the elytra scarcely more distinctly so, the abdomen very minutely, sparsely and subgranularly; pubescence short, rather sparse, not conspicuous, very sparse on the abdomen. *Head* large, rather longer than wide, fully as wide as the prothorax, the sides parallel; eyes at a little more than their own length from the base; surface deeply concave along the middle anteriorly, and with a deep conspicuous fovea at the centre; antennæ short, feebly incrassate, scarcely visibly longer than the head and prothorax, the basal joint thicker and nearly as long as the next two, second longer than wide and nearly as long as the third and fourth, constricted at base, outer joints distinctly transverse. *Prothorax* not more than one-fourth wider than long; sides broadly arcuate, becoming gradually almost straight and slightly convergent in about basal half; apical angles deflexed and broadly rounded; basal obtuse and more narrowly rounded; base broadly arcuate, scarcely as wide as the apex; disk convex, narrowly and rather strongly impressed along the median line throughout. *Elytra* much shorter than wide, toward apex distinctly wider than the prothorax, not longer, the sides feebly divergent from the slightly exposed humeri. *Abdomen*, contracted, subequal to the anterior parts, at base distinctly narrower than the elytra; sides straight and just perceptibly divergent from the base, the apex of the

fifth appreciably wider than the base; fourth and fifth segments equal in length and each distinctly longer than one to three. *Legs* very short, stout. Length 1.0 mm.; width scarcely 0.2 mm.

New York (Catskill Mts.). Mr. H. H. Smith.

The more polished, more sparsely pubescent integuments, less transverse prothorax and shorter elytra, will readily distinguish this species from *capito*.

**T. exigua** n. sp.—Extremely slender, parallel and linear, moderately convex, shining, minutely, rather closely but not conspicuously punctate, the pubescence rather long, close and distinct, streaming obliquely on the elytra and transversely on the pronotum; color rather pale brown, the head piceous, the abdomen black toward apex; legs and antennæ toward base pale, flavescent. *Head* large, rather convex, deeply impressed just before its centre; sides parallel; eyes at fully one-half more than their own length from the base; antennæ nearly as in *demissa*. *Prothorax* one-third wider than long; sides feebly convergent and straight from apex to base; base and apex broadly, strongly arcuate, the former slightly the narrower; disk strongly, rather widely impressed along the median line. *Elytra* quadrate, barely wider than long, one-third longer but scarcely perceptibly wider than the prothorax; sides parallel, straight; humeri very slightly exposed. *Abdomen*, extended, a little longer than the anterior parts, at base perceptibly narrower than the elytra; sides straight; apex of the fifth segment distinctly wider than the first and fully as wide as the elytra; first four tergites impressed at base, the impressions successively and uniformly decreasing in depth and width. *Legs* very short, stout. Length 1.3 mm.; width 0.2 mm.

Iowa (Cedar Rapids). Dr. E. Brendel.

Almost as extremely slender as *tenuissima*, but with a minutely punctate and parallel head. I can find only a single specimen amongst my material, and the sex of the type is undetermined.

#### THECTURA Thoms.

The anterior and middle tarsi in this genus are distinctly four-jointed, the posterior five-jointed, the basal joints very short and equal and the last joint long; its position among the allies of Colpodota is therefore erroneous, and it should be transferred to the neighborhood of Homalota Mann., with which however it cannot be united because of its three-jointed labial palpi. The following species is closely related to *cuspidata* Er. :—

**T. americana** n. sp.—Slender, parallel, linear, very strongly depressed, piceous-black; antennæ toward base and legs pale; anterior parts dull and alutaceous, the head strongly, sparsely punctured, the pronotum and elytra

excessively finely and indistinctly so, the abdomen with a few scattered asperate punctures; pubescence fine, rather dense but not conspicuous, longer and sparse on the abdomen. *Head* very nearly as wide as the prothorax, wider than long, the sides parallel; eyes well developed, convex and prominent; antennæ distinctly incrassate, short, barely as long as the head and prothorax, the last joint as long as the two preceding. *Prothorax* one-third wider than long, the sides just visibly convergent and almost straight from near the apex to the rounded basal angles; base arcuate; disk broadly, feebly impressed along the middle. *Elytra* fully as long as wide, not wider than the prothorax and one-half longer, parallel and straight at the sides; humeri exposed. *Abdomen* as long as the anterior parts, slightly narrower than the elytra, parallel and straight at the sides, the border strong. Length 1.6 mm.; width 0.3 mm.

New York.

The middle spine of the sixth dorsal plate is as well developed as in *cuspidata*, but is more inclined backward; its apex is notched anteriorly, the posterior spur more abruptly bent forward over the tip than in *cuspidata*; lateral spines small and distinct. The male has, at the middle of the second tergite, two small tubercles distant by one-half the width, on the third two rather stronger tubercles distant by two-thirds the width, on the fourth two much feebler tubercles distant by barely one-third the width, the fifth broadly impressed in the middle. A single male.

This species differs from *cuspidata* in its slightly more incrassate antennæ with longer terminal joint, in its wider and distinctly more-transverse prothorax, and in the position of the tubercles of the fourth dorsal, which are distant by one-half the discal width in the European species; also by the more posteriorly inclined terminal spine, somewhat differently modified at apex, and in the entire absence of the discal impression of the sixth segment at the base of the spine.

#### OLIGUROTA n. gen.

Body minute, parallel, subdepressed. Head large, quadrate, the eyes moderate, convex and prominent, before the middle; infra-lateral carina completely obsolete. Antennæ short, incrassate, the basal joint large, thick; second shorter; second and third strongly constricted at base, the former much the larger; outer joints transverse. Mentum very small, transversely trapezoidal. Ligula with a minute, apparently simple terminal process and two stiff bristles, the palpi well developed, three-jointed, the first thick, elon-



gate, cylindrical, the second narrower and much shorter; third slender, as long as the first. Maxillary lobes small, short, thick, ciliate within; the palpi small, with the third joint longer than the second; fourth minute. Gular sutures perfectly straight and parallel throughout. Prothorax quadrate, the hypomera narrow but entire, feebly inflexed and distinct from the side. Elytra moderate. Abdomen normal, parallel, not at all spinose at apex, the four basal segments feebly, narrowly impressed at base; fourth and fifth equal and longer than the others. Prosternum rather well developed before the coxæ. Intermediate coxæ small, approximate, the mesosternal process short, angulate. Metasternal side-pieces wide, parallel, the epimera well developed, disappearing under the elytra at basal third. Legs and tarsi very short, the tarsi 4-4-5-jointed, the basal joint of the middle and posterior slightly longer than the second; last longer; claws small, slender.

This genus is allied to *Thectura*, but differs in the absence of caudal spines, in its shorter elytra and metasternum, and especially in the conformation of the metaparapleuræ, which in *Thectura* are quite remarkable, being narrow and parallel anteriorly, but with the inner margin oblique toward the elytra behind, so that they become exceedingly narrow at the elytral apex, the epimera invisible. In both of these genera the coxæ are unusually small for the present tribe.

**O. pusio** n. sp.—Parallel, pale piceous-brown, the head and abdomen darker, blackish, the tip of the latter, legs and antennæ paler; integuments rather shining, coarsely and feebly reticulate, not densely and almost imperceptibly punctate throughout; pubescence rather long and sparse but distinct. *Head* just perceptibly wider and distinctly longer than the prothorax, as long as wide, the neck two-thirds as wide; sides parallel; surface with a small impression in the middle between the eyes; antennæ one-half longer than the head. *Prothorax* nearly one-third wider than long; sides parallel, nearly straight, the apical and basal angles rounded; base and apex about equal, arcuate; disk narrowly and feebly impressed along the median line. *Elytra* much wider than long, very slightly wider and longer than the prothorax; sides nearly parallel and straight. *Abdomen* shorter than the anterior parts, slightly narrower than the elytra, parallel and straight at the sides; border rather fine. *Legs* rather stout. Length 1.2 mm.; width 0.2 mm.

#### Indiana.

One of the most minute of the *Bolitocharides*, and probably occurring under bark; the unique type is apparently a female.



**LEPTUSA** Kraatz.

The first species here described seems to be truly congeneric with the European  *analis*, but has the prothorax much smaller and narrower, the elytral humeri being exposed at base.

**L. brevicollis** n. sp.—Slender, subparallel, rather convex, shining, the abdomen still more polished, dark red-brown; legs paler, more flavate; antennæ concolorous; head piceous; abdomen brighter rufous, with a black subapical cloud; head and pronotum very feebly punctulate; elytra coarsely, somewhat rugosely but not at all asperately so; abdomen finely and sparsely; pubescence sparse but rather long, subrecumbent and distinct. *Head* orbicular, convex, much wider than long, distinctly narrower than the prothorax, the eyes rather large and prominent, at less than their own length from the base; labrum truncate; antennæ as long as the pronotum and elytra, moderately incrassate, second and third joints elongate, subequal, fourth obconical, as long as wide, four to ten gradually wider, the latter nearly twice as wide as long, eleventh rather small, not longer than the two preceding. *Prothorax* transverse, fully three-fourths wider than long, widest at two-fifths from the apex where the sides are narrowly rounded, thence convergent and feebly arcuate to the apex, equally convergent and broadly sinuate to the basal angles, which are obtuse but sharp, the apical deflexed but also not at all rounded; hypomera extending to the apex; base transverse, equal to the apex; disk strongly convex, extremely obsoletely impressed along the middle and transversely before the scutellum. *Elytra* large, parallel, slightly wider than long, one-fourth wider and one-half longer than the prothorax; sides nearly straight; humeri exposed at base; suture finely beaded. *Abdomen* parallel and straight at the sides, much narrower than the elytra, as wide as the prothorax; only the first three segments strongly impressed at base; fifth distinctly longer than the fourth. *Legs* rather long, slender; posterior tarsi short, with the first joint distinctly longer than the second. Length 2.1 mm.; width 0.55 mm.

Pennsylvania.

The type is a male, the fifth dorsal plate having a small feeble longitudinal carina in the middle. The labial palpi are apparently three-jointed, but the first is small and anchylosed to the second, which is subequal to the more slender third; the process of the ligula is slender, parallel and simple at apex. The metasternum is large and long, with the side-pieces very narrow and parallel—quite different from the form occurring in *Sipalia*. The middle acetabula are deep and sharply limited by an acute beaded edge, except for the extremely short distance between the apices of the sternal processes, of which the mesosternal is acutely produced to the middle with its apex slightly blunted, the coxæ quite appre-

ciably separated. This species seems to be somewhat intermediate between *Leptusa* and *Silusa*.

The two following species are similar in structure throughout and possibly belong to *Leptusa*, but differ considerably in facies from *brevicollis*, because of the much longer prothorax and the densely opaque and lustreless anterior parts of the body; they may be defined as follows:—

Stouter, the anterior parts of the body velvety blue-black and perfectly opaque; fourth and fifth ventral segments exactly equal in length.

**opaca**

Much more slender, the head and pronotum opaque, brown, the elytra rather more shining; fifth ventral a little longer than the fourth...**seminitens**

In *opaca* the conformation of the parts about the middle coxæ is exactly as in *brevicollis*, but the mesosternal process extends as far behind as the apex of the metasternal; it is however free and not continuous on the same level.

**L. opaca** n. sp.—Stout, blackish, opaque, the abdomen shining, rufo-testaceous, the last two segments black; legs pale, the posterior femora clouded with piceous toward apex; antennæ blackish, pale toward base and with the eleventh joint abruptly pale flavate; head and pronotum completely lustreless, not punctate, minutely and extremely densely granulato-reticulate throughout; elytra sericeous, indistinctly punctate; abdomen rather strongly, not very densely punctate, sparsely so toward apex; anterior parts finely, very indistinctly pubescent, the abdomen more sparsely but distinctly so. Head more than three-fourths as wide as the prothorax, the eyes rather prominent, at less than their length from the base; antennæ about as long as the prothorax and elytra, strongly, gradually increasing in width, the outer joints strongly transverse, eleventh longer than the two preceding. Prothorax two-fifths wider than long, widest at anterior third where the sides are strongly rounded and prominent, thence strongly convergent and distinctly sinuate to the base, which is transversely arcuate and equal in width to the apex; basal angles obtuse but scarcely at all blunt; disk convex, even, not impressed. Elytra slightly wider than the prothorax and about one-third longer, parallel, the sides nearly straight; humeri slightly exposed at base. Abdomen a little longer than the anterior parts, about as wide as the prothorax; sides parallel, scarcely visibly arcuate; border thick. Length 2.0 mm.; width 0.6 mm.

Pennsylvania.

The four specimens in my cabinet do not indicate any variation.

**L. seminitens** n. sp.—Slender, parallel, dark red-brown, the abdomen bright rufo-testaceous, with a subapical black cloud; legs pale; antennæ blackish, paler toward base, the eleventh joint abruptly pale; head and pronotum opaque, feebly pubescent, impunctate and minutely, very densely grau-

ulato-reticulate; elytra feebly shining, indistinctly punctate, feebly pubescent; abdomen polished, strongly, closely punctate toward base, very minutely and remotely so toward tip, the pubescence longer, sparse but distinct. *Head* transverse, very nearly as wide as the prothorax, the eyes small, at more than their length from the base; antennæ feebly incrassate, rather longer than the prothorax and elytra, the outer joints but slightly wider than long. *Prothorax* large, one-fourth wider than long, widest and rather strongly rounded at apical third, the sides strongly and distinctly sinuate in more than basal half; base broadly arcuate, rather narrower than the apex; basal angles obtuse, scarcely at all blunt; disk broadly convex, even, with a very feebly impressed line along the middle. *Elytra* slightly wider than long, equal in width to the prothorax and but very slightly longer; sides parallel; humeri slightly exposed at base. *Abdomen* fully two-thirds longer than the anterior parts, perfectly parallel, about as wide as the elytra. Posterior tarsi about two-thirds as long as the tibiæ. Length 2.4 mm.; width 0.5 mm. •

New York.

Evidently allied to the preceding, but distinguishable very readily by the slender and more parallel form, longer abdomen, more shining elytra, longer and more slender antennæ, smaller eyes and several other structural features.

#### **ASTHENESITA** n. gen.

Body minute, parallel, not very narrow, somewhat convex. Head long, ovo-conoidal, convex, the eyes very small, at some distance from the mandibles and antennæ, and at fully twice their own length from the base; labrum rather elongate, rounded; infra-lateral carina very feeble, subobsolete. Antennæ long, evenly and gradually incrassate, the second joint nearly as long as the next two; third strongly obconical; four to ten equal in length, transverse, gradually wider, the tenth more than twice as wide as long; eleventh ovoidal, as long as the preceding two. Mentum trapezoidal, truncate. Ligula with a slender terminal process which is distinctly bifid at apex; labial palpi three-jointed. Maxillary palpi normal, the third joint much longer than the second, the fourth very minute, oblique. Prothorax narrowed and sinuate toward base, nearly as in *Leptusa*. Elytra well developed, broadly emarginate at apex, the suture not distinctly beaded. Abdomen very feebly narrowed toward base, the first three segments deeply impressed at base; fifth very much shorter than the fourth, the latter not at all impressed. Middle coxæ and sterna as in *Leptusa*. Metasternal side-pieces narrow, parallel. Legs short; tarsi stout, 4-4-5-jointed,

the posterior but little more than one-half as long as the tibiæ, with the first joint just visibly longer than the second or third, the latter scarcely longer than wide.

This genus is closely allied to *Leptusa*, but differs in the longer antennæ with much shorter third joint, in the longer head and labrum, in the bifid ligula and very short fifth segment of the abdomen, which is not perceptibly more than one-half as long as the fourth; also in the more robust tarsi and minute size.

**A. pallens** n. sp.—Pale rufo-testaceous throughout, the fourth dorsal segment piceous-black; integuments slightly reticulate, feebly shining, the abdomen polished; head, pronotum and elytra very minutely and scarcely visibly punctulate; abdomen more sparsely but not distinctly so; pubescence sparse but long, coarse and distinct. *Head* rather longer than wide, a little narrower but longer than the prothorax, convex, even; sides parallel and evenly arcuate; antennæ as long as the head, prothorax and elytra, pale throughout. *Prothorax* one-third wider than long, the sides broadly, feebly arcuate, more convergent and nearly straight in basal half, the basal angles very obtuse but not rounded; apical deflexed, right—viewed laterally—not rounded; base very feebly arcuate, slightly narrower than the apex; disk convex and declivous at the sides, more flattened above, with a broad region along the middle which is very feebly impressed, more distinctly so toward base and densely granulo-reticulate and opaque throughout. *Elytra* distinctly wider than long, parallel and straight at the sides, just visibly longer and fully one-fourth wider than the prothorax, the humeri distinctly exposed and transverse at base. *Abdomen* as long as the anterior parts, behind the middle as wide as the elytra, but at base distinctly narrower; sides scarcely perceptibly arcuate; border moderate, not thick; surface transversely convex behind. *Legs* short. Length 1.25 mm.; width 0.3 mm.

Florida.

In the male the fifth ventral plate is transverse at apex, with a short acute spicule projecting horizontally from the middle of the edge, the sixth lobed in the middle.

#### SIPALIA Rey.

This genus seems to be distinct from *Leptusa* although closely allied.

**S. frontalis** n. sp.—Parallel, thick, rather convex, shining, the abdomen polished, rufo-testaceous, the antennæ dusky except at base; abdomen piceous, the fifth segment and apices of the first three, pale; pubescence coarse, sparse but rather long and distinct; head and pronotum extremely finely, feebly but rather closely punctulate; elytra coarsely, more sparsely and asperately punctate; abdomen sparsely so. *Head* orbicular, convex, slightly



narrower than the prothorax, fully as long as wide; eyes at fully one-half more than their own length from the base; clypeus rather prolonged in front of the antennæ, truncate; antennæ nearly one-half as long as the body, distinctly incrassate, second and third joints elongate, subequal, fourth to tenth very evenly, gradually increasing in width, the latter fully twice as wide as long, eleventh conoidal, longer than the preceding two. *Prothorax* rather large, strongly and evenly convex, but slightly wider than long, widest at apical third, the sides thence distinctly convergent and feebly sinuate to the base, the latter transverse and slightly narrower than the apex; basal angles obtuse but not at all blunt; apical deflexed but not at all rounded; hypomera continuous to the apex. *Elytra* at apex as wide as the prothorax, gradually, feebly narrowed toward base, the two bases equal; suture just perceptibly shorter than the pronotum; sides feebly arcuate; apex transverse and slightly trisinate; disk rather convex, not impressed on the suture, the latter finely beaded. *Abdomen* as wide as the elytra, as long as the anterior parts, parallel, the sides nearly straight; border moderate; first three segments strongly impressed and more coarsely punctate at base; fourth scarcely at all impressed; fifth distinctly shorter than the fourth. *Legs* moderate; posterior tarsi slender, nearly two-thirds as long as the tibiæ, the first joint slightly but distinctly longer than the second. Length 2.0 mm.; width 0.5 mm.

#### California.

This species is allied closely to *reitteri* Epp., but the latter has the first four segments equally impressed at base and the fifth fully as long as the fourth. In *frontalis* the labial palpi have the first joint shorter than the second, the third nearly as long as the first two, the metaparapleuræ very wide, with the inner margin rapidly divergent from the elytra, the epimera large, occupying nearly the entire width behind and disappearing under the elytra near basal third. The mesosternal process is long, acute, extending two-thirds the length of the very narrowly separated coxæ, the apex free, the metasternal process short, subangulate, not attaining the mesosternal, the acetabula rather shallow behind but limited everywhere by a fine beaded edge, except along the very short intersternal isthmus.

#### **BRYOBIOTA** n. gen.

Body parallel and linear, somewhat thick and convex. Head fully as wide as the prothorax and as long as wide, with the sides parallel; basal angles right but rounded; base transverse; neck scarcely one-half as wide as the head; labrum twice as wide as long, truncate; eyes small, anterior; infralateral carina completely obsolete. Antennæ long, the second joint longer than the third.



Mentum transverse, trapezoidal, the apex feebly sinuato-truncate. Ligula with a simple slender process; labial palpi three-jointed, the first more robust than the second and twice as long, third thin, not quite as long as the first. Maxillary palpi nearly normal, the second joint slightly arcuate and much shorter than the third; fourth very small. Prothorax narrowed toward base, the apical angles deflexed and very broadly rounded; hypomera distinct laterally, not attaining the apex; base of the pronotum superposed on the base of the elytra and transversely arched in the middle. Elytra very short. Abdomen long, parallel, as wide as the elytra, the first four segments impressed at base; fourth and fifth equal. Middle coxæ not distinctly separated; the acetabula being simply very feeble impressions posteriorly and not at all limited, the mesosternal process short but acutely triangular. Legs moderate; tibiæ rather slender, clothed with rather coarse pubescence, without trace of spinules; tarsi 4-4-5-jointed, the posterior rather slender, with the basal joint as long as the next two; ungues small, slender, arcuate.

Bryobiota is allied to Sipalia, but differs in the feebly impressed and undefined middle coxal cavities. From *Arena Fvl.* it may be known at once by the distinct but rather wide neck and longer antennæ. It is represented as far as known to me by a single species from the southern salt beaches of California:—

**B. bicolor** Csy.—Bull. Cal. Acad. Sci., I, 1885, p. 311 (Phytosus).

This species is not at all allied to Phytosus, the tibiæ being completely devoid of spinules.

### **BOLITOCCHARA** Mann.

A widely diffused genus, decidedly isolated in general habitus and coloration from all those which are structurally most closely allied to it. It can always be recognized, among the Bolitocharides, by the coarse subasperate sculpture and variegated elytra. Our species as far as known may be separated as follows:—

Elytra very much longer than the prothorax.

Prothorax distinctly narrower than the elytra. Pacific coast.

Elytra coarsely and less densely sculptured, usually dark only externally toward apex and sometimes near the scutellum.

Abdomen sparsely punctured ..... **notata** Mäkl.

Abdomen densely punctured, especially toward base.

**californica** Csy.

Elytra more finely and densely punctate, black, each elytron pale at base except near the scutellum, also narrowly along the suture in apical two-thirds and along the apical margin; abdomen finely, sparsely punctate.....**nigrina** Csy.

Prothorax on the disk as wide as the base of the elytra. Atlantic coast.

Abdomen coarsely, densely punctate; carina of the fifth male tergite long and strong.....**blanchardi** n. sp.

Adomen finely, densely punctate; carina of the fifth tergite extremely small, reduced to a small point near apical fourth.

**marginella** n. sp.

Elytra shorter; "Flügeldecken wenig länger als das Halsschild."

**alternans** Sachse.

*Silusa alternans*, from its indicated size and coloration, seems to be more appropriately placed in the present genus, but I have not been able to identify it; *Silusa gracilis* is however a true *Silusa*, and it may be possible therefore that Dr. Sachse was not mistaken as to the genus of *alternans*, but the coloration is certainly not at all distinctive of *Silusa*, viz., "rufo-picea, elytrorum angulo exteriore abdomineque ante apicem nigricantibus." Of *notata* Mäkl. I have several specimens, taken by Mr. Wickham at Fort Wrangel and in Vancouver; on the whole, it is a larger, stouter form than *californica*, and differs specifically in abdominal sculpture.

*Homalota trimaculata* Er. is possibly a *Bolitochara* allied to *blanchardi*, but joints five to ten of the antennæ are said to be transverse in that species.

**B. blanchardi.**—Pale flavo-testaceous, the head, pronotum except feebly along the sides and base, elytra toward the external apical angles and feebly near the scutellum, abdomen feebly at the middle near the bases of the first three segments, throughout the fourth and in basal two-thirds of the fifth, blackish; antennæ fuscous, the last joint somewhat less dark, the first four pale flavate; head feebly but distinctly, rather sparsely punctate, the pronotum and elytra strongly asperately and densely so, the latter slightly the more coarsely; abdomen strongly and closely but not so densely punctate; pubescence fine, very short, not conspicuous. *Head* orbicular, convex, about as long as wide, nearly three-fourths as wide as the prothorax; eyes very large, separated from the base by about one-half of their own length; antennæ distinctly longer than the head and prothorax, incrassate, first three joints elongate, third a little shorter than the second, tenth scarcely wider than long, a little longer and less transverse than the ninth. *Prothorax* transverse, four-fifths wider than long, widest and broadly subangulate at basal third; sides convergent and feebly areuate thence to the apex; base broadly arcuate, much wider than the apex; basal angles distinct but blunt; disk convex, strongly biimpressed in the middle near the base. *Elytra* slightly transverse, a little

wider and much longer than the prothorax; humeri obliquely rounded to the prothorax. *Abdomen* long, at base distinctly narrower than the elytra; sides straight, feebly convergent throughout; first three segments strongly impressed at base; fourth and fifth equal in length. *Legs* moderate. Length 2.4-3.5 mm.; width 0.8 mm.

New York; Iowa.

The male has the fifth tergite strongly carinate almost throughout its length, the sixth dorsal feebly emarginate, the emargination coarsely and obtusely crenulate. The species is dedicated with pleasure to Mr. Frederick Blanchard of Lowell, Mass.

**B. marginella.**—Pale flavate, the head blackish; elytra clouded with piceous toward each external apical angle, the dark area always separated from the apex by a distinct pale margin; abdomen with a large subapical blackish cloud; antennæ slightly infusate toward apex; integuments feebly shining, the abdomen more polished; head extremely minutely, sparsely punctate, the prothorax finely, densely, subasperately so, the elytra more strongly but still not very coarsely, densely punctate, the abdomen finely, evenly and densely so; pubescence fine, very short, not conspicuous. *Head* orbicular, much wider than long; eyes rather large, at one-half their length from the base; antennæ rather short, about as long as the head and prothorax, third joint but little shorter than the second, outer joints strongly transverse, closely perfoliate, tenth a little longer than the ninth, almost twice as wide as long, eleventh conoidal, pointed rather longer than the two preceding. *Prothorax* four-fifths wider than long, the sides parallel and feebly arcuate in basal two-thirds, then gradually rounded and convergent to the apex; base slightly wider than the truncate apex, broadly arcuate, becoming straight toward the angles which are obtuse and distinctly rounded; disk feebly impressed in the middle before the base, the impression not geminate. *Elytra* distinctly transverse, slightly wider and much longer than the prothorax, the humeri obliquely, strongly rounded to the base of the latter; sides just visibly divergent, very feebly arcuate; disk slightly impressed behind the scutellum. *Abdomen* long, at base distinctly narrower than the elytra; sides straight and feebly convergent throughout; fifth segment much longer than the fourth. Length 2.0-2.6 mm.; width 0.7 mm.

New York (Catskill Mts.).

The male has a very small raised point on the fifth tergite near apical fourth; the sixth also has a very small dorsal elevation and has the apex broadly emarginate and obtusely crenulate. This species is much smaller than *blanchardi*, and may be distinguished at once by its finer sculpture.

**THINUSA** n. gen.

Body very narrow, parallel and linear, thick, opaque. Head wider than long, slightly narrower than the prothorax; sides parallel toward base, the latter very broad and inserted within the prothorax; eyes moderate; labrum truncate. Antennæ short, moderately incrassate, the second joint as long as the next two. Mentum transverse, trapezoidal, truncate. Maxillary palpi normal, the second joint shorter than the third; labial three-jointed, the first joint apparently longer than the second. Infralateral ridge obsolete. Prothorax strongly narrowed from near the apex to the base; hypomera feebly inflexed, rather narrow but extending almost to the apex; base of the pronotum superposed over the base of the elytra and broadly, feebly arched throughout the width. Elytra very short. Abdomen long, linear, as wide as the elytra, the first four segments impressed at base; fifth much longer than the fourth; sixth visible. Coxæ very large, the anterior extremely so; middle cavities deep, distinctly limited, approaching extremely close to the posterior margin. Metasternum very short, the side-pieces narrow, parallel to the oblique edge of the elytra. Legs stout; tibiæ very short, the anterior and middle spinulose externally; tarsi short, stout, the first four joints of the posterior subequal.

This genus is allied to *Phytosus* but distinguished at once by its very short elytra and extremely abbreviated metasternum. From *Actosus* it may be known by the much narrower and more lineate body, the narrower met-episterna, which are perfectly parallel to the edge of the elytra, and by the much less developed met-epimera. The single species is common about San Francisco.

**T. maritima** Csy.—Bull. Cal. Acad. Sci., I, 1885, p. 312 (*Phytosus*).

The European *Actosus balticus* must form part of the genus *Phytosus*, or else be regarded as the type of a new genus allied to *Thinusa*; it is altogether generically distinct from *Ac. nigriventris*—the type of *Actosus*—in its narrow parallel metasternal side-pieces, these being very strongly triangular in *nigriventris*. All of these genera differ, in addition, from *Thinusa*, in having the infralateral carina of the head distinct toward base and the hypomera much more dilated behind.

## HYGRONOMIDES.

Antennæ 11-jointed ; tarsi 4-4-4-jointed.

**GYRONYCHA** n. gen.

Body elongate, linear and depressed. Head moderate in size, constricted at base, the neck usually about one-half as wide ; eyes large, distant from the base, sparsely setose ; labrum short, truncate ; infralateral carina obsolete, feebly traceable anteriorly. Antennæ very long, slender, subfiliform or feebly and gradually incrassate from near the base ; basal joint elongate, longer than the second or third, the latter elongate and subequal ; outer joints seldom at all transverse. Mentum moderate, transversely trapezoidal, truncate, impressed on the disk at each side. Ligula with a stout parallel apical process, the labial palpi moderate, three-jointed, the basal joint the longest and thickest, cylindrical. Maxillary palpi moderate, the third joint but slightly longer than the second ; fourth small. Mandibles simple and acute at apex. Prothorax oblong, feebly narrowed behind and broadly sinuate—viewed sublaterally—the apical angles abruptly and feebly deflexed ; hypomera feebly inflexed, very distinct from the side, entire. Elytra large, long and well developed. Abdomen elongate and linear, the fifth segment usually distinctly longer than the fourth ; first four segments more or less impressed at base. Middle coxæ contiguous, the mesosternal process very acute, prolonged to the middle, the metasternal process extremely short, broadly angulate, scarcely at all entering between the coxæ, the distance from its tip to a point beneath the free apex of the mesosternal occupied by a fine linear compressed and cariniform isthmus ; acetabula tolerably well defined behind. Metasternum large, the side-pieces narrow, linear and parallel ; epimera rather small, disappearing under the elytra well behind the middle. Legs rather short ; anterior tibiæ normal ; tarsi short, 4-4-4-jointed, the first joint of the posterior more or less elongate, generally not quite as long as the next two and subequal to the last, the latter rather stout but scarcely at all incrassate ; ungues well developed, divergent, abruptly bent downward behind the middle and somewhat broadened at the point of flexure.

This very interesting genus is the American representative of the European Hygronoma, and is probably rather extensive, extending from the Atlantic to the Pacific and occurring in the high-



lands and lowlands. In outward appearance it bears a striking resemblance to *Calodera*, but possesses none of the essential characters of that genus. From *Hygronoma* it is at once distinguishable by the very long subfiliform antennæ and abruptly bent tarsal claws, resembling *Diglossa* in this latter peculiarity.

*Gyronycha* is allied also to the Central American *Bamona* of Sharp, but differs in its much more slender linear and depressed form, wider neck, longer, relatively narrower elytra and short tarsi, with a distinctly shorter basal joint. It is probable that some of the species assigned to *Bamona* by Dr. Sharp should be referred rather to the present genus; in fact the sexual spine near the base of the abdomen in *Bam. robusta* Shp., proves almost conclusively that this at any rate is a *Gyronycha*. The falagrioid form of the body in *Bamona* is especially alluded to in the original diagnosis, but in *Gyronycha* there is no vestige of such a facies.

The following species will serve as types of the genus:—

Head narrower than the prothorax; antennæ very long.

Third antennal joint obconical, elongate, fully as long as the second.

Dorsal plates two and three broadly impressed and subimpunctate at base through about one-half of their length; male with dorsal carinæ.

Prothorax wider than long, laterally rounded and narrowed in apical third.....**valens**

Prothorax nearly as long as wide, rounded and narrowed only in apical fourth; body much narrower; antennæ more slender.....**texana**

Dorsal plates throughout feebly impressed only very near the base, flat and strongly, evenly punctate throughout; male apparently without abdominal carinæ.....**obscura**

Third antennal joint shorter than the second.....**fusciceps**

Head equal in width to the prothorax; antennæ more incrassate.

Antennæ long, the outer joints barely perceptibly wider than long; third elongate, slightly shorter than the second.....**lineata**

Antennæ much shorter, more compact and strongly incrassate, not much longer than the head and prothorax; second antennal joint subequal in length to the next two together; eyes much smaller.

Neck rather more than one-half as wide as the head.....**attenuata**

Neck slightly more than one-third as wide as the head.....**pertenuis**

**G. valens** n. sp.—Parallel, depressed, somewhat wider than usual, piceous-black, the elytra paler, clouded near the scutellum; abdomen dark rufo-testaceous, clouded with blackish near the tip; legs very pale throughout; antennæ black, paler toward base; head and pronotum extremely minutely, closely punctate, feebly shining, the former more sparsely punctate toward the front; elytra rather less finely, more strongly and much more excessively densely punctate and alutaceous; abdomen with the first four segments closely,

comparatively coarsely and conspicuously punctate in apical half, impunctate in the polished basal impressions, fifth very remotely, subasperately punctate; pubescence very short, extremely dense on the elytra, transverse on the pronotum, longer but very sparse on the abdomen. *Head* slightly wider than long, a little narrower than the prothorax; eyes large, rather prominent, at their own length from the base; neck fully one-half as wide as the head; antennæ two-fifths as long as the body, slender, all the joints longer than wide, first three equal, very long, together constituting one-third of its length, remainder obconical, except the eleventh which is pointed and not as long as the two preceding. *Prothorax* slightly wider than long, the sides rounded anteriorly almost continuously around the apex from apical third, feebly convergent and straight thence to the basal angles which are obtuse and not rounded; base broadly arcuate; disk broadly, feebly flattened in the middle toward base. *Elytra* two-fifths wider and one-half longer than the prothorax, subquadrate; sides parallel and straight; humeri exposed at base; surface flat, strongly impressed on the suture toward base. *Abdomen* quite distinctly narrower than the elytra, as long as the anterior parts; sides parallel and straight, feebly convergent near the apex; border moderate; fifth segment much longer than the fourth. Length 3.8 mm.; width 0.75 mm.

Texas (Austin).

The type is a male, having a strongly elevated carina in apical half of the first visible dorsal plate, the carina projecting posteriorly to a slight extent; the fifth segment also has a small feeble carina in the middle near the base. One specimen.

**G. texana** n. sp.—Narrow, parallel, pale brown, the head blackish; abdomen more rufous, with a large feeble blackish cloud near the apex; legs very pale; antennæ blackish, paler toward base; head and pronotum very minutely, densely punctate, strongly shining; elytra more coarsely and asperately but not quite so densely punctate, rather shining; abdomen polished, finely, moderately closely punctate, very sparsely so on the fifth segment; anterior parts finely, very densely, the abdomen much more coarsely and sparsely, pubescent. *Head* distinctly shorter and narrower than the prothorax, slightly wider than long, the neck one-half as wide; eyes large, at fully their own length from the base; antennæ slender, a little longer than the prothorax and elytra, the first joint much longer than the second or third, the latter elongate, equal, fourth to tenth obconical, longer than wide, eleventh slender, pointed, scarcely as long as the two preceding. *Prothorax* nearly as long as wide, rounded near the apex, the latter feebly arcuate in the middle; sides feebly convergent and straight from apical fourth to the basal angles, the latter obtuse but not rounded; base very feebly arcuate, subtruncate; disk almost imperceptibly impressed along the median line and feebly flattened in the middle before the base. *Elytra* quadrate, one-third wider and longer than the prothorax; sides parallel and nearly straight; humeri distinctly exposed at base; disk narrowly, strongly impressed on the suture toward base. *Abdomen* scarcely wider than the prothorax, a little longer than the anterior parts,

parallel and straight at the sides except near the apex; border rather thick; fifth segment longer. *Legs* short; posterior tibiæ swollen toward apex, slender near the base, the tarsi scarcely three-fifths as long. Length 2.7–3.0 mm.; width 0.55–0.6 mm.

Texas (Austin).

The male has a strongly elevated carina at the middle of the first dorsal, becoming gradually feebler and ending at the basal impression; at apex it projects slightly beyond the margin; there is also a very small carina near the base of the fifth.

In both of these species the fourth antennal joint is distinctly shorter than the fifth; in *obscura*, however, these two joints are subequal. The present species, although closely allied to *valens*, differs greatly in the longer basal joint of the antennæ, form of the prothorax, sparser elytral and much finer and sparser abdominal punctuation, and in its smaller size and more slender form. Three males, exhibiting no variation.

**G. obscura** n. sp.—Depressed, rather wide, blackish, the pronotum slightly, the elytra distinctly, pale; abdomen scarcely paler toward base but with the tip flavescent; legs pale; antennæ not distinctly paler toward base; anterior parts extremely minutely, rather densely punctate, somewhat strongly shining, finely, densely pubescent; abdomen more strongly, rather closely, evenly punctate, with longer and somewhat sparse but distinct pubescence. *Head* a little wider than long, distinctly shorter but only slightly narrower than the prothorax, the neck one-half as wide as the width across the eyes, the latter at fully their own length from the base; antennæ slender, fully as long as the prothorax and elytra, equal in width from the fourth joint, the first three greatly elongate, the first longer, second and third equal, fourth scarcely visibly shorter than the fifth, fourth to tenth obconical, longer than wide, the tenth fully as long as wide, eleventh slender, pointed, not quite as long as the two preceding. *Prothorax* very slightly wider than long, the sides rounded and convergent in apical third, the apex more feebly arcuate in the middle; sides straight and just visibly convergent in basal two-thirds, the base broadly, distinctly arcuate; basal angles obtuse and distinct; disk even, not perceptibly impressed. *Elytra* quadrate, one-third longer and wider than the prothorax, parallel and straight at the sides, with the humeri exposed at base; disk impressed on the suture behind the scutellum. *Abdomen* distinctly narrower than the elytra, as long as the anterior parts; sides parallel and evenly, just visibly arcuate; border strong; first four segments equal and nearly flat; fifth one-half longer. Length 2.9 mm.; width 0.65 mm.

California (Pomona). Mr. H. C. Fall.

The truncate sixth ventral plate would seem to indicate the male, but there is no trace of the dorsal carinæ so well developed in the two preceding species, and the present differs also in its more

pubescent abdomen, with the basal impressions much shorter or finer, extending only very slightly upon the disk of the plates. Two specimens.

**G. fusciceps** n. sp.—Slender, depressed, pale rufo-testaceous, the head darker, piceous; elytra more flavate; antennæ dusky, pale toward base; legs very pale; head shining, minutely, densely and distinctly punctate; pronotum feebly alutaceous, somewhat reticulate, very minutely and not distinctly punctate; elytra feebly alutaceous, minutely, very densely and rather more distinctly, the abdomen minutely feebly and sparsely, punctate; pubescence fine, short, dense, especially on the elytra; abdomen very sparsely but more coarsely pubescent. *Head* nearly as long as wide, distinctly shorter and slightly narrower than the prothorax, the neck two-thirds of the width across the eyes, the latter moderate, at one-half more than their length from the base; vertex just visibly, longitudinally impressed in the middle; antennæ long, very feebly incrassate, fully as long as the prothorax and elytra, the basal joint longer and slightly thicker than the second, the latter subcylindrical and perceptibly longer than the third, which is obconical and elongate, four to ten obconical, loosely connected, deeply concave at apex as usual, the fourth as long as wide, shorter than the fifth, tenth very slightly wider than long, eleventh rather large, fully as long as the two preceding. *Prothorax* nearly quadrate, rounded at the sides and narrowed in apical third, the apex broadly, feebly arcuate; sides feebly convergent and straight in basal two-thirds; base feebly arcuate, the angles nearly right and very pronounced; disk feebly, transversely convex, scarcely at all impressed. *Elytra* quadrate, parallel and straight at the sides, one-third wider and longer than the prothorax, the humeri exposed at base; suture narrowly impressed behind the scutellum. *Abdomen* as long as the anterior parts, distinctly narrower than the elytra, the sides parallel and straight, the first three segments with large deep impressions, the fourth scarcely impressed and much shorter than the fifth; basal segments with the raised basal part broadly emarginate posteriorly in nearly circular arc. Length 2.7 mm.; width 0.55 mm.

New York (Catskills); North Carolina (Asheville).

Readily distinguishable from those which precede by the less punctate abdomen, shorter third antennal joint and smaller eyes. I can see no sexual marks of prominence in my three specimens.

**G. lineata** n. sp.—Narrow, linear and depressed, rufo-piceous, shining, the abdominal apex, legs and basal parts of the antennæ pale; head and pronotum feebly reticulate, minutely, closely but not very distinctly punctate, the elytra more asperately and distinctly but scarcely more densely so, the abdomen sparsely, extremely minutely and feebly; pubescence anteriorly very short, dense, on the abdomen very sparse as usual, long and fimbriate at the apices of the basal segments. *Head* large, fully as wide as the prothorax, nearly as long as wide, the neck very broad, fully three-fourths as wide; eyes



rather small, at fully three-fourths more than their length from the base; front with a feeble and posteriorly angulate flat depression, extending from the middle to the apex; antennæ long, distinctly incrassate, two-fifths as long as the body, the three basal joints gradually decreasing in length, four to ten obconical, the latter nearly one-half wider than long, eleventh well developed. *Prothorax* about as long as wide, the sides very feebly convergent and straight in basal three-fourths; apex and base equally and distinctly arcuate, the former slightly the narrower; basal angles obtuse but rather distinct; disk just visibly impressed along the median line except near the base and apex. *Elytra* quadrate, parallel and straight at the sides, one-fourth wider and longer than the prothorax; humeri narrowly exposed; disk flat, rather widely impressed on the suture near the scutellum. *Abdomen* linear, parallel and straight at the sides, distinctly narrower than the elytra, the first two segments strongly and widely, the third and fourth very feebly, transversely, impressed at base, the raised basal part emarginate in circular arc; fifth nearly one-half longer than the fourth. Length 2.4 mm.; width 0.45 mm.

Nevada (Reno).

The two specimens serving as types appear to be females. This species is quite distinct from any of those described above by the larger head, smaller eyes, more incrassate—though not much shorter—antennæ, wider neck and relatively somewhat smaller elytra.

**G. attenuata** Csy.—Bull. Cal. Acad. Sci., I, 1885, p. 306 (Calodera).

This species is nearly similar to *lineata*, but has the antennæ shorter and much stouter and the prothorax quite distinctly wider than long. Length 2.0 mm.; width 0.45 mm.

**G. pertenuis** n. sp.—Narrow, linear, depressed, piceous-black, the pronotum and elytra slightly paler; legs and basal parts and tip of the abdomen pale flavate; integuments highly polished, the punctuation excessively minute, sparse, the pubescence of the head and pronotum rather long, sparse, of the elytra a little shorter and closer, of the abdomen very sparse, the erect setæ sparsely bristling along the sides. *Head* rather convex, unimpressed, fully as wide as the prothorax, nearly as long as wide, the neck distinctly less than one-half as wide as the width across the eyes, the latter small, at about twice their length from the base, the basal angles broadly rounded; antennæ short, scarcely longer than the head and prothorax, distinctly incrassate, the first joint a little longer and much thicker than the second, the latter as long as the next two, tenth nearly one-half wider than long, the eleventh large, rather wider than the tenth, pointed near the apex and much longer than the two preceding. *Prothorax* nearly as long as wide, broadly rounded and convergent at the sides in apical third, the sides thence feebly convergent and just visibly sinuate to the distinct basal angles; base broadly arcuate, fully three-fourths wider than the apex; disk broadly, feebly convex, even. *Elytra*



rather longer than wide, one-fourth wider and one-third longer than the prothorax, parallel and straight at the sides, the humeri distinctly exposed; suture deeply, narrowly impressed just behind the scutellum. *Abdomen* scarcely as long as the anterior parts, linear, distinctly narrower than the elytra, the sides parallel and straight; first four segments narrowly deeply and equally impressed at base, the impressions more coarsely punctate; fifth much longer than the fourth. Length 1.45 mm.; width 0.25 mm.

New Jersey.

The single specimen seems to be a female. This species is by far the most minute of the genus, and is somewhat aberrant in its sparser punctuation.

#### **BAMONA** Sharp.

A small Californian species is referred to this genus, but not without some doubt. It cannot be associated generically with *Gyronycha*, although the tarsi are four-jointed throughout and the tarsal claws similarly abruptly bent downward, for the reason that it differs in having a distinctly falagrioid habitus and in its short transverse abdominal segments; it also differs conspicuously in the structure of the sterna between the middle coxæ. The mesosternum is only very slightly produced between the coxæ and forms a very short broad and gradually depressed cusp; behind this cusp the narrow but perceptible space between the coxæ is depressed, forming a low rounded ridge, gradually regaining the level of the metasternum behind but without trace of a metasternal process defined by an acute line or bead; the coxal cavities are gradually less impressed and not well defined behind. At a very short distance behind the mesosternal cusp there appears, however, to be a fine transverse suture in the depressed ridge, and this may constitute the anterior limit of the metasternum proper. The posterior tarsi are rather long and slender, but the neck seems to be much broader and the antennæ shorter than in the Central American forms.

Although I am not sure, therefore, of the generic identity of the present species, its discovery is interesting in proving that these peculiar hygronomoid species form an important element in the Aleocharini of America, and include at least several distinct genera.

**B. falliana** n. sp.—Narrow, slightly convex, polished throughout, piceous-black, the antennæ black, paler at base; legs pale, brownish-flavate throughout; head finely, very sparsely punctulate; pronotum equally minutely but much more closely, evenly punctulate, each puncture having a very minute stout decumbent hair quite different from those of any other part of the body,

the punctures and peculiar vestiture abruptly and completely disappearing near all the edges; elytra and abdomen minutely sparsely and indistinctly punctulate; pubescence of the head and elytra stiff and rather long, distinct although not very dense, of the abdomen longer, the pronotum with a series of three or four long erect setæ along the lateral edges. *Head* rather longer than wide, at the eyes almost imperceptibly wider than the prothorax; sides subparallel; base transverse; angles rounded; neck two-fifths as wide as the perocular width, the eyes large, at their own length from the base; antennæ short, scarcely longer than the head and prothorax, the two basal joints equal in length, the first slightly thicker, second elongate, as long as the next two, third obconical, longer than wide, four to ten mutually almost perfectly similar, scarcely at all increasing in width, distinctly obtuse, one-half wider than long, eleventh conoidal, as long as the two preceding. *Prothorax* as long as wide, widest at apical third, where the sides are strongly rounded and somewhat prominent, thence rapidly oblique to the neck and distinctly convergent, broadly, feebly sinuate to the base; apical angles strongly deflexed, rounded; basal also deflexed, slightly obtuse but not at all rounded; base very feebly arcuate; disk perfectly even, without trace of impression. *Elytra* quadrate, about as long as wide, not quite twice as wide as the prothorax and about two-fifths longer; sides subparallel and straight; humeri very broadly exposed and transverse at base; disk feebly convex. *Abdomen* short and broad, scarcely as long as the anterior parts, narrower than the elytra but much wider than the prothorax; sides parallel, slightly convergent at the fifth segment, which is but slightly longer than the fourth; first three impressed and polished at base. *Legs* slender, the posterior tarsi slender; fully three-fourths as long as the tibiæ, with the basal joint rather longer than the next two. Length 1.75 mm.; width 0.4 mm.

California (Los Angeles Co.). Mr. H. C. Fall.

This is one of the most interesting aleocharinides which has been discovered on the Pacific slope, although quite insignificant in point of size.

#### OLIGOTIDES.

Antennæ 10-jointed; tarsi 4-4-4-jointed.

#### SOMATIUM Woll.

The following species differs from the European *flavicorne* in its more convex surface, much sparser pubescence and coarser, more uneven imbricate sculpture of the elytra.

**S. nugator** n. sp.—Oval, convex, polished, black, the legs dark brownish-rufous; antennæ still paler throughout; head almost impunctate, remainder of the upper surface very minutely, sparsely punctate, the elytra and abdomen very coarsely imbricate, the latter becoming smooth toward tip;

pubescence rather long, stiff and sparse, subrecumbent but longer erect and bristling on the abdomen, especially beneath. *Head* small, evenly convex; eyes large, not prominent; antennæ about one-half longer than the head, the second joint longer and narrower than the first and as long as the next two, the latter not wider, five to seven gradually wider, eight and nine subequal, abruptly strongly transverse, twice as wide as long; tenth short, bluntly ogival. *Prothorax* twice as wide as long, the sides strongly divergent from apex to base, evenly arcuate and continuous in curvature with the sides of the elytra; base broadly evenly and strongly arcuate throughout; disk sparsely feebly, subsparately punctate. *Elytra* slightly wider than the base of the prothorax, one-half longer than the latter, two-thirds wider than long, broadly, angularly emarginate at apex; disk evenly convex. *Abdomen* short, as broad at base as the elytra; sides convergent and feebly arcuate; fifth segment longer than the fourth. Legs short. Length 0.9 mm.; width 0.5 mm.

#### Pennsylvania.

The club of the antennæ is stouter than in *flavicorne*, and the eighth joint is much more transverse. The single type has the abdomen contracted.

**S. claviger** n. sp.—Stout, suboval, convex, strongly shining, black throughout, the legs piceous; antennæ pale toward base, the large club piceous-black; head minutely, sparsely, the pronotum a little more strongly, asperately and rather closely punctate; elytra strongly and closely imbricate; abdomen more coarsely imbricate, the lines finer, the sculpture of the fifth tergite extending very nearly to the apex; pubescence rather coarse, moderate in length and density. *Head* strongly deflexed, evenly convex, wider than long and fully three-fifths as wide as the prothorax; eyes large, attaining the prothorax; antennæ one-half longer than the head, the second joint as wide as the first and a little longer, as long as the third and fourth, third slightly elongate, fourth scarcely longer than wide, fifth but little thicker, quadrate, sixth decidedly thicker, one-third wider than long, seventh still much wider, transverse, sixth to ninth rapidly and evenly increasing in width, the latter more than twice as wide as long, tenth as wide as long, very obtuse, as long as the two preceding, ninth joint more than twice as wide as the first. *Prothorax* fully twice as wide as long, the sides arcuate and strongly convergent from base to apex; base very strongly, broadly arcuate, fully three-fourths wider than the apex; disk strongly, evenly convex. *Elytra* as wide as the base of the prothorax, much longer than the latter; sides feebly convergent and arcuate toward base; disk slightly longitudinally prominent along the sides toward apex. *Abdomen*, when contracted, scarcely as long as wide, subquadrate, shorter than the anterior parts, slightly narrower than the elytra, the sides feebly convergent toward apex; border moderate; fifth segment longer than the fourth. Tarsi slender. Length 1.0 mm.; width 0.65 mm.

#### Iowa (Keokuk).

This species is larger and still broader than *nugator*, and differs

in its more finely and closely imbricated elytra, and still larger and longer but more gradually formed antennal club. Two specimens.

**S. oviforme** n. sp.—Broadly oval, convex, polished, black, the legs piceo-testaceous; antennæ flavate; punctures of the head and pronotum fine, moderately close, even; elytra and abdomen with imbricate sculpture; pubescence moderate in length, fuscous, rather conspicuous. *Head* vertical, not visible from above, the eyes large, attaining the base; antennæ short, one-half longer than the head, the second joint longer than the first and longer than the next two combined, third longer than the fourth and nearly twice as long as wide, three to seven subequal in width, the latter somewhat transverse, club abrupt, parallel, loose, the ninth joint one-half wider than long. *Prothorax* small, about twice as wide as long; base strongly arcuate; apical angles deflexed and right, narrowly rounded; basal almost obliterated; disk evenly convex. *Elytra* together broadly emarginate at base and equally broadly, triangularly emarginate at apex, at apical third much wider than the prothorax, one-third longer; sides strongly arcuate toward base, continuous in curvature with the prothorax. *Abdomen*, when contracted, a little wider than long, about as long as the elytra, subcontinuous in outline with the latter, conical, the sides nearly straight; fifth segment as long as the two preceding together. *Legs* slender, the posterior tarsi much shorter than the tibiæ. Length 0.75 mm.; width 0.5 mm.

California (Los Angeles Co.).

Differs from the preceding two species in its more evenly elliptical outline, more abruptly formed antennal club and longer fifth ventral segment.

#### NOTE.

The species described by Say as *Aleochara simplicicollis* (Trans. Am. Phil. Soc., VI, p. 155), is identical with *Microglotta suturalis* Sahlb.

#### OXYTELINI.

#### **OXYTELUS** Grav.

Considering the general homogeneity of facies in *Oxytelus*, there is an unusual amount of variation in the structure of important organs, such as the mentum, and especially a very great amount of diversity in the male sexual modifications; these may manifest themselves at either end of the body, sometimes virtually at the head only, in other species at the abdominal apex, but occasionally also quite noticeably at both extremities. The females are often very similar among themselves, and it is frequently almost impos-



sible to accurately identify an isolated example of that sex. I have consequently drawn all the characters of the following table and subsequent descriptions from the male alone, when that sex could be examined.

In the Oxytelini true ocelli, such as characterize the Omalini, do not exist, but in Oxytelus their place is taken by two strongly setigerous punctures, occupying very nearly the same position at the base of the vertex. I have not noticed these punctures in Trogophlœus, nor in Aploderus, and they may possibly be peculiar to Oxytelus.

Most of the species are subarctic, but those in which the front is spinose or spiculate in the male appear to be more partial to tropical conditions, and are abundant in Central America. Those known to me at present may be distinguished by the following characters:—

Eyes large in both sexes, the tempora subobsolete; seventh ventral plate of the male with two deep remote and parallel-sided fissures, the median lobe truncate, not projecting beyond the lateral parts and with its edge slightly thickened in the middle.....	<b>sculptus</b>
Eyes moderate, the tempora always large and well developed.....	2
2—Frontal margin armed in the male with a short stout acuminate or triangular process.....	3
Frontal margin not armed in the male.....	4
3—Frontal process simple and finely acute at apex; head large, subquadrate; elytra longer than the prothorax.	
Eyes at their own length from the basal angles; elytra closely punctate; mandibles arcuate.....	<b>insignitus</b>
Eyes at much more than their own length from the basal angles; elytra more coarsely and sparsely punctate; mandibles almost straight, arcuate at apex.....	<b>munitus</b>
Frontal process notched at apex; head smaller, strongly transverse.	
	<b>breviceps</b>
4—Male with the seventh ventral plate abruptly produced in the middle in the form of a flattened ligula, which is generally subtruncate at tip.....	5
Male with the seventh ventral bisinuate or biemarginate at tip, the median lobe rounded or broadly angular, sometimes obsolete.....	10
5—Pronotum with three longitudinal impressed grooves.....	6
Pronotum even, without longitudinal impressions.....	9
6—Vertex with two grooves convergent from the base.....	<b>convergens</b>
Vertex with the grooves parallel.....	7
Vertex without impressed grooves.....	8
7—Sides of the prothorax sinuate near the basal angles, the latter more or less prominent.	



- Antennæ moderately incrassate ; joints seven to ten equal, eleventh small, not as long as the two preceding ; basal joint slender, strongly constricted near the apex.....**fuscipennis**
- Antennæ more incrassate ; joints seven to ten increasing in width, the eleventh large, as long as the two preceding ; basal joint stouter, cylindrical, not constricted .....**nimius**
- Sides of the prothorax without trace of sinuation before the basal angles, the latter obtuse but generally not rounded, not at all prominent.
- Tempora more prominent than the eyes ; posterior tarsi long, fully two-thirds as long as the tibiæ.....**montanus**
- Tempora not more prominent than the eyes ; posterior tarsi scarcely more than one-half as long as the tibiæ.....**invenustus**
- 8**—Pronotal sulci very feeble.....**pennsylvanicus**
- 9**—Vertex not at all impressed ; upper surface smooth and even.  
**incolumis**
- 10**—Sides of the prothorax more or less distinctly crenulate ; antennæ rather long and slender.
- Front flattened and strongly, densely granulose and opaque between the antennal prominences ; eyes moderate in size .....**rugosus**
- Front finely, sparsely punctate and polished ; eyes very small.....**niger**
- Sides of the prothorax not crenulate.....11
- 11**—Sculpture coarse and moderately dense ; rather small species .....12
- Sculpture very finely, longitudinally strigose ; species still more minute ....15
- 12**—Prothorax moderately transverse, with the sides parallel ; abdomen very strongly reticulate and dull toward base.....**placusinus**
- Prothorax strongly transverse. with the sides convergent behind.....13
- 13**—Sides of the prothorax distinctly emarginate just before the basal angles ; median sulcus of the pronotum alone distinct.....**densus**
- Sides of the prothorax not emarginate near the base ; pronotum with three more or less distinct longitudinal impressions .....14
- 14**—Sculpture very dense ; lustre dull, the abdomen reticulate and but feebly shining ; antennæ rather more slender and less incrassate.  
**alpicola**
- Sculpture not so dense, except on the elytra of some species, the lustre somewhat shining ; abdomen always polished ; antennæ more incrassate.
- Elytra distinctly impressed near the suture toward base ; elytral punctures distinct, not forming long rugæ at least toward base.....**nitidulus**
- Elytra very narrowly impressed along the suture near the base, the punctures indistinct, forming long coarse parallel rugæ, the elytra shorter and more transverse than in *nitidulus* .....**suspectus**
- Elytra not in the least impressed along the suture, perfectly flat, the punctures indistinct, forming long fine anastomosing rugæ.....**sobrinus**
- 15**—Antennæ longer, slender, the outer joints but slightly wider than long ; surface more shining and less densely strigilate .....**vegrandis**
- Antennæ short, stouter, strongly incrassate, the outer joints strongly transverse ; lustre very dull.

Elytra but slightly longer than the prothorax; abdomen polished, very remotely and obsoletely punctulate ..... **nanus**

**exiguus**

Elytra much longer than the prothorax; form broader, the abdomen strongly reticulate, finely, more densely and subgranularly punctulate.

**tetracarinatus**

It will be observed that the species are not quite as abundant as in the European fauna, but others will probably be discovered, as these obscure little insects are seldom collected. Four of the twenty-three are common to the two continents.

**O. sculptus** Grav.—Mon., p. 191; *mærens* Mels.: Proc. Ac. Phila., II, p. 42; *antennatus* Steph.; *longicornis* Mann.; *testaceipennis* Fairm.

The head in both sexes is small, narrower than the prothorax, with a single median impressed channel toward base and large eyes. The prothorax is moderately transverse, with three distinct impressed channels, the elytra increasing in width from base to apex, a little wider and much longer than the prothorax, rather coarsely, subrugosely sculptured. The mentum has a fine arcuate discal groove extending from one basal angle to the other. Length 3.4–4.0 mm.; width 1.0–1.1 mm.

This species is represented in my cabinet from Iowa, Wisconsin, California and Europe. The European and American forms do not differ at all. The male appears to be much less abundant than the female.

**O. insignitus** Grav.—Mon., p. 188; *americanus* Mann.: Brachél., p. 48.

In the male of this species the head is large, slightly wider than long, with the eyes at their own length from the basal angles, the antennæ about one-third longer than the head, exclusive of the mandibles, the latter very long, decussate, almost evenly arcuate and acutely pointed, the frontal porrect process acute and simple. In the female the head is very much smaller, transverse, with the frontal margin not armed, the eyes about equally large but almost attaining the base, the antennæ fully one-half longer than the head and the mandibles much smaller, thicker and more strongly arcuate. The mandibular tooth is situated at nearly the same distance from the base in both sexes, but is very much nearer the apex in the female. In the male the head, prothorax and elytra are nearly equal in width and the elytra are distinctly longer than the prothorax, strongly and rather closely punctured. It occurs through-

out the Atlantic States from New York to Texas and far into Mexico. Length 2.4–3.0 mm.; width 0.75–0.9 mm.

**O. munitus** n. sp.—Parallel, stout, flavate, the pronotum darker, rufescent; head and abdomen still darker, piceous; antennæ black, pale toward base; mandibles and legs pale; integuments polished throughout; pubescence very sparse, the abdominal setæ rather long; head impunctate and polished, except near and at the sides, where there are some coarse elongated subrugiform punctures, the under surface impunctate; pronotum coarsely, very sparsely, rugosely, the elytra also coarsely sparsely and unevenly punctate; abdomen minutely, sparsely punctulate. *Head* very large, as wide as the prothorax, slightly wider than long, with a very large uneven smooth impression at each side at about lateral third, the frontal margin abruptly prolonged in a short acute porrect spine; eyes moderately convex, at very much more than their own length from the basal angles; tempora behind the eyes nearly straight and feebly divergent, then broadly rounded to the neck which is three-fifths as wide as the head; mandibles very long, nearly straight, arcuate at apex, toothed near the base; antennæ only slightly longer than the head exclusive of the mandibles, the basal joint large, stout, constricted at base, nearly as long as the next four, second a little shorter and stouter than the third, which is longer than the fourth, the latter slightly elongate-oval, five to eight increasing rapidly in width, eight to ten equal, moderately transverse, eleventh small, conoidal, not as long or wide as the preceding two. *Prothorax* short and transverse, nearly twice as wide as long, the sides strongly convergent from apical fifth to the basal angles, which are very obtuse and nearly obsolete, the edges feebly crenulate and with a slight sinuation just before the basal angles; apex broadly bisinuate; apical angles well marked; disk strongly trisulcate, broadly impressed toward the sides. *Elytra* two-fifths wider than long, equal in width to the prothorax and fully two-fifths longer; sides subparallel, feebly arcuate; humeri broadly, transversely exposed at base; suture broadly, strongly margined; disk of each broadly impressed along the middle. *Abdomen* short, nearly as wide as the elytra, parallel, the border thin and deep. Length 3.0 mm.; width 0.8 mm.

#### Pennsylvania.

This species is allied to *insignitus*, and resembles it strongly in the general form of the head and simple acute apex of the frontal process, but differs in the straight mandibles, eyes more distant from the basal angles and in the much coarser and sparser sculpture of the pronotum and elytra; the oblique rugæ near the base of the head toward the sides in *insignitus* are wanting in *munitus*. The description is taken from the male, which is the only sex that I have seen.

**O. breviceps** n. sp.—Moderately broad, parallel, dark brownish-testaceous; mandibles and palpi concolorous; elytra and legs flavate; antennæ

black, flavate at base; head blackish; abdomen dark piceous-brown, the apices of the segments paler. *Head*, exclusive of the mandibles, one-half wider than long, a little narrower than the prothorax, finely reticulate and alutaceous, minutely, sparsely punctate, strongly, longitudinally rugose toward the sides, broadly biimpressed, the impression as usual very deep within the antennal tubercles; eyes moderate, at less than their own length from the basal angles, the tempora feebly divergent behind them; basal angles broadly rounded; mandibles moderate, strongly, evenly arcuate, decussate; frontal process notched at tip; antennæ fully one-half longer than the head, nearly as in *insignitus* and *munitus*. *Prothorax* fully three-fourths wider than long, the apical angles nearly right, distinct; sides thence nearly straight, feebly divergent for a short distance, then rather strongly convergent to the broadly rounded basal angles; edges finely crenulate; disk strongly trisulcate, broadly impressed laterally, rather closely, strongly punctate. *Elytra* very short, strongly transverse, at base as wide as the prothorax, at apex a little wider, the suture not longer than the prothorax; humeri transverse at base; disk scarcely impressed, strongly distinctly and closely punctate. *Abdomen* parallel, very slightly narrower than the elytra, minutely feebly and sparsely punctulate. Length (extended) 3.0–3.5 mm.; width 0.7–0.9 mm.

New York (Catskill Mts.).

The description is taken from three males, which are perfectly similar among themselves, except that the notch in the tip of the frontal process varies in size, in some specimens being very narrow. The female greatly resembles the female of *insignitus*, except that the eyes are somewhat less basal, the elytra shorter and the neck a little wider.

**O. convergens** Lec.—Trans. Am. Ent. Soc., VI, 1877, p. 236.

Head in the male large, at base rather wider than the prothorax, coarsely, rugosely punctate, with a large apical concavity, the eyes convex, at their own length from the basal angles, the tempora strongly divergent behind the eyes, the frontal margin slightly produced in a short broad truncate process; antennæ a little longer than the head, the tenth joint slightly wider than long. *Prothorax* nearly twice as wide as long, deeply trisulcate, broadly impressed laterally, strongly, rather closely punctate. *Elytra* a little longer and wider than the prothorax, strongly, moderately closely punctate. Length 3.8 mm.; width 1.1 mm. Georgia and Florida.

The mentum is as usual composed of three parts, the basal limited by a deep groove, trapezoidal in form, extending from one basal angle to the other and advancing anteriorly more than one-half the entire length, the apical consisting of a narrow transverse



semi-membranous margin. In the male the sixth ventral plate has two small feeble teeth on the apical edge, separated by one-third of the total width; the seventh is prolonged in the middle in a liguliform process which is as long as wide, gradually narrowed toward the truncate apex, the surface of the segment perfectly flat and even throughout, except a very feeble swelling at the tip of the ligula.

**O. fuscipennis** Mann.—Bull. Mosc., 1843, II, p. 233.

Black, the elytra rufescent; legs pale brown; surface highly polished, the punctures strong but rather sparse, closer and feebly subconfluent on the elytra. The head in the male is large, about as wide as the prothorax, with a large deep apical concavity, the middle of the frontal edge broadly sinuate, the sinuation limited by rather prominent angular projections; eyes rather small, at nearly twice their length from the neck, the tempora evenly, strongly arcuate from the eyes to the neck; antennæ a little longer than the head, the outer joints strongly transverse. Prothorax not twice as wide as long, deeply trisulcate, also longitudinally, obliquely impressed toward the sides. Elytra a little wider and distinctly longer than the prothorax. Length 4.0 mm.; width 1.2 mm. Alaska to California.

The sixth ventral is not modified, the seventh abruptly produced in the middle in a gradually narrowed ligula, a little longer than wide, subtruncate at apex, the surface of the segment thrown up in the middle at the base of the ligula in a short transverse ridge which is steep behind, gradually declivous anteriorly, the summit of the ridge scarcely one-half wider than the apex of the ligula, with its lateral limits very acute, each bearing a stiff seta; surface of the ligula perfectly flat throughout. The transverse groove of the mentum attains the middle of the length, is parabolic in form and interrupted in the middle.

In connection with this species, I do not understand the reference by Mr. Fauvel to *laqueatus* Marsh., as the sexual characters in my representative of that species are altogether different, nor to *luteipennis* Erichs., by Dr. Sharp in the "Biologia," as that species is stated by Erichson to have the sixth ventral plate bituberculate at apex. I think there can be no doubt that I have correctly identified Mannerheim's species, as there seems to be none other at all like it found in Alaska. There is a large series in my cabinet. Dr. LeConte confounded with this species one or more eastern



forms, and the indicated sexual characters of the male (l. c., p. 235) must surely have been inadvertently taken from a specimen of *O. sculptus*.

***O. nimius*** n. sp.—Stout, black, polished, the elytra dark rufous; legs and basal parts of the antennæ pale; integuments glabrous, with a few erect stiff setæ, the two occipital distinct. *Head* just visibly narrower than the prothorax, nearly as long as wide, strongly but rather sparsely punctate, broadly concave anteriorly, the frontal margin very broadly, feebly produced and slightly sinuate, with the lateral angles obtuse; eyes convex; tempora strongly arcuate from the eye to the neck, one-half longer than the former and equally prominent; neck two-thirds as wide as the head; antennæ one-third longer than the head, the outer joints rapidly incrassate, basal joint long, stout and cylindrical. *Prothorax* not quite twice as wide as long, widest scarcely before the middle; sides broadly rounded, convergent and sinuate posteriorly, the basal angles prominent; base arcuate; apex truncate, feebly sinuate laterally; disk strongly trisulcate, strongly, longitudinally impressed sublaterally; strongly but sparsely punctate. *Elytra* a little wider and distinctly longer than the prothorax; sides feebly divergent; humeri exposed; base broadly emarginate in circular arc; disk flat, coarsely, closely punctate, the punctures becoming slightly confluent along the middle of each. *Abdomen* slightly narrower than the elytra, almost impunctate, minutely, sparsely punctulate toward base. Length 5.0 mm.; width 1.25 mm.

Pennsylvania.

The male from which the description is drawn, has two extremely obsolete dentiform subapical elevations on the sixth ventral plate, separated by one-fifth of the entire width, the seventh abruptly produced in the middle in a short gradually narrowed ligula, much shorter than wide, with its apex slightly thickened, beveled and transversely truncate, the surface of the segment and ligula perfectly even and flat throughout, the eighth narrowly, deeply impressed throughout the length along the median line.

This species is allied to *fuscipennis*, but differs in the male sexual characters and antennal structure.

***O. montanus*** n. sp.—Stout, black, glabrous, highly polished throughout, the elytra scarcely visibly rufo-piceous; legs piceous-black, the tarsi paler; antennæ scarcely paler at base. *Head* slightly narrower than the prothorax, distinctly shorter than wide, strongly, not densely punctate, the mandibles stout, arcuate, the apical concavity large, transverse; frontal margin very broadly, feebly produced, distinctly sinuate, with rather prominent angles; eyes moderate, prominent; tempora strongly arcuate from the eyes to the neck, not twice as long as the eye and rather more prominent; antennæ one-half longer than the head, strongly incrassate, the eleventh

joint barely as long or wide as the preceding two, basal joint slender, feebly constricted toward apex. *Prothorax* twice as wide as long, the sides broadly, evenly arcuate from apex to base, parallel nearly to the middle, then convergent to the basal angles which are obtuse and scarcely evident; base broadly arcuate; apex truncate, the sinuations distant and very feeble; disk strongly trisulcate, broadly impressed toward the sides, strongly but not densely punctate throughout. *Elytra* as wide as the prothorax and distinctly longer; sides almost parallel; humeri feebly exposed; disk strongly, evenly, not densely punctate throughout, the punctures tending to unite longitudinally. *Abdomen* a little narrower than the elytra; sides parallel and slightly arcuate; punctures minute, rather numerous toward base, very remote and obsolete toward apex. Length 3.6–4.0 mm.; width 1.1–1.2 mm.

California (Lake Tahoe).

This species is allied to *fuscipennis*, differing in the more strongly and less sparsely punctured integuments, dark elytra and legs, rounded sides of the prothorax with nearly obsolete basal angles, and in the male sexual characters. The sixth ventral plate is not modified, the seventh abruptly produced in the middle in a very short gradually narrowed ligula, much wider than long, with the apex feebly sinuato-truncate, the angles rounded, its surface tumid and widely beveled toward apex, the surface of the segment with two approximate subconfluent setigerous tubercles at some distance anterior to the base of the ligula, and distant by less than the apical width of the latter.

**O. invenustus** n. sp.—Stout, black, highly polished and glabrous, the elytra dark piceous; legs and basal joint of the antennæ pale; sparse erect setæ long and distinct. *Head* small, wider than long, distinctly narrower than the prothorax, deeply concave at apex, the median parts of the clypeus flat, with the apical margin broadly sinuate and biangulate; punctures strong but sparse; eyes moderate, convex; tempora strongly, evenly arcuate to the neck, but slightly longer than the eye and not more prominent; antennæ one-half longer than the head, strongly incrassate, the first joint long, slightly contorted and broadly constricted near the apex; tenth scarcely one-third wider than long, eleventh small, not as long as the two preceding. *Prothorax* not twice as wide as long, widest at the middle, the sides parallel, evenly, broadly arcuate throughout; base and apex very nearly equal; basal angles broadly obtuse but not blunt; disk strongly trisulcate, broadly and strongly impressed sublaterally, strongly but rather sparsely punctate, the punctures fine on the median ridges. *Elytra* distinctly longer than the prothorax, at base equal in width, at apex a little wider; disk strongly but rather sparsely, nearly evenly punctate. *Abdomen* distinctly narrower than the elytra; sides parallel, feebly arcuate toward apex; surface subimpunctate; border rather deep, moderately thin. Length 3.7 mm.; width 1.1 mm.

Maryland.

The small head may be exceptional and an individual feature in the unique type, for it varies a good deal in *fuscipennis*; I find, however, that the sexual characters at the ventral apex are very nearly constant, whatever may be the size of the head. The present species is allied closely to *fuscipennis*, but differs in having two small feeble tubercles at the apex of the sixth ventral plate, separated mutually by only one-eighth or one-tenth of the entire width, also in the parallel sides of the prothorax. The seventh ventral is abruptly produced in a narrow, gradually almost parallel, narrowly truncate ligula, longer than wide, with the surface at apex broadly and feebly beveled, the surface of the segment at the base of the ligula acutely and confluent bituberculate and bisetigerous. The transverse groove of the mentum is entire and in the form of a circular arc.

**O. pennsylvanicus** Erichs.—Gen. Staph., p. 792; Lec.: Trans. Am. Ent. Soc., VI, p. 235.

Dark rufo-piceous, the elytra, legs and basal parts of the antennæ pale, brownish-flavate; surface polished, glabrous. Head scarcely visibly narrower than the prothorax, transverse, the frontal margin not produced, broadly arcuate in the middle; antennæ not quite as long as the head and prothorax, moderately incrassate. Prothorax three-fourths wider than long, widest at the middle, the sides almost evenly arcuate; base and apex subequal; disk finely, sparsely punctate like the head. Elytra slightly wider and distinctly longer than the prothorax, rather sparsely, not coarsely punctate, a broad median area of each feebly impressed and more closely punctured. Abdomen parallel, distinctly narrower than the elytra, subimpunctate. Length 3.4–4.4 mm.; width 0.75–0.95 mm. New York to the Gulf States.

The sixth ventral plate of the male has at apex two small tubercles, distant by one-sixth of the entire width; the seventh is feebly produced in a gradually narrowed, short flat ligula, much wider than long, with its apex emarginate, and the surface of the segment at the base of the ligula is obtusely elevated in the form of a short, transverse, anteriorly arcuate ridge, the highest point of which is the middle and not the setigerous lateral extremities as in *fuscipennis* and its allies. The arcuate line of the mentum is very fine and is subinterrupted in the middle. The head in the female is much smaller than in the male, with the eyes relatively larger.

**O. incolumis** Erichs.—Gen. Staph., p. 791; Lec.: l. c., p. 235.

Head black; prothorax and abdomen dark brownish-rufous; elytra and legs pale flavate; antennæ rufo-fuscous, slightly paler toward base; integuments polished, glabrous, very finely, sparsely punctate, the elytra a little more coarsely and deeply, the abdomen finely punctate and sparsely clothed with short, stiff pubescence. Head and prothorax without longitudinal grooves, the antennæ moderately incrassate, the tenth joint in the male strongly transverse, the eleventh unusually long, equalling the preceding three. Elytra equal in length and width to the prothorax. Abdomen parallel, a little narrower than the elytra, the border rather thin and deep. Length 3.5 mm.; width 1.0 mm. Southern States.

One of the most distinct and isolated of our species, easily known by the characters given above and by the parallel and feebly arcuate sides of the prothorax. The sixth ventral of the male has at apex two feeble, broadly cuspid tubercles, separated by between one-sixth and one-eighth of the width, the seventh produced in a flat ligula, a little wider than long, with the sides rapidly convergent to the feebly sinuato-truncate apex, the surface not beveled at its apex, and the surface of the segment perfectly flat and even throughout.

**O. rugosus** Fabr.—Syst. Ent., p. 267; *basalis* Mels.: Proc. Ac. Nat. Sci., Phila., II, p. 41; *rugulosus* Harris nec Say.

This fine species is too well known to need extended notice; the American specimens do not differ at all from the European, except perhaps in the less finely substrigose sculpture of the head. The head is large in the male, with the antennæ as long as the head and prothorax, the outer joints not at all transverse and the eleventh much shorter than the two preceding. Prothorax arcuately narrowed from near the apex, as wide as the elytra and fully three-fourths as long. Abdomen minutely granulato-reticulate and dull. Length 4.2–5.0 mm.; width 1.0–1.1 mm. United States and Europe. I have not seen it, however, from the Pacific Coast.

The mentum differs greatly from that of *fuscipennis* and the other allied species preceding, having no trace of the transverse groove; it is rectangular, twice as wide as long, finely, densely granulato-reticulate and dull, with a wide membranous apical margin. The male sexual characters are also of a different type, the fifth ventral having a strong porrect median tooth, the sixth a



feebly elevated bisinuate subapical elevation, and the seventh is deeply, almost equally and angularly biemarginate.

**O. niger** Lec.—*Trans. Am. Ent. Soc.*, VI, 1877, p. 235.

Parallel, rather narrow, somewhat convex, polished, black throughout, the antennæ not at all paler at base; legs dark reddish-brown. Head slightly transverse, convex, a little narrower than the prothorax, impressed only at the inner side of the antennal prominences, the frontal margin finely beaded, transversely truncate; punctures fine but strong, not dense; eyes very small; tempora large, rounded, more prominent than the eye; antennæ as long as the head and prothorax, feebly incrassate, the basal joint long, cylindrical, narrowed gradually toward base, tenth very slightly transverse, eleventh nearly as long as the preceding two. Prothorax two-thirds wider than long, narrowed behind from near the apex, trisulcate, the median sulcus deeper, scarcely impressed toward the sides, not very coarsely but strongly, sparsely punctate. Elytra equal in width to the prothorax but not quite as long, rather coarsely but sparsely punctate, somewhat uneven. Abdomen very remotely and obsoletely punctulate, rather coarsely so and distinctly pubescent beneath. Length 3.3 mm.; width 0.75 mm. California (San Francisco and Lake Tahoe); British Columbia—LeConte.

The sixth ventral plate of the male is obtusely tuberculate at its centre, and also has, on the disk near the posterior edge, two small erect very approximate tubercles arranged transversely, the seventh broadly biemarginate, the median lobe broadly rounded, the eighth not longitudinally impressed. The mentum is transverse, shining though transversely rugulose, impressed along the basal margin, and with the usual pale semi-membranous apical piece.

**O. placusinus** Lec.—*Trans. Am. Ent. Soc.*, VI, 1877, p. 237.

Pale reddish-brown throughout, the head and abdomen more piceous but only slightly darker; punctures rather coarse, very dense, forming long anastomosing rugæ, the depressed flat front of the head between the antennal prominences shining, almost impunctate; tergum subimpunctate but strongly reticulate and dull toward base; integuments glabrous, the tempora, and especially the venter, distinctly pubescent. Head narrower than the prothorax, as long as wide, subquadrate; eyes small, convex, at the middle; antennæ feebly incrassate, one-half longer than the head.



Prothorax rectangular, one-half wider than long, the sides parallel, very feebly arcuate; median groove feeble, the others almost completely obsolete. Elytra distinctly wider and longer than the prothorax, flat. Length 2.5 mm.; width 0.75 mm. District of Columbia.

Of this distinct and myrmecophilous species I have only seen the female. The mentum is smooth and polished, with a transverse, feebly arcuate broad and irregularly eroded subbasal groove, and the usual membranous apical margin.

**O. densus** n. sp.—Parallel, rather narrow, strongly shining, glabrous, the tergum with very minute sparse hairs, the venter minutely and extremely remotely pubescent; pronotum rufous; elytra darker, piceous; head and abdomen black; legs pale flavate; antennæ blackish, pale toward base; punctures throughout the head, pronotum and elytra rather coarse, very dense, subcoalescent; separated longitudinally by anastomosing rugæ, the front between the antennal prominences shining and subimpunctate; abdomen polished throughout, very minutely remotely and obsoletely punctulate. *Head* very slightly narrower than the prothorax, a little wider than long, the occiput feebly, remotely biimpressed at base only; eyes small, convex, at one-half more than their own length from the basal angles; tempora nearly straight and parallel behind them to the rounded basal angles, thence subtransverse to the neck; antennæ nearly as long as the head and prothorax, the basal joint cylindrical, as long as the next three, second much stouter than the third, outer joints moderately incrassate, tenth one-half wider than long, eleventh as wide and long as the two preceding, ovoid. *Prothorax* nearly twice as wide as long, widest near apical third, the sides parallel, broadly, evenly arcuate from the apex to the antebasal notch, the latter distinct; base narrower than the apex, arcuate, the latter truncate; disk unusually convex toward the middle, the median groove deep, the others obsolete, not impressed toward the sides. *Elytra* slightly wider and much longer than the prothorax; sides divergent, broadly arcuate behind; humeri exposed; disk flat. *Abdomen* a little narrower than the elytra; sides parallel; border moderately deep, rather thin toward base, gradually very thin behind the middle. Length 1.9–2.1 mm.; width 0.5 mm.

Maryland; Texas.

Possibly also myrmecophilous, somewhat resembling *placuosinus* but much smaller, with the abdomen polished, much less pubescent beneath, and the prothorax short, narrowed and laterally emarginate near the base. The female has the head smaller and shorter and the eyes relatively larger, situated at not more than their own length from the base. In the male the seventh ventral plate is broadly bisinuate at apex, the median lobe feeble but obtusely an-

gulate, the eighth not distinctly impressed. The mentum is nearly as in *placusinus*, but with a deeper, more even, feebly arcuate and unusually coarse subbasal groove. Numerous specimens.

**O. alpicola** n. sp. (Fauvel MS.)—Broad, flat above, dull, very densely sculptured, black throughout, the antennæ slightly paler toward base; legs dark rufo-testaceous; integuments deeply, densely but not very coarsely punctate, the punctures separated by longitudinally anastomosing rugæ throughout, the small depressed clypeus between the antennal prominences more feebly sculptured and somewhat shining; abdomen coarsely, strongly reticulate and dull, feebly, sparsely punctate and sparsely clothed with short hairs, which are more distinct but not at all closer on the polished under surface. *Head* subquadrate, nearly as long as wide, quite distinctly narrower than the prothorax, longitudinally trisulcate, the median impression narrow and distinct, the lateral broad and feebler; eyes small, at fully one-half more than their own length from the basal angles; tempora divergent and nearly straight behind them, broadly rounded behind, becoming transverse near the neck, which is narrow, only three-fifths as wide as the head; antennæ gradually, moderately incrassate, scarcely one-half longer than the head, the basal joint as long as the next three, second longer and thicker than the third, tenth one-half wider than long, eleventh fully as wide but not quite as long as the preceding two, obtusely ogival. *Prothorax* about twice as wide as long, the sides parallel and feebly arcuate, becoming strongly convergent in basal half, the basal angles very obtuse, almost obliterated; disk trisulcate, the median sulcus distinct and entire, the lateral partial and broadly impressed, scarcely at all impressed toward the sides. *Elytra* equal in width to the prothorax and nearly one-half longer, one-third wider than long; sides subparallel, feebly arcuate; humeri slightly exposed; disk flat, not at all impressed at the suture near the base. *Abdomen* subequal in width to the elytra. Length 2.1 mm.; width 0.7 mm.

#### Colorado.

The male is the only sex examined; it has very feeble abdominal characters, the seventh ventral plate being transversely truncate throughout its width, shorter than the dorsal plate, the infolded sides of which are visible laterally beyond its apex. The mentum has no groove, but a depressed basal area, extending beyond the middle and bounded anteriorly by an arcuate line from angle to angle, which is evenly, transversely rugose; anterior part polished, devoid of sculpture; apical membranous margin fine.

**O. nitidulus** Grav.—Micr., p. 107; *punctatus* Lec.: Tr. Am. Ent. Soc., VI, p. 236; *rugulosus* Gemm. et Har. nec Say.

Elongate, slender, parallel and rather depressed, shining, strongly but not densely punctate, black, the legs pale; elytra rufo-testaceous,

generally more or less infumate toward base. Head in the male nearly as wide as the prothorax, obsoletely trisulcate, the eyes at their own length from the basal angles, the tempora slightly divergent behind them and a little more prominent. Prothorax trisulcate, the median sulcus deep and narrow, the lateral broad and very feeble, also broadly impressed toward the sides. Elytra a little wider and distinctly longer than the prothorax. Length 2.1–2.9 mm.; width 0.6 mm. Pacific Coast and Siberia to Western Europe.

The male seems to be much less abundant than the female and has rather feeble sexual modifications, the sixth ventral plate being broadly and just visibly sinuate toward the middle, and the seventh moderately bisinuate. The groove of the mentum is feebly arcuate, very deep and somewhat uneven. A male which I took in the Sta. Clara Valley, California, has longer elytra, at least one-half longer than the prothorax, but does not differ much otherwise.

According to Mr. Fauvel the Mexican *rugulosus* of Say and *carbonellus* Solksy, are identical.

**O. suspectus** n. sp.—*O. nitidulus* Lec. nec Grav.: Trans. Am. Ent. Soc., VI, p. 237.—Parallel, polished, black, the elytra and legs pale brownish-testaceous; antennæ piceous toward base; integuments glabrous; the venter remotely, coarsely pubescent. *Head* very nearly as wide as the prothorax, slightly wider than long, coarsely, closely punctate laterally, finely, feebly so toward the middle, the subquadrate clypeus convex and scarcely at all punctured, finely impressed along the middle posteriorly to the base and with two distant impressions at the base of the occiput; eyes moderate, at their own length from the basal angles, the latter broadly rounded to the neck, a little more prominent than the eyes; neck two-thirds as wide as the head; antennæ as long as the head and prothorax, rather strongly incrassate and perfoliate, the tenth joint not quite twice as wide as long, eleventh small, conoidal, not as wide as the tenth and shorter than the two preceding. *Prothorax* strongly, closely, somewhat longitudinally punctate, three-fourths wider than long, widest at apical third; sides evenly rounded anteriorly, becoming gradually distinctly convergent and straight behind, the basal angles obtuse but distinct; base feebly arcuate, narrower than the subtruncate apex; disk trisulcate, the median sulcus deep and distinct, the lateral broad and feeble, also impressed toward the sides. *Elytra* a little wider and longer than the prothorax, transverse, flat, the sides feebly divergent; humeri exposed; disk of each very broadly, feebly impressed along the middle; punctures strong but rather fine, longitudinally confluent, separated by fine close anastomosing rugæ. *Abdomen* slightly narrower than the elytra, parallel, polished. Length 1.6–2.0 mm.; width 0.5–0.55 mm.

New York ; North Carolina ; Nebraska.

The female does not differ greatly, but has the head distinctly smaller. The sixth ventral plate of the male is not sinuate at apex, the seventh narrowly and feebly bisinuate in the middle at apex, the median lobe more advanced, small and broadly subangulate. The mental groove is coarse and deep. This species is readily distinguishable from *nitidulus* Grav., by its smaller size and much finer closer and aciculate sculpture of the elytra. It unquestionably does occur with ants, but I believe only occasionally, as I have found it in localities which were apparently not connected in any way with their nests.

**O. sobrinus** Lec.—Trans. Am. Ent. Soc., VI, 1877, p. 237.

Rather broad, depressed, moderately shining, black, the elytra with a slight piceous tinge; legs paler, piceo-testaceous; antennæ scarcely at all paler at base. Head feebly trisulcate, strongly punctate, distinctly narrower than the prothorax, the eyes well developed, at their own length from the basal angles, the tempora parallel, not at all more prominent than the eyes; antennæ strongly incrassate, the last joint not quite as long as the two preceding. Prothorax nearly as in *nitidulus*, but more densely sculptured. Elytra distinctly wider and nearly one-half longer than the prothorax; sides rather strongly divergent; disk between the slightly swollen upper limits of the flanks perfectly flat, finely, confluent punctate and closely, longitudinally rugose. Abdomen distinctly narrower than the elytra, parallel, finely reticulate, feebly alutaceous, finely, sparsely, subgranularly punctulate and minutely, sparsely pubescent, much more distinctly so beneath. Length 1.9–2.6 mm.; width 0.6–0.75 mm. California (Humboldt to Los Angeles); Southwestern Utah.

The head in the female is distinctly smaller. In the male the sixth ventral plate is unmodified, the seventh feebly bisinuate in the middle, the small median lobe slightly produced, rounded and extremely minutely fimbriate along its apex. The groove of the mentum is coarse, deep and entire. This species is allied to *nitidulus* and *suspectus*, but differs in its broader form and in the much finer, denser, substrigose sculpture of the elytra.

**O. vegrandis** n. sp.—Slender, parallel, depressed, feebly shining, minutely strigilate, black, the elytra piceous; legs pale, the femora blackish;



antennæ piceous at base. *Head* large, slightly transverse, as wide as the prothorax, feebly impressed along the middle; depressed clypeus strigilate and dull; eyes convex, at a little more than their own length from the basal angles, rather more prominent than the tempora, the latter straight and parallel behind them, abruptly rounded at base; antennæ rather slender, feebly incrassate, fully as long as the head and prothorax, tenth joint slightly transverse, the eleventh pointed, fully as long as the two preceding. *Prothorax* two-thirds wider than long, the sides feebly convergent, evenly and distinctly arcuate from apex to base, the basal angles obtuse and almost obliterated; disk with four polished feeble carinæ, separated by concavities of the surface, the two median very approximate, but becoming more distant from base to apex, rather strongly impressed also toward the sides. *Elytra* distinctly wider and longer than the prothorax, the sides nearly parallel and straight; humeri exposed at base; disk flat, finely, densely strigilate, also obscurely punctate, the strigilations slightly confluent and shining toward base. *Abdomen* a little narrower than the elytra, parallel, shining, very coarsely but feebly reticulate, minutely remotely and obsoletely punctulate, each tergite with two distant erect and stiff setæ at apex; under surface polished, very remotely pubescent. *Legs* slender, the posterior tarsi very short; anterior tibiæ not angulate externally near the apex. Length 1.4 mm.; width 0.35 mm.

California (near San Francisco).

While allied to *nanus*, this minute species differs in its coarser strigilation, longer, much more slender antennæ, and in the male sexual characters. The sixth ventral is fimbriate at apex and sinuate in median fifth, the seventh cylindrically impressed and finely pubescent along the middle, the apex produced in the middle in a small broadly rounded simple lobe, the eighth broadly impressed. The mentum is coarsely, transversely grooved in the middle.

**O. nanus** Erichs.—Gen. Staph., p. 797.

**O. exiguus** Erichs.—Gen. Staph., p. 798; *pygmaeus* Melsh.: Proc. Ac. Phila., II, p. 41; *parvulus* Melsh.: l. c., p. 41.

I cannot resolve the ample material in my cabinet into distinctly characterized species. It is easy to select two or three specimens which apparently represent species, but in all cases others are found which seem to be intermediate; so it is impossible to give any distinguishing characters at present. The species may be readily known by its opaque, minutely strigilate sculpture, less dense in the female, especially on the head, and its polished subimpunctate abdomen. Length 1.2–1.8 mm.; width 0.3–0.45 mm. New York to Florida; Lake Superior and Texas—probably extending through Mexico.



**O. tetracarinatus** Block.—Verz. Ins. Plauen., p. 116; *depressus* Grav., Micr., p. 103.

This species is added on the authority of LeConte and Fauvel, as I have seen no American specimens. It is very readily distinguishable from *nanus* by its larger, longer elytra, stouter form and less polished, somewhat reticulate abdomen, which is finely, subgranularly punctulate. Length 1.7 mm.; width 0.55 mm. Europe; Indiana—LeConte.

#### OMALINI.

The genera allied to *Lesteva* form a much more important element in the omaline fauna of North America than of Europe, and may be distinguished among themselves as follows:—

Third joint of the maxillary palpi very small, not longer than wide, the fourth extremely long as in *Lesteva*; pronotum not impressed at the sides; labrum as in *Lesteva*, composed of two nearly equal parts, the basal corneous, transverse and broadly truncate, the apical abruptly thin, translucent and rounded.

Elytra short, quadrate; first four joints of the hind tarsi subequal in length, the first not quite as long as the second; antennæ not clavate.

#### **Pseudolesteva**

Elytra long, extending to the apex of the third ventral; first four joints of the hind tarsi subequal, the first not appreciably longer than the second; antennæ with the last three joints longer and thicker than the eighth, forming an elongate and very slender club.....**Tevales**

Third joint of the maxillary palpi longer than wide; pronotum always impressed near the middle of the sides.

Maxillary palpi filiform, nearly as in *Lesteva*, the second joint but slightly thicker than the third or fourth; third very slightly longer than wide and scarcely more than one-fourth as long as the fourth; labrum semi-circular, the central parts tumid, uneven and dense, the edges throughout thinned and translucent; antennæ filiform, the joints elongate.

#### **Unamis**

Maxillary palpi smaller, the second joint thick, nearly three times as wide as the very slender fourth, third one-half longer than wide, a little thicker than the fourth and less than one-half as long; labrum as long as wide, acutely parabolic, the edges throughout abruptly but very narrowly thinned and translucent; antennæ short, gradually incrassate, the outer joints not longer than wide.....**Artochia**

Maxillary palpi filiform, the second joint not much thicker than the third or fourth, the second two to nearly three times as long as wide and one-half as long as the fourth or somewhat less; labrum short, broad,

entirely corneous, broadly rounded at apex, the disk abruptly, strongly, transversely impressed and thinned in apical third; antennæ filiform. Head completely devoid of any trace of ocelli; body small.....**Vellica**  
 Head with two distinct and widely distant ocelli; body large.....**Tilea**

It is not possible to state at present whether the rather numerous European species of *Lesteva* display notable variation in tarsal structure, but certainly our *pallipes* and *cribratulus* are not at all conformable with *pubescens* and *longelytrata* which I have under observation, since both differ radically in tarsal structure, and *cribratulus* also in its much longer elytra, subclavate antennæ and narrower, more convex form of the body.

#### **PSEUDOLESTEVA** n. gen.

The three forms described by LeConte have been combined to form the single species *pallipes*. My material is not sufficiently extensive to enable me to pronounce any opinion of value, but, although extremely similar in form, it is possible that *pallipes* and *biguttula* (= *picescens*) may really be distinct, at least the two oblique spots of the latter seem to be very constant and characteristic; the true *pallipes* is entirely black with the legs pale flavate. *Pseudolesteva* is limited to the Atlantic regions of the continent.

#### **TEVALES** n. gen.

A single species, remarkably distinct from *Ps. pallipes* in general habitus, forms the type of this genus, which is also confined as far as known to the Atlantic faunal regions. These two genera of the Atlantic slope are much more closely allied to the true *Lesteva* than those of the Pacific fauna, and the latter are furthermore remarkable as a group in having the pronotum deeply impressed at the sides.

**T. cribratulus** n. sp.—Pale and uniform brownish-testaceous throughout, the legs slightly paler; surface rather shining; pubescence uniform, moderate in length, not dense. *Head* much wider than long, distinctly narrower than the prothorax and about as wide as an elytron, finely densely and distinctly punctate, indefinitely biimpressed, transversely impressed between the antennæ, the epistomal suture visible near the sides; ocelli distinct, just behind the line of the posterior limit of the eyes, distant by one third of the total width; eyes well developed, setose; tempora less than one-half as long; antennæ very slender, one-half as long as the body, second joint rather longer than the third, fifth nearly three times as long as wide, eighth shorter than the seventh or ninth. *Prothorax* one-fourth wider than long, the sides evenly

arcuate and convergent to the apex from just before the middle, convergent and strongly sinuate in basal half; base and apex equal; disk convex, even, finely densely evenly and very distinctly punctate. *Elytra* more than twice as long as the prothorax and three-fourths wider, longer than wide; humeri rounded and exposed; sides just visibly divergent throughout; disk strongly densely punctate. *Abdomen* short behind the elytra, feebly, sparsely punctulate. *Legs* short but slender; hind tarsi short, scarcely one-half as long as the tibiæ. Length 2.7 mm.; width 1.0 mm.

Pennsylvania.

The single specimen is a male, having the sixth ventral feebly sinuato-truncate at apex. The maxillary palpi are as in *Lesteva pubescens*, the second joint stouter than the third and fourth, the third small, not quite as long as wide and scarcely more than one-sixth as long as the fourth. In *Lesteva* the head is constricted at a much greater distance behind the eyes, the ocelli being notably more basal, and the second antennal joint is rather shorter than the third. In *Pseudolesteva* the second antennal joint is much shorter than the third, and the fourth palpal joint is shorter and more gradually pointed toward apex.

**UNAMIS** n. gen.

The species previously described as *Lesteva truncata* (Bull. Cal. Acad. Sci., I, p. 322) demands without any doubt a special genus for its reception. It is most closely allied to *Artochia*, resembling that genus in the basal position of the eyes and obsolete tempora, but differs in palpal structure and in the tarsi. In *Unamis* the hind tarsi are long and slender, with the basal joint equal to the next two together.

**ARTOCHIA** n. gen.

Body small, rather narrow, the head small, triangular, with the front somewhat prolonged; eyes basal, densely setose, the head transversely constricted immediately behind them; ocelli widely distant and on the edge of the transverse constriction. *Antennæ* incrassate, much shorter than in any other genus of this group. *Maxillæ* with the inner lobe elongate, arcuate and feebly unguate at apex, with an inner fringe of very minute setæ; outer lobe as long as the inner, very slender, gradually thicker near the base, arcuate at apex, the latter with a terminal tuft of minute setæ; *cardo* very large, elongate, densely pubescent. *Labial palpi* with

the last joint slender and greatly elongate as usual. Coxæ all contiguous. Mesosternum feebly carinate; metasternum long. Elytra extending to the middle of the second ventral. Legs short and stout; tibiæ sparsely spinulose, the anterior thick but abruptly narrowed at base in the male; tarsi short, the first four joints of the posterior equal in length.

**A. productifrons** n. sp.—Black, finely, densely punctate throughout, the antennæ dusky; legs pale flavo-testaceous; integuments feebly shining, the pubescence fine, short and abundant. *Head* with labrum acutely triangular, longer than wide, evenly convex, just visibly and obliquely bi-impressed beyond the eyes, the latter large, moderately convex; epistomal suture feebly indicated; antennæ scarcely as long as the head and prothorax, gradually incrassate, outer joints barely as long as wide, eleventh conoidal, about as long as the two preceding, second much longer and thicker than the third, fourth shorter than the third. *Prothorax* transversely subquadrate, two-fifths wider than long, nearly one-half wider than the head, sides subparallel, very obtusely rounded at the middle, straight thence to the base and apex; base truncate, rather wider than the apex; disk transversely, evenly convex, impressed at each side, the margins thence to the base narrowly explanate. *Elytra* as long as wide, three-fourths longer and scarcely two-fifths wider than the prothorax; humeri very narrowly exposed, rounded; sides just perceptibly divergent, nearly straight; apex truncate; disk very broadly and feebly impressed along the suture except at base. *Abdomen* less punctate, much shorter than the elytra, rapidly acute at apex; border strongly inclined. Length 2.1 mm.; width 0.9 mm.

California (Gilroy Springs, Sta. Clara Co.).

The unique type appears to be a male, but the sixth ventral is rather longer than the fifth, and is feebly subtruncate at apex.

#### **VELLICA** Casey.

This genus, with *Tilea*, forms a group immediately distinguishable from the two preceding by the less basal eyes and absence of the transverse dorsal constriction behind them. The complete absence of any trace of ocelli is such an exceptional character, that I have taken care to verify it in a number of specimens and under the most favorable optical conditions. Otherwise *Vellica* is closely allied to *Tilea*, differing in the small size of the body, narrower and more convex form and non-explanate sides of the pronotum.



**TILEA** Fauvel.

*Phlæopterus* Mots. i. litt.; *Phlæopterus* Csy., olim.

This is the most conspicuous of the endemic North American genera of Omalini, although probably occurring also in Siberia; I believe there is no record of its having been taken there, however. The two species previously assigned by me to *Phlæopterus*—an erroneous quotation of *Phlæopterus* Mots. i. l.—belong in reality to *Tilea*, which has the fourth joint of the maxillary palpi, not one-half longer than the third as stated in the original description, but about twice as long as the third in the female, and often distinctly longer, especially in the male.

The sexes differ but very little in general appearance, the female is however usually a little larger, relatively broader, and often with the elytra distinctly longer, and the male has the anterior tarsi slightly stouter toward base. The sixth ventral segment in the male is more or less sinuately or arcuately truncate, but is longer and parabolically rounded in the female.

There are a number of distinct species of *Tilea* in North America, all confined to the true Pacific fauna, which descends to some extent also from the north along the crests of the Rocky Mountains indefinitely to the southward. Of *T. cavicollis* Fvl. I have examined two specimens, one forming part apparently of the original lot from Vancouver, and the other taken in the high sierras of California; it differs distinctly from *longipalpus* in its narrower form and in thoracic structure.

The seven species thus far discovered may be readily distinguished as follows:—

Elytra long, always distinctly more than twice as long as the prothorax; body black or piceous-black.

Femora paler toward base, 6.75 mm. Unalaska Island.....**fuscinigra**

Femora not paler toward base. California to Vancouver.

Prothorax strongly transverse.

Sides of the pronotum broadly, feebly reflexed behind the fovea but only very narrowly and feebly declivo-subexplanate from the lateral angles to the apex; prothorax smaller when compared with the elytra—♀ .....**cavicollis**

Sides of the pronotum deeply concave and strongly reflexed continuously from the apical angles to the base, more broadly behind the fovea; form distinctly broader, the prothorax nearly as wide as the elytra—♀ .....**longipalpus**



Prothorax much smaller and only slightly wider than long, perfectly similar in the two sexes.

Larger species, the elytra each strongly rounded at apex; hypomera narrow, much less than one-half as wide as the distance thence to the coxæ; tempora not one-third as long as the eye—♂ .....**rufitarsis**

Smaller, the elytra narrower, each subtruncate at apex, the lateral angles much less broadly rounded and oblique; hypomera fully one-half as wide as the distance thence to the coxæ; tempora nearly one-half as long as the eye and more prominent than in *rufitarsis*—♂.

**filicornis**

Elytra short, always distinctly less than twice as long as the prothorax; color of body paler, castaneous throughout. Rocky Mts.

Head strongly and densely punctate throughout; antennæ with the intermediate joints more than three times as long as wide, more finely and densely pubescent; sides of the prothorax oblique and very feebly, broadly sinuate from the lateral angles to the base; large species, the male with the sixth segment sinuato-truncate at apex—♂.

**brevipennis**

Head minutely and remotely punctate especially toward the middle; antennæ with the joints rather shorter and more coarsely pubescent; sides of the prothorax very strongly constricted behind, deeply sinuate, becoming subparallel toward base; male with the sixth segment somewhat lobed in the middle, the anterior tarsi more noticeably dilated; size much smaller—♂ .....**castanea**

It is possible that *fusconigra* Mäkl. may be the same as *cavicollis* or *longipalpus*, but considering the remote locality and the undoubted plurality of species in the genus, the chances are decidedly against such identity.

**T. rufitarsis** n. sp.—Rather shining, black throughout, the trochanters and tips of the coxæ feebly rufescent; pubescence dense, suberect, consisting of longer stiffer and more erect, and shorter and finer hairs, confusedly intermingled especially on the elytra. *Head* finely, densely punctate, distantly biimpressed between the eyes, transversely impressed between the antennæ, the latter slender, filiform, black, not at all incrassate, more than one-half as long as the body, the joints fully three times as long as wide and feebly obconical; eyes well developed, prominent; tempora very short; ocelli small, separated by two-fifths the entire width; fourth palpal joint one-half longer than the second and much more than twice as long as the third in both sexes. *Prothorax* small, one-third wider than long, widest and laterally subangulate at two-fifths from the apex; sides thence to the base convergent and evenly sinuate throughout, to the apex more feebly convergent and broadly arcuate; basal angles nearly right but slightly blunt; disk finely, densely punctate, even though feebly distantly and obliquely biimpressed at basal third, and with a large deep impression at each side at the middle; surface anteriorly broadly, evenly convex from one lateral edge to the other, the side margins

not at all explanate even near the basal angles. *Elytra* in the male two and one-half times as long as the prothorax, in the female nearly three times as long, longer than wide, near the apex almost twice as wide as the prothorax; sides nearly straight, feebly divergent, external apical angles very broadly rounded and oblique; punctures fine but strong, dense. Scutellum more finely and extremely densely punctate. *Abdomen* very short behind the elytra, extremely minutely, densely punctulate. *Legs* slender. Length 6.0–6.3 mm.; width 2.3–2.6 mm.

California (Siskiyou Co.).

The male has the intermediate tibiæ very feebly swollen, slightly constricted in apical fourth, the constricted part glabrous; in the female the same tibiæ are more slender and have the glabrous terminal part scarcely at all constricted but occupying almost one-third of the total length. Three specimens.

**T. brevipennis** n. sp.—Strongly shining, castaneous, the legs and coxæ paler, rufous; pubescence fine, moderate in length, abundant and uniform. *Head* finely, densely punctate, nearly as in *rufitarsis*, the fourth palpal joint fully twice as long as the third and one-half longer than the second; antennæ very slender, filiform, rufous, three-fifths as long as the body, the joints very elongate, scarcely perceptibly obconical, the tenth very nearly three times as long as wide. *Prothorax* one-half wider than long and one-half wider than the head, widest and obtusely subangulate at the sides just before the middle; sides thence to the base convergent and feebly sinuate, becoming more sinuate only extremely near the basal angles which are right and not blunt, to the apex feebly convergent and slightly arcuate; apex feebly bisinuate; disk finely, closely punctate, not at all impressed on the disk near the base, the lateral impression large but only moderately deep; sides broadly, feebly reflexed from the hind angles past the fovea to apical fourth. *Elytra* not quite as long as wide, four fifths longer than the prothorax, and, near the apex, two-fifths wider than the latter; sides nearly straight and divergent from the exposed but rounded humeri nearly to the apex; disk strongly, moderately densely punctate. *Abdomen* short, very minutely, densely punctulate. *Legs* very long and slender. Length 6.5 mm.; width 2.6 mm.

Wyoming.

The single male before me has the intermediate tibiæ slender and almost evenly cylindrical, with the glabrous apical part extremely short and not in the least constricted, differing greatly in this respect from *rufitarsis*.

**T. castanea** n. sp.—Less broad, strongly shining; castaneous; legs and antennæ rufo-testaceous; pubescence fine, dense, uniform and inclined. *Head* finely punctate, sparsely so toward the middle, otherwise as in *rufitarsis* but with rather longer and more angulate tempora; antennæ filiform, three-fifths

as long as the body, stouter than in *brevipennis*, the outer joints more strongly obconical, the tenth scarcely more than twice as long as wide. *Prothorax* minutely but closely, strongly and evenly punctate, evenly convex, nearly as in *brevipennis* but with the sides broadly constricted toward base, becoming nearly parallel for some distance before the basal angles, which are right and not blunt; base broadly, feebly sinuate, narrower than the apex, the latter feebly bisinuate; disk simply feebly subexplanate from the fovea to the basal angles, not in the least reflexed, declivous to the edge from the lateral obtuse angulations to the apex; lateral foveæ large and very deep, the bottom punctiform. *Scutellum* large, very densely and more finely punctate. *Elytra* as long as wide, not quite twice as long as the prothorax, and, near the apex, about one-fourth wider; humeri broadly rounded to the base of the prothorax, but slightly exposed at base; sides straight, divergent; disk strongly, evenly, moderately closely punctate. *Abdomen* subobsoletely punctulate. *Legs* moderate in length, stouter and shorter than in *brevipennis*. Length 4.7-5.0 mm.; width 1.9-2.0 mm.

#### Colorado.

The two specimens represent a species allied to *brevipennis* but differing in the much smaller size, relatively longer elytra, stouter antennæ and legs, deeper pronotal impressions and unreflexed lateral edges of the pronotum, as well as in the sparser, finer punctures of the head and the male sexual characters at the ventral apex. The anterior tarsi of the male are more strongly dilated toward base than in *brevipennis*, and both the anterior and intermediate are papillose beneath. As in *rufitarsis* the elytra are distinctly longer in the female than in the male.

### OROBANUS LeConte.

In view of the radical difference in palpal structure, the approximation of this genus to *Lesteva* is very remarkable. It resembles *Lesteva* in the very slender cylindrical posterior tarsi, with the basal joint subequal to the next two, in the filiform antennæ, duplex labrum, and in general appearance, but the spinules of the tibiæ are replaced by a few long slender flexible setæ, and the maxillary palpi are short stout and densely pubescent, with the fourth joint small slender and subulate. The pronotum is feebly impressed at the sides, thus conforming partially to the general law affecting all the Californian allies of *Lesteva*. The three species may be separated as follows:—

Eyes smaller, subequal in size to the tempora and not more prominent; outline and humeri as in *rufipes*. Rocky Mts.....**simulator** Lec.

Eyes larger, much longer and more prominent than the tempora.

Elytra with the sides strongly divergent from the humeri, which are obliquely rounded to the prothorax. Pacific fauna.....**rufipes** Csy.

Elytra with the sides feebly divergent, the humeri much more broadly exposed, becoming transverse at base near the prothorax. Sonoran fauna.

**densus** Csy.

All of these species are minutely, very densely punctate and pubescent.

#### **GEODROMICUS** Redt.

The members of this genus include some of the larger of the Omalini and are abundant in the western parts of North America. As remarked by Mr. Fauvel, the form of the body recalls *Lesteva*, or, it might be added, *Orobanus*, rather than *Anthophagus* with which the species were united by Gemminger and Harold; in the structure of the palpi they are somewhat intermediate between *Orobanus* and *Anthophagus* and differ greatly from *Lesteva*. The posterior tarsi, however, with the first four joints short and stout, together scarcely longer than the fifth, will at once distinguish the genus from *Anthophagus*. At the same time, *integer*, although perfectly normal in tarsal and palpal structure, seems to diverge in the direction of *Anthophagus* in the form of the prothorax, and a divergence in the same direction is also observable in the tarsus of *debilis*.

The American species known to me may be distinguished by the following characters:—

Prothorax never transversely quadrangular, the disk not at all explanate near the hind angles.

Pronotum with a more or less distinct impression along the median line, the prothorax often much larger and of a different form in the male; last joint of the maxillary palpi longer, subulate and much narrower than the apex of the third, although frequently nearly as long as the latter.

Larger species, pale castaneous, clouded with blackish toward the apices of the elytra, the abdomen paler and with a large blackish subapical cloud. Atlantic regions .....**brunneus**

Smaller, the abdomen black or slightly piceous and uniform in coloration.

Sides of the prothorax deeply sinuate posteriorly, becoming subparallel near the base.

Pronotum strongly and closely punctate, the prothorax much larger in the male than in the female.

Elytra more finely, moderately densely punctate; anterior tibiae of the male slender, nearly equal in diameter throughout, fully twice as long as the tarsi, the latter moderately dilated.

**strictus**



Elytra more coarsely deeply and sparsely punctate; antennæ stouter; anterior tibiæ of the male shorter, thick, narrowed near the base and less than twice as long as the tarsi, the latter more dilated.....**fauveli**

Pronotum more finely feebly and much more sparsely punctured; discal parts of the elytra more or less indefinitely clouded with a paler rufescent tinge.

Elytra shorter, with the sides very strongly divergent, coarsely, very sparsely punctate; abdomen with five exposed segments; border very wide; size larger, the form broader—♀.

**ovipennis**

Elytra longer, the sides less divergent; punctures finer and more abundant; abdomen with scarcely more than four exposed segments; border narrower—♀.....**nubilatus**

Sides of the prothorax oblique and feebly sinuate behind, the base relatively wider; small species, pale flavescent in color, the punctation fine and sparse; elytra small, much shorter than wide; tarsi longer and more slender.....**debilis**

Pronotum without trace of an impressed median line, almost similar in the male and female; body intense polished black throughout. California.

Tempora rounded but rather prominent and subrectangular; prothorax wider than long; punctures smaller and closer; last joint of the antennæ much longer than the tenth.....**temporalis**

Tempora very convergent and broadly rounded, not at all prominent; prothorax not distinctly wider than long, nearly as in *Orobanus* but more convex; punctures strong and sparse; last joint of the antennæ only just visibly longer than the tenth; last joint of the maxillary palpi smaller.....**humboldtianus**

Prothorax transverse, nearly as in *Anthophagus*, the sides but feebly convergent behind and very feebly, broadly sinuate; surface explanate toward the hind angles; last joint of the maxillary palpi short, subulate; posterior tarsi short, stout and normal.....**integer**

**G. brunneus** Say.—*Journ. Ac. Phila.*, III, p. 158; *verticalis* Say: *Trans. Am. Phil. Soc.*, IV, p. 463; *cæsus* Er.: *Gen. Staph.*, p. 853.

It is somewhat remarkable that Erichson should have failed to recognize in his *cæsus* the species described by Say as *brunneus*, for the cloud of black near the apex of the tergum, in connection with the size of the body—slightly under a quarter of an inch or 6 mm.—is very characteristic of the species. *Verticalis* is probably a smaller female specimen, the great difference in form of the male and female prothorax possibly not having been noticed by Say.



**G. strictus** Fvl.—Rev. d'Ent., 1889, p. 126; *nigrita* Fvl. nec Müll.: Not. Ent., 7, 1878, p. 90.

Abundant from New York and Massachusetts to Michigan. Easily known by its black polished integuments and smaller size from *brunneus*, the only other species inhabiting the same districts.

**G. fauveli** n. sp.—Stout, feebly convex, polished, dark and uniform piceo-castaneous throughout; pubescence short and very sparse. *Head* finely and sparsely punctate, three-fourths as wide as the prothorax; eyes large and prominent, the tempora not one-half as long, rapidly convergent and feebly arcuate; vertex deeply impressed in the middle and with two short deep divergent grooves; epistoma impunctate, deeply, arcuately impressed, the depression connected with the vertical impression by a feeble channel; antennæ filiform but rather stout, nearly three-fifths as long as the body, the basal joint stout, twice as long as wide, second shorter than the fourth, third very much longer, obconical, three times as long as wide, eleventh one-half longer than the tenth. *Prothorax* one-half wider than long, the sides strongly, evenly rounded, rapidly constricted toward base, becoming parallel in basal fifth or sixth; base truncate, one-third wider than the apex; disk widest before the middle, deeply, rather coarsely and closely punctate, deeply impressed along the median line except near the apex, with a deep transverse pit before the scutellum. *Elytra* scarcely as long as wide, as long as the head and prothorax, near the apex two-fifths wider than the latter; sides straight, strongly divergent; humeri widely exposed; humeral width scarcely four-fifths of the sub-apical; punctures coarse, deep and not dense. *Abdomen* finely but not very densely punctate; border moderate. *Legs* and coxæ pale rufo-ferruginous; under surface blackish-piceous. Length 5.8 mm.; width 2.0 mm.

Oregon (The Dalles).

Allied to *strictus* but amply distinct in its broader form, much more divergent sides of the elytra, longer and stouter antennæ, and the sexual differences in the anterior legs, which are very marked. A single male.

**G. ovipennis** Lec.—Bull. U. S. Geol. Surv., 1878, IV, ii, p. 452; Fvl.: Not. Ent., 7, p. 89; *plagiatus* Fvl. nec Fab.: Rev. d'Ent., 1889, p. 125.

The specimens of *ovipennis* which I have examined can be distinguished very readily I think from *plagiatus* or *nigrita* by their broader form, much sparser punctures which are coarser on the elytra, the latter being much more abbreviated, and by the broader abdominal border. I have seen no North American examples which could be referred very satisfactorily to *plagiatus*.

**G. nubilatus** n. sp.—Polished black with a feeble piceous tinge, the apex and lateral margins of the abdomen slightly paler; legs, mouth parts

and antennæ ferruginous; elytra each with a rufescent cloud from near the humerus to the middle; pubescence fine, subrecumbent, sparse but rather long. *Head* fully four-fifths as wide as the prothorax, deeply impressed and bistrate in the middle between the eyes, the epistomal depression scarcely connected by a groove; eyes large, very convex, the tempora scarcely more than one-half as long, very convergent, broadly arcuate; antennæ three-fifths as long as the body, moderately stout, the outer joints not quite three times as long as wide, equal, eleventh one-half longer than the tenth. *Prothorax* not quite one-third wider than long, widest at apical third; sides strongly constricted behind, becoming abruptly parallel in basal fifth or sixth; base truncate, much wider than the apex; disk finely, very sparsely punctate, feebly but distinctly impressed along the median line from the apical margin to the deep transverse antebasal fovea. *Elytra* not quite as long as wide, distinctly longer than the head and prothorax; humeri broadly exposed; sides moderately divergent; outer apical angles rather broadly rounded; disk not coarsely, somewhat sparsely punctate, broadly impressed along the suture toward base. *Abdomen* barely as wide as the elytra and much shorter, polished, finely, sparsely punctulate; border moderate. Length 4.4 mm.; width 1.55 mm.

New Mexico (Las Vegas).

Distinguishable from *ovipennis* by its smaller size, longer elytra with much less divergent sides and many other characters. The fourth joint of the maxillary palpi in the single female before me is very nearly as long as the third, fusiform and gradually pointed, and by this character, as well as the stouter antennæ and much finer, sparser punctures of the head and pronotum, it can be readily separated from *plagiatus* or any of its varieties.

In the female of *ovipennis* the humeral width of the elytra is not more than three-fourths of the subapical, while in *nubilatus* the ratio is fully four-fifths.

**G. debilis** n. sp.—Highly polished, very sparsely and rather coarsely pubescent, pale flavo-testaceous, the head a little less pale and the abdomen picescent. *Head* scarcely visibly narrower than the prothorax, the eyes small, strongly convex, scarcely longer but very much more prominent than the tempora; surface very finely, remotely punctate, the median impression and diverging lines distinct, not connected with the strong epistomal depression; ocelli extremely feeble; fourth joint of the maxillary palpi almost as long as, but much narrower than, the obconical third; antennæ rather stout, filiform, three-fifths as long as the body, the tenth joint twice as long as wide, three-fifths as long as the eleventh. *Prothorax* scarcely visibly wider than long, rounded at the sides anteriorly, feebly, gradually narrowed behind, feebly constricted at basal fourth; disk finely, very remotely punctate, with a median impression attaining neither the apex nor the subbasal transverse fovea. *Elytra* small, three-fourths longer than the prothorax, and, near the

apex, twice as wide; sides nearly straight, very strongly divergent; humeral width scarcely more than two-thirds of the subapical; punctures rather strong but sparse. *Abdomen* well exposed, as wide as the elytra and rather longer, finely but not densely punctulate, the border moderate. Length 4.0 mm.; width 1.5 mm.

#### Colorado.

The type appears to be a female, but the ventral apex is concealed so that I cannot be entirely certain. The tarsi are aberrant, the first three joints of the posterior more elongate than usual and decreasing uniformly, the third and fourth subequal, fifth distinctly shorter than the first four together—a variation in the direction of *Anthophagus*. This species is altogether distinct from any other in its small size, small eyes, almost obsolete ocelli; small elytra and many other characters.

**G. temporalis** n. sp.—Moderately broad and depressed, polished, black throughout; legs, palpi and antennæ black; pubescence rather fine, sparse, of the usual length, shorter and much more abundant on the abdomen. *Head* distinctly narrower than the prothorax, the eyes large and strongly convex; tempora unusually strongly rounded but much less prominent than the eyes; vertexal impression distinct, the oblique grooves rather distant; epistomal depression large and strong; last joint of the maxillary palpi very much shorter and narrower than the third; antennæ filiform, rather more than one-half as long as the body, the outer joints strongly obconical, three times as long as wide, eleventh two-fifths longer than the tenth. *Prothorax* very slightly wider than long, widest at apical third where the sides are very evenly, strongly rounded to the apex, moderately convergent and feebly sinuate in basal three-fifths; base truncate, a little wider than the apex; disk strongly, rather closely, evenly punctate, with the usual median ante-basal impression. *Elytra* about as long as wide, twice as long as the prothorax and four-fifths wider; sides feebly divergent from the transversely exposed humeri, the humeral width fully four-fifths of the subapical; disk very feebly, broadly impressed on the suture toward base as usual, strongly and somewhat closely punctate. *Abdomen* with about four and one-half exposed segments, a little shorter than the elytra and equally wide; border wide; stomata distinct. *Legs* rather short and somewhat stout; tibiæ gradually enlarged and more densely pubescent from base to apex; tarsi short, normal. Length 5.7–5.9 mm.; width 1.75 mm.

#### California (Sonoma Co.).

The description is drawn from the male, which has the sixth ventral feebly sinuato-truncate at apex and the anterior tarsi strongly dilated. The female differs extremely little in general appearance, having the prothorax relatively smaller but identical in shape. Three specimens.

On the disk of the pronotum two very broad feeble parallel impressions can be discerned behind the middle, which unite with the transverse subbasal fovea; these impressions are analogous to those of *Anthophagus alpestris* Heer, and perhaps some other species; here, however, the disk is very convex and resembles *Orobanus* in outline, being not at all suggestive of *Anthophagus* in these respects.

**G. humboldtianus** n. sp.—Depressed, highly polished, deep black; coxæ and tarsi rufescent; antennæ black; integuments strongly and sparsely punctate, the abdomen minutely and densely so; pubescence sparse, suberect, uniform and coarse, moderately long, short subrecumbent and dense on the abdomen. *Head* as wide as the prothorax, as wide as long, strongly constricted at base, the constriction as usual extending sharply across the dorsal surface, where it is broadly, anteriorly angulate; surface with a deep depression in median third between the eyes, limited laterally by oblique excavated lines, arcuately impressed between the antennæ, the epistoma impunctate; ocelli on a line with the posterior limits of the eyes distant by less than one-third of the total width; eyes well developed, convex and very prominent; tempora shorter, not at all prominent, convergent and arcuate; antennæ slender, filiform, nearly three-fifths as long as the body, the joints fully three times as long as wide. *Prothorax* nearly as long as wide, the sides evenly rounded, becoming convergent and sinuate posteriorly, subparallel in basal fourth; base truncate, rather wider than the apex; disk widest at apical third, strongly, evenly convex, impressed in the middle near the base. *Elytra* twice as long as the prothorax, and, near the apex, twice as wide; humeri rather broadly exposed, rounded; sides straight and strongly divergent; humeral width three-fourths of the subapical; disk broadly, feebly impressed in the middle toward base. *Abdomen* with nearly four exposed segments, shorter than the elytra; border wide, moderately inclined. *Legs* long and rather slender, finely, densely pubescent; posterior tarsi less than two-fifths as long as the tibiæ; claws long, slender, arcuate. Length 4.4 mm.; width 1.65 mm.

California (Humboldt Co.).

The type is a male, having the sixth ventral short and broadly emarginate throughout at apex, the median segment of the seventh with a thin laminate carina in the middle toward base; anterior tarsi moderately dilated. I obtained the unique representative on the under side of a small loose stone in the dry bed of a rivulet near Fort Gaston.

This species differs from *temporalis* in its smaller size, still sparser and stronger punctuation, less prominent and more convergent tempora, and in the very strong median lamina of the seventh ventral, which is completely wanting in *temporalis*.



**C. integer** n. sp.—Broad, more parallel, feebly convex, polished, black throughout; tarsi, tibiæ toward tip and femora toward base feebly rufescent; pubescence moderate in length, inclined, rather abundant and distinct. *Head* scarcely more than two-thirds as wide as the prothorax, the eyes prominent; tempora short, strongly convergent and arcuate; median impression wide, the oblique grooves distant; a median impressed channel connects the large deep epistomal depression; last joint of the maxillary palpi subulate, very much narrower than the third and only one-half as long; antennæ filiform, three-fifths as long as the body, the joints very long, just visibly obconical, rather more than three times as long as wide, the eleventh but slightly longer than the tenth. *Prothorax* one-fourth wider than long, the sides evenly rounded anteriorly, feebly convergent and broadly, just visibly sinuate in basal half; base truncate, very wide, nearly one-half wider than the apex; disk evenly, broadly convex, rather strongly, closely punctate, feebly explanate at the hind angles, without distinct median impressed line and devoid of ante-basal fovea. *Elytra* nearly as long as wide, two-thirds longer than the prothorax, and, near the apex, two-fifths wider; humeri very slightly exposed at base, the humeral width but slightly exceeding that of the prothorax and about five-sixths of the subapical; sides noticeably divergent; outer apical angles rather broadly rounded; disk finely, rather sparsely but distinctly punctate. *Abdomen* scarcely as wide as the elytra and much shorter, with five exposed segments, minutely, sparsely punctate, the border moderate. *Legs* moderate in length and thickness; tarsi normal. Length 6.0–6.3 mm.; width 2.3 mm.

Washington State.

The male, which serves as the type, differs from the female only in its larger prothorax, the latter being however identical in shape; in the female the elytra are nearly twice as long as the prothorax and three-fourths wider. The male has the sixth ventral rather deeply sinuate at apex throughout the width, and the anterior tarsi strongly dilated.

#### PELECOMALIUM Casey.

This genus will include nearly all the North American species hitherto assigned to *Amphichroum*, and differs radically and constantly from the latter in the structure of the tarsi. The tarsi throughout have the penultimate joint deeply bilobed and clothed beneath with long papillose pubescence; in *Amphichroum* they are slender, compressed, with the penultimate joint not at all wider and devoid of all trace of lobes, the fifth joint being inserted at its obliquely truncate apex. In the present genus the intermediate coxæ are contiguous, while in *Amphichroum* they are narrowly but perceptibly separated.



Pelecomalium also differs from Amphichroum in a singular palpal character, the sexual nature of which I did not notice until shortly after my original description appeared, and which lead to the assignment of the two sexes of *modestum* to different genera. In the male the fourth palpal joint is strongly securiform, while in the female it is slender, slightly compressed and gradually somewhat obliquely narrowed to the apex, where it is very narrowly but obliquely truncate. In Amphichroum there are no discoverable sexual differences in the palpi, the last joint of which is stouter toward base and prolonged slender and cylindrical toward apex, differing noticeably from the form characterizing either sex of Pelecomalium.

To Amphichroum there are but two described North American species assignable at present, viz.: *maculatum* Lec. (*Stachygraphis*) which is quite homologous with *canaliculatum*, and *floribundum* Lec. (= *flavicornis* Csy. ♀), which is slightly aberrant in sculpture and in its much longer and more slender maxillary palpi, agreeing however otherwise. I have in my cabinet a female taken at Lake Tahoe in June, which differs from the male of *maculatum*, as figured by Dr. Horn, in its broader form, much shorter and wider prothorax and uniformly flavate elytra; there is no way of proving its identity, but in view of the limited number of specific forms assignable to Amphichroum in both continents, and of the fact that in *floribundum* and some species of Pelecomalium the female is notably paler as well as broader than the male, I think there can be little doubt that it is the female of *maculatum*.

The species are rather closely allied among themselves but may possibly be identified by the following tabular statement:—

Punctures of the elytra more or less sparse, never extremely dense.

Species of the Pacific coast fauna.

Larger, not less than 4 mm. in length; pronotum more or less alutaceous and subimpunctate.

Prothorax transverse, fully one-half wider than long in the male; body flavate, immaculate, the head and abdomen blackish...**testaceum**

Prothorax subquadrate, scarcely one-third wider than long in the male, testaceous, the head and abdomen black; elytra each with a large elongate discal spot of black beyond the middle.....**binotatum**

Smaller, always much less than 4 mm. in length.

Elytra extremely sparsely and obsoletely punctulate, the punctures scarcely distinguishable; surface throughout highly polished.

**sparsum**

Elytral punctures distinct and much less sparse.

Abdomen black.

Elytra piceo-fuscous.....**pilosellum**

Elytra flavate, with a triangular scutellar spot of blackish.

**scutatum**

Elytra clear and uniform pale flavate throughout.

**puberulum**

Abdomen flavate, more or less clouded with piceous toward the middle and apex; elytral punctures very strong.....**flavescens**

Species of the Atlantic region. Polished; prothorax transverse, subimpunctate; elytra piceous in the male, with paler side margins, frequently wholly flavate in the female, the punctures sparse, feeble and ill-defined.

**laevicollis**

Punctures of the elytra exceedingly dense.

Elytra normal, large, one-half or more longer than the prothorax.

Dark in color, the sides of the elytra sometimes feebly and indefinitely paler and the lateral and basal edges of the pronotum testaceous.

Ocelli small, clearly defined, more prominent and less distant.

Prothorax in the female less transverse, two-fifths wider than long, more strongly narrowed toward apex, the sides more narrowly flat and explanate near the basal angles; elytra in that sex one-half longer than the prothorax.....**opaculum**

Prothorax in the female nearly three-fifths wider than long, less narrowed toward apex and with the sides of the disk near the basal angles more broadly concave and reflexed; elytra in that sex nearly three-fourths longer than the prothorax (*veterator* Csy. ♀).

**modestum**

Ocelli large, suffused and distinctly more distant; pronotum more strongly punctate; antennæ noticeably more incrassate.

**crassicornis**

Pale in color and more rufous; elytra often feebly infumate along the apex; abdomen blackish; pronotum very densely and distinctly punctate nearly like the elytra.....**pallidum**

Elytra small, quadrate, distinctly less than one-half longer than the prothorax; body dark, piceous-black in color, the sides of the elytra and base and side margin of the pronotum in basal two-thirds paler.

**alutaceum**

The Australian species assigned to *Amphichroum*, with their transverse antennal joints, will in all probability also have to be separated generically.

**P. flavescens** n. sp.—Rather broad, depressed, polished throughout, flavate, the abdomen black; posterior portions of the head piceous; antennæ feebly infumate toward apex; pubescence very minute, sparse and inconspicuous. *Head* one-half as wide as the elytra, slightly wider than long; eyes convex, well developed; vertex and front flattened, the two divergent grooves

of the former distinct; antennæ slender, cylindrical, very feebly incrassate, one-half as long as the body, all the joints elongate, the eleventh cylindrical in basal half, thence conical to the pointed apex. *Prothorax* transverse, one-half wider than long, the sides broadly, almost evenly arcuate; apex four-fifths as wide as the base; disk impunctate but with small scattered punctures near the basal margin, broadly, feebly convex, even, just visibly flattened before the scutellum, narrowly explanate along the sides. Scutellum triangular, polished, impunctate. *Elytra* ample, quadrate, at base as wide as the prothorax, three-fourths longer; sides nearly straight, feebly divergent from base to apex; disk with sparse, evenly distributed and very distinct punctures. *Abdomen* fully as wide as the elytra but scarcely as long, sparsely and extremely feebly punctulate, the border wide, feebly delimited and more densely punctate. *Legs* moderate. Length 2.2–3.3 mm.; width 0.85–1.3 mm.

California (Lake Tahoe).

The male characters, other than palpal, are very feeble, the general form of the body and length and structure of the antennæ being nearly identical in the two sexes; the fourth palpal joint is very strongly securiform, and the intermediate tibiæ are broadly and just visibly sinuate within. The tibiæ are very feebly and sparsely spinulose. Ten specimens.

**P. pallidum** n. sp.—Somewhat broad, feebly convex, shining though feebly alutaceous, flavate; abdomen black; elytra feebly clouded with piceous especially toward apex; head testaceous; antennæ blackish in apical half; pubescence short but abundant throughout. *Head* coarsely reticulate but with only a few very fine and remote punctures, flattened above; vertex feebly, obliquely bistriate; eyes well developed; antennæ very feebly incrassate, cylindrical, rather more than one-half as long as the body, all the joints longer than wide, eleventh cylindrical in basal, and conical in apical, half. *Prothorax* transverse, almost two-thirds wider than long; sides rather strongly, nearly evenly arcuate; basal angles obtuse and rounded; apex truncate, three-fourths as wide as the base; disk feebly convex, narrowly explanate at the sides, much more obliquely and broadly so toward base, almost perfectly even, finely, densely punctate and rather coarsely reticulate, shining. *Elytra* ample, scarcely as long as wide, at base subequal in width to the prothorax, two-thirds (♂) to three-fourths (♀) longer than the latter; sides nearly straight, feebly divergent from base to apex; disk flat, abruptly convex and declivous at the sides, finely, very densely punctate but shining. *Abdomen* shining, very feebly punctulate; border wide, the dividing line very fine. *Legs* moderate; femora broad; tibiæ slender, finely and extremely sparsely spinulose. Length 2.3–2.6 mm.; width 0.8–1.0 mm.

California (Lake Tahoe); Nevada (Reno).

Easily distinguishable from the others of Fauvel's "Section B," by the pale coloration. The sexual differences in general form are

very slight, but as usual the head is a little larger and the prothorax a trifle less transverse in the male than in the female; in the former sex the fourth palpal joint is strongly and normally securiform, and the intermediate tibiæ broadly and distinctly sinuate within just beyond the middle. Fifteen specimens, almost uniform in size and coloration.

### LATHRIMÆUM Erichs.

The species of *Lathrimæum* are rather abundant in the western parts of North America, but only one has been thus far recorded from the Atlantic regions. The seven representatives in my cabinet may be very readily distinguished as follows:—

Pronotum distinctly impressed along the median line except toward base.

Elytra flavate, each strongly, obliquely bimaculate with piceous-black, not modified at apex in the female; size larger.

Prothorax shorter and broader, more strongly arcuate at the sides; striae intervals of the elytra convex.....**subcostatum**

Prothorax smaller, feebly rounded on the sides; elytra smoother, the striae intervals not distinctly convex.....**pictum**

Elytra nearly uniform in coloration.

Larger species, never much less than 3 mm. in length, with the oblique discal impressions near the base of the pronotum nearly obsolete; apices of the elytra obliquely produced in the female.

Narrower, castaneous; prothorax three-fourths wider than long, feebly rounded at the sides; elytra much longer than wide.

#### **fimetarium**

Broad, piceous-black; prothorax twice as wide as long, strongly rounded at the sides; elytra but slightly longer than wide, the apices less produced in the female.....**nigropiceum**

Small species, never much more than 2 mm. in length, the two approximate oblique impressions near the base of the pronotum very deep and distinct, coalescent.

Prothorax very transverse, strongly and extremely widely reflexed at the sides; antennæ more slender, one-half as long as the body: color pale brownish-flavate.....**reflexicollis**

Prothorax narrower, less broadly reflexed at the sides; antennæ shorter, more incrassate toward tip; color piceous-black.....**spretum**

Pronotum not impressed along the median line; surface even; elytra short, not more than twice as long as the prothorax.....**sordidum**

Of *sordidum* I have before me a single mutilated specimen from Fredericksburg, Virginia; it is remarkably distinct; the oblique impressions of the pronotum are obsolete in this example, and the



scutellum has a few coarse punctures. The species previously described by me as *humeralis* (Bull. Cal. Acad. Sci., II. p. 243) is the same as *subcostatum*.

**L. nigropiceum** n. sp.—Oblong, broad, rather convex, polished, glabrous and dark blackish-piceous throughout, the lateral edges of the pronotum and elytra slightly paler from diaphaneity; legs but slightly paler; antennæ black, with one or two basal joints paler. *Head* short, transverse, scarcely more than one-half as wide as the prothorax, broadly, feebly, longitudinally biimpressed, the ocelli at the feeble nuchal constriction separated by two-fifths of the entire width; eyes well developed; antennæ as long as the head and prothorax, gradually rather strongly incrassate, outer joints wider than long. *Prothorax* very short, fully twice as wide as long, the sides strongly, evenly arcuate; base transverse, wider than the apex; disk coarsely, strongly, rather densely and unevenly punctate, very broadly explanate at the sides and with the usual sublateral impression just before the middle; oblique subbasal impressions feeble but distinct. *Elytra* very slightly longer than wide, a little wider than the prothorax and more than three times as long; sides parallel and broadly, feebly arcuate. *Abdomen* entirely covered by the elytra. *Legs* rather short, moderately slender. Length 2.7–3.3 mm.; width 1.5–1.8 mm.

California (Sta. Cruz Co.).

The three specimens in my cabinet are females, and may be distinguished at once from the corresponding sex of *fimetarium* by the dark color, shorter, broader form, and by the sculpture of the elytra which, though similar in general to that of *fimetarium*, is more closely and unevenly punctate, the difference in size between the minute punctures of the intervals and the coarser sculpture of the series being much more marked than in that species.

**L. reflexicollis** n. sp.—Oblong, convex, very broad, polished, pale brownish-flavate, the head and elytra feebly picescent, the latter paler at the humeri and along the lateral margins. *Head* wider than long, rather large, fully three-fifths as wide as the prothorax, strongly, rugosely punctate toward base but finely and sparsely so anteriorly; ocelli distant by two-fifths the width; eyes well developed; nuchal constriction subobsolete; antennæ slender, feebly incrassate, the sixth joint nearly twice as long as wide, eighth distinctly longer than wide, tenth scarcely wider than long. *Prothorax* rather more than twice as wide as long, the sides broadly, somewhat unevenly arcuate; base a little wider than the apex; disk coarsely densely and rugosely punctate, more sparsely and evenly so near the sides, broadly, strongly reflexed laterally, with a punctiform fovea in the middle rather distant from the lateral margin; median subbasal impressions coalescent, forming a transversely arcuate channel. *Elytra* two and one-half times as long as the prothorax, and, toward apex, fully one-third wider; sides distinctly divergent from the feebly



oblique and unexposed humeri and nearly straight; outer angles broadly rounded; apex truncate; disk coarsely, not very densely and deeply punctate, the punctures forming uneven series with feebly convex punctate intervals. *Abdomen* very short and rapidly pointed behind the elytra, pale, shining and subimpunctate. Length 2.0 mm.; width 1.2 mm.

British Columbia (Stickeen River Cañon). Mr. H. F. Wickham.

The single specimen from which the description is taken is a male, and may possibly be immature. It is distinguishable at once by its small size and very broadly concave and reflexed side margins of the prothorax.

**L. spretum** n. sp.—Short, broad, polished, convex, piceous-black, the side margins slightly paler from diaphaneity; legs paler; antennæ black, paler at base. *Head* two-thirds as wide as the prothorax, wider than long, strongly, densely punctate toward base, the clypeus subimpunctate; ocelli separated by one-third of the total width, the nuchal constriction almost obsolete; surface impressed near each ocellus and also obliquely at the sides of the clypeus; antennæ but slightly longer than the head and prothorax, slender, rather rapidly strongly incrassate near the tip, sixth joint one-half longer than wide, the tenth transverse. *Prothorax* scarcely twice as wide as long, the sides rather strongly rounded, convergent and nearly straight toward base, widest before the middle; basal angles obtuse but not rounded; base not distinctly wider than the apex; disk strongly and closely but scarcely rugosely punctate, explanate at the sides, the sublateral fovea before the middle and near the edge; median subbasal impressions strong, coalescent, forming a posteriorly angulate transverse channel. *Elytra* quadrate, almost three times as long as the prothorax and nearly two-fifths wider; sides subparallel, nearly straight; humeri distinctly exposed at base; apex truncate, the sutural angles not at all produced; disk strongly punctate, the punctures forming dense close and rather well-marked series with the intervals feebly convex and finely remotely and subserially punctate. *Abdomen* extremely short and broadly obtuse behind the elytra, black, subimpunctate. Length 2.2 mm.; width 1.2 mm.

California (Siskiyou Co.).

The unique type is a female but cannot be confounded with *reflexicolle*, as the numerous differences are not at all suggested in the large series of males and females of *subcostatum* which I have before me. The present species differs from *reflexicolle* in the very much more narrowly explanate sides of the pronotum, in the less coarse and closer sculpture of the elytra, straight and not arcuate sides of the prothorax toward base, in the shorter antennæ, and in the distinctly exposed humeri; in color, rugosity of the pronotum and several other features there is also notable divergence.

**DELIPHRUM** Erichs.

The two following species are referred to *Deliphrum*, although in some characters they appear to be intermediate between that genus and *Lathrimæum*. In *æquicolle* the intermediate tibiæ only are sparsely spinulose, the others coarsely setose, or with spines only very slightly thicker than the ordinary setæ; in *occiduum* the spinules of the hind tibiæ are but slightly more visible. A few very short spines are also visible along the intermediate tibiæ of *Lathrimæum spretum*. In the general facies and fine even punctures of the pronotum both of these species agree very satisfactorily with *Deliphrum tectum* Payk.; they are very much smaller than *D. expansum* Lec. from Colorado.

The antennal differences given by LeConte and Horn (Class. Col. N. A.) to distinguish *Lathrimæum* and *Deliphrum* do not exist, these organs being equally incrassate in both; they are however longer and much more nearly filiform in *Olophrum*. In *Lath. subcostatum* the tibiæ are not spinose, but evenly covered with short stiff inclined setæ.

**D. æquicolle** n. sp.—Broad, polished, glabrous, dark piceous-brown, the head and abdomen blackish; antennæ black, slightly pale at base; legs, sterna and epipleuræ paler, flavescens. *Head* transverse, three-fifths as wide as the prothorax, very finely, remotely punctate, smooth; ocelli large, prominent, distant by two-fifths the width; dorsal constriction of the neck obsolete; surface feebly impressed before each ocellus and at the sides of the clypeus; lateral margins of the latter deeply interrupted as usual before the eyes for the reflexion of the antennæ; eyes moderate; antennæ two-fifths as long as the body, slender toward base but rapidly though gradually, strongly incrassate near the apex, sixth joint one-third longer than wide, eighth and tenth similar in form, slightly wider than long, the tenth very much the larger. *Prothorax* not quite twice as wide as long, the sides parallel, evenly, moderately rounded; basal angles obtuse and blunt; disk minutely, not very densely, evenly punctate, the punctures rather closer and stronger near the base, the surface narrowly explanate along the sides, not at all impressed in the middle, the sublateral foveæ before the middle very feeble. *Elytra* subquadrate, nearly parallel, truncate at apex, not as long as wide, not more than twice as long as the prothorax; sides nearly straight; humeri not exposed at base; disk coarsely deeply confusedly and not very densely punctate, the punctures having only the most indistinct lineate arrangement, altogether confused and denser near the suture. *Abdomen* with more than three exposed segments, subimpunctate, polished. Length 2.0 mm.; width 1.1 mm.

California (Lake Tahoe).

I took a single male only of this species, which is very distinct by reason of its short and coarsely, subserially sculptured elytra.

**D. occiduum** n. sp.—Oblong, convex, polished, glabrous, black, the elytra with the feeblest piceo-metallic tinge; legs piceous-black, the tibiæ and tarsi rufescent; antennæ black throughout. *Head* two-thirds as wide as the prothorax, nearly as in *æquicolle*, minutely, sparsely punctate; antennæ slender, slightly longer than the head and prothorax, very evenly, feebly incrassate throughout from near the base, joints one to seven more or less longer than wide, eight to ten shorter, similar in form, scarcely as long as wide, increasing in size. *Prothorax* about twice as wide as long, the sides parallel, feebly and evenly arcuate; base and apex subequal; basal angles obtuse and narrowly rounded; disk evenly, transversely convex, not impressed, very narrowly explanate along the side margins, finely, rather strongly and somewhat closely punctate; sublateral foveæ before the middle very feeble. *Elytra* toward apex nearly one-third wider than the prothorax, two and one-half times as long as the latter, fully as long as wide, truncate at apex, the sides feebly divergent, nearly straight; humeri not exposed at base, obliquely rounded to the prothorax, rather coarsely strongly and closely punctured, with a broad deep impression along each side of the elevated suture, the punctures almost evenly distributed, with very feeble subserial arrangement. *Abdomen* with nearly three exposed segments, polished, subimpunctate. Length 2.2 mm.; width 1.2 mm.

California (Siskiyou Co.).

Allied to *æquicolle* but differing altogether in the form of the antennæ, which are here much more slender and very feebly gradually and evenly incrassate throughout, also in its rather more transverse prothorax and in the larger, more densely punctate elytra. It is represented in my cabinet by a single female.

#### OMALIUM Grav.

In this difficult genus the European species have been divided into several subgenera which appear to be amply valid, at least as such, there being notable differences in the structure of the maxillary palpi. The following species are to be added to those already known from North America:—

**O. ater** n. sp.—Narrow, convex, highly polished, intense black, the legs toward tip and antennæ toward base rufescent; very narrow side margins of the pronotum also feebly rufescent from diaphaneity; pubescence excessively short, remote and scarcely visible. *Head* barely more than two-thirds as wide as the prothorax, wider than long, flat throughout above, finely, very remotely

and unevenly punctate; front broadly, strongly rounded; eyes large, at the base; tempora nearly obsolete; nuchal constriction immediately behind the eyes, extending transversely across the head; ocelli large, separated by two-fifths the total width, on the edge of the nuchal depression; third joint of the maxillary palpi small, not longer than wide, fourth fusiform, pointed toward apex, in the middle wider than the third, about three times as long; antennæ stout, not quite as long as the head and prothorax, basal joint cylindrical, twice as long as wide and as long as the next two, the latter equal in length, third narrow, obconical, nearly twice as long as wide, six to eleven gradually strongly incrassate and more densely pubescent, forming a six-jointed club, seven to ten strongly transverse; minute impressions before the ocelli scarcely distinct. *Prothorax* nearly one-half wider than long; sides parallel and broadly, evenly arcuate; base truncate, scarcely wider than the feebly areolate apex; disk transversely convex, nearly even but with two obsoletely flattened median areas; punctures fine, deep, very sparse and rather unevenly distributed. *Elytra* but very slightly wider than the prothorax and twice as long, about as long as wide; sides straight, scarcely divergent; punctures somewhat coarse, deep, not very dense, forming indistinct longitudinal rugulations. *Abdomen* shining, minutely, sparsely punctate, as long and wide as the elytra; border moderate. *Legs* short and rather stout; tibiæ strongly spinulose externally and with an internal row of slender bristles which are very short on the anterior; hind tarsi nearly four-fifths as long as the tibiæ, the last joint barely as long as the four preceding together, the fourth distinctly shorter than the third; anterior feebly dilated in the male. Length 2.9 mm.; width 1.0 mm.

California (Sta. Cruz Co.).

Related to *florale* (= *rufipes* Fourc.) but much smaller, with the elytral punctures much coarser and not joined by anastomosing impressed lines as they are in that species.

**O. pacificum** n. sp.—Narrow, moderately convex, feebly narrowed anteriorly, intense black throughout; legs and base of the antennæ rufescent; pubescence in the form of minute but distinct erect stiff setæ. *Head* three-fourths as wide as the prothorax, in form as well as structure of the palpi and antennæ nearly as in *ater*, the basal joint of the latter however not as long as the next two and the second longer as well as thicker than the third, outer joints strongly incrassate and transverse. *Prothorax* three-fifths wider than long; sides nearly parallel, broadly, evenly arcuate; base transversely truncate, very slightly wider than the apex; disk evenly, transversely convex, with scarcely any trace whatever of central flattening, finely strongly and densely punctate. *Elytra* toward apex slightly wider than the prothorax, nearly two and one-half times as long as the latter; sides straight, just visibly divergent; disk finely, deeply, extremely densely punctate, the sculpture feebly rugulose, longitudinally substriate near the middle. *Abdomen* fully as wide as the elytra and rather shorter. *Legs* short and stout, the tibiæ spinulose externally. Length 2.3 mm.; width 0.75 mm.



California (Siskiyou Co.).

This species is allied to *ater* and *megarthroides*, differing greatly from the former in its still smaller size, narrower form, more distinct setæ and much finer, denser sculpture, and from the latter in coloration and in its more parallel and less anteriorly attenuate form. In *pacificum*, *ater* and probably generally throughout the genus, there is a transverse row of longer erect setæ near the middle of each abdominal segment and the minute erect setæ of the elytral punctures are replaced at wide intervals by longer setæ; the small and ordinary elytral setæ in *ater* are very much more minute than in *pacificum* and can scarcely be discerned under comparatively high power. The type appears to be a female.

Of *megarthroides* I have many examples of all degrees of color and immaturity. The measurements given by Fauvel seem to be a little too great, my series of thirty-one specimens, taken in numerous localities from Los Angeles to Victoria, give as extremes of length 1.75–2.6 mm.; *megarthroides* appears to be extremely closely allied to *humile* Mäkl.

**O. lacustre** n. sp.—Narrow, elongate, subparallel, feebly convex, polished, rufo-testaceous throughout, the head and abdomen, especially toward apex, rather darker and more piceous; pubescence consisting of extremely minute suberect scarcely visible setæ, denser and much longer on the alutaceous under surface of the abdomen. *Head* distinctly but not greatly narrower than the prothorax, wider than long, triangular, with the epistoma truncate and one-half as wide as the base; eyes moderate, at one-half their length from the base; the tempora parallel, nearly straight and almost as prominent as the eye; base truncate, the constriction extending transversely and deeply across the dorsal surface; ocelli separated by two-fifths the entire width, on the edge of the constriction; occiput not impressed before them; surface finely, rather closely but unevenly punctate, very feebly biimpressed between the antennæ, the latter pale, very short, one-third longer than the width of the head, subcylindrical, scarcely visibly incrassate, outer joints transverse; last joint of the maxillary palpi subbulbose toward base, gradually finely attenuate and feebly arcuate thence to the apex, nearly three times as long as the third but scarcely as thick. *Prothorax* one-half wider than long, widest before the middle; sides broadly rounded, becoming rather more convergent and straighter toward base; disk finely, rather closely punctate, without anastomosing impressed lines, with two elongate subobsolete median impressions and another scarcely visible between them near the apex. *Elytra* but just visibly wider than the prothorax, quadrate, as long as the head and prothorax, scarcely as long as wide, finely, very densely punctate and obsolete, longitudinally substriolate. *Abdomen* a little narrower and rather longer than the elytra, subparallel; border rather wide. *Legs* short; poste-



rior tarsi slender, very nearly as long as the tibiæ; fourth joint shorter than the third, first three somewhat elongate, first four together much longer than the fifth. Length 2.75 mm.; width 0.75 mm.

#### Michigan.

The single specimen is a male and has the anterior tarsi very feebly dilated; the sixth ventral is broadly, feebly arcuate at apex. This species closely resembles *longulum*, but differs in its much shorter and more densely punctate elytra, smaller and less incrassate antennæ, in the absence of anastomosing fine lines on the shorter pronotum, and, radically, in the structure of the posterior tarsi, which in *longulum* have the first four joints short, thick, oblique, equal and together rather shorter than the fifth.

**O. capito** n. sp.—Elongate, parallel, feebly convex, polished, black; antennæ, legs and elytra paler, castaneous; pronotum piceous-black; setæ extremely minute, sparse and scarcely discoverable, on the abdomen longer and distinct but sparse above and beneath, the venter shining. *Head* large, not as long as wide, much longer and only slightly narrower than the prothorax, finely, sparsely punctate, scarcely perceptibly impressed between the antennæ; eyes feebly convex; tempora subparallel, straight, nearly as long and prominent as the eye; base transverse and strongly constricted, the ocelli on the edge of the constriction, very feeble, separated by barely one-third of the width; antennæ stout, feebly incrassate, as long as the head and prothorax, third joint rather longer than wide, constricted and strongly compressed toward base. *Prothorax* two-thirds wider than long, widest before the middle; sides feebly convergent and just perceptibly sinuate toward base; disk scarcely visibly flattened in the position of the usual impressions, evenly convex, finely, sparsely punctate. *Elytra* about as long as wide, a little longer than the head and prothorax, very slightly wider than the latter, strongly, broadly impressed along the elevated suture, finely, very sparsely punctate, the punctures feebly lineate in arrangement toward the middle of each. *Abdomen* a little narrower and rather shorter than the elytra, minutely sparsely and indistinctly punctate, shining, just visibly alutaceous. *Legs* short; posterior tarsi very long and slender, as long as the tibiæ, the first three joints elongate, oblique at apex, second nearly twice as long as the first, two to four decreasing rapidly in length, first four together much longer than the fifth. Length 3.0 mm.; width 0.9 mm.

#### Wisconsin.

Allied to *lacustre*, having nearly the same peculiar structure of the tarsi and also similar in the form of the body and oral organs. It differs notably in the larger head, longer, stouter antennæ with compressed third joint, more approximate ocelli, longer tempora, longer elytra and much sparser punctuation throughout. The single specimen is a male, having the sixth ventral feebly arcuate

at apex and the anterior tarsi feebly dilated and densely pubescent beneath. If the usual definition of the genus is to hold, these two species will have to be separated because of the marked tarsal differences.

The following species have the body slender, parallel, subimpunctate and opaque or alutaceous, with the fourth joint of the maxillary palpi slender, cylindrical, much narrower than the third and somewhat more or less than twice as long; they constitute the subgenus *Phlæonomus* of Heer:—

Fourth palpal joint shorter, one-half longer than the third. Arctic.

### **lapponicum**

Fourth palpal joint twice as long as the third or very slightly longer.

Posterior tarsi distinctly more than one-half as long as the tibiæ.

Surface opaque, strongly granulato-reticulate; prothorax very nearly as wide as the elytra. European subarctic ..... **pusillum**

Surface much more shining, alutaceous, more coarsely and feebly reticulate; prothorax much narrower than the elytra; setæ of the latter longer and more visible. American subarctic ..... **læsicolle**

Posterior tarsi not more than one-half as long as the tibiæ; legs longer; body much broader, feebly shining, alutaceous. American subarctic.

### **suffusum**

*Pusillum* is simply included for comparison; it is closely allied to *læsicolle* but is distinct and does not appear to inhabit North America.

**O. suffusum** n. sp.—Suboblong, depressed, feebly shining, black, the legs and elytra rufous, the latter suffused with black near the scutellum and each external apical angle; antennæ fuscous, pale in basal half; integuments subglabrous; elytral setæ minute, erect, distinct under a power of 80. *Head* small, wider than long, three-fourths as wide as the prothorax; eyes large, convex; tempora feebly arcuate, short, strongly convergent to the nuchal constriction; ocelli distinct, on the edge of the constriction, separated by scarcely more than one-fourth of the total width; surface impressed before each, also broadly, strongly impressed at each side of the large rounded clypeus; antennæ a little longer than the head and prothorax, outer six joints abruptly stouter, six to ten strongly transverse. *Prothorax* four-fifths wider than long; sides subparallel, feebly arcuate, slightly convergent and scarcely sinuate toward base; disk subimpunctate, explanate at the sides, more broadly toward base, also with two broad strong median impressions extending but slightly beyond the middle and a very feeble median impression at the apex. *Elytra* quadrate, one-fourth wider than the prothorax and twice as long, nearly as long as wide, much longer than the head and prothorax; humeri extremely narrowly exposed; sides parallel; disk very sparsely and obsoletely punctate. *Abdomen* as wide as the elytra and rather shorter, somewhat strongly

shining, feebly pubescent; border moderate. *Legs* slender, rather short; four basal joints of the hind tarsi together barely three-fourths as long as the last. Length 2.0 mm.; width 0.7 mm.

Alaska (Hunter's Bay, Prince of Wales Island). Mr. Wickham.

Much broader and rather more convex than *læsicolle*, to which it is allied. In *læsicolle* the fifth abdominal tergite is nearly two and one-half times as wide as long, while in the present it is scarcely more than twice.

**O. quadripenne** n. sp.—Oblong, feebly convex, black with a feeble piceous tinge except on the abdomen; legs rufous; antennæ fuscous, paler toward base; integuments polished, subglabrous, the abdomen finely, strongly reticulate and alutaceous. *Head* strongly, closely punctate, wider than long, fully two-thirds as wide as the prothorax; neck narrow, one-half the total width; eyes moderate, near the base; ocelli separated by scarcely more than one-fourth the total width; surface with a deep puncture before and exterior to each ocellus, also broadly impressed at each side of the large and broadly rounded clypeus; antennæ as long as the head and prothorax, gradually and moderately incrassate; fourth palpal joint as wide as the third and about three times as long, very feebly narrowed, the tip obtuse. *Prothorax* strongly transverse, four-fifths wider than long; sides broadly, evenly rounded, feebly convergent and nearly straight toward base, the basal angles obtuse; disk transversely convex, feebly explanate near the hind angles, with three distinct median impressions, the intermediate near the apex. *Elytra* parallel, quadrate, slightly wider than the prothorax and barely twice as long, very little longer than the head and prothorax, not quite as long as wide, strongly, very densely punctate and obsoletely, longitudinally rugulose. *Abdomen* as wide as the elytra and a little shorter; segments very short; border ample. *Legs* short, slender; four basal joints of the hind tarsi together scarcely more than two-thirds as long as the fifth. Length 1.8 mm.; width 0.7 mm.

Virginia (Fredericksburg).

Allied rather closely to *foraminosum*, but abundantly distinct in its broader form, larger prothorax, shorter elytra, much denser punctuation, shorter, broader abdominal segments and many other characters; from *cribrum* it may be known at once by the rounded sides of the prothorax.

In this and many other species there is a deep wide and oblique antennal groove on the upper surface of the head near the eye, the inner margin of which is frequently cariniform. It seemed at first as though this might serve to define the genus *Omalium* better than the variable posterior tarsi, but I find that it disappears in some species such as *lapponicum* and *læsicolle*, and moreover exists in some other genera such as *Lathrimæum*.

*O. rugipenne* Csy. is a very aberrant form in its small short elytra and large rounded abdomen, but belongs to the genus by all of its structural characters. *O. algarum* Csy. (= *fucicola* || Csy.) is closely allied to *theveneti* Fvl., but differs in its much larger size and relatively shorter antennæ. Of *exsculptum* Mäkl. I took a single specimen in Humboldt Co. California; the sculpture of the pronotum reminds us somewhat of *Lathrimæum*, but it is a true *Omalium*.

### ANTHOBIUM Steph.

The species of *Anthobium* are really very numerous in America, especially in the regions near the Pacific Ocean, but had not been collected to any extent at the time Mr. Fauvel wrote upon them (Not. Ent., 7, 1878). During a four or five days collecting trip to Lake Tahoe in June 1886, I took four species in an area not exceeding several hundred yards in extent bordering this pretty little mountain sea. *Omalini* of several genera are especially abundant in those regions, which will yield many more interesting forms when the numerous secluded valleys can be carefully explored.

At the present time I have selected a number of the more distinct and interesting new species for description; these may be identified among themselves as follows:—

Elytra with the outer angle at apex moderately broadly rounded, the apex subtruncate.

Head black.

Entire upper surface intense black ..... **nigerrimum**

Upper surface black, the pronotum and elytra dark piceous; sutural angles not prolonged in the female; prothorax in the male much larger than in the female..... **diversicolle**

Black, the pronotum slightly paler especially toward base; elytra pale flavate ..... **gilvipenne**

Head testaceous.

Pronotum with a feeble subobsolete median impressed line, at least in the male.

Elytra transversely truncate or evenly arcuate at apex, in the female not in the least modified at the sutural angle; pronotum polished, very coarsely, deeply punctate ..... **punctatum**

Elytra with the sutural angles abruptly and strongly produced in the female; prothorax in the male much more elongate than in the female ..... **tibiale**

Pronotum without vestige of an impressed median line.

Sides of the prothorax broadly subangulate at basal third; large stout species, strongly punctate..... **subangulatum**



Sides of the prothorax very evenly rounded; small species.

**atriventre**

Elytra with the outer angle very broadly rounded, the apex conjointly semi-circular in the male or gradually acutely pointed in the female; prothorax relatively smaller .....**fraternum**

As several species, such as *fimetarium*, *segmentarium* and *marginatatum* are unknown to me, and *rugulosum* doubtfully determined, I am not able at present to give a complete statement of our species; *sorbi* is somewhat doubtful as an American species.

**A. nigerrimum.**—Elongate, parallel, polished, the pronotum and abdomen reticulate and alutaceous, the abdomen finely, sparsely pubescent; legs and antennæ pale rufo-testaceous, the latter infumate near the tip. *Head* transverse, two-thirds as wide as the prothorax, very finely, sparsely punctate, feebly and longitudinally impressed near the sides; eyes large and prominent; ocelli small, separated by less than one-third the width; antennæ short, scarcely as long as the head and prothorax, outer joints gradually rather strongly incrassate, sixth longer than wide, seven to ten similar in form and a little wider than long. *Prothorax* three-fourths wider than long, the sides evenly and continuously arcuate, feebly divergent to beyond the middle, then very broadly rounded and strongly convergent to the apex which is scarcely three-fourths as wide as the base; disk evenly, transversely convex, very feebly subexplanate at the sides just behind the middle, without trace of median impressed line, the punctures fine but strong and distinct, rather sparse. *Elytra* a little longer than wide, more than twice as long as the prothorax and scarcely visibly wider, the sides straight and subparallel; apex broadly feebly and very evenly arcuate; disk unusually coarsely deeply confusedly and rather closely punctate. *Abdomen* as wide as the elytra, with four exposed segments. Length 2.2 mm.; width 0.9 mm.

Southern California. Mr. H. C. Fall.

The single male in my cabinet is related to *californicum* but differs in its intensely black and more coarsely sculptured elytra. The anterior tibiæ are simple and the median elevated plate of the sixth ventral segment is very large, transverse, twice as wide as long, extending to the apex and with its apex transversely truncate and its sides parallel.

The nuchal constriction throughout *Anthobium* is completely obsolete on the dorsal surface, and by this character the species can be distinguished from all the forms of *Omalium* which I have seen, although the constriction becomes very feeble in several species of the latter genus, such as *hamatum* and *megarthroides*, these also approaching *Anthobium* in general habitus as well.



**A. diversicolle.**—Subparallel, convex, subalutaceous, the elytra polished, black, the pronotum and elytra piceous-black; legs and antennæ pale flavate, the latter toward apex and the posterior femora toward base dusky. *Head* two-thirds as wide as the prothorax, broadly, longitudinally biimpressed, minutely, sparsely punctate; ocelli small, separated by more than one-third of the width; eyes rather small; antennæ much shorter than the head and prothorax, strongly incrassate toward apex. *Prothorax* large, rectangular, one-third wider than the length; sides parallel, broadly, feebly and evenly arcuate; apex broadly, very feebly arcuate, but slightly narrower than the base; disk strongly convex, even, impressed at the sides behind the middle, very minutely feebly and rather sparsely punctate. *Elytra* about as long as wide, just visibly wider than the prothorax and distinctly less than twice as long; humeri not exposed; sides straight and subparallel; apex broadly, evenly, feebly arcuate; disk not very coarsely but strongly, rather sparsely, confusedly and subrugosely punctate. *Abdomen* with more than three exposed segments. Length 1.7–2.3 mm.; width 0.8–0.95 mm.

California (Lake Tahoe); Nevada (Reno); Utah (southern).

A very abundant species, remarkable because of the great sexual disparity in the form of the prothorax. The description is drawn from the male which has the sixth ventral strongly, transversely convex but scarcely visibly elevated or thicker in the middle, and the anterior tibiæ prominent within at the middle and thence nearly parallel to the apex and gradually strongly narrowed to the base. The female has the prothorax nearly twice as wide as long and more shining, the elytra broadly arcuate at apex and transversely impressed before the tip of each, the sutural angles not visibly modified. In *californicum*, of which I have a large series from Lake Co., corresponding prothoracic differences are observable but not so marked. The present species is allied to *tibiale*, but differs in its smaller size, in coloration and in its much sparser punctuation.

**A. gilvipenne.**—Narrow, parallel, convex, black, the pronotum piceous, sometimes decidedly paler at base; elytra and legs flavate; antennæ pale, dusky in outer half; surface strongly shining, the pronotum not distinctly alutaceous. *Head* transverse, large, five-sixths as wide as the prothorax, rather strongly, longitudinally biimpressed, minutely, sparsely punctate; eyes large and prominent; ocelli separated by more than one-fourth of the width; antennæ rather feebly incrassate in apical half, about as long as the head and prothorax, the sixth joint quadrate, seventh similar but a little larger, eighth slightly wider than long, the tenth distinctly transverse. *Prothorax* transversely rectangular, two-fifths wider than long; sides parallel, nearly straight, convergent and rounded in apical third; base slightly wider than the apex; basal angles slightly blunt; disk transversely, strongly convex, with feeble traces of an impressed median line, feebly impressed laterally behind the

middle and obsoletely in the middle before the base; punctures fine, feeble and sparse. *Elytra* one-fourth longer than wide, the sides subparallel and nearly straight; apex transverse; humeri not exposed; disk scarcely visibly wider than the pronotum but nearly two and one-half times as long, coarsely strongly confusedly and not very densely punctate. *Abdomen* with nearly four exposed segments, shining, subimpunctate and not distinctly pubescent. Length 1.7-1.9 mm.; width 0.7-0.8 mm.

California (Sta. Cruz Co.).

The two specimens are males, having the median elevated plate of the terminal ventral segment large, trapezoidal in form, twice as wide as long with the apex transversely truncate; anterior tibiae simple. In the female the pronotum will probably prove to be distinctly shorter, as in *californicum*, *tibiale* and *diversicolle*.

**A. punctatum.**—Rather broad and cuneiform, pale rufo-testaceous, the elytra more flavate, the abdomen sometimes feebly clouded with darker; integuments glabrous and very highly polished, the pronotum without trace of reticulation or alutaceous lustre. *Head* four-fifths as wide as the prothorax, the eyes very prominent; surface obsoletely, longitudinally biimpressed, rather coarsely sparsely and unevenly punctate; ocelli large and separated by fully one-third of the width; antennae as long as the head and prothorax, outer six joints gradually thicker, tenth one-third wider than long and twice as wide as the third. *Prothorax* three-fourths wider than long; sides subparallel, feebly arcuate, a little more convergent anteriorly; base distinctly wider than the apex; disk highly polished, very coarsely deeply and somewhat closely punctate, feebly impressed near the sides behind the middle and obsoletely and unevenly along the median line. *Elytra* about as long as wide, at the obliquely rounded and scarcely exposed humeri barely wider than the prothorax but one-half wider near the apex, two and one-half times as long; sides divergent and nearly straight; apex broadly, evenly rounded throughout the width; disk broadly impressed along the suture; punctures coarse, deep, confused and rather close. *Abdomen* with three or four exposed segments, shining, flat, scarcely perceptibly and remotely punctulate. Length 2.0-2.5 mm.; width 1.1-1.2 mm.

California (Sta. Cruz Co.).

This species is allied in general form and more distant ocelli to *pothos*, but differs much in its more convex and polished, less transverse and very coarsely punctate pronotum. It is represented by four females.

**A. tibiale.**—Subparallel, rather convex, shining, subglabrous, pale rufo-testaceous, the antennae dusky toward tip; elytra more flavate, the abdomen piceous-black; head and pronotum alutaceous. *Head* three-fourths as wide as the prothorax; eyes moderately prominent; ocelli distant by one-third the width; surface perfectly flat and unimpressed, minutely, rather closely punc-

tate; antennæ much shorter than the head and prothorax, moderately incassate. *Prothorax* large, subrectangular, one-third wider than long; sides subparallel, very feebly arcuate, a little more convergent anteriorly; base distinctly wider than the apex; basal angles slightly obtuse and blunt; disk strongly, evenly convex, minutely but strongly, evenly, rather sparsely punctate, very feebly impressed near the sides behind the middle and also extremely obsoletely and narrowly along the median line. *Elytra* rather longer than wide, twice as long as the prothorax, and, near the apex, almost one-third wider; sides feebly divergent, nearly straight; humeri not exposed; apex broadly, evenly arcuate throughout the width; disk rather finely but strongly, confusedly and closely punctate. *Abdomen* with about four exposed segments. Length 1.8–2.1 mm.; width 1.0–1.1 mm.

#### Arizona.

The description is taken from the male, in which sex the sixth ventral is abruptly thickened and transversely more convex in the middle, with the very short apex of the segment beyond thinned and transparent, and the apical margin of the thickened part bearing long stiff setæ; the anterior tibiæ are widest and obtusely prominent within at the middle, thence rapidly narrowed to the base and broadly sinuate to the apex. The female is quite different, the prothorax being very much shorter and more transverse as in *diversicolle*, and the elytra larger, fully three times as long as the prothorax, covering the entire abdomen, with the sutural angles very strongly and abruptly prolonged behind. Six specimens.

**A. subangulatum.**—Robust, subparallel, convex, rufo-testaceous and polished throughout, the abdomen black. *Head* large, four-fifths as wide as the prothorax, nearly as long as wide, scarcely at all impressed, finely but strongly, rather closely punctate; ocelli all but completely obsolete; eyes smaller than usual, the tempora distinct behind them; antennæ longer than usual, longer than the head and prothorax, sixth joint longer than wide, not wider than the preceding, seven to eleven forming a long loose five-jointed club, tenth but slightly wider than long. *Prothorax* transverse, fully four-fifths wider than long; apex truncate, fully as wide as the base; sides very broadly subangulate just behind the middle, thence feebly convergent and nearly straight to the distinct but rounded apical angles, more convergent and somewhat sinuate to the base, the basal angles obtuse and blunt; disk rather coarsely deeply and closely punctate, just visibly impressed before the scutellum and strongly so along the sides behind the middle. *Elytra* about as long as wide, near the apex slightly wider than the prothorax, more than twice as long; sides just visibly divergent, nearly straight; humeri slightly exposed; apex broadly, evenly subtruncate; punctures distinct, deep, subequal to those of the pronotum and rather less approximate, confused. *Abdomen* with about three exposed segments. Length 2.3–3.0 mm.; width 1.0–1.25 mm.

## California (Lake Tahoe).

Described from the male, which has the sixth ventral broadly, feebly sinuate throughout at apex, with the surface not modified, the median segment of the seventh acutely parabolic, as long as wide, polished, with a few erect setæ; anterior tibiæ not modified, the tarsi distinctly dilated. The female is almost perfectly similar in general structure to the male, but has the head a little smaller and the sides of the elytra a trifle more divergent.

This is an interesting aberrant type of the genus, having longer antennæ, and differing also in male sexual characters and in tarsal structure; the first four joints of the stout posterior tarsi are together much longer than the last, with the second joint nearly twice as long as the first and as long as the next two together. The subobsolete ocelli makes the transition to the complete absence of them in *Vellica*, a comparatively easy one and also detracts somewhat from the importance of that character.

**A. atriventre.**—Subparallel, convex, shining, the pronotum but very feebly reticulate and alutaceous, pale rufo-testaceous, the abdomen black; antennæ darker at apex. *Head* fully three-fourths as wide as the prothorax, flat, minutely, sparsely punctate, very obsoletely biimpressed between the eyes and between the antennæ; ocelli large, diffuse, separated by fully one-third the width; eyes large, prominent; antennæ scarcely as long as the head and prothorax, moderately incrassate, the last five joints gradually larger. *Prothorax* transverse, fully three-fourths wider than long; sides broadly, evenly arcuate, much more convergent in apical half, the base truncate and nearly one-half wider than the apex; basal angles obtuse but not appreciably blunt; disk strongly, transversely convex, even, minutely but distinctly, sparsely punctate. *Elytra* distinctly longer than wide, more than twice as long as the prothorax, and, near the apex, one-third wider; sides feebly divergent, nearly straight; humeri slightly exposed at base; apex broadly, feebly arcuate, with a small notch at the suture; punctures strong confused and rather dense. *Abdomen* half exposed behind the elytra. Length 1.7 mm.; width 0.75 mm.

## California (Los Angeles).

This species is allied to *gilvipenne*, resembling it in general form, but differs in its shorter, more transverse prothorax, which is much more narrowed toward apex, in its larger, more distant ocelli, and in coloration and size. The single male has the sixth ventral thin and transparent, broadly lobed in the middle, the surface before the lobe abruptly elevated, flat, transversely trapezoidal, with the apex of the thickened part not quite attaining the apex of the segment



and broadly sinuate in the middle, not truncate as in *gilvipenne*; anterior tibiæ simple.

**A. fraternum.**—Broad, cuneiform, convex, pale rufo-testaceous throughout, alutaceous, the elytra polished. *Head* three-fourths as wide as the prothorax, the surface perfectly flat, minutely, sparsely punctulate; eyes large; ocelli large, separated by one-third the width, each immediately behind a small deep impressed fovea; antennæ as long as the head and prothorax, gradually and rather strongly incrassate from the middle. *Prothorax* transverse, not quite twice as wide as long; sides feebly rounded, slightly convergent in basal and strongly so in apical half; apical angles obtuse but visible; base two-fifths wider than the transversely truncate apex; disk evenly convex, broadly, feebly impressed at the sides behind the middle, very widely so toward base; punctures very minute but rather close. *Elytra* large, longer than wide, transversely convex, one-half wider than the prothorax and nearly three times as long, semi-circularly rounded behind, covering all but the acute tip of the abdomen, finely but strongly, distinctly confusedly and not very densely punctate. Length 2.2–2.6 mm.; width 1.1–1.25 mm.

California (Hoopa Valley, Humboldt Co.).

The male, from which the above outline is drawn, has the tibiæ simple and straight, the posterior tarsi long, stout, with the second joint notably longer than the first and almost as long as the next two—nearly as in *subangulatum*—the first four together much longer than the fifth, the fifth ventral broad, transverse at apex, with a deep abrupt parallel-sided median fissure nearly four times as deep as wide, the sixth short, broadly sinuate throughout, and the median ligula of the seventh large, longer than wide, convex and acutely triangular. The female is similar but larger, the elytra more oval, more than three times as long as the prothorax, covering the entire abdomen, slightly dehiscent at apex, and arcuately narrowed and conjointly acutely ogival from posterior third.

This species with the eastern *convexum* and the Californian *aurifluum* of Fauvel, constitutes a peculiar group of the genus, differing in the nature of the male sexual characters, in the larger oval and more convex elytra, and in tarsal structure.

*Aurifluum*, of which I took a large series at Lake Tahoe, is a small species, 1.5–2.0 mm. in length, having the anterior and middle tibiæ flattened within and strongly arcuate throughout the length, the posterior tarsi shorter and more nearly normal, the fifth ventral unmodified and the sixth longer, narrower, trapezoidal, with the apex narrowly truncate. In the female the elytra pro-



ject far beyond the abdomen, are dehiscent in apical fourth, and obliquely narrowed from just behind the middle.

In the male of *convexum* the fifth segment is transverse and unmodified, the sixth very short, transverse at apex, with a small feeble median sinuation, the posterior tarsi somewhat as in *fraternum*. The elytra in the female are nearly as in *fraternum* but have the sides more parallel.

### PSELAPHIDÆ.

On recently arranging my long-neglected material in this remarkable family, I found so much to correct and explain in my earlier work and, incidentally, so many undescribed and interesting species, which had been gradually accumulating, that it seemed to me a few notes might not be unacceptable to general students of the family. In the arrangement of the tribes I have followed the order proposed by Mr. A. Raffray, in his valuable revision published a few years since in the "Revue d'Entomologie."

The mode of antennal insertion in this family does not seem to have been dwelt upon thus far in systematic works. The first joint is attached to the under part of the sides of the front by the upper part of its base, the basal parts being, as it were, turned upward to the point of attachment. This structure, which is of course not essentially different from that seen elsewhere in the Coleoptera except in degree, is best displayed in such genera as *Pselaphus* and *Tychus*; but at the same time it is a constant peculiarity of the family; it restricts the motion of the antennæ almost to a horizontal plane.

### FARONINI.

The general form of the body in this tribe resembles that of the *Euplectini*, but many features, and especially the tarsus of *Faronus* and its immediately related genera, show that it is also very closely allied to certain *Staphylinidæ*. The tarsus of *Faronus* is exactly similar in structure to that of many *Oxytelini*, and the transverse pubescent line of the first visible dorsal segment, a very important and characteristic modification in the true *Faronini*, is frequently seen in the *Omalini*. The tribe is thus truly intermediate between the *Staphylinidæ* and *Pselaphidæ*, but these remarks apply fully only to the small group having staphylinide tarsi referred to above.

The second section of Raffray, having the tarsi normally pselaphidous in structure, should constitute a distinct tribe, intermediate between the Faronini and Euplectini, for, in the present family, a difference in tarsal structure such as this, is of far greater importance than any possible modification of the ungues.

At the same time, an extraordinary character, hitherto escaping record as far as I can discover, shows that the tribe Faronini, in its limited sense, is in reality very isolated. The sexual modifications at the apex of the venter are bilaterally asymmetric. Whether or not this occurs in Faronus I am unable to state at present, but it is a common condition in both of our genera, and is confirmed by large series of several species in my cabinet.

The genera of this tribe thus far known are as follows, those not occurring within the limits of the United States being distinguished by an asterisk:—

Tempora obsolete, the eyes very large, extending to the base.

**\*Faronidius**

Tempora large and long behind the eyes, the latter smaller.

Tempora angulate; intermediate coxæ not separated by a mesosternal process; metasternum short.....**\*Faronus**

Tempora not angulate; intermediate coxæ separated by a narrow mesosternal lamina.

Metasternum and elytra rather short (types of genus *misella* and *parva* Shp.); front narrowed, the antennal prominences approximate, separated by a longitudinal sulcus which is expanded behind the frontal margin.....**\*Sagola**

Metasternum long, in a longitudinal line through the acetabula about twice as long as the intermediate coxæ; front wide, not tuberculiform, the antennal prominences widely distant, separated by a non-sulciform depression, having a very large, isolated, extremely deep and sensitive pit at some distance behind the apical margin; nuchal constriction simple beneath; elytra long; first visible dorsal segment very short, transversely lineate with minute pubescence.....**Sonoma**

Metasternum short, in the line of the acetabula scarcely at all longer than the intermediate coxæ; head as in Sonoma, but with two sensitive patches in the nuchal constriction beneath; eyes rather more convex and prominent; elytra short; first visible dorsal nearly as long as the second and entirely similar to it, completely devoid of the pubescent line.....**Rafonus**

Metasternum and elytra very short, the latter scarcely as long as the prothorax; front broad, the antennæ widely separated; vertex with two foveæ, not isolated from the frontal pit but joined by a foveiform channel; basal segment of the abdomen without the transverse subpubescent line.....**\*Delenda.**

Delenda Croiss. (= *Eusonoma* Reit.) has been recently proposed (*Coléoptèrologiste*, 1891, p. 152) for a small species from Asia Minor. It is closely related to *Rafonus* but appears to differ decidedly in the structure of the upper surface of the head.

#### **SONOMA** Casey.

In this genus the head is generally small, the eyes well developed, the tempora somewhat variable, generally rapidly convergent and rounded to the neck, sometimes rounded and about as prominent as the eye, never in the least angulate. Upper surface constantly with two small nude post-median foveæ, and a large extremely deep abruptly excavated subapical pit, which is always more acutely rounded behind and with its anterior margin more transverse. On the under surface there is a deep transverse sulcus just behind the mentum and maxillæ, the plane of these parts sloping rapidly upward from the base, the base of the maxillary cardo greatly exposed; there is also a deep transverse and perfectly simple nuchal constriction. The under surface never has any sign of the singular and complicated excavations and carinæ so common in *Sagola*.

The maxillary palpi have the first joint minute, simple and scarcely more than one-third as long as the second, otherwise nearly as in *Sagola*. Antennæ submoniliform, with the joints loosely connected throughout, as usual in the tribe, gradually thicker toward apex and with the basal joint much thicker and longer than the second. The antennæ are more clavate than in *Sagola*, but much less so and shorter than in *Rafonus*. The pronotum has constantly two small discal foveæ at the middle, besides the complex subbasal impressions, and the metasternum a long broad deep canal extending posteriorly from the outer side of the middle acetabula.

The remarkable asymmetric modifications of the sixth ventral segment of the female and the ventral pygidium of the male have been alluded to above. They are present in both of our genera, and probably constitute one of the most characteristic distinguishing features of the tribe. The asymmetry affects very different forms in the various species of the same genus, as may be seen from the few examples figured on the plate.<sup>1</sup>

<sup>1</sup> The staphylinide genus *Palaminus* is also remarkable in having asymmetric male sexual characters at the ventral apex.

I cannot entirely agree with Mr. Raffray in considering the head in *Sonoma* as even broadly tuberculate. If the front in this genus has an antennal tubercle, it is difficult for me to conceive of any method of distinguishing between the presence or absence of a tubercle. Probably there is no such line of demarcation, but assuredly if the front in *Sonoma* is tuberculate, there are very few genera known to me which might not be forced by effort of the imagination into this same condition. In my own opinion, the tuberculate condition can only obtain when the front is strongly narrowed and more or less prolonged, with the antennæ approximate at base, the two supra-antennal prominences then come together, or nearly so, to form the tubercle.

My reasons for maintaining the validity of this genus, which is said by Mr. Raffray (*Rev. d'Ent.*, 1893, p. 15) to be identical with *Sagola*, are several. In the first place, the genus *Sagola* as constituted in the interesting work of Raffray, is evidently composite, and the cephalic characters alone of such species as *excavata* and *sulcata* of Broun, show that these at least are very aberrant and in all probability generically distinct. The peculiar frontal pit in *Sonoma* is such a constant and characteristic feature, that any decided modification of it is almost sure to be accompanied by other striking differences. Again, the fact that in our own fauna we have two distinct genera of this tribe, both conforming to the general organization of *Sagola*, tends still further to indicate that neither of them can be identical with that genus. Finally, the fact that a considerable number of Californian species, all indeed known from that region, have certain characters, previously disregarded but here assumed to be of generic value, perfectly and completely constant, tends to show that the genus *Sagola* as now organized is really a group of genera, perhaps as truly so as the old genus *Euplectus*. This will I think be admitted if, as in the present case, the newly discovered species range themselves into groups having certain peculiarities of abdominal, cephalic or thoracic structure in common. The generic value of these characters will depend solely upon their constancy throughout groups of species, and not upon any previously assumed criterion of their relative importance.

Our species are well characterized and may be distinguished as follows:—

Black or piceous-black, the elytra rufous; antennæ rather stout but of the usual length.....**isabellæ**



Rufous or flavo-testaceous in various shades, never in the least black or piceous.

Tempora as prominent as the eye, rounded.....**corticina**

Tempora always less prominent than the eye.

Head as wide as the prothorax ; tempora parallel but less prominent than the eye ; prothorax hexagonal .....**grandiceps**

Head invariably distinctly narrower than the prothorax.

Prothorax about as long as wide.....**longicollis**

Prothorax more or less strongly transverse.

Elytra fully twice as long as the prothorax ; frontal margin much narrower than the neck.

Head larger ; tempora at first moderately convergent, then strongly rounded to the neck .....**subsimilis**

Head very small, much narrower than the prothorax ; tempora extremely convergent and broadly, feebly rounded from the eye to the neck .....**rubida**

Elytra distinctly less than twice as long as the prothorax ; frontal margin subequal in width to the neck.

Prothorax widest before the middle .....**parviceps**

Prothorax widest at about the middle ; smaller species, 1.6 mm.

in length, paler in color, the head relatively larger, with the tempora more strongly convergent and broadly rounded from the eye ; elytra shorter, more abruptly expanded and rounded at the sides behind.....**cavifrons**

**S. grandiceps** n. sp.—Slender, parallel, polished, subimpunctate, pale rufo-testaceous, the pubescence coarse and sparse. *Head* large, as wide as the prothorax, wider than long, the frontal margin bisinuate and as wide as the neck, equalling three-fifths of the maximum width ; eyes well developed, moderately convex ; tempora parallel behind the eyes but not quite as prominent, then strongly rounded to the neck ; subapical fovea very large, deep, nearly as wide as long, triangular, with the apex behind ; foveæ of the vertex as usual ; antennæ slender, as long as the head and prothorax, the outer joints incrassate. *Prothorax* hexagonal, but slightly wider than long, widest and narrowly rounded at the middle, the sides almost equally, strongly convergent and nearly straight thence to base and apex, the latter but very slightly narrower than the base ; large subbasal impression as usual, punctate in the middle and just behind each lateral extremity, also prolonged anteriorly at the sides, each spur extending to and including one of the usual discal punctures ; lateral subbasal foveæ isolated. *Elytra* fully as long as the head and prothorax and one-half wider than the latter, rather longer than wide, the sides nearly straight, feebly divergent, broadly, feebly arcuate near the apex, the discal stria excavated beyond the middle. *Abdomen* rather longer than the elytra but scarcely as wide, parallel, the border relatively not quite as wide as usual ; structure throughout normal, the fourth visible dorsal nearly one-half longer than the third. Length 1.4 mm. ; width 0.35 mm.



California (Sta. Cruz Co.).

The male of this remarkably isolated species has the venter abruptly and strongly, subcircularly concave near the apex, the sides of the concavity on the disk of the fifth segment acutely elevated, the cusp-like elevation with a tuft of long stiff setæ. In the female the transverse apex of the sixth segment is a little more emarginate on the right, the middle produced as an abrupt rounded cusp. A single pair.

This is the smallest, narrowest and most parallel species of the genus.

**S. longicollis** n. sp.—Moderately stout, depressed, polished, impunctate, rufo-testaceous and coarsely, very sparsely pubescent throughout. *Head* about four-fifths as wide as the prothorax, distinctly wider than long, the frontal margin feebly arcuate, equalling one-half the maximum width and as wide as the neck; eyes rather large, moderately prominent; tempora to the neck as large as the eye, strongly rounded, not at all prominent; frontal pit large, oval, more acutely rounded behind, abrupt, extremely deep and cavernous, with the bottom spongy; foveæ of the vertex small, nude, situated behind the middle and distant by less than one-third of the total width; antennæ a little longer than the head and prothorax, gradually slightly thicker toward tip, eighth joint subglobular, ninth and tenth transverse. *Prothorax* very nearly as long as wide, widest before the middle where the sides are strongly rounded, very strongly convergent anteriorly, sinuate near the apex, the latter feebly subtubulate, convergent and nearly straight in basal half; discal foveæ minute, at the middle, separated by one-fourth the width; transverse impression just behind basal third straight, abruptly, minutely foveate at the middle and just behind each end; lateral foveæ at basal fourth large, nude and free. *Elytra* subquadrate, two-thirds longer than the prothorax and, near the apex, nearly twice as wide; sides more inflated and arcuate posteriorly; sutural striæ coarsely punctate near the base, discal very coarsely, deeply impressed and coarsely punctate in basal half, continued very feebly and indefinitely by a series of feeble punctures nearly to the apex, approaching the suture; intermediate region with a series of two or three coarse subbasal punctures. *Abdomen* about as long and wide as the elytra, the first visible dorsal scarcely more than one-half as long as the second, with the interrupted pubescent line broad. Length 1.6 mm.; width 0.6 mm.

California (Sta. Cruz Co.).

The single male before me has the abdomen deflexed behind, the venter broadly, indefinitely impressed near the apex but without further modification, except a very feeble transverse tumidity near the anterior margin of the sixth segment. Seventh or anal segment of the usual structure, with the oblique asymmetric median portion rounded throughout behind.

The unusually elongate prothorax will readily distinguish this species.

**S. subsimilis** n. sp.—Rather wide, feebly subcuneiform, polished, impunctate, rufo-testaceous throughout; pubescence very sparse. *Head* wider than long, slightly though distinctly narrower than the prothorax, the frontal margin arcuate, much narrower than the neck; eyes well developed, convex; tempora moderately convergent, broadly rounded to the neck; subapical pit large, very deep, abrupt, but slightly longer than wide; two punctures behind the middle separated by much less than one-third the width; antennæ two-fifths as long as the body, slender, last three joints gradually larger, basal joint thick, elongate, cylindrical, nearly as long as the next two. *Prothorax* one-third wider than long, widest at the middle where the sides are strongly rounded, strongly convergent anteriorly, more feebly so in basal half and feebly sinuate; base two-thirds wider than the apex; median punctures faint; subbasal excavation large, deep, transversely lunate, with a deeper punctiform fovea at the middle and each end; lateral subbasal foveæ isolated, large, deep. *Elytra* as long as the head and prothorax, two-thirds wider than the latter, about as long as wide; sides feebly divergent, broadly arcuate; discal punctate stria deeply excavated before the middle; the other punctures and sutural stria as usual. *Abdomen* about as long and wide as the elytra, the first visible dorsal short, with the usual pubescent line; fourth nearly one-half longer than the third. Legs slender. Length 1.7 mm.; width 0.65 mm.

California (Sonoma Co.).

In the single male the abdomen is deflexed toward apex, the venter broadly, indefinitely impressed behind, the fifth segment not modified but having the pubescence erect, with a very wide area in apical half completely glabrous, impunctate and highly polished, the posterior edge even throughout; sixth with a transverse, feebly tumid line behind the anterior margin, bearing a fringe of erect setæ. Anal segment with the unevenly oval included segment far to the left of the center.

This species is allied to *parviceps*, but differs in its larger head with relatively much narrower frontal margin, and in the male sexual characters.

**S. rubida** n. sp.—Broader, feebly subcuneiform, polished, impunctate, sparsely pubescent, deep rufo-testaceous throughout, the elytra paler. *Head* small, scarcely more than two-thirds as wide as the prothorax, wider than long; eyes large, convex, the tempora very rapidly convergent and broadly rounded to the neck, the latter distinctly wider than the truncate frontal margin and rather more than one-half as wide as the maximum width; frontal pit deep, abrupt, acutely rounded behind; foveæ small, behind the middle, distant by nearly one-third the width; antennæ two-fifths as long as the body,

gradually and distinctly incrassate toward apex. *Prothorax* fully one-half wider than long, widest at the middle where the sides are very strongly rounded, thence very rapidly convergent and broadly sinuate to the neck, less convergent and just visibly sinuate to the base, which is about twice as wide as the apex; median foveæ very feeble, separated by rather more than one-fourth the width; impression at basal fourth broadly, evenly arcuate, minutely foveate in the middle and at each end; lateral impressions large, disconnected. *Elytra* confusedly sparsely and very feebly punctulate, rather longer than wide, fully twice as long as the prothorax and two-thirds wider; sides very feebly, gradually divergent from base to apex and just visibly arcuate; discal stria deeply, coarsely impressed in basal half. *Abdomen* fully as wide as the elytra but barely as long; border strongly inclined, one-fifth as wide as the disk; first exposed dorsal one-half as long as the second, with the usual fine pubescent line; two to four gradually increasing in length. *Legs* moderate, slender. Length 1.6–2.1 mm.; width 0.6–0.7 mm.

California (San Francisco and Sta. Cruz).

The male has the abdomen more deflexed at apex, the venter broadly, indefinitely impressed near the tip, but not otherwise at all modified; the anal segment has a cuneiform, anteriorly pointed and submedian part, nearer the left than the right side and gradually flexed to the right anteriorly. This median part is probably homologous with the flat enclosed pygidium of certain Euplectini, but in the latter group it is bilaterally symmetrical. The female has the transverse apex of the sixth ventral modified in a feeble but complicated and indescribable manner, the anal segment behind it broadly angulate and slightly but acutely produced at tip.

Not closely allied to any other species, the largest of the genus, about equal to *Rafonus tolulæ*. It is represented before me by a large and homogeneous series.

**S. parviceps** Mäkl.—Bull. Mosc., 1852, ii, p. 372 (Euplectus); Brendel: Bull. Univ. Iowa, 1890, p. 79 (Faronus); Raffray; Rev. d'Ent., 1893, p. 30 (Sagola).

Rather broad, deep rufo-testaceous, polished, impunctate and sparsely pubescent throughout. Head small, transverse, fully three-fourths as wide as the prothorax, with the usual sculpture; tempora nearly straight behind the eye but distinctly convergent, then more strongly rounded to the neck, the latter but slightly wider than the apical margin. Prothorax rather large, about one-fourth wider than long, widest and strongly rounded distinctly before the middle, the sides convergent and deeply sinuate thence to the base, the latter two-thirds wider than the apex; sculpture

nearly as in *subsimilis*. Elytra longer than the head and prothorax, fully three-fourths wider than the latter, nearly as long as wide, with the usual sculpture. Abdomen rather longer than the elytra and fully as wide, of normal structure. Length 2.0 mm.; width 0.7 mm.

The male in the LeConte cabinet from which I have taken these characters, is in an imperfect condition, lacking the antennæ; it is one of the original Frankenbæuser types. The fifth ventral is broadly, feebly emarginate almost in median two-fifths, the surface bordering the emargination feebly concave, polished and glabrous; sixth broadly, feebly lobed anteriorly, the lobe fitting the emargination of the fifth, the surface along the edge of the lobe thrown up in a distinct acute and arcuate ridge, bearing an erect fringe of setæ, and, behind the ridge, feebly impressed, glabrous and polished. Anal segment with the usual median piece far to the left of the center.

#### **RAFONUS** n. gen.

This genus resembles *Sonoma* in general organization and form of the body, but differs greatly in many points, the generic value of which it is difficult to overlook. The head is smaller than the prothorax, the frontal margin broadly angulate, subequal in width to the neck and rather less than one-half as wide as the width across the eyes, the antennal prominences strongly elevated, widely distant and separated by a broad rounded depression, which is not at all sulciform. Immediately behind the line of the antennæ there is a very large and extremely deep pit, as in *Sonoma*, abruptly defined throughout its circumference, more acutely rounded behind and subtruncate anteriorly; there are also two distant nude foveæ on the vertex. The maxillary palpi have the first joint very small. The antennæ are slender, moniliform, one-half as long as the body, the last three joints abruptly wider, forming a loose, but distinct club. Prothorax slightly transverse, with the usual complex transverse, subbasal impression and isolated lateral foveæ, without discal foveæ. Elytra much shorter than wide, but slightly longer though much wider than the prothorax, the sides strongly divergent. Abdomen at least three-fourths longer than the elytra, the four first visible dorsal segments gradually increasing in length.



The single species was described by LeConte under the name *Faronus tolulæ*. It occurs in Pennsylvania and Georgia and appears to be rare.

#### EUPLECTINI.

The tribes or groups Euplectini and Trichonyini of Reitter and Raffray, cannot be maintained as distinct and natural aggregates of genera, and should be united to form the single tribe Euplectini. The auxiliary tarsal claw varies by successive degrees in different genera and species otherwise closely related, so that it is impossible to draw any line of demarcation between two groups founded upon this character, or any other which it seems possible to discover.

The second tarsal claw is distinctly visible as a minute hair-like appendage in at least several species of European Euplectus, in Trimiopsis, and also in Actium, which was recently re-described by Mr. Raffray under the name Proplectus and placed in the "Trichonyini." I have seen the second rudimentary claw plainly in *Biblioporus bicanalis* and *Euplectus californicus*. Finally in *Euplectus crinitus* the auxiliary claw becomes as large, conspicuous and fully formed as in Trichonyx itself, and yet in general habitus and details of structure *crinitus* is unmistakably very closely allied to Euplectus, and should not be widely separated from that genus.

The so-called second claw is always in the nature of an appendage, even in Trichonyx, Oropus and other typical trichonychide genera. That is to say—the large claw is in every case perfectly in the plane of the axis of the tarsus, the auxiliary claw projecting laterally from its base.

In view of the great diversity in the relative size and distinctness of the second tarsal claw, in pronotal structure and in the general type of male sexual characters among our species of Euplectini, a revision of them from a generic standpoint seems imperative. This I have attempted in the following table, it being unnecessary in treating a single limited fauna to indicate groups or subtribes by special designation :—

Antennæ inserted at the inferior apical angles of an extremely narrow advanced and porrect frontal process, the tubercle formed by a complete amalgamation of the antennal prominences without trace of dividing sulcus ; basal joint of the antennæ elongate-oval ; unguial appendage not distinct.

#### **Rhinoscepsis**



- Antennæ slightly less approximate, the frontal tubercle shorter and wider but very pronounced, with the sides behind it constricted, the antennal prominences narrowly separated by a very deep sulcus; antennæ as in *Oropus*; unguar appendage visible but exceedingly minute.....**Morius**
- Antennæ not inserted on a frontal tubercle, more or less widely distant at base .....2
- 2—Antennæ geniculate, the basal joint elongate; prothorax bilobed; appendage of the tarsal claw distinct.....**Rhexius**
- Antennæ not geniculate, the basal joint normal.....3
- 3—Unguar appendage long and conspicuous, approaching one-half the length of the principal claw.....4
- Unguar appendage more or less minute, but generally visible, in some cases apparently obsolete.....5
- 4—Prothorax with an acute marginal tooth at each side near the base; first dorsal segment longer than the second; male sexual modifications affecting the fourth dorsal segment .....**Oropus**
- Prothorax without lateral spines, but frequently minutely and unevenly crenulate along the sides in basal half; first dorsal not distinctly longer than the second.
- Head more transverse; body shorter; pronotum with a fine subentire median groove; secondary male sexual characters affecting the fourth tergite.
- Rhexidius**
- Head less transverse; body longer, more parallel; pronotum without discal impression; male characters near the apex of the abdomen beneath, or near the middle of the lateral edges; maxillary palpi partially received in deep sublateral fossæ, which are separated from the cardo of the maxillæ by minute slender porrect processes.....**Ramecia**
- 5—Antennal club gradually formed, the last joint relatively moderate in size .....6
- Antennal club consisting almost entirely of the larger abrupt terminal joint; pronotum without discal impressions; first dorsal segment subequal to the second .....12
- 6—Prosternum not carinate along the middle .....7
- Prosternum finely but strongly carinate in the middle throughout the length; antennæ less distant than in *Euplectus* .....11
- 7—Prosternum with two distant diverging longitudinal carinæ; elytra with two discal striæ and three basal foveæ; abdomen without trace of basal impressions or carinæ, the segments equal in length.....**Oropodes**
- Prosternum without diverging lines; abdomen at least impressed at the middle of the first two or three dorsal segments.....8
- 8—First dorsal not longer than the second; palpal fossæ wide, shallow, more inferior and posterior, and not separated from the maxillæ by porrect processes .....9
- First dorsal much longer than the second .....10
- 9—Eyes large, bordered above and beneath by a broad abrupt channel; pronotum with three very large, feebly connected, subbasal excavations, without discal impression; elytra and sexual characters as in *Euplectus*.

**Acolonia**

Eyes normal.

Pronotum with a subcentral discal impression; elytra with a discal stria.

Head large, truncate, the antennæ very remote; abdomen with distinct basal carinæ; male with a transversely subrhomboidal and longitudinally carinate terminal segment of the venter.....**Euplectus**

Head generally smaller, the front always more abruptly and strongly narrowed; antennæ less distant; abdomen without basal carinæ; male with the flat oval subenclosed ventral pygidium of *Ramecia* and *Actium*; species in general decidedly more minute than in *Euplectus*.

#### **Thesiastes**

Pronotum without a discal impression; elytra without a discal stria.

#### **Biblopectus**

**10**—Pronotum without a discal impression.....**Trimiopectus**

**11**—Pronotum with the three subbasal foveæ, not transversely connected; each usually prolonged forward in an impressed line.....**Bibloporus**

Pronotum having the subbasal foveæ connected by a transverse sulcus.

Antennæ moderately distant at base; eyes rudimentary in the female; prosternum long before the coxæ; tenth antennal joint normal; pronotum with an elongate discal sulcus; male with feeble abdominal characters.

#### **Eutyphlus**

Antennæ somewhat less distant at base; eyes nearly similar in the sexes; prosternum short; tenth antennal joint larger than usual; pronotum with a small subapical discal impression; body shorter, convex; male with a small flat subcircular and enclosed pygidium at the ventral apex.

#### **Thesium**

**12**—Prothorax with rather well-defined edges at the sides toward base, and with two distinct latero-subbasal foveæ on the disk; elytra with a discal stria.....**Actium**

Prothorax without lateral edges or sublateral foveæ, the transverse sulcus continued on the flanks; elytra without discal stria, the latter replaced by a larger deep and subelongate basal impression.....**Trimioptis**

Distinguishing peculiarities in thoracic structure both pronotal and prosternal, it will be noticed, have been freely used in the above table in defining the genera. I am quite convinced that this is the proper course to take in dealing with the genera, at any rate in some parts of this particular tribe: first, because every distinct peculiarity in the structure of this part of the body, appears to be accompanied by radical divergencies in other important features. Taking the old genus *Euplectus* as represented within our faunal limits, for example, we find that all of those species without the discal pit of the pronotum are distinguished either (*Ramecia*) by a formation of the tarsal claws identical with that of *Trichonyx*, or (*Biblopectus*) by an extremely minute size of body and more

approximate antennæ, or (*Acolonia*) by a peculiar structure of the lateral parts of the head near the eyes.

Secondly, because we find these differences accompanied in every instance by radical divergencies in the type of male sexual manifestation, a feature which in the *Pselaphidæ* possesses an importance which has not always been duly appreciated. In many parts of this family the developmental energy, so to speak, or the energy expended in differentiating species, seems to have been exerted solely upon the males, the females remaining mutually almost similar. This is a familiar fact among the species of *Reichenbachia* and *Batrisus*. *Types* of male sexual modification have therefore great importance, and, when the same type pervades a number of species otherwise allied, we are frequently even compelled to separate and define genera by such characters alone, as has been done by Reitter in the case of *Ctenistes* and *Sognorus* and as I have already tried to demonstrate in regard to the allies of *Bryaxis* (*Bull. Cal. Acad. Sci.*, II, p. 179).

#### **MORIUS** n. gen.

This remarkable genus occupies a position with respect to *Oropus* nearly corresponding with that of *Rhinoscepsis* to *Euplectus*. The head is strongly but gradually narrowed before the eyes, forming at apex a wide but strong antennal tubercle, rendered still more prominent by lateral constrictions immediately behind it, the very pronounced antennal prominences separated by a coarse, deeply excavated fossa, which behind them becomes shallower and bifurcates, sending a feeble oblique sulcus to each of the vertexal foveæ. The antennæ are almost exactly as in *Oropus* though very narrowly separated at base. The under surface is smooth and without trace of carinæ or palpal fossæ, but has in the middle just behind the mentum, a very abruptly and strongly elevated, broad and parallel elevation which terminates abruptly midway to the neck. Maxillary palpi well developed, sparsely pubescent; first joint small; second finely pedunculate in basal half, the apical half abruptly and strongly claviform; third smaller than the clava of the second, subglobular; fourth nearly as long as the preceding together, stouter, fusiform, twice as long as wide, with a long slender terminal process. The other oral organs are normal in structure, the mentum small, the labial palpi minute and slender. Prosternum long, obliquely, feebly biimpressed, the mesosternum with two anteriorly

convergent carinæ and three pubescent foveæ, and the metasternum in the middle one-half longer than the intermediate coxæ. The anterior coxæ are long and conical, the intermediate narrowly separated by the meso- and metasternal processes which meet just before their median line, the posterior transverse, contiguous, moderately prominent internally. Abdomen with six dorsal and seven ventral segments, the first ventral unusually long, greatly visible behind the coxæ throughout, and, in the middle, nearly one-half as long as the second, the latter very large, as long as the entire remainder; first dorsal covered, the second much longer than the third, with a deep, transversely oval and pubescent excavation at the middle of the base; margin moderately wide, inclined.

There appears to be but one species as follows:—

**M. occidentis** n. sp.—Moderately stout and convex, polished, dark rufotestaceous throughout, subimpunctate, the elytra coarsely sparsely and very feebly rugoso-punctate; pubescence long, coarse, erect, not very abundant except at the antero-lateral and under surfaces of the head where it is erect bristling and very dense. *Head* as wide as the prothorax, as long as wide; eyes small, just behind the middle; outline behind them almost semi-circular; foveæ on a line through the eyes, distant by one-half the total width; antennæ a little longer than the head and prothorax, stout, first joint cylindrical, longer than wide, second a little narrower, globular, three to eight still slightly smaller, transverse, five and seven larger than six and eight, ninth and tenth larger, transverse, eleventh subquadrate, broadly conical at apex. *Prothorax* nearly as wide as long, widest at apical third, the sides thence feebly convergent and straight to the base but with a shallow emargination midway, strongly convergent and sinuate anteriorly to the neck, the latter two-thirds as wide as the base; disk with a strong transverse excavation at basal third from side to side, divided into three parts by two cariniform elevations, the lateral portions irregular and continued to the base, the median consisting of three large coalescent foveæ, the middle one more posterior, continued forward beyond the center of the disk by an almost imperceptible impression; surface just before the basal margin divided into five nearly equal deep impressions by four short longitudinal carinæ, the lateral communicating with the irregular lateral impressions as before mentioned, and the middle one similarly with the median discal impression, the two others deeper and more foveiform. *Elytra* short, two-fifths wider than long, one-half longer than the prothorax and fully twice as wide, one-half wider near the apex than at base; sides strongly oblique and nearly straight; humeri obsolete; disk with the single arcuate sutural stria only, also with a deep stria and post-humeral fovea on the flanks, each with four basal foveæ, the two infra-humeral coalescent and prolonged posteriorly for a very short distance as a broad gradually evanescent impression; intermediate fovea isolated, without trace of stria. *Abdomen* fully as wide as the elytra and distinctly longer. *Legs* slender; posterior



tarsi long and slender, the third joint a little longer than the second, with a rather long single claw, having an exceedingly minute basal appendage as in *Euplectus*. Length 1.6 mm. ; width 0.6 mm.

California (Sta. Cruz Co.).

The unique type is unfortunately broken into a number of pieces from which the measurement has been compounded ; it is apparently a female.

**OROPUS** Casey.

The median thoracic sulcus, which is so characteristic a feature of *Oropus* and *Rhexidius*, is subject to singular malformation in both of these genera, being sometimes completely interrupted or irregularly broken up, apparently by reason of accidental circumstances attending emergence from the pupa, when the integuments are in a plastic condition. I have figured one of these malformations in a species described under the name *interruptus*, and Dr. Brendel has recorded another case in his description of *Rhexidius intermedius*.

The species of *Oropus* are readily divisible into two groups as follows :—

First dorsal segment relatively shorter ; eyes in the female much smaller than in the male, the latter with the fourth dorsal not greatly modified, having simply a transverse subbasal line of minute pubescence ; females very rare in proportion to the males ; species generally larger.

Head small, much narrower than the prothorax .....**striatus**

Head much larger, equal in width to the prothorax or extremely nearly so. Head and prothorax relatively smaller, the thoracic teeth exceedingly minute.....**convexus**

Head and prothorax larger ; thoracic teeth larger, more distinct.

Male with the fourth dorsal unimpressed, having a long very fine, transversely arcuate line of minute pubescence.....**interruptus**

Male with the fourth dorsal impressed along the broader and shorter, nearly straight subbasal line of pubescence ; elytral striæ more abbreviated ; size smaller .....**abbreviatus**

First dorsal relatively much longer ; eyes in the female only slightly smaller than in the male, but with the facets smaller and mutually much more distant ; male with the fourth dorsal broadly concave, the upper margin produced posteriorly and closing inferiorly the produced median lobe of the third ; males rare, the females abundant ; size generally smaller ; elytra more abbreviated.

Larger species ; pronotum sparsely and simply punctate throughout.

**montanus**

Small species ; pronotum densely and strongly granulose between the transverse sulcus and the basal margin.....**cavicauda**



Among the fifteen representatives of the first group in my cabinet there is only one female, while among the sixteen specimens of the second group there are only three males. This indicates without doubt a difference in the life habits of the species composing the two sections of the genus, which should perhaps be treated as subgenera. The peculiar conformation of the elytral striæ mentioned by me in the description of *montanus* (Bull. Cal. Acad., II, p. 479) is a malformation; it is not observable in any other of the numerous examples in my cabinet, many of which are from Sta. Cruz Co.

**O. cavicauda** n. sp.—Moderately stout, convex, shining, dark rufo-testaceous throughout; pubescence moderate in length, rather abundant. *Head* much wider than long, very slightly narrower than the prothorax, subhexagonal, the eyes small, much nearer the base than the apex, the tempora strongly convergent, rather longer than the eye and nearly straight; foveæ deep, widely separated, connected by the usual deep parabolic groove; antennal tubercles strong, each with a deep rounded fovea immediately above and behind the point of antennal insertion; surface polished, subimpunctate, beneath minutely punctate and finely, densely setose; antennæ short, stout, the tenth joint fully twice as wide as long, eleventh stout, conoidal, as long as the preceding four. *Prothorax* about as long as wide, widest at the middle; sides convergent and rounded to the apex, convergent and straight to the base; apex narrower than the base, subtubulate; lateral teeth small but well formed and distinct; disk with the usual foveæ and sulci, rather coarsely feebly and sparsely punctate, the punctures becoming granuliform near the base. *Elytra* not as long as wide, one-half longer and fully three-fourths wider than the prothorax, the three discal striæ deep, rather short, none extending much beyond the middle. *Abdomen* scarcely longer but a little narrower than the elytra, the first dorsal constituting one-half its total length from above, the basal impression two-thirds of the total width, not carinate. Length 1.4 mm.; width 0.5 mm.

California (Marin Co.).

A single male, having the third dorsal acutely produced in a triangular lobe, the fourth vertical, concave, not visible from above, glabrous, polished, impunctate throughout except abruptly, densely so along the lower margin. With the male type is associated a female from Siskiyou, which agrees very well. This is by far the smallest known species of the genus.

In all of the species of this genus the elytra have, along the apical margin, an even row of small slender porrect and strigose scales.

**RHEXIDIUS** Casey.

This genus is closely allied to *Oropus*, but differs in the absence of well-defined and acute marginal thoracic teeth, in the more minute size and shorter, more robust form of the body, and in the shorter first dorsal segment. This latter character, however, in view of the variation seen in the two groups of *Oropus*, may not be of decisive value. Although the different habitus of the two genera prompts me to believe that they are really distinct, there are two characters, in addition to general organization, which serve to show further how closely they are really allied, viz.: the presence of the peculiar granuliform sculpture of *Rhexidius* in *Oropus cavicauda*, and the fact that the part of the body subject to sexual modification is the fourth dorsal segment.

I have not seen the eastern species recently described by Brendel, but *Euplectus canaliculatus* Lec. appears to be congeneric, although differing in having but three basal foveæ and obsolete discal striæ, instead of the four basal foveæ and three short striæ of the two Californian representatives; even here however there is considerable variation in this respect, the two outer foveæ being much more approximate or semi-coalescent in *granulosus* than in *asperulus*. The basal foveæ will be shown to be without value as a generic character also in several other parts of the Euplectini. *R. canaliculatus* was recently redescribed by Mr. Raffray under the name *Prorhexius sylvaticus* (Rev. d'Ent., 1890, p. 197).

The two known Californian species are the following:—

Elytra short, transverse, but slightly longer than the prothorax, the head and prothorax relatively large; pubescence coarse, longer and sparser.

**granulosus**

Elytra large, about as long as wide, subequal in length to the head and prothorax together, the latter both smaller; pubescence shorter, denser and more decumbent ..... **asperulus**

Both of these species are represented by large series in my cabinet.

**R. asperulus** n. sp.—Rather stout, convex, shining, dark rufo-testaceous throughout, noticeably pubescent, the head and pronotum covered with small sparse granuliform punctures. closer on the head, the elytra and abdomen rather strongly, sparsely punctate, the punctures feebly asperate. Head transverse, thick, just visibly narrower than the prothorax, with two small deep nude and very remote foveæ which are entirely isolated, also, just behind

the frontal margin, a long deep abrupt evenly and feebly arcuate groove, not connected in any way with the foveæ but flexed obtusely outward at the sides, crossing the antennal tubercles; eyes moderate; tempora convergent behind them; antennæ nearly as long as the head and prothorax, with the last joint subequal to the five preceding; under surface with rather dense erect setæ. *Prothorax* but slightly wider than long, widest and rather strongly rounded at the middle, the sides convergent and straight thence to the base; apex broadly and feebly subtubulate; median sulcus not quite attaining the apex, the transverse line beyond basal fourth. *Elytra* subquadrate, the humeri much more rectangular and wide exposed than in *granulosus*, nearly twice as wide as the prothorax; three discal striæ distinct, the outer very short. *Abdomen* scarcely as long as the elytra—viewed vertically—and but slightly narrower, the first dorsal not in the least longer than the second. Length 1.2 mm.; width 0.45 mm.

California (San Francisco and Sta. Cruz Cos.).

The male sexual characters are feeble, the fourth dorsal being broadly impressed at each side of the base, each impression extending from near the middle to near the lateral margin and having its posterior limiting line posteriorly arcuate, the impressed surface glabrous polished and impunctate; the punctures of the third dorsal become very dense along the apical margin, the latter not otherwise abnormal. In the male of *granulosus* the two basal impressions are almost contiguous. The sculpture of the head in both of these species is altogether different from anything known in *Oropus*.

In *canaliculatus* the general features of cephalic sculpture are the same, but in the male of that species the transverse frontal marginal ridge is tuberculate in the middle, and, further, the fourth dorsal is not modified, the venter having a broad shallow lunate impression near the apex. These differences, taken in connection with elytral structure, may be of subgeneric value.

#### **RAMECIA** n. gen.

The true affinities of this genus are rather difficult to state, for, in spite of its great similarity to *Euplectus*, it has the second tarsal claw well developed, and differs considerably besides in the structure of the mouth and palpal fossæ. The species also differ much among themselves, especially in general appearance, but are sufficiently homogeneous in oral and pronotal structure, as well as other essential points of organization.

The most variable of the minor structural features is perhaps the abdominal carinæ. These are short in all, and, in one at least, be-

come completely obsolete; in *crinita*, however, they are distinct and finely cariniform on the first three tergites. In *decora* they become very widely separated. The discal stria of the elytra is also very inconstant in form, and there may be three basal foveæ, although two appears to be the general rule.

The known species are only six in number and may be thus distinguished:—

Head smaller than the prothorax.

Body elongate, depressed and subparallel, the punctures dense and asperulate ..... **crinita**

Body shorter, convex, smooth and polished, the pubescence much less conspicuous; integuments subimpunctate ..... **capitulum**

Head as wide as the prothorax; body shorter, compact and more or less convex.

Elytra with two basal foveæ; abdominal carinæ minute.

Discal stria of elytra coarsely impressed, gradually dilated toward base; pubescence longer, distinct; basal carinæ of abdomen less distant.

The stria very short, vanishing far before the middle..... **arcuata**

The stria long, extending far behind the middle..... **discreta**

Discal stria very fine, arcuate, extending fully to apical fourth, more abruptly dilated and foveate at base; pubescence sparse and excessively minute; carinæ of abdomen minute and unusually distant, separated by fully one-half the discal width..... **decora**

Elytra with three basal foveæ; basal impression and carinæ of abdomen completely obsolete ..... **dentiventris**

The finely subgranulate punctures of the anterior parts of the body in *crinita*, is interesting and significant in view of the prevalence of this type in *Rhexidius*.

In *arcuata* there seem to be two very short triangular abdominal carinæ; I cannot discover any however in *discreta*, but the type of this species is not in entirely perfect condition.

**R. discreta** n. sp.—Subparallel, moderately convex, polished, dark rufotestaceous; the abdomen somewhat more piceous; integuments subimpunctate; pubescence coarse, stiff, rather abundant and semi-erect. Head fully as wide as the prothorax, rather wider than long, the apex truncate and two-thirds as wide as the maximum width; foveæ distinct, separated by nearly one-half the total width, connected by a deep entire and impressed parabolic sulcus; antennal prominences crossed by a fine shallow groove; eyes small but prominent, much shorter than the tempora, the latter large, convergent; base very broad, sinuate; antennæ one-half longer than the head, normal in structure; under surface with a few widely scattered short erect and coarse capitulate setæ. Prothorax very slightly wider than long, widest at the middle, the sides thence convergent and broadly, evenly arcuate to the apex, also



abruptly convergent and just visibly sinuate thence to the base, the latter wider than the apex; disk even, with a transverse impressed biarcuate sulcus and two sublateral foveæ at basal third, the sulcus dilated in the middle. *Elytra* relatively small, one-half longer and wider than the prothorax, the humeri very oblique and subdentate behind the base, this appearance being due to the deep post-humeral fovea; disk with a deep coarse stria. *Abdomen* a little longer and slightly narrower than the elytra; dorsal segments equal, not perceptibly carinate, the fifth tumid in the middle. *Legs* short. Length 1.2 mm.; width 0.3 mm.

Pennsylvania.

A single female specimen, having the venter unmodified, the terminal segment large, nearly flat, and posteriorly produced at the middle in a rounded lobe.

**R. dentiventris** n. sp.—Moderately stout, convex, polished, paler, rufo-ferruginous throughout, impunctate, the vestiture rather long, coarse and somewhat abundant. *Head* large, rather wider than the prothorax, a little wider than long, the foveæ distant by nearly one-half the total width, connected by a coarse deep impressed semi-circular and entire sulcus; transverse frontal ridge very long, scarcely more than one-half as wide as the maximum width; eyes moderate, prominent, not longer than the tempora, the latter feebly convergent and nearly straight: base broadly sinuate; antennæ scarcely more than one-third longer than the head; under surface with a few widely scattered erect setæ. *Prothorax* a little wider than long, widest rather before the middle, the sides there evenly and not very narrowly rounded, gradually convergent and broadly sinuate thence to the base, strongly convergent near the apex, the latter much narrower than the base; transverse biarcuate sulcus at basal third deep and well developed. *Elytra* moderate in size, two-thirds longer and three-fourths wider than the prothorax, not quite as long as wide, convex, with a deep coarsely impressed, gradually attenuate discal stria, extending behind the middle. *Abdomen* not longer and distinctly narrower than the elytra, the segments equal. Length 1.15 mm.; width 0.4 mm.

Virginia.

The male has the anterior and intermediate legs shorter and stouter than the posterior as usual, the venter broadly, feebly impressed near the apex, with the sixth segment large, deeply sinuate at apex, receiving a nearly circular flat pygidium, and the third strongly obliquely toothed at the sides, the teeth prominent also from a dorsal point of view at the sides of the apparent second segment. This is a very distinct and interesting species, represented before me by a single male.

In the only antenna remaining, the sixth and seventh joints are



completely anchylosed, but this may possibly be a deformity. The second tarsal claw is distinct as in the other species, and nearly one-half as long as the principal.

### OROPODES n. gen.

The body in this genus resembles *Euplectus* in general outline, but the head is smaller, more orbicular and with less distant antennæ; the elytra have two distinct though short discal striæ, and the abdomen is completely devoid of basal impression or carinæ. The prosternum is rather long before the coxæ, and has a fine impressed and carinate line extending from each ante-coxal fovea to the apical margin, where it is met by the similar fine raised line separating the prosternum proper from its parapleuræ. The dorsal segments are equal, the first ventral extending beyond the coxæ and greatly exposed throughout the width. Legs rather slender; hind tarsi more than one-half as long as the tibiæ, with the second joint a little longer than the third; claw well developed, the appendage not visible in the type.

The single species has a facies which is somewhat intermediate between *Euplectus* and *Oropus* :—

**O. orbiceps** n. sp.—Elongate, subparallel, feebly convex, polished, subimpunctate and dark rufo-testaceous in color throughout; pubescence rather long but sparse. *Head* slightly narrower than the prothorax, nearly as long as wide; eyes small, slightly prominent, the tempora large and long, at first feebly convergent, then broadly rounded to the neck which is not wider than the apex; occiput with a feeble tumor at the middle of the posterior declivity; foveæ small, deep, perforate, nude, distant by one-third the total width, situated distinctly behind the middle, each continued forward by a deep oblique sulcus, the two coalescent anteriorly in a large flat depressed area separating the large and prominent antennal tubercles; antennæ widely separated, stout, rather longer than the head and prothorax, the club gradual, eleventh joint subquadrate, obtusely pointed; under surface smooth, polished, subimpunctate, with fine sparse subrecumbent hairs, entirely devoid of erect capitulate setæ, but having the usual deep rounded impression near the neck; maxillary palpi nearly as in *Euplectus* but stouter. *Prothorax* distinctly wider than long, widest just before middle, where the sides are broadly rounded and convergent to the neck, less strongly convergent and nearly straight in basal half, the base much wider than the apex; disk with a deep transverse pit at basal fourth, feebly connected with two large deep sublateral foveæ, also with a large feeble median impression between the subbasal pit and the basal margin, and another subinterrupted extending between this and each basal angle; also with a narrow, very feebly impressed, subentire median sulcus.

*Elytra* as long as the head and prothorax, one-half wider than the latter and fully as long as wide, the sutural stria deep and entire, the discal short, the outer terminating at basal fourth, the inner at basal two-fifths. *Abdomen* about as wide as the elytra and scarcely as long; border broad, one-fourth as wide as the disk. Ventral segments two to four decreasing almost imperceptibly in length; hind coxæ contiguous, the abdominal process short and acutely triangular. Length 1.5 mm.; width 0.45 mm.

California (Los Angeles Co.).

The unique specimen has no striking sexual modifications, and is apparently a female.

#### ACOLONIA n. gen.

The form in this genus is shorter and more convex than in *Euplectus* and the eyes are larger. The infraocular channel becomes narrowed anteriorly and communicates with the antennal excavation. The prosternum is long, not carinate, the first three dorsal segments equal, the first two each with two long strong divergent carinæ, the fourth much longer than the preceding. First ventral extending beyond the coxæ; two to five rapidly decreasing in length. Male with the large convex rhomboidal and carinate ventral pygidium of *Euplectus*. Legs rather short and stout, the tarsi short and compressed, the third joint of the posterior rather longer than the second; claw long, arcuate, with a very minute internal basal appendage. The pronotum has no discal impression, and each elytron has at base two pairs of deep foveæ. Our species has been described under the name *Euplectus cavicollis* Lec.

#### EUPLECTUS Leach.

The somewhat numerous species within our boundaries agree satisfactorily with the European, but are probably more heterogeneous. Among those in my cabinet three subgeneric groups are readily observable:—

- Head not quite so large, sometimes very slightly narrower than the prothorax, with two larger widely distant foveæ situated behind the middle, the intermediate surface of the vertex strongly convex; body less slender, more convex .....**I**
- Head larger, flatter above, frequently much larger than the prothorax, with two smaller, more anterior and much more approximate foveæ; body smaller, narrower and more depressed.

- Antennæ longer, the club normally small; eyes more or less prominent; elytra much wider than the head..... **II**  
 Antennæ short, the club larger and thicker, as long as the preceding six joints; eyes more inferior, scarcely visible from above; elytra parallel, not appreciably wider than the head..... **III**

Group I is represented by *difficilis*, *congener*, *sexualis*, *spinifer*, *linearis*, *hudsonicus*, *interruptus* and probably *longissimus*; group II by *longicollis*, *confluens*, *elongatus*, *californicus* and *iowensis* and group III by *pertenuis*. Group II is apparently homologous with European species of the *bonvouloiri* type.

The true position of *planipennis* and *rotundicollis* of Brendel cannot be definitely stated at present; they are apparently both peculiar, not only in the smaller head but in other features also, and in the subjoined catalogue I have placed them at the end as requiring further investigation.

The name *longicollis* is preoccupied by Reitter for a New Zealand species, but as the two may in reality belong to different genera it is not advisable to change the name just now. The same remark applies to *linearis* Lec. and *linearis* || King and *rotundicollis* Reitt. and *rotundicollis* || Brend.

The following species seem to be undescribed:—

**E. hudsonicus** n. sp.—Slender, somewhat convex, polished and pale rufo-testaceous throughout; pubescence short, coarse and rather dense; head and pronotum with very coarse feeble punctures, which can scarcely be individually defined but which give a feebly asperate and uneven appearance; elytra and abdomen subimpunctate. *Head* about as wide as the prothorax, a little wider than long, broadly truncate at apex, the foveæ distant, behind the middle, the middle of the vertex strongly convex; parabolic sulcus very deep; antennæ nearly as long as the head and prothorax, normal; eyes small but prominent, the tempora slightly convergent, nearly straight and a little longer than the eye. *Prothorax* distinctly wider than long, widest just before the middle where the sides are broadly rounded to the apex, convergent and unevenly serrulate to the base, somewhat prominent opposite the foveæ; disk with an elongate pit extending from near the apex to the middle, also with the usual deep subbasal excavation connected with the lateral foveæ. *Elytra* about as long as wide, nearly as long as the head and prothorax, one-half wider than the latter; base strongly quadrifoveate; discal stria distinct, vanishing before the middle; sides subparallel, broadly arcuate; humeri distinct. *Abdomen* subequal in length to the elytra and a little narrower. Length 1.25 mm.; width 0.35 mm.

New York.

The type is a male and has the fourth ventral segment even along its apical edge, but with two feeble approximate transverse

tuberosities. The fifth segment is deeply emarginate at its anterior edge, the emargination broadly parabolic, one-fifth as wide as the segment and extending to apical third of its length, the emargination bearing two or three short porrect and anteriorly projecting setæ. Sixth segment with two deep discal foveæ, distant by one-third the width and each subcarinate along its anterior edge; pygidium tumid, rhomboidal, finely carinate and indistinctly punctate. In some of my previous descriptions of the species of *Euplectus* I seem to have designated the true fourth ventral as the third.

In the male of *linearis*, to which this species is allied, the fourth ventral has two large transverse and much more distant tubercles, and the anterior emargination of the fifth is much smaller.

**E. iowensis** n. sp.—Linear, parallel, rather depressed, dark rufo-ferruginous and polished throughout; pubescence fine, short, subappressed, not very abundant; head coarsely, sparsely punctured above, more densely and deeply beneath, the pronotum finely and sparsely punctulate, the elytra and abdomen subimpunctate. *Head* large, wider than the prothorax, but slightly wider than long; eyes small, slightly prominent, the tempora behind them largely developed, straight, subparallel and longer than the eye, the basal angles nearly right and slightly rounded; foveæ small, feeble, distant by one-third of the interocular width, the connecting sulcus becoming broadly expanded and deep behind the frontal margin; antennal tubercles small, prominent, each with a deep nude fovea; antennæ not quite as long as the head and prothorax, normal; under surface without erect setæ. *Prothorax* slightly wider than long, widest near apical third where the sides are strongly rounded, thence convergent and broadly, just visibly sinuate to the base; disk with a large transverse median pit at basal third and two lateral fovea not connected, also with an oval discal fovea feebly connected with the sub-basal pit. *Elytra* one-half longer and two-fifths wider than the prothorax, a little wider than the head, the discal stria extending to the middle. Length 1.2 mm.; width 0.3 mm.

Iowa.

The male sexual characters are complex; the fourth ventral is feebly but abruptly emarginate in middle third, the bottom of the emargination broadly arcuate, with the apex of the lobe projecting as far as the sides and bearing two approximate porrect tufts of everted setæ; fifth transversely excavated anteriorly to receive the tufts; sixth transversely impressed and receiving the large rhomboidal subimpunctate and feebly carinate pygidium.

This species is allied to *confluens*, but differs in its smaller size, narrower and more depressed form and longer tempora. The appendage of the tarsal claw is distinct but very small.



The species of *Euplectus* seem to be completely devoid of the erect capitulate setæ of the under surface of the head, so characteristic of some other related genera.

**THESIASTES** n. gen.

In general organization the species of this genus resemble *Euplectus*, but have the body much more minute, the head smaller and especially shorter, the frontal truncature narrower, the eyes relatively larger and more prominent, the tempora shorter and the abdomen completely devoid of dorsal carinæ, although deeply impressed at the base of the first two or three segments. In spite of these differences I should have probably regarded them as one of the subgeneric groups of *Euplectus*, had it not been for the fact that the male sexual modifications at the apex of the venter were found to be of a completely different type. The large rhomboidal tumid and carinate seventh ventral of the male in *Euplectus*, is here replaced by the oval flat laterally enclosed pygidium so characteristic of *Ramecia*, *Actium*, and other more or less widely separated genera; this indicates a real divergence from *Euplectus* far more pronounced than might be inferred from general organization. The male sexual organs must indeed be remarkably different in structure.

Our known species are not numerous but many others will doubtless be discovered. They appear to live principally in turfy lands bordering brackish water, and may be distinguished in the following manner, the characters of *pumilus* being gathered from description, as the type is not accessible at present:—

- Size larger, 1 mm. in length, dark brown, the discal pit of the pronotum broader, deeper and oval ..... **fossulatus**
- Size very minute, never exceeding 0.8 mm. in length; discal sulcus narrower, feebler and fusiform.
- Color pale ferruginous; pronotum asperulate ..... **pumilus**
- Color dark piceous-brown; pronotum sparsely but rather distinctly punctate ..... **debilis**
- Color intense black, smooth, highly polished, with but the feeblest traces of pronotal punctuation ..... **atratus**

**T. atratus** n. sp.—Slender, convex, polished, black throughout; legs antennæ and trophi testaceous; head and prothorax sparsely extremely feebly and indefinitely punctate; pubescence short, not conspicuous but not very sparse. *Head* rather small, distinctly narrower than the prothorax, wider



than long, the foveæ large, deep, spongiose, at the middle, separated by nearly one-half the total width, the arcuate sulcus deep, evanescent anteriorly between the antennæ, and gradually declivous to the labrum; antennal tubercles strong, crossed by a fine groove; antennæ nearly as long as the head and prothorax, the funicle slender, third joint short, strongly obconical, club normal, gradual; eyes rather large, very prominent, longer than the tempora, the latter moderately convergent behind them; base broadly, strongly sinuate. *Prothorax* wider than long, widest before the middle where the sides are broadly rounded to the apex, convergent and nearly straight in basal half; disk with an elongate fusiform median sulcus and a transverse biarcuate sulcus behind basal third, the latter dilated at the middle and foveate near the sides. *Elytra* large, subquadrate, nearly as long as the head and prothorax, two-thirds wider than the latter, very nearly as long as wide; discal stria coarse, gradually dilated toward base, vanishing at basal two-fifths; three basal foveæ deep and well developed. *Abdomen* parallel, rather longer and much narrower than the elytra, the segments equal. Length 0.75 mm.; width 0.25 mm. or rather less.

#### Rhode Island.

A single male taken near the seashore. The venter is feebly flattened before the apex, and the terminal pygidium is small, flat, narrow, elongate-oval and as usual enclosed completely at the sides by the lateral portions of the anal or seventh segment. In the male of *fossulatus* the venter is very feebly, broadly impressed near the apex, and the flat pygidium is smooth, very large, but slightly longer than wide, oval, more narrowly rounded behind and broadly, very feebly arcuate anteriorly where it fits against the posterior margin of the sixth segment.

*Atratus* is allied to *debilis* but differs from my single female of that species in its intense black color, more feeble punctuation and smaller head. In *debilis* the head is about as wide as the prothorax.

#### **BIBLOPECTUS** Reitter.

This genus as represented within the United States is undoubtedly valid, the species differing from *Euplectus* in their very minute size, smaller head, more strongly narrowed front, less distant antennæ, and in the absence of a discal pronotal pit; the importance of this last character has I think been underestimated. Another important difference relates to the discal stria of the elytra, which is wanting and replaced, as in *Trimium* and *Trimipsis*, by a larger, more or less elongate basal impression. The antennæ, also, have a

less robust and looser club, with the terminal joint more conoidal and more gradually pointed.

Our representatives differ from the European species of the *ambiguus* type in their more convex body and head, and in having a fine but strong carina extending from the transverse sulcus to the pronotal base; they should perhaps form a subgenus of *Biblopectus* and may be recognized as follows:—

Sides of the prothorax parallel and nearly straight in middle two-thirds of the length.

Size more minute, about 0.65 mm. in length; pronotum scarcely punctulate ..... **ruficeps**

Size appreciably larger and stouter, more than 0.7 mm. in length; pronotum rather strongly punctate ..... **integer**

Sides of the prothorax not parallel; size still larger, rather more than 0.8 mm. in length; surface smooth, polished and subimpunctate throughout.

**leviceps**

The species from Michigan, described by LeConte under the name *integer*, seems to be distinct from the more southern *ruficeps* and I take pleasure in restoring it to its true position. Judging by the type of *leviceps*, which I have before me, the measurements given in my original description are too great; it is possible that the larger specimen represents a different species.

#### **TRIMIOPLECTUS** Brendel.

I have not seen the type recently published by Brendel under the name *obsoletus*, but according to the description and figures, it represents a widely distinct genus, singularly combining the characters of *Trimium* and *Euplectus*. The author placed with *obsoletus* several other species, such as *arcuatus* and *ruficeps*, which are however in no way very closely related. The elongate prothorax and basal segment of the abdomen, the latter with an unusually broad pubescent impression, reminding us of some species of *Ramecia*—where however the basal segment is never elongate,—the head in the form of “an equilateral triangle with arcuate corners,” and the sexual modifications at the ventral apex, as figured, form a combination of characters which render it impossible to discuss its true relationships without further study. The tarsal claw probably has an extremely minute or obsolete appendage as in *Actium* and *Trimioptis*, in the neighborhood of which it is probably most fittingly placed. The name selected by Dr. Brendel is certainly appropriate.

**BIBLOPORUS** Thomson.

This genus was redescribed by me under the name Faliscus (Cont. Col. N. A., II, p. 94), as correctly stated by Brendel in his recent monograph; it is widely distinct from Euplectus in the structure of the prosternum and pronotum. In *B. bicanal* the rudimentary second tarsal claw is quite distinct, although not large enough to ally it with the trichonychide types of the tribe.

**EUTYPHLUS** LeConte.

Related to Bibloporus in the long carinate prosternum, but departing widely in pronotal structure and in the sexual modification of the eyes. It was described by me (l. c., p. 94), from the male especially, under the name Nicotheus. The two species in my cabinet may be recognized by the following characters taken from the female:—

Head relatively less transverse, the tempora longer and moderately convergent; dorsal carinæ of the first segment strongly divergent, distant by one-third of the discal width.....**similis**  
 Head very transverse, the tempora much shorter and extremely convergent; carinæ of first dorsal less divergent and separated by nearly one-half of the discal width.....**prominens**

In both of these species there is a very fine pronotal carina extending from the transverse sulcus to the basal margin, as in the American species of Biblopectus. The males seem to be extremely rare. The ventral segments are seven in number in both sexes, the last three short, the anal segment of the male enclosing an elongate flat pygidium as in Thesiastes. The terminal joint of the antennæ consists of two distinctly defined parts, a large basal segment and a narrow conical apical portion placed far within the lateral margins of the former; this structure is more pronounced in the females than in the males, and probably offsets the more defective vision of that sex.

**E. prominens** n. sp.—Slender, somewhat convex, polished and bright rufo-testaceous throughout; pubescence rather long, coarse, shaggy but not very dense. *Head* short, as wide as the prothorax and scarcely more than two-thirds as long, transverse, abruptly narrowed before the very prominent acute tubercles bearing the rudimentary eyes; tempora very strongly convergent; foveæ well developed, at basal third, distant by nearly one-half the maximum width, each continued forward in a deep oblique channel, the two

meeting in the depression between the antennal tubercles, the latter large, prominent, each crossed by the usual fine groove; vertex between the foveæ somewhat rugose, strongly convex; antennæ stout, not quite as long as the head and prothorax; under surface with a few erect setæ. *Prothorax* as long as wide, widest at apical fourth where the sides are broadly rounded to the apex, moderately convergent and nearly straight in basal three-fourths; discal impression elongate; transverse sulcus and foveæ deep and well developed; surface subimpunctate but sparsely punctato-rugulose between the sulcus and the base. *Elytra* not quite as long as wide, one-third longer and two-thirds wider than the prothorax, the sides feebly divergent, broadly arcuate, each with two large and very deep basal foveæ, the second continued posteriorly by a broad gradually evanescent groove, vanishing before the middle; sutural stria entire. *Abdomen* longer than the elytra and fully as wide, the sides very feebly arcuate; carinæ of the second dorsal very short but distinct. Last three ventrals together about equal in length to the second, two to four uniformly and very slowly decreasing in length. Length 1.25 mm.; width 0.35 mm.

Virginia (Lee Co.).

Readily distinguishable from the female of *similis* (= *tibialis* Csy.) by its smaller size, longer, more rectilateral pronotum, form of the tempora and many other characters.

#### THESIUM Casey.

Through the abrupt narrowing of the front before the eyes, the antennæ in this genus are less distant than usual, but there is no tubercle properly speaking, and the form of the head differs only in degree from that of the other Euplecti, resembling *Biblopectus* and *Thesiastes* in this respect, but with a much more robust body.

*Apothinus* of Sharp does not differ from *Thesium* by any feature mentioned in the description of that genus, but as the type is a much larger insect than our representatives of *Thesium*, it may actually be different. No mention of the structure of the prosteronum is made in the diagnosis of *Apothinus*, so that but little of definite value can be said in regard to the extent of this relationship.

The basal foveæ of the elytra in *Thesium* are three in number, distinct, deep, circular and mutually rather distant, the first and second from the suture transversely connected by a deep sulcus, the second prolonged in basal fourth or fifth in an arcuate stria, the third prolonged for a short distance in a broad and deep, gradually wider and shallower excavation, the sides of which are rather

abruptly defined, giving the appearance of two short divergent striæ. Although the abdomen is impressed at base, the carinæ appear to be entirely obsolete.

The two forms known to me resemble each other closely in all generic characters, but are quite different specifically, as may be inferred from the following statement:—

Head larger, almost as wide as the prothorax, the frontal margin deeply interrupted in the middle; eyes slightly smaller; prothorax less transverse, more broadly rounded and parallel at the sides, the latter strongly convergent and sinuate only in basal third; size very minute, 0.75 mm. Mississippi Valley.....**cavifrons** Lec.  
 Head smaller, very much narrower than the prothorax, with the frontal margin feebly interrupted; prothorax more transverse, much more strongly rounded laterally before the middle, the sides strongly convergent and broadly sinuate in basal half; size appreciably less minute, 0.85–0.9 mm. Texas.....**laticolle** Csy.

#### ACTIUM Casey.

This genus is closely allied to *Trimiopsis* Reit., but the species are generally larger and have a distinct discal stria on the elytra, while in *Trimiopsis* the discal stria is wanting. It is further distinguishable at once from *Trimiopsis* by the structure of the prothorax, the disk of the pronotum having two subbasal foveæ and rather well-defined lateral edges in *Actium*, while in *Trimiopsis* there are no definite lateral foveæ or edges, the transverse sulcus being continuous down the vertical flanks, gradually disappearing beneath.

Both *Actium* and *Trimiopsis eggersi*—assumed here as the type—are easily distinguishable from *Trimum brevicorne* by the presence of a post-humeral fovea and pleural sulcus on the elytra, a character apparently of some importance. The basal foveæ of the elytra are however of no value generically in this group, and are often inconstant, one specimen before me having two foveæ on one elytron and three on the other. There are species having either two or three foveæ, not only in *Actium*, but in *Euplectus* and *Ramecia*. As an instance of the importance of the post-humeral fovea, however, *Trimiopsis specularis* Reit. may be cited. This species lacks the fovea completely, and is further distinguished by its shorter and stouter tarsi, and by a singular antennal character, the eleventh joint being split at apex in both sexes, the two segments apparently mobile.



The North American species hitherto placed in *Trimium* resemble the European *T. brevicorne* in the absence of a post-humeral fovea and discal stria, and, at the same time, perfectly resemble *Trimiopsis eggersi* in this latter feature and in the structure of the prothorax. In fact *Trimium brevicorne*, *Trimiopsis eggersi* and our own *Trimium convexulum*, *dubium* etc. are so extremely closely allied among themselves, that they might with propriety be treated as subgenera. I prefer for the present to regard our species as constituting an important section of *Trimiopsis*, distinguished by the absence of the post-humeral fovea.

The male of *Actium* is distinguished by the large oval flat and horizontal pygidium, almost surrounded by the anal segment, and sometimes also, by setose tubercles or spicules near the sides of the second and third ventral plates, both of these modifications being prominent, as before noted, in several other euplectide genera—for example *Ramecia*. *Trimiopsis* frequently presents the sub-lateral tubercles, but in *T. eggersi* the flat pygidium is wholly wanting. In *Ramecia dentiventris* the oblique pointed tubercles are at the extreme sides of the third segment.

*Actium* is widely diffused in North America but is essentially subarctic, while *Trimiopsis* is more especially tropical in distribution and probably contains a number of elements which will have to be removed eventually. The species known to me may be separated as follows:—

Elytra each with three basal foveæ.

Basal abdominal ridges fine and cariniform, generally about one-third as long as the segment and separated by about one-third of its discal width, larger species.

Form more slender; male without distinct setose tubercles near the sides of the abdomen, but with a minute internal subapical denticle on the anterior tibiæ.

Head very small; eyes much longer than the tempora; abdominal carinæ separated by distinctly less than one-third of the discal width.....**californicum**

Head larger, the tempora as long as the eye; abdominal carinæ separated by fully one-third of the discal width.....**politum**

Form stouter; male with small setose tubercles near the sides of the second and third ventral segments, but apparently entirely devoid of the subapical tibial denticle.

Head very small, the prothorax relatively larger; ventral pygidium of the male almost perfectly circular.....**robustum**

Head relatively much larger; ventral pygidium of the male larger, very slightly longer than wide; body smaller and less stout.

**testaceum**

Basal ridges extremely short, flat and broadly but acutely triangular, separated by barely one-fourth of the discal width; smaller species, the male with minute setose tufts near the sides of the second and third ventral segments.

Head subequal in size to the prothorax; intermediate femora greatly swollen in the male.....**candidum**

Head much shorter and narrower than the prothorax; intermediate femora scarcely perceptibly larger in the male.....**marinicum**

Elytra with two basal foveæ.

Head smaller; elytra nearly as long as wide.

Cephalic foveæ large and very widely separated.

The foveæ near the antero-superior margin of the eye; abdominal carinæ strong, one-half as long as the segment.....**foveicolle**

The foveæ unusually posterior in position; abdominal carinæ two-thirds as long as the segment.....**costale**

Cephalic foveæ very small, nude, separated by one-half the total width; front parabolic in outline; abdominal carinæ finely triangular, flat, scarcely one-third as long as the segment.....**pacificum**

Head slightly larger; elytra very much shorter, transverse, species more minute.....**brevipenne**

The following species which I have not seen are attached provisionally to the present genus:—

Elongate, shining, black, the antennæ and legs testaceous. 1.3 mm. Sitka, Alaska. Probably a true Actium.....**clavicorne**

Head narrower than the prothorax; elytral striæ extending to the middle; abdominal carinæ very minute. 1.2 mm. Iowa. Probably a true Actium.

**durum**

Head transverse, nearly as wide as the prothorax, the foveæ pubescent and separated by one-half the width; elytra with two basal foveæ, the discal stria very short; base of the tergum not carinate, the segments subequal.

Iowa? Affinities somewhat doubtful.....**parabolicum**

Antennæ not longer than the head [Brendel]. 1.5 mm. Georgia. Affinities decidedly doubtful.....**globifer**

Head narrower than the prothorax, the latter wider than long; maxillary palpi with the last joint not larger than the third. 1.4 mm. Virginia.

Probably not an Actium.....**impunctatum**

*Costale* Brend is also unknown to me in nature, but its relationship with *foveicolle* appears to be sufficiently evident. *Californicum* Lec. was described by me under the name *pallidum*; the discal stria is too short in the figure (Bull. Cal. Acad. Sci., II, Pl. XVI). The species has recently been described also by Mr. Raffray under the

name *Proplectus decipiens* (Rev. d'Ent., 1890, p. 197). *Parabolicum* Brend., was doubtfully referred to *Trimiopectus*, but the antennal and abdominal structure seems to prohibit this association.

The coloration of *clavicorne* Mäkl. is very unusual in this genus, all the other species being of a more or less pale testaceous. In regard to *impunctatum*, if the description and figure of the maxillary palpus published by Dr. Brendel are even substantially correct, it must form the type of a very distinct genus.

In drawing up the above table I have before me only the female of *politum*, and am unable to see the base of the abdomen in *marinicum*, the characters of these species being inferred from their resemblance to *californicum* and *candidum* respectively.

**A. candidum** n. sp.—Rather slender, moderately convex, polished, rufo-testaceous, subimpunctate; pubescence short, sparse, recumbent. *Head* rather large, with two small deep spongiose foveæ midway of the length, separated by one-half the total width, connected by an acutely parabolic sulcus; antennal tubercles somewhat prominent, crossed by a fine deep sulcus; eyes rather prominent, barely as long as the tempora, the latter feebly convergent; antennæ twice as long as the head; under surface with long sparse capitate setæ. *Prothorax* slightly wider than long, widest at apical third; sides thence convergent and nearly straight to the base, the latter one-half wider than the apex; transverse sulcus deep, at basal third, deeply prolonged backward in the middle; foveæ small but deep. *Elytra* about as long as wide, two-thirds longer than the prothorax and nearly twice as wide; sides arcuate; discal stria extending not quite to the middle, sutural fine, deep, entire. *Abdomen* slightly shorter and narrower than the elytra, gradually pointed behind. *Legs* short, the two anterior shorter and stouter. *Prosternum* with two large spongiose antecoxal foveæ; intermediate coxæ contiguous, the cavities confluent; corresponding trochanters toothed within in the male. Length 1.2 mm.; width 0.3 mm.

California (Santa Cruz Co.).

A single male, easily distinguishable among the Californian species by the unusually large head, this being only just perceptibly narrower than the prothorax. The male pygidium is perfectly flat, evenly elliptical and very slightly wider than long.

**A. marinicum** n. sp.—Moderately slender, strongly convex, polished, subimpunctate, pale yellowish-ferruginous throughout; pubescence short, sparse and subrecumbent. *Head* rather small, distinctly shorter and narrower than the prothorax, wider than long, rapidly and sinuately narrowed before the eyes, the width at the prominent antennal tubercles not quite one-half that across the eyes; foveæ small, deep, spongiose, in the middle, separated by two-fifths the total width, connected by a broadly parabolic and

rather deep sulcus; eyes prominent, slightly longer than the tempora which are feebly convergent and nearly straight; antennæ twice as long as the head; under surface with sparse capitate setæ. *Prothorax* slightly wider than long, widest before the middle, the transverse sulcus deep, strongly dilated backward in the middle, situated at basal fourth; foveæ deep; sides convergent and nearly straight in basal half. *Elytra* not quite as long as wide, three-fourths longer than the prothorax and nearly twice as wide; sides strongly arcuate; discal stria fine, extending fully to the middle. *Abdomen* distinctly narrower than the elytra but nearly as long, parabolic behind. *Legs* scarcely modified in the male, the two anterior shorter but not much stouter. Length 1.1 mm.; width 0.4 mm.

California (Marin Co.).

In the unique male type, the sexual apparatus is fully protruded and is of immense size in proportion to the body. The flat pygidium, horizontal in its normal position, is seen to be the external covering of a large cylindrical sack-like body, one-half longer than wide and one-half as long as the entire abdomen, having attached to the anterior border of its free extremity, two long acute and complicated processes, which are gradually everted toward apex. The plate-like cover of the large cylindrical body, referred to as the flat pygidium, is displaced in this specimen, and the interior of the sack seems to be filled with a white spongy material.

**A. pacificum** n. sp.—Moderately stout, convex, pale flavo-ferruginous throughout, shining, subimpunctate; pubescence very short, recumbent, rather abundant. *Head* much narrower but only slightly shorter than the prothorax, nearly as long as wide, the eyes—viewed from above—feebly convex, not prominent, situated rather behind the middle on the sides and as long as the tempora, the latter straight and parallel behind them; outline before the eyes and around the apex almost evenly parabolic; surface rather flat; foveæ minute but deep, nude, at the middle, separated by one-half the total width, connected by a very feeble parabolic sulcus; antennal tubercles broad and flat, crossed by a fine but deep and conspicuous groove; antennæ missing; under surface very sparsely setose. *Prothorax* very nearly as long as wide, widest and broadly rounded near the middle; sides convergent and nearly straight thence to the apex and base, the former four-fifths as wide as the latter; sulcus deep, between basal third and fourth, strongly dilated in the middle; foveæ very large but nude. *Elytra* three-fourths longer than the prothorax and nearly twice as wide, the discal stria extending to the middle. *Abdomen* as long as the elytra but much narrower, parabolic toward apex. *Legs* moderate. Length 1.1 mm.; width 0.4 mm.

California (Siskiyou Co.).

The male has a large terminal pygidium which is not rounded as in the other species but rectangular, with straight sides and apex,



and is much longer than wide, with the surface longitudinally and broadly convex; also, at lateral fourth of the third ventral segment and at the middle of its length, a peculiar oblique lamelliform bilobed and setose process. This species is readily separable from any of the others by the peculiar form of the head.

**A. brevipenne** n. sp.—Minute, somewhat stout, convex, uniformly dark rufo-testaceous, polished, subimpunctate; pubescence short, subrecumbent, rather abundant. *Head* distinctly shorter and narrower than the prothorax, wider than long; foveæ small but deep, distant by one-half the total width, not distinctly spongiose, connected by a deep entire sulcus; antennal tubercles rather prominent; eyes moderate, from above slightly prominent, not quite as long as the tempora, the latter subparallel, feebly rounded and almost as prominent as the eyes; antennæ two-thirds longer than the head, second joint stouter than the first; under surface with sparse erect and finely capitate setæ. *Prothorax* slightly wider than long, the base and apex subequal, widest before the middle where the sides are broadly, evenly rounded to the apex, abruptly convergent and broadly, feebly sinuate from the middle to the base; sulcus fine, deep, at basal fourth, broadly, very feebly angulate but not perceptibly dilated in the middle; lateral foveæ large and nearly nude. *Elytra* not quite one-half longer and three-fourths wider than the prothorax, transverse; discal stria extending to apical third. *Abdomen* much longer and slightly narrower than the elytra. *Legs* moderate, the two anterior femora, and especially the intermediate, incrassate in the male. Length 0.9 mm.; width 0.3 mm.

California (Sta. Cruz Co.).

A single pair exhibiting scarcely any sexual differences in general form. The venter of the male is not tuberculate near the sides, but, as usual, the second ventral is broadly feebly impressed at lateral sixth especially toward base. The short elytra of this species will distinguish it at once from any other. It is the smallest of the genus.

#### BATRISINI.

#### **BATRISUS** Aubé.

The following interesting forms belong to the first division of LeConte, but differ altogether from *ferox* and *ionæ* in the type of male sexual modification, having the anterior legs simple but the posterior more or less distorted. This small group may also possibly receive *confinis* Lec., which is known only by the unique female type.



**B. cavicus** n. sp.—Moderately slender, very convex, polished and coarsely pubescent throughout, brownish-rufous in color, the elytra brighter. *Head* distinctly wider than the prothorax, wider than long, coarsely but feebly rugoso-punctate, polished, with a long carina above the flanks; occiput tricristate; eyes at more than their own length from the base, well developed; nude foveæ joined by a circumambient sulcus; antennæ one-half as long as the body, second joint longer than the third, three to eight equal in width becoming shorter, ninth and tenth abruptly wider, slightly transverse, club paler in color. *Prothorax* a little longer than wide, widest near apical third; median subbasal fovea large, lateral distinct; median sulcus very feeble, on each side of it a series of two or three acute recurved spines; subbasal spiniform tubercles distinct; surface between the median fovea and base finely carinate, two foveæ also at the basal margin on each side of the middle, also one on the flank just before the base and adjacent to another belonging to the prosternal parapleuræ. *Elytra* about as long as wide; sides subparallel, broadly arcuate; humeri broadly exposed, rounded. *Abdomen* a little shorter and narrower than the elytra, the basal carinæ separated by rather more than one-sixth of the entire width. Length 1.7 mm.; width 0.65 mm.

North Carolina (Asheville).

The description is taken from the male, the female being nearly similar but having very much smaller and subrudimentary eyes. The special sexual characters of the male affect the abdomen and posterior legs only, the venter having a moderate rounded subapical impression. The posterior trochanters have a compressed inferior dentiform lobe, and an internal apical process which is slender and contorted, the femora compressed, polished impunctate and feebly concave internally nearly throughout the length, the lower margin with a sinuation at basal third, the tibiæ slender but gradually dilated internally near the middle; terminal process entirely wanting; tarsi normal.

**B. carolinæ** n. sp.—Slender, very convex, polished and coarsely pubescent throughout, bright rufo-testaceous in color, the elytra still paler. *Head* distinctly wider than the prothorax, nearly as long as wide, subscabrous anteriorly, finely, sparsely punctate behind, with two nude foveæ connected by the usual arcuate sulcus; flanks carinate above; occiput unicristate; eyes moderately developed, far in advance of the base; antennæ one-half as long as the body, rather slender, the club gradual and rather heavy, second and fifth joints subequal, longer than the third or fourth. *Prothorax* a little longer than wide; widest before the middle, the median subbasal fovea large; sulcus subobsolete, between two series each containing two or three acute recurved spines, a similar spine also at the lateral margin just behind the middle; subbasal tubercles well developed; lateral foveæ distinct; at the basal margin two strong foveæ at each side; surface between the median fovea

and base finely carinulate; general surface rather sparsely but asperately punctate. *Elytra* about as long as wide; sides very feebly divergent from the distinct humeri and nearly straight; intrahumeral excavation large and strong. *Abdomen* slightly narrower and much shorter than the *elytra*, the basal carinæ strong, approximate, separated by scarcely one-tenth of the total width. Length 1.6 mm.; width 0.55 mm.

North Carolina (Asheville).

This species is allied to *cavicrus*, but differs in its unicristate occiput and very much in the sexual characters of the male, the venter in that sex having a larger wide impression at the apex. The posterior femora are bowed, with the convexity downward, strongly clavate, the clavate part strongly punctate externally but impunctate and polished internally, gradually narrowed at the middle and attached by a slender peduncle which is nearly one-half as long as the femur, the corresponding tibiæ swollen toward the middle and the trochanters with a long contorted inferior process. Two males.

It is scarcely possible that this species can prove to be the same as *confinis* Lec., for that is much larger and apparently lacks the four anterior pronotal spines. *Carolinæ* is one of the most minute species of the genus, though *juvencus* Brend., which is stated to be 1.4 or 1.5 mm. in length, appears to be still smaller; it is related to *carolinæ* but differs in its almost obsolete occipital crest and dark color, as far as can be inferred from the description of the single female type from northern Illinois.

The Pacific coast species form a homogeneous group, distinguished in general from the Atlantic coast forms by the fact that the sexual modifications are almost invariably centered at the posterior extremity of the body, while in the latter they quite as constantly affect the anterior portions only, the curious cephalic and antennal characters of the eastern males being unknown—if we except a minute subbasal spicule of the eleventh joint—in the western representatives. Another singular fact is that among these west coast forms, there are several which are separable more readily by female characters than by those of the male. The species known to me may be distinguished as follows, *cicatricosus* not being represented in my cabinet:—

*Elytra* finely punctulate; head not carinate; pygidial modifications when present affecting the female only; ventral excavation of the male large.

Color of the body intense black throughout.....**monticola**

Color paler, dark piceous to rufous, the elytra always brighter and rufescent.

Pygidium broadly, very feebly and evenly convex, similar in the sexes but a little shorter and broader in the female; elytra shorter, the humeri obsolete and the sides more oblique.....**occiduus**

Pygidium differing in the sexes, in the female strongly tumid, in the male nearly flat and unmodified.

Pygidial tumor of the female very large, compressed, broadly rounded in profile; body more robust (*aculeatus* Lec., i. litt.)...**albionicus**

Pygidial tumor abrupt, acutely rounded in profile, the highest point being at the lower margin, the surface thence broadly concave to the upper margin (var. *mendocino* and *speculum* Csy.).....**zephyrinus**

Elytra strongly though sparsely punctate; head longitudinally carinate above the eyes; pygidial characters probably common to both sexes; ventral excavation of the male small.

Ambient sulcus of the head continued to the base; pronotum with a complex process at each side of the median subbasal fovea...**cicatricosus**

Ambient sulcus not continued posteriorly beyond the foveæ; pronotum with a simple erect spiculate elevation at each side of the median fovea.

Pygidium of the male small, transverse, broadly tumid, with a transverse polished and impunctate excavation along its lower margin.

#### **pygidialis**

Pygidium in both sexes with an abrupt, strongly elevated, compressed and cariniform tooth at the middle .....**denticauda**

In these species the anterior femora, apparently in both sexes, have an elongate narrow area on the under surface which is strongly and transversely punctato-rugose.

**B. pygidialis** n. sp.—Moderately slender, polished, bright rufo-testaceous throughout, the abdomen rather darker; legs pale, with the knees darker; pubescence rather long, coarse, very sparse. *Head* as long as wide, subequal in width to the prothorax; eyes moderate, very convex, scarcely behind the middle, outline behind them almost evenly, semi-circularly rounded; nude foveæ deep, connected by a distinct sulcus; vertex impunctate, finely carinate at the base of the occiput; surface outside of the supra-ocular carinæ finely sparsely and subasperately punctate; antennæ a little longer than the head and prothorax, moderately stout, the basal joint emarginate above at apex and impressed on the surface behind the emargination, second very much smaller and narrower than the first, equal to the second and but slightly longer than wide, two to eight subequal, ninth but very slightly longer than the eighth, tenth trapezoidal, foveate within, eleventh stouter with an anteriorly oblique spiculate tooth near the base. *Prothorax* not longer than wide, widest and broadly rounded before the middle, impunctate, the lateral sulci broadly impressed, median narrow, vanishing beyond the middle; three subbasal foveæ moderate, connected by an extremely feeble biarcuate groove, the lateral each with an erect spicule immediately behind it; spicule at the sides of the median fovea small, erect and simple; surface between the median

fovea and base minutely carinate, with two feeble foveæ at each side near the basal margin. *Elytra* not quite as long as wide, one-half longer than the prothorax and about twice as wide, convex; humeri tumid and minutely spiculate. *Abdomen* impunctate, the first segment longer than the fourth, with two minute basal carinæ separated by one-sixth of the entire width. Length 1.9 mm.; width 0.65 mm.

California.

The two specimens in my cabinet are males, the venter having a small deep rounded impression near the apex. The elytral punctures are not large but strong, asperate and very sparse.

**B. denticauda** n. sp.—Rather slender, polished, piceous-brown, the elytra rufescent; pubescence very sparse, coarse. *Head* but slightly wider than the prothorax, including the labrum a little longer than wide; eyes small, just behind the middle; basal parts behind them almost semi-circularly rounded; vertex impunctate; occiput feebly carinulate at base; sides longitudinally carinate above; foveæ connected by a sulcus which is feeble in front; interantennal depression feeble; antennæ short, not longer than the head and prothorax, the club gradual and heavy, eleventh joint with a slender anteriorly oblique tooth at basal fourth. *Prothorax* as long as wide, widest just before the middle; disk polished, minutely, very remotely punctulate; lateral grooves feeble, median impressed and traceable to apical fourth or fifth; subbasal spines strong, simple; biarcuate transverse sulcus distinct; lateral foveæ well impressed; surface between the median fovea and base finely carinate; two sublateral foveæ at each side near the basal margin. *Elytra* not quite as long as wide, one-half longer than the prothorax and twice as wide; humeri elevated and with a minute recumbent spiculate tooth; disk distinctly but very remotely punctate. *Abdomen* as wide as the elytra but shorter, the basal dorsal longer than the next two combined, the carinæ short, distant between one-fifth and one-sixth of the total width. *Legs* moderate. Length 1.9–2.0 mm.; width 0.65–0.7 mm.

California (Siskiyou Co.).

The description is taken from a male specimen, the ventral modification consisting solely of a rather small but deep rounded impression near the apex. In the female the curious pygidial cariniform elevation is identical with that of the male, but the venter is not excavated; there is often, however, a very feeble impression at the position of the male excavation, this community of male and female impressions of the last ventral being a common character throughout large sections of the Coleoptera, as I have elsewhere shown; it is observable also in *albionicus*. An analogous condition, relating to the manifestation of male antennal structures in a rudimentary form in the antennæ of the female, will be referred to under *Reichenbachia tumida* and its allied species.



On comparing the male of *luculentus* with that of the typical *spretus* in the LeConte cabinet from northern Georgia, I find that the two are wholly dissimilar in the frontal modification, as may be seen from the following statement:—

Upper surface of the head flat, produced in the same plane beyond the antennæ in a short broad trapezoid, the apex transversely and evenly truncate and one-half as wide as the interantennal distance; clypeus below the trapezoid with a dorsal setose tubercle which extends upward nearly to the level of the frontal margin but distinctly in advance of it; basal joint of the antennæ compressed beneath, the lower outline broadly arcuate and the under surface strongly asperate.....**spretus**  
 Front declivous, broadly truncate and biimpressed between the antennæ, bearing at the middle of the beveled edge two approximate suberect and tuberculiform teeth; clypeus beneath with a dorsal tubercle as usual; basal joint of the antennæ broadly arcuate beneath and coarsely but simply punctate.....**luculentus**

*Spretus* is one of the most minute species of the genus, appreciably smaller than *luculentus*. It is probably quite local in habitat.

The species described by me as *cephalotes* is identical with *striatus* Lec., which was long ago very carelessly suppressed as a synonym of *globosus*; it has scarcely anything in common with *globosus*, and possesses radically different frontal characters in the male. *Simplex* Lec. and *aterrimus* Csy. are both founded upon the female of this species, the types of *simplex* being two very immature females. *Striatus* may be readily known by its large head in the male, with the antennal joints two to four uniformly decreasing and with the basal joint not modified beneath, and also by the small pubescent vertexal foveæ.

#### ARTHMIUS LeConte.

There can be no doubt of the validity of this genus, and its separation from *Batrisis* is a necessity in any natural scheme of classification. *Arthmius* differs from *Batrisis* in the complete absence of an impressed line and post-humeral fovea on the flanks of the elytra, and in having a radically different arrangement of the impressions and carinæ at the base of the abdomen; these characters alone would demand generic isolation, but, in addition, the form of the body is shorter and stouter—somewhat reminding us of *Bryaxis* as noted by LeConte,—the head entirely without trace of any



kind of foveal sulcus, and the prothorax devoid of longitudinal impressed grooves. In fact even the transverse line near the base is of a structure foreign to *Batrisus*, being simply a fine fold of the surface and not an impressed channel.

The conformation of the base of the tergum is wholly different from anything ever seen in *Batrisus*, there being two long strong carinæ mutually distant by about one-half of the entire width of the abdomen, each separating two large transverse impressions; so, instead of three impressions separated by two more approximate cusps, which is the constant condition in *Batrisus*, we have here four impressions arranged in two pairs; this is an extremely important character from a generic standpoint. The carinæ, although similar to those of *Bryaxis* and especially *Decarthron*, are, singularly enough, never divergent as in those genera but always feebly convergent. The tarsal claws are as in *Batrisus*.

It is useless to attempt to separate the species of *Arthmius* by referring to the females, as these possess no visible characters of differential value; I have therefore based the following arrangement of the four species in my cabinet upon male sexual modifications alone:—

Penultimate ventral segment transversely and deeply excavated.

The excavation broadly rounded in front, rather abruptly defined throughout and occupying nearly the entire segmental width; ventral pygidium strongly convex longitudinally, the surface ascending toward apex.

New York to northern Georgia.....**globo-collis**

The excavation small, with the edge ill-defined and rounded throughout, not more than one-half as wide as the segment; pygidium rather large, nearly flat; fifth antennal joint very much larger. Texas ....**bulbifer**

The excavation large, ill-defined and rounded at the edges except anteriorly where it is broadly angulate; pygidium nearly flat. North Carolina.....**involutus**

Penultimate ventral with an extremely deep excavation longer than wide, the sides of which are parallel and nearly straight, with rounded ill-defined edges. Florida.....**gracilior**

In many of the tropical species the head is remarkably modified in the male, but this is not the case in any thus far found within the United States. The modified antennal joints five to eight form, in all of our species, a more or less definite arc, and, on the under surface, are clothed with much shorter stouter and more recumbent setæ.

I have before me the female of two of these species, and in neither

of them is there any structure at all approaching that figured by Brendel for that sex (Mon. Pl. 1x, f. 76b); the last ventral is always large, flat, or very feebly convex, perfectly even on the disk, and acutely rounded and feebly produced at apex. In considering the excavated penultimate ventral and terminal pygidium of the male and the large flat apically prominent last ventral of the female, it is impossible not to discern a marked homology with *Euplectus*. The male pygidium is altogether absent in *Batrisus*, this being another very important generic distinction.

The antenna figured in three positions by Dr. Brendel (l. c.) is very remarkable, and entirely different from anything which I have observed in this genus.

**A. bulbifer** n. sp.—Stout, strongly convex, highly polished and pale flavo-ferruginous throughout, impunctate, the elytra very sparsely punctulate; pubescence coarse, long but not dense. *Head* just visibly wider than the prothorax, subquadrate; upper surface smooth, with two small nude foveæ at basal third separated by rather more than one-half the total width, also with a feeble impression just behind each of the large feeble antennal prominences; eyes large, prominent, at one-half of their own length from the base; antennæ one-half as long as the body, the fifth joint very large, subquadrate, nearly twice as wide as the fourth, eighth strongly acuminate externally at apex, five to eight forming the usual arc. *Prothorax* as long as wide, widest and broadly rounded before the middle; sides feebly convergent and broadly sinuate toward base; disk even, strongly convex, with a small nude fovea at each side near the base, the two connected by a fine even straight and transverse fold of the surface; basal foveæ feeble. *Elytra* convex, one-third wider than long, nearly one-half longer than the prothorax and distinctly more than twice as wide; sides evenly arcuate; humeri nearly obsolete, feebly tumid. *Abdomen* from above fully as wide as the elytra but not quite as long, the first segment forming two-thirds of the whole. Length 1.5 mm.; width 0.7 mm.

#### Texas.

The unique male, from which the description is drawn, appears to be somewhat immature. The anterior tibiæ are strongly, triangularly toothed externally at apical third, and the penultimate ventral has an unusually small, strongly transverse excavation not more than one-half as wide as its disk, the impression nowhere abruptly defined; pygidium rather large, nearly flat. A female before me from Texas, probably of this species, is darker in color and with much shorter elytra.

**A. involutus** n. sp.—Moderately stout, highly polished, dark red-brown, the elytra paler, bright red; legs paler, brown; integuments impunctate;

pubescence long, coarse, erect but sparse. *Head* scarcely perceptibly wider than the prothorax, subquadrate, the upper surface smooth, even, not very convex, with two strong nude foveæ separated by one-half the total width; antennal tubercles wide and flat, each limited internally and posteriorly by a short oblique impression; eyes large, prominent, at fully one-half their length from the base; antennæ one-half as long as the body, fifth joint but slightly wider than the fourth, eighth but little produced outwardly at apex. *Prothorax* fully as long as wide, widest and broadly rounded at the sides before the middle, with a fine transverse fold before the base which is flexed abruptly forward at right angles for a very short distance at its lateral extremities, the right angles enclosing a small nude fovea; two foveæ at the basal margin at each side deep and distinct. *Elytra* one-fourth wider than long, one-half longer than the prothorax and more than twice as wide, convex, impunctate, the sides broadly arcuate; humeri rather prominent and tumid. *Abdomen* from above nearly as wide as the elytra but distinctly shorter, the basal segment forming one-half the length. Length 1.4–1.5 mm.; width 0.65–0.7 mm.

North Carolina (Asheville).

I took a large series of this species in the mountains of western North Carolina; there is very little variation, but the female differs considerably from the male, being smaller, unicolorous and darker, and especially narrower, with shorter elytra and relatively longer abdomen, the latter having the last dorsal acutely pointed as in some species of *Batrissus*. The description refers to the male, the anterior tibiæ having a lamelliform external tooth at apical third, the surface between this and the apex feebly impressed and with a small central foveola which encloses a condensed tuft of setæ; penultimate ventral with a large deep non-abrupt excavation, angulate and abruptly defined anteriorly. This species differs greatly from *bulbifer* in the form of the tibial tooth, in addition to the other sexual characters.

#### BRYAXINI.

#### **RYBAXIS** Saulcy.

The species of this genus are not numerous, but appear to be well differentiated from *Bryaxis* by possessing a deep groove on the vertical flank of each elytron and a transverse biarcuate sulcus joining the lateral pronotal foveæ. Although the sulcus is perfectly constant, exhibiting no tendency to vary in the direction of *Bryaxis*, there is notable inconstancy in the median fovea, which may be large and spongiose or completely obsolete, the sulcus then being simply abruptly bent and very feebly dilated at this point. *Rybaxis*

is distinguished further from *Bryaxis* by the internally dentate anterior tibiæ of the male. The species known to me may be thus characterized:—

Median pronotal fovea large circular and spongiöse; basal carinæ of the abdomen very short and remote.....**valida**

Median fovea obsolete or very feeble, never spongiöse; abdominal carinæ less distant.

Antennal club nearly normal in the male, the anterior trochanters not apically spinose.....**conjuncta**

Antennal club very large compact and subcylindrical in the male, the anterior trochanters internally spinose near the apex.

Body as in *conjuncta*; male antennal club broader, the last joint not longer than the three preceding together; tenth joint more than twice as wide as long.....**brendeli**

Body as in *Reichenbachia rubicunda*, but with larger elytra; male antennal club more elongate, the tenth joint one-half wider than long, the eleventh as long as the four preceding, the tenth and eleventh with a large common flattened impression beneath, which, on the eleventh, is strongly and very coarsely asperate, on the tenth smooth....**mystica**

In *brendeli* Horn, the flattened lower surface of the tenth antennal joint in the male is not smooth, but coarsely asperate except near the base. *Valida* differs greatly from *sanguinea* in having a larger circular pronotal fovea. Dr. Brendel indicates two varieties of *conjuncta*; the first is not described and must therefore be regarded as unpublished, but, on the other hand, *truncaticornis* appears to be a valid species.

**R. mystica** n. sp.—Robust, convex, oval, black, the apical joint of the antennæ paler; elytra ruby-red, blackish at base and apex; legs pale ferruginous throughout; integuments polished, subimpunctate, the elytra sparsely and very obsoletely punctulate; pubescence moderate in length, coarse, sparse. *Head* wider than long, very slightly smaller than the prothorax; eyes large, prominent; foveæ large, deep, just behind the middle, separated by rather more than one-half the total width; antennal prominences separated by a large deep and smooth concavity, without trace of fovea; antennæ stout, one-half as long as the body, second joint stouter but not longer than the third, fourth smallest of all, quadrate, fifth to seventh larger, slightly modified, eighth narrower, wider than long, ninth twice as wide as long, more acute internally, tenth very much longer and wider than the ninth. *Prothorax* two-fifths wider than long, widest before the middle, the sides convergent and broadly, very feebly sinuate thence to the base; transverse sulcus gradually and feebly dilated in the middle but remaining abruptly defined; median fovea completely obsolete. *Elytra* but slightly wider than long, the sides feebly divergent, broadly arcuate, rounded at base for some distance to the



prothorax, the humeri distinct; discal stria extending to apical fourth or fifth. *Abdomen*, viewed laterally, scarcely as long as the elytra; basal segment with two straight divergent carinæ separated by one-third the discal width and scarcely one-third as long as the segment. Length 1.5 mm.; width 0.75 mm.

Rhode Island.

The description is drawn from a male example which is apparently unique.

### BRYAXIS Leach.

Those species having the dorsal surface of the abdomen similar in the two sexes, separated by Thomson under the name *Brachygluta*, appear to be entirely wanting in the North American fauna, all of our species entering the true genus *Bryaxis* as limited by Saulcy, Reitter and others. *Nisa* Csy., is a subgenus, differing from the true *Bryaxis* in having the medial of the three spongiose pronotal foveæ much smaller than the lateral, and all very feebly impressed, in having the trochanters larger—often spinose in the male,—the first dorsal segment entirely devoid of carinæ, and the antennal club of the male curiously and intricately modified but with the tergum simple; the venter is generally broadly and feebly impressed nearly throughout the length in that sex. The following is a distinct and interesting species, with very complex abdominal modifications in the male, from which sex the description is taken:—

**B. labyrinthea** n. sp.—Moderately stout, convex, polished, bright rufo-testaceous throughout; pubescence rather long, coarse and sparse. *Head* impunctate, with three large spongiose foveæ, the surface between the occipital foveæ and the eye feebly impressed; eyes large, prominent, not quite attaining the base; antennæ long and slender, all the joints elongate, except eight to ten which increase gradually in size, obtuse in form, the eighth wider than long. *Prothorax* very feebly and sparsely punctulate, slightly wider than long, but little wider than the head, the median fovea much smaller, more basal and deeper than the lateral, very deeply impressed, with a small spongiose area at the bottom. *Elytra* convex, finely, very sparsely punctulate, nearly as long as wide, almost twice as wide as the prothorax. *Abdomen* shorter than the elytra, with two large exposed dorsal segments, the first three times as wide as long, with two equally trisecting parallel and very pronounced tumid ridges, gradually increasing in size and prominence from base to apex and each bearing upon its crest one of the fine abdominal carinæ, the latter entire and separated by one-third the width, just perceptibly divergent; apex abruptly perpendicular throughout the width, with a porrect setose process at lateral third far below the crest of the corresponding dorsal ridge, and also a small rounded porrect median lobe, bearing at apex two



small approximate and mutually everted reflexed and corneous laminae. Second segment slightly longer than the first, trapezoidal, one-half wider than long, the apex broadly sinuate with obtusely rounded angles and two-thirds as wide as the base, the surface not at all foveate at base, broadly, strongly impressed laterally especially toward base, the median parts obtusely but strongly elevated throughout the length, becoming broadly and gradually impressed toward apex thus forming the apical sinuation. The second segment only slightly overreaches the third, which is inferior and but slightly modified. Metasternum broadly impressed. Length 1.8 mm.; width 0.8 mm.

New York. Mr. W. Jülich.

It is almost impossible to describe the extremely complicated modifications on the transverse vertical wall which forms the apex of the first segment. This species is allied to *intermedia*, differing in the parallel and not oblique elevations of the first segment, the shorter broader and non-foveate second segment and in many other details.

The species described by me under the name *infinita* (Bull. Cal. Acad. Sci., II, p. 184), is an altogether different thing from *belfragei*, with which it has been considered synonymous. The differences can be noted in the following statement drawn from the females of the two species, the original types of each:—

Distinctly stouter in form; head much smaller and narrower than the prothorax, the eyes moderate in size, the tempora strongly convergent behind them to the neck; prothorax slightly transverse; subapical dorsal segments of the abdomen inferior and strongly inflexed.....	<b>belfragei</b>
Head very large, fully as wide as the prothorax, the eyes extremely large and prominent, extending to the base; tempora obsolete; prothorax much shorter and more transverse; abdominal segments feebly inflexed near the apex .....	<b>infinita</b>

The drawing of *belfragei* given by Brendel (Bull. Univ. Iowa, Pl. IX, f. 57) seems to have been taken from a specimen of *infinita*, and the male sexual modifications are probably of the same general type in both. There can be no doubt that the original series from which *infinita* was described, was composed entirely of females, and the differences signaled in the remarks beneath the description, were in some measure due to unconscious imagination while laboring under the impression that there ought at any rate to be one male among fourteen specimens.<sup>1</sup>

<sup>1</sup> A lifetime might well be occupied in simply training the brain to see things as they really are and as revealed to us by the visual images on the retina, and the nearest we can ever get to truth is an approximation, depend-

Under the name *dentata* Say, two remotely isolated species have been confused, one having the body larger, pale brown throughout, with the first dorsal strongly conical and prominent at apex in the male, and the other smaller, black with paler elytra, the first ventral not prominent at apex. Neither of these species corresponds with Say's description, which states that the elytra are "half the length of the tergum;" body blackish, with paler elytra, the "tergum simple," and the length one-twentieth of an inch. No species of *Bryaxis* known to me has the elytra so short in comparison with the tergum. No mention is made of any sexual modification, but there is added "Var. a. Reddish-brown." In view of the name given by Say, and of the fact that he had before him reddish-brown specimens, I think the best way out of this dilemma is to apply the name *dentata* Say, to the species for which it is most appropriate, viz.: the larger brown species with strongly conical first dorsal, and to designate the smaller blackish species by another name, as suggested in the following description drawn from the male:—

**B. intricata** n. sp.—Moderately stout, convex, polished and subimpunctate throughout, black; antennæ piceous; elytra and legs rufo-ferruginous; pubescence short, subrecumbent, sparse. *Head* smaller and just visibly narrower than the prothorax, deeply trifoveate; eyes moderate, but slightly more than twice as long as the tempora, the latter strongly convergent; antennæ rather short and stout, as long as the head and prothorax, club gradual, robust, fourth joint scarcely longer than wide. *Prothorax* but slightly wider than long, widest at the middle, with three extremely large equal circular and spongiose foveæ, the median much nearer the base than the lateral. *Elytra* but slightly wider than long, quite distinctly less than twice as wide as the prothorax, the sides moderately divergent, broadly arcuate; humeri distinct. *Abdomen*, viewed laterally, much shorter than the elytra. First dorsal nearly two and one-half times as wide as its median length, broadly, parabolically rounded behind throughout the width, with two fine short basal carinæ which are parallel and distant by about one-half the discal width, the surface evenly, feebly convex throughout; apex not deflexed but with the surface very slightly more transversely arched in median sixth or seventh, the edge of the arch broadly, very feebly and simply emarginate. Second segment scarcely one-half as long as the first, excavated in anterior two-thirds and median third, the excavation with two distant anteriorly divergent ridges which are densely clothed with short erect setæ; at the apical margin, under the apex of the

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ing not only upon the amount and quality of this training, but upon the relative freedom of the brain from temporary bias and prepossession.

first segment, there is a thin transverse erect lamina, gradually curved backward, the apex appearing immediately under the middle of the emargination of the first segment; from the posterior base of the erect lamina there projects obliquely backward a small straight narrow ligula. Remainder of abdomen simple. *Legs* rather slender, the posterior tibiae bent, the intermediate shorter and thicker. Length 1.25 mm.; width 0.65 mm.

New York.

The abdominal characters of this species are more nearly homologous with those of the *texana* group than with *abdominalis* or *intermedia*. It is one of the smallest species of the genus.

In the desert regions extending from western Texas to southern California there are species of a peculiar type, pale ferruginous in color and having the first dorsal segment in the male very long, in fact constituting the entire abdomen when viewed from above, with the apex deflexed and more or less broadly sinuate in the middle. I have before me three species, all represented by the male alone, the female being apparently very rare; they may be distinguished as follows:—

Elytra but slightly wider than long, the suture very much longer than the first ventral segment, with the sides less divergent and more arcuate.

First dorsal segment with the sides subparallel, at the apex much wider than the elytra at the humeri; second nearly twice as long as the third, the apex broadly, feebly sinuate in middle fourth, the surface feebly and approximately biimpressed in median fourth and anterior half; second and third segments strongly punctate throughout; third and fourth subequal in length; last dorsal broader, even, entire and very broadly rounded at apex. Length 1.5 mm.; width 0.7 mm. Southern California.

**loripes** n. sp.

First dorsal strongly narrowed from base to apex, at the latter point scarcely wider than the elytra at the humeri; second transverse at apex, scarcely at all longer than the third, feebly, obliquely impressed on the disk at each side of median third in anterior half, and also along the apical margin, the central portion between the impressions very feebly elevated, strongly punctate and setose; third segment one-half longer than the fourth, with the apex broadly and very feebly sinuate in the middle; last dorsal with a short beveled spongiöse apical region, the anterior margin of which is abruptly limited and broadly anteriorly arcuate throughout the width; body otherwise nearly similar in form and size to *loripes* though rather less stout ..... **texana** Csy.

Elytra short and transverse, the sides strongly divergent from the humeri and nearly straight; suture but slightly longer than the first dorsal; second dorsal scarcely more than one-half as long as the third, deeply emarginate in the middle of its anterior margin under the apex of the first, the surface with a transverse elevated median tubercle occupying the entire segmental

length and limited at each side by a feeble oblique impression, the latter more distinct anteriorly; third segment nearly twice as long as the fourth, the former scarcely perceptibly sinuate at the middle of the apex; punctures throughout fine and sparse; body smaller and less stout.

**arizonæ** Csy.

The lengths of the segments are measured along the middle line.

Of *foveata* Lec., I have before me several specimens taken in Utah by Mr. Soltau, and perfectly agreeing with the female type from Yuma, California. The male has the following abdominal characters:—

First dorsal a little more than twice as wide as long, with two feebly divergent basal carinæ more than one-third as long as the segment (very much shorter and feebler in the female), separated by one-half of the discal width; apical margin broadly, feebly arcuate; surface even but, near the apex at the middle, very slightly more transversely arched, the edge feebly emarginate in median eighth to tenth, the notch rounded, much deeper when viewed obliquely from behind; second segment less than one-half as long as the first, broadly, deeply impressed in median half and anterior two-thirds, the impressed area transverse, with a posteriorly arcuate rounded hind margin, the bottom smooth polished and nearly even throughout, the middle of the anterior margin narrowly reflexed and curved upward and backward far under the arched portion of the apex of the first segment.

*Foveata* belongs to the same group as *intricata* and resembles it in form and size, but is dark red-brown in color with paler elytra. There are no marked sexual differences in the antennæ, and the original type as described (Ann. Lyc. N. H., V, p. 215) appears to be a female. The description of the male sexual characters more recently published by LeConte (Tr. Am. Ent. Soc., VIII, p. 181) is somewhat misleading.

The sexual characters of some previously published species now united as varieties of *hæmatica*, indicate that they are really entitled to full specific recognition. This is especially the case with *perforata* Aubé. It is desirable therefore that *perforata* Brend. should receive another designation, and I would suggest the name **terebrata**. This species belongs to the same group as *foveata* and *intricata*.

#### **REICHENBACHIA** Leach.

Our eastern species of this genus are somewhat difficult to identify owing to the absence of strongly marked sexual characters; a few of them however, such as *scabra*, *gemmifer* and *puncticollis*, are



quite isolated otherwise. The typical *rubicunda* is rather stout, with subimpunctate polished integuments, elytra distinctly shorter than wide, abdominal carinæ rather long, divergent and separated by between one-fifth and one-sixth of the entire width, the pubescence long, bristling and coarse, and the male sexual characters feeble, the last ventral flattened and the last dorsal with a very small apical sinuation, two or three times as wide as deep, with its lateral limits not abruptly defined. In *gracilicornis* the body is equally stout and the carinæ similar, but the vestiture is a little shorter and coarser, and the last dorsal has at apex a small semi-circular nick, abruptly limited by acute angles, the last ventral just visibly impressed. *Gracilis* is narrower and still more hirsute than *rubicunda*, though similarly carinate, and has the last ventral deeply impressed, the last dorsal being broadly sinuate at apex, the sinuation about twice as wide as in *rubicunda* or *gracilicornis* but nearly similar in shape to that of the former. *Atlantica* also has the vestiture long, erect and hirsute, but the abdominal carinæ are much closer, nearly as in *divergens*.

On the other hand *divergens*, *facilis*, *cribricollis*, *congener*, *furtiva* and *inepta*, have the pubescence decidedly shorter and more recumbent, and the abdominal carinæ generally less distant though in different degrees; in *inepta* they are relatively a little more distant than in *rubicunda*, this species as well as *congener* being distinguished also by its minute size. In *congener*, *furtiva* and *cribricollis*—if I have correctly identified this species—the carinæ are a little less distant than in *rubicunda* but more distant than in *facilis* and *divergens*, where they are separated at base by a distance not greater than that of the sutural striæ at the middle of the elytra. *Cribricollis* has an unusually long prothorax.

*Divergens* was recently redescribed by Brendel under the name *canadensis*, specimens sent to me by the author agreeing completely with the types in the LeConte cabinet; the pronotum in these types is sparsely and coarsely but feebly punctate, more distinctly so anteriorly and not impunctate as stated in the original description. The species is easily recognizable by its short transverse and roughly scabro-punctate elytra. *Facilis* is a widely different species with longer, subimpunctate elytra and still more minute appressed pubescence; it differs also in antennal structure and male sexual characters, and was possibly described by Brendel under the name *divergens* Lec.



*Inopia* Csy., is the same as *litoralis* Brendel; this is one of the species confounded with *puncticollis* by LeConte. I agree with Dr. Brendel that the true *puncticollis* is, when mature, dark with reddish elytra, the pronotum being very strongly and closely punctate especially in the male. It is abundant in the swamps near New York and Washington. The prothorax in *inopia* is feebly punctate, especially anteriorly, and not impunctate, as originally stated.

The few remaining specimens of *nevadensis* in my cabinet are females, and it is quite certain that the male has never been taken. The head is without a true frontal fovea, but has a short distinct transverse linear and pubescent impression between the antennæ; otherwise it is so similar to the female of *fundata* and *deformata* that I have no hesitation in putting it near them for the present; in the females of those species there is no trace of the transverse frontal impression.<sup>1</sup>

The species described by me as *franciscana* is identical with *compar* as surmised by Dr. Brendel. The name *polita* given by Brendel to one of our species is preoccupied by King for an Australian species—possibly belonging to the genus *Rybaxis* however. *Minuta* Brend. (Proc. Ent. Soc., Phila., 1865, p. 30) cannot be identified, and is not referred to by Dr. Brendel in his recent monograph.

The following species seem to have been overlooked:—

**R. furtiva** n. sp.—Stout, convex, polished, black or piceous-black with paler and more rufous elytra; legs and antennæ pale ferruginous; integuments sparsely and not distinctly punctulate; pubescence very short but stiff, almost recumbent, rather sparse. *Head* much narrower but only slightly shorter than the prothorax, deeply trifoveate; eyes moderate, very convex and prominent, at very nearly their own length from the base; antennæ slender, one-half as long as the body, the club very gradual, joints elongate, fifth twice as long as wide, eighth as long as wide. *Prothorax* nearly one-half wider than long, widest and evenly, strongly rounded at about the middle; apex scarcely two-thirds as wide as the base; median fovea small but distinct, lateral large, visible from above. *Elytra* large, nearly twice as long as the prothorax and fully twice as wide, not quite as long as wide; humeri narrow at base but distinct; discal stria evanescent at apical fifth. *Abdomen*, from above, much shorter than the elytra, equally wide, the first dorsal nearly

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<sup>1</sup> The small circular fovea in the transverse frontal impression, mentioned in the original description of *nevadensis*, seems to be the result of slight injury to the type, which was the only specimen examined in this connection.

three times as wide as long, with two very short basal striæ which are strongly divergent and distant at base by one-sixth of the discal width. *Legs* rather long and slender. Length 1.3 mm.; width 0.75 mm.

#### Pennsylvania.

A single pair, differing only in the length of the abdominal carinæ. The carinæ appear to be variable in length as a general rule in this genus, but are less variable in direction and are quite constant in mutual distance asunder. The male type above described has the last ventral very large, very broadly and somewhat deeply impressed, the impression even; last dorsal very broadly but distinctly sinuate at apex.

This species belongs near *rubicunda* and *gracilicornis*, but differs greatly in its short subrecumbent pubescence and strongly marked male sexual characters of the last ventral, also in the very different form of the terminal notch of the last dorsal. It is also closely allied to *facilis*, having the same minute decumbent pubescence, but more distant abdominal carinæ; it is intermediate between *rubicunda* and *facilis* in many respects.

**R. inepta** n. sp.—Rather stout, convex, polished, subimpunctate, dark red-brown, the elytra brighter rufous; pubescence moderately abundant, rather short, stiff, inclined. *Head* much smaller than the prothorax, with three spongiose foveæ, the two posterior smaller than the subapical; eyes moderate in size, well before the base; antennæ scarcely longer than the head and prothorax, rather slender, the club stout, fifth joint nearly one-half longer than wide, the eighth slightly transverse. *Prothorax* two-fifths wider than long, rounded on the sides and widest just before the middle; lateral foveæ distinct, intermediate subobsolete, consisting of an oval impression so feeble as to be discernible only in certain lights, near the posterior margin of which there is an excessively minute puncture, only distinct under rather high power. *Elytra* transverse, one-half wider than long, one-half longer than the prothorax and nearly twice as wide; sides strongly divergent; discal stria extending nearly to apical sixth. *Abdomen*, from above, but slightly shorter than the elytra and equally wide, the first segment nearly three times as wide as long, with two straight divergent carinæ in basal third, separated by about one-fourth of the discal width. Length 1.0 mm.; width 0.65 mm.

#### New Jersey.

The single specimen before me is a female. The species belongs near *rubicunda*, differing obviously however in its very minute size, shorter, coarser vestiture and nearly obsolete subbasal fovea of the pronotum. It is also allied to *furtiva* but has the pubescence longer and coarser, and the abdominal carinæ more distant; the size, also, is much smaller.

**R. demissa** n. sp.—Moderately stout, convex, polished, dark brown, the elytra paler; integuments subimpunctate; pubescence short, coarse, strongly inclined, not very dense but distinct. *Head* scarcely shorter but much narrower than the prothorax, excepting the eyes subquadrate; foveæ deep, the posterior widely distant, subapical larger, in the interantennal depression; eyes rather small, prominent; tempora to the neck a little longer than the eye, strongly rounded; antennæ about as long as the head and prothorax, normal, the club gradual but heavy, the eleventh joint nearly as long as the preceding four. *Prothorax* transverse, one-half wider than long, widest at the middle where the sides are rather strongly rounded; apex one-half as wide as the disk and two-thirds as wide as the base; lateral foveæ large, deep, just behind the middle, visible from above, median small, near the base. *Elytra* very feebly punctulate, together fully two-fifths wider than long, one-half longer than the prothorax and nearly twice as wide; sides strongly divergent; humeri broadly, obliquely rounded, not abrupt; discal stria deep, extending to apical fifth. *Abdomen*, from above, slightly shorter than the elytra but fully as wide; basal carinæ fine, fully one-third as long as the segment, very feebly divergent but slightly everted toward apex, separated by rather more than one-third of the discal width. *Legs* moderate; posterior tibiæ bent as usual. Length 1.1 mm.; width 0.65 mm.

District of Columbia.

The type is a male but with very feeble sexual modifications, having the last ventral feebly flattened and the sinuation at the tip of the last dorsal narrow and scarcely distinct.

This minute species resembles *congener* in size but belongs near *polita* in the Brendelian arrangement, differing in its smaller size, much shorter, broader form, more transverse prothorax and elytra, and in many other characters. Two specimens.

There is a remarkable group of *Reichenbachia* confined apparently to our southwestern country, which is distinguished not only by curious modifications of the intermediate joints of the antennæ, but more particularly by the fact that these modifications exist in a rudimentary manner also in the antennæ of the female, although the special function subserved by them in the former sex apparently cannot obtain in the latter. It seems as though this phenomenon might be parallel in some way with that presented by the rudimentary, though well-marked, mammæ of the male in the higher vertebrates.

The species of this little group may be distinguished in the following manner by the females, the males of *subtilis* and *complexens* being unknown:—

Fifth and sixth antennal joints almost exactly equal, distinctly stouter than the fourth, three-fourths longer than wide, feebly rounded internally, straighter externally; body larger and much stouter....**complectens**

Fifth and sixth joints cylindrical, not much thicker but very much longer than the fourth; fifth shorter than the sixth, the former less, the latter more than twice as long as wide.....**tumida**

Fifth antennal joint alone modified, slightly thicker, more arcuate internally toward apex, nearly twice as long as wide, as long as the two preceding together and two-thirds longer than the sixth; first joint much longer and thicker than the second, densely punctate and with long pubescence; eyes moderate; frontal fovea less apical, much nearer each of the vertexal foveæ than the transverse distance separating the latter, the triangle much wider than long.....**wickhami**

Fifth joint alone modified but in relative length only, twice as long as wide and not quite as long as the two preceding together; first joint not longer or wider than the second, sparsely punctulate and sparsely pubescent like the following; eyes much larger, twice as long as the tempora; foveæ of the head forming an equilateral triangle, the frontal much more apical, on the declivity and as distant from each of the vertexal as the latter are from each other; length 1.25 mm., width 0.6. Yuma, California.

**subtilis**

In *subtilis*, which is represented by the unique female type only, the circular spongiose frontal fovea is not at all smaller than the others, but if anything a little larger; it is however unusually apical, being situated on the anterior declivity and so may appear very slightly smaller or, more properly, elliptical, from a vertical point of view; in a posteriorly oblique line of sight it may of course soon be made to vanish. *Subtilis* may be very readily separated from *wickhami* by the larger eyes, position of the frontal fovea, and much smaller basal joint of the antennæ.

In all of these species the color is pale rufo-ferruginous throughout, the surface very convex, the elytra long and ample, the basal carinæ of the abdomen short, subparallel and separated by one-third of the total width, except in *tumida*, where they are sensibly more distant. In *tumida* the head of the male is very remarkable, the upper surface being nearly flat with two large distant foveæ at basal third, produced anteriorly beyond the antennæ in a short trapezoid, the apex abruptly transversely truncate, feebly bisinuate and as wide as one-half the interfoveal distance; at the narrow truncate apex the surface becomes abruptly vertical or even gradually feebly inflexed to the labrum, the vertical part one-half as long as the upper horizontal part; the frontal fovea is replaced by a



transversely fusiform spongiöse line at the angle separating the vertical from the upper portion, and is invisible from above. The large sixth antennal joint is deeply excavated almost throughout its extent beneath, the excavation clothed with erect subsquamiform setæ. In the female the head, as in *complectens* ♀, is simple, the three circular foveæ forming a large equilateral triangle. These four species, while agreeing generally among themselves, are all very isolated, and the discovery of the male of *subtilis* and *complectens* may be awaited with interest. In conformity with a general rule in the present genus, the female is smaller than the male, and has shorter elytra.

#### BYTHININI.

#### BYTHINUS Leach.

The presence or absence of small raised knobs on the under surface of the second palpal joint is not a generic character in this group of species, as these minute tuberosities may be traced more or less readily in nearly every representative; in our own *carinatus* they are extremely feeble, but in *tychoides* Brend. (*Tychus bythinoides* Br. olim) they are very distinct. In fact *Machærodes tychoides* agrees almost exactly with an example of *Bythinus italicus* in my cabinet, and I cannot perceive that there is even a subgeneric difference in any direction.

*Pselaptrichus* is extremely closely allied to *Bythinus*, differing only in the longer abdomen and more narrowed and produced frontal tubercle, but in view of the variation exhibited in the latter respect by the numerous species of *Bythinus*, this cannot be considered of very decisive value. The more elongate apparent first dorsal segment is the only really important differential character possessed by *Pselaptrichus tuberculipalpus* Brend., but there can be but little doubt that this alone is sufficient to establish its validity.

*Bythinus* is extremely poorly represented in America, but in Europe appears to be the most important element of the family.

#### CYLINDRARCTUS Schaufuss.

The more elongate third palpal joint, mentioned by Schaufuss and Raffray as a distinguishing feature of this genus, is, it seems



to me, one of the least decisive of the differential characters, for there is no species in which this joint becomes fully as long as the fourth, and there are several species of true *Tychus* which have the third and fourth joints quite similar to the usual form in *Cylindrartus*; the second palpal joint is however more abruptly and strongly clavate and with a more slender peduncle in *Tychus*.

*Cylindrartus* is very closely allied to *Tychus*, but differs in the more elongate and somewhat more depressed form of the body, the more elongate antennæ, in having the vertexal foveæ on the sloping sides near the eye—and not remote from the eye and visible from above as in *Tychus*,—and especially in the much less distant posterior coxæ.

In *Tychus* the basal joint of the antennæ is usually simple, while in *Cylindrartus* it is generally modified in some peculiar manner; in the former the male may or may not have the anterior trochanters spiculate, and the last ventral is seldom foveate as in *Cylindrartus*, but,—in *T. minor* for example,—has the surface broadly concave, the apex gradually deflexed to the level of the flat ventral pygidium. In *Tychus* the second joint of the posterior tarsi is subequal to or longer than the third, while in the present genus the second joint is shorter than the third. Duly considering all of these differences, I am therefore inclined to agree with Mr. Raffray in considering *Cylindrartus* a genus distinct from *Tychus*.

The known species may be thus distinguished:—

- Third palpal joint angulate internally near the base; sixth ventral of the male with a deep indefinitely limited impression, which is acutely angulate anteriorly at the anterior margin, the apical margin deflexed and with an abruptly limited semi-circular notch ..... **longipalpis**
- Third palpal joint more or less broadly rounded within behind the middle, not at all angulate.  
Basal joint of the antennæ obliquely carinate externally at base; sixth ventral of the male with a deep triangular excavation, the apical angle of which is at the anterior margin as in *longipalpis*; pubescence rather shorter than usual, very coarse ..... **americanus**
- Basal joint not described; pubescence shorter than in *comes* and *crinifer*; sixth ventral with a deep circular fovea; body larger, 1.9 mm. in length. **ludovicianus**
- Basal joint obliquely flattened in a large external area at base; sixth ventral of the male with a small transversely lunate impression just before the ventral pygidium..... **comes**
- Basal joint compressed beneath, the lower margin strongly arcuate; females only known; vestiture very long and bristling..... **crinifer**

Of *americanus* Schauf. I have before me a single male from Illinois; it is blackish in color throughout and unusually narrow and elongate; the third palpal joint is evidently shorter than the fourth.

**C. comes** n. sp.—Moderately narrow and convex, polished, subimpunctate, dark rufo-testaceous, the abdomen piceous; pubescence sparse but very long, erect, the hairs of the elytra about one-third as long as the prothorax. *Head* longer than wide, as long as the prothorax but much narrower; eyes large, prominent, nearly at the base; antennal tubercles convex; vertexal foveæ deep, perforate, on the sloping sides near the eye; subfrontal spicule midway between fovea and tubercle, small; palpi long, third and fourth joints beset with long erect setæ, the former much the shorter; antennæ one-half as long as the body, the club not quite as long as the funicle, first joint stout, longer than wide, with a large oval area at base which is flattened and well defined above and beneath, one to three decreasing feebly in thickness, three to seven longer than wide, eighth wider than long, ninth and tenth abruptly much wider, trapezoidal, eleventh as long as the preceding three. *Prothorax* convex, nearly as long as wide, widest and strongly rounded at the middle; sides thence strongly convergent to the apex which is three-fifths as wide as the base; near the basal margin a few small feeble impressions and on each side before the base a larger fovea. *Elytra* about as long as wide, as long as the head and prothorax, nearly twice as wide as the latter; humeri evident, widely exposed at base, the humeral width fully four-fifths of the subapical; impressed discal line extending to the middle. *Abdomen* scarcely as wide as the elytra and much shorter, the first visible dorsal distinctly longer than the second; border moderate. Length 1.6 mm.; width 0.7 mm.

Florida.

The male, from which the description is taken, has a short stout erect spine at the base of the anterior and posterior trochanters, the intermediate simple. The metasternum is tumid, the tumidity bearing two rather distant short erect and acute spines, arranged transversely just before the middle of the metasternal length, the posterior declivity broadly feebly and longitudinally impressed to the intercoxal situation. First and second ventrals not impressed, the sixth with a small deep lunate impression at apex, not extending beyond the middle of the segment and bordering the small flat ventral pygidium.

This species differs from *ludovicianus* Brend. in its smaller size and longer pubescence.

**C. crinifer** n. sp.—Rather convex, polished, dark rufo-testaceous throughout, often paler from immaturity; integuments subimpunctate; pubescence long, sparse, erect and bristling, the hairs of the elytra nearly one-third as long as the prothorax. *Head* scarcely as long as the prothorax and about

three-fourths as wide, convex; eyes moderate, near the base; supra-ocular foveæ at some distance from the eye; spicules very small; antennæ one-half as long as the body, the basal joint stout, compressed beneath, two to five longer than wide, six and seven quadrate, eighth wider than long, club large, abrupt; palpi long but stout, the last two joints pubescent with erect, minutely capitulate setæ and smaller subrecumbent hairs. *Prothorax* one-fourth wider than long, widest at the middle where the sides are rather broadly rounded, strongly convergent and sinuate toward the apex, which is two-thirds as wide as the base; subbasal fovea at each side rather large, the surface before it somewhat broadly flattened. *Elytra* not quite as long as wide, scarcely as long as the head and prothorax; sides broadly, evenly arcuate throughout; humeri angulate and distinctly exposed, the humeral width fully three-fourths of the subapical; discal impression feeble, traceable to the middle. *Abdomen* rather narrower and much shorter than the elytra. Length 1.5–1.6 mm.; width 0.65–0.7 mm.

Indiana; Iowa.

The two type specimens are females, which leads me to think that the modifications of the first antennal joint in this genus may possibly be to some extent asexual.

#### TYCHUS Leach.

In both *Tychus* and *Cylindrarctus* the sexual characters are nearly as in *Arthmius*, the male having a small flat horizontal pygidium behind the last ventral segment; in the female the pygidium is wanting, and the last ventral is more or less acutely produced in the middle at apex. In these genera the first antennal joint is attached to the under side of the frontal tubercles as in *Pselaphus*, and the antennal cavities are very large and extremely deep, so that they meet internally, being separated—in an oval area—only by a thin transparent membrane. In both genera the upper surface of the head has a small nude puncture, more or less near the anterior part of the eye, and, between this and the frontal tubercles on each side, a small erect spicule which is a very constant peculiarity throughout. The antennal tubercles are large, approximate, and separated by a short longitudinal canal.

Our species are comparatively few in number, and none have yet been observed possessing sexual modifications of the antennæ; they are minute, closely allied among themselves, and may be distinguished by the following characters:—

*Species of the Atlantic Regions.*

Dark brownish-rufous in color; foveæ of the head extremely minute, perforate, the subfrontal spicules very feeble (*testaceus* || Csy.) ..... **minor**  
 Black, sometimes with slightly paler elytra; much smaller species, the vertexal foveæ larger, more impressed, the spicules large and conspicuous.  
 Subfrontal spicules midway between the tubercles and vertexal foveæ.

**spiculifer**

Subfrontal spicules very near the foveæ, distant from the tubercles.

**verticalis**

*Species of the Rocky Mountains.*

Body small, brown, coarsely, not densely pubescent, impunctate; eyes rudimentary. Length 1.4 mm. .... **microphthalmus**

*Species of the Pacific Coast.*

Antennæ normal, the club composed of three larger joints, the ninth abruptly much wider than the eighth; anterior trochanters generally not sexually modified.

Pubescence dual, composed of very long erect hairs with others much shorter and more decumbent ..... **puberulus**

Pubescence simple or nearly so, shorter and much less conspicuous.

Elytra larger, the humeri broadly exposed at base, rounded (*bipuncticeps* Csy.) ..... **cognatus**

Elytra smaller, more oblique at the sides to the base, the humeral angles obsolete ..... **sonomæ**

Antennæ with a very stout club which is composed almost entirely of the last two joints, the ninth but slightly wider than the eighth; body very small, narrow, blackish, with the elytra red clouded with black toward base; pubescence rather long; anterior trochanters strongly spiculate at base in the male ..... **tenellus**

In *cognatus* the sixth ventral of the male is feebly subimpressed, the apex with a broad feeble cuspiform emargination; in *tenellus* the sixth ventral is scarcely impressed, the apex with a triangular emargination; in both, the male pygidium is very small.

**T. spiculifer** n. sp.—Minute, black, the elytra more rufous; legs and antennæ pale; integuments polished, subimpunctate; pubescence sparse, long and coarse. *Head* distinctly narrower than the prothorax and about as long; eyes situated at nearly their own length from the base; vertexal foveæ rather large, distinct from above, the subfrontal spicules distinct, midway between the foveæ and the large, somewhat flattened antennal tubercles; antennæ stout, fully one-half as long as the body, the club large, fully as long as the seven preceding joints, one to three decreasing in thickness, the third obconical, as long as wide, three to eight equal in thickness, four to eight transverse, ninth and tenth much wider, strongly transverse, eleventh large, almost as long as the preceding four together; maxillary palpi moderate in develop-



ment, the third joint broadly rounded within. *Prothorax* a little wider than long, widest and rather broadly rounded at the sides; apex three-fourths as wide as the base, lateral subbasal foveæ large. *Elytra* not as long as wide, one-half longer than the prothorax and nearly twice as wide; sides broadly arcuate behind, oblique; humeri scarcely at all exposed at base; humeral width barely more than two-thirds of the subapical; discal stria extending rather behind the middle. *Abdomen* a little shorter than the elytra and nearly as wide, the first dorsal slightly longer than the second. *Legs* moderate. Length 1.2 mm.; width 0.45 mm.

Pennsylvania.

The single type appears to be a female and is about equal in length to *tenellus* but broader. Another female from Illinois is a little larger, with slightly longer elytra, but I cannot perceive that it is specifically distinct.

**T. verticalis** n. sp.—Minute, piceous-black and polished throughout, the legs and antennæ pale, subimpunctate except the elytra which are sparsely punctulate; pubescence long, coarse and sparse. *Head* across the eyes fully as wide as long, narrower than the prothorax; eyes at about one-half their length from the base, large, prominent; antennal tubercles large, convex, vertexal foveæ large, visible from above, the spicules large and very near the foveæ, distant from the tubercles; antennæ rather stout, one-half as long as the body, the club not quite as long as the funicle, first three joints decreasing, third rather longer than wide, four to eight slightly transverse, the fifth but little wider than long, ninth to eleventh abruptly wider, increasing in width; third palpal joint broad, triangular. *Prothorax* distinctly wider than long, widest and rounded at the middle, the apex three-fourths as wide as the base; lateral subbasal foveæ deep. *Elytra* not quite as long as wide, two-thirds longer than the prothorax and distinctly less than twice as wide; sides oblique, rounded behind; humeri but slightly exposed at base, the humeral width three-fourths of the subapical; discal stria extending rather behind the middle. *Abdomen* a little narrower and much shorter than the elytra, the first dorsal much longer than the second. Length 1.2 mm.; width 0.45 mm.

District of Columbia.

The type is a female and resembles *spiculifer*; it may be readily distinguished however by the position of the subfrontal spicules, which are very near the foveæ, also by the larger and more basal eyes, more transverse prothorax and some other characters. Both of these species differ from *minor* in their much smaller size, blacker coloration, much larger vertexal foveæ, and larger subfrontal spicules.



**VALDA** n. gen.

This remarkably distinct and interesting genus is evidently to be associated with *Cylindrartus* and *Tychus*, but also evinces some affinity with *Arthmius* and *Pselaphus*, as is likewise the case with the genera mentioned. In *Cylindrartus* the tarsal claw has a distinct basal unguiform appendage, but here there are two long slender and well-developed but unequal claws as in *Batrisus*.

In *Valda* the body is nearly as in *Cylindrartus*, the first ventral segment very short but visible from side to side; the second and third ventrals—first and second visible dorsals—are long, but somewhat exceptionally, the former is distinctly shorter than the latter above and beneath. The trochanters are normally bythinoid, the anterior coxæ long and conical, the intermediate narrowly separated by the sternal processes and the posterior approximate, narrowly but quite perceptibly separated. Mesosternum long, finely but strongly bicarinate, the metasternum large. Maxillary palpi long and greatly developed, the first joint minute; second long flattened and contorted, the concave side smooth polished and glabrous, the convex covered with erect setæ; third small, triangular, partially setose; fourth large stout oval and subglobose, bristling throughout with short stiff capitulate setæ, and without distinct terminal process.

The head has a broad frontal tubercle partly divided by a short canal, the antennæ long, inserted as in *Tychus* and *Pselaphus*; eyes large and prominent. Prothorax with two lateral subbasal foveæ connected by a rough and uneven transverse fold of the surface, and with five basal impressions separated by short ridges. Elytra large, each bifoveate at base and with a partial discal and entire sutural stria, the hairs longer stiffer and porrect near the hind margin as in *Pselaphus*. Abdomen margined, the first dorsal strongly and the second feebly bicarinate. Sexual characters as in *Arthmius*, the male having a small flat horizontal pygidium behind the sixth ventral segment. Legs and tarsi slender, the second joint of the hind tarsi much shorter than the third.

The single species may be described as follows from the male:—

**V. frontalis** n. sp.—Pale brownish-flavate throughout, polished, subimpunctate, the elytra slightly punctulate; pubescence rather short and sparse but very coarse. *Head* much shorter and narrower than the prothorax, scarcely as long as the width across the eyes, the neck strongly constricted; frontal

tubercles convex, broad; surface behind them abruptly deeply and transversely excavated from side to side, the excavation trisected by two feeble carinæ at the bottom, its posterior margin acute and feebly bilobed; in the middle on the upper surface immediately behind each lobe there is a large fovea, the two approximate and each bearing a tuft of long erect setæ; occiput and vertex without other impressions, even, very strongly convex, arched and elevated above the eyes, the latter prominent and convex, near the base; tempora with a dense tuft of coarse setæ; under surface strongly but broadly convex behind the oral opening; antennæ not quite one-half as long as the body, the first joint a little longer and thicker, two to eight subquadrate, nine and ten but little larger, nearly as long as wide, eleventh large, thick, oval, obtusely pointed. *Prothorax* nearly as long as wide, hexagonal, widest a little before the middle; apex three-fourths as wide as the base. *Elytra* nearly as long as wide, three-fourths longer than the prothorax and nearly twice as wide; sides feebly arcuate behind; humeri strong, broadly exposed at base; discal stria extending to the middle. *Abdomen* a little narrower than the elytra but nearly as long; border as in *Cylindrarctus*; carinæ of the first and second dorsals subparallel, separated by a little less than one-third the discal width, the first two-thirds, the second one-fourth as long as the respective segment. *Metasternum* large but not tumid, perfectly even throughout. Length 1.8 mm.; width 0.7 mm.

California (Siskiyou Co.).

The male sexual modifications of the under surface are very feeble, consisting only of a small and very feeble impression of the sixth ventral, with a narrow feeble sinuation of its apex, the sinuation receiving the very minute transversely oval pygidium on the same plane. In the female the subfrontal excavation is doubtless wanting, but it would be interesting to note the position of the vertexal foveæ, as these seem to be peculiarly modified and connected in some way with the excavation in the male, if, indeed, the two foveæ mentioned above are really the two ordinary cephalic foveæ of the family.

#### PSELAPHINI.

#### **PSELAPHUS** Herbst.

In this singular genus there are two characters which, though probably not peculiar to it, are nevertheless strikingly developed. The first relates to the position of the two large spongiose foveæ of the head, which, in most genera possessing them, are situated on a comparatively flat surface and are distinct from a vertical point of view. In the present genus the upper surface becomes abruptly declivous far behind the middle, the declivous wall being almost

semi-circular in plan and forming the posterior limit of the long rostriform and ante-ocular part of the head, and also of its longitudinal groove; the foveæ are situated on the oblique side-walls of the declivity, and their large cavities extending under the surface horizontally, thin out the chitinous envelope above them, giving rise to the two large pale spots between the eyes. The second refers to the peculiar masses of vestiture of the under surface, especially of the head and sterna; these masses are difficult to analyze structurally, but appear to be formed of agglutinated scales of a remarkably broad and thick form and gelatino-membranous texture; this kind of vestiture has been alluded to as "sugary" by Dr. Sharp, an appropriate term as far as appearance is concerned. It is unnecessary at present to allude to the almost unique form of the body which isolates *Pselaphus* from all of our other genera.

The North American representatives do not appear to be numerous and the four in my cabinet may be readily separated as follows:—

- Upper surface of the head bordering the frontal groove roughly punctate; club of the fourth palpal joint small, constituting one-third of the total length.....**erichsoni**
- Upper surface smooth, polished and impunctate throughout; club much longer.
- Palpal club gradually formed, smooth, bearing fine erect setæ only. The club slender, occupying one-half of the total length...**longiclavus**
- The club very long, constituting fully two-thirds of the total length, the peduncle more abruptly bent.....**fustifer**
- Palpal club with semi-erect curved asperities in addition to the erect setæ, somewhat abruptly formed and constituting about one-half the entire length.....**bellax**

**P. fustifer** n. sp.—Moderately slender and convex, polished, subimpunctate and dark rufo-testaceous throughout, subglabrous. *Head* about as long and wide as the prothorax, the surface feebly reticulate anteriorly, feebly, sparsely punctate and setose behind, the frontal groove broad and deep, extending to the foveæ; occipital groove extending thence midway to the base; antennæ fully two-thirds as long as the body, the basal joint scabrous, cylindrical, as long as the next three, the latter decreasing feebly in size, seventh longer than the sixth or eighth, ninth thicker, longer than wide, narrower and rather longer than the tenth, eleventh large, obliquely oval, pointed, as long as the preceding three joints. *Prothorax* a little longer than wide, oval, truncate at base and apex, the latter nearly equal; sides strongly but broadly arcuate; surface impunctate and strongly convex. *Elytra* about as long as wide, nearly two-thirds longer and two and one-half times as wide as the prothorax, the sides broadly, feebly arcuate; humeri obsolete; base one-third as

wide as the apex; each with four even series of short stiff setæ. *Abdomen* as wide as the elytra and about three-fourths as long, the border of the first segment one-fourth of the discal width, the latter one-third greater than its median length. *Legs* moderate, the femora thick and subclavate, the tibiæ strongly thickened toward apex; second posterior tarsal joint compressed, much thicker than the third and equal to it in length. Length 1.6 mm.; width 0.7 mm.

New York.

The single specimen is of undetermined sex. The fourth palpal joint is rather thick, about as long as the prothorax and has the clavate part thickly covered with long erect pale ashy hairs.

**P. bellax** n. sp.—Rather slender and depressed, polished, subimpunctate, nearly glabrous and dark rufo-testaceous throughout. *Head* rather longer than the prothorax and fully as wide, the upper surface sparsely setose, polished, not at all reticulate anteriorly, sparsely punctulate behind, especially at the posterior margins of the pale spots, these punctures bearing longer stiff setæ recumbent over and beyond the spots; frontal channel and occipital groove well developed; antennæ nearly two-thirds as long as the body, somewhat scabro-reticulate throughout, the cylindrical basal joint nearly as long as the next three, second almost as thick as the first, ninth longer and narrower than the tenth, eleventh stout, obliquely oval, as long as the preceding two joints combined, less scabrous but with sparse asperate punctures. *Prothorax* subcylindrical, widest at the middle; sides broadly arcuate; base and apex truncate and equal; surface very convex, impunctate. *Elytra* as long as wide, three-fourths longer than the prothorax and two and one-half times as wide; humeri very oblique and obtuse; base one-third as wide as the apex; each with four even series of erect distant setæ. *Abdomen* as wide as the elytra and three fourths as long, of the usual structure; border wide. *Legs* moderate, more slender throughout than in *justifer*, the second posterior tarsal joint but slightly thicker and decidedly longer than the third. Length 1.4 mm.; width 0.55 mm.

Massachusetts; Michigan.

This species is very closely allied to the European *heisei*, but differs in its rather smaller size, and especially, narrower form, in the somewhat stouter and more abruptly formed palpal club, and in the longer antennal club, the three last joints of the antennæ being together much shorter than the seven preceding in *heisei*, while in *bellax* the club is fully as long as the funicle. I obtained two specimens at Taunton in damp moss; the three specimens before me are equal in size and almost similar in structure, the sexual characters being apparently very feeble.



CTENISTINI.

**BIOTUS** Casey.

Could Dr. Brendel have had before him a representative of the European *Chennium*, I am sure that he would not have united that remarkable genus with *Atinus* and *Biotus* in his recent monographic study of the *Pselaphidæ*; the differences are manifold and very important; they may be expressed as follows:—

Middle coxæ distinctly separated by the wide sternal processes; sides of the clypeus conically and acutely prominent; mentum transverse, longitudinally convex and coarsely setulose; maxillary palpi with the last two joints large, distinct and covered with short recumbent squamiform setæ.

**Chennium**

Middle coxæ contiguous, their cavities broadly confluent; sides of the clypeus normal; mentum much more deeply seated, flat and subglabrous; maxillary palpi much smaller, with the last two joints apparently combined in one.

Labial palpi invisible; muzzle below the antennæ greatly extended beyond the eyes; antennæ cylindrical, nearly as in *Chennium* but with the second joint small; posterior tibiæ compressed throughout, rather narrower toward apex.....**Biotus**

Labial palpi robust and distinct; muzzle not produced; antennæ slender, normal, moniliform, gradually and strongly thickened toward apex; posterior tibiæ clavate at apex .....**Atinus**

In *Biotus* it is almost impossible to make out the true structure of the maxillary palpi without dissection. The entire organ is less than one-third as large as in *Chennium*, and all that can be clearly seen is a single oval truncate joint, which is robust, longer than wide, apparently flattened beneath and covered sparsely with minute recumbent hairs; there is quite certainly a small basal joint, and, apparently, a minute wart-like tubercle on the outer side of the second joint.

In the two species of *Atinus* the palpus differs surprisingly in size and form. In *monilicornis* it is very minute, scarcely larger than in *Biotus*, the second joint stout, sublunate, with the oblique pointed apex apparently setulose, while in *brevicornis* it is nearly twice as large, not lunate but somewhat spindle-form, gradually and finely produced beneath and bearing at apex a short appendage. In both of these species the organ is sparsely clothed with



long fine erect and remote setæ, differing greatly in this respect, as well as antennal structure, from *Chennium* and *Biotus*.

In all of these genera the first ventral segment is short, but visible from side to side behind the coxæ.

#### ATINUS Horn.

The two species of this genus may be readily distinguished by the following characters:—

Eyes smaller, between one-third and one-fourth as wide as the interocular surface; antennæ longer, the basal joint as long as the next two, the ninth and tenth joints much larger than the eighth, subglobose and as long as wide ..... **monilicornis**

Eyes very large and prominent, fully one-half as wide as the interocular surface; antennæ shorter, the club apparently five-jointed, the seventh and eighth joints subequal in width and larger than the sixth, eighth to tenth similar in form, gradually increasing in size, seventh to tenth transversely oval, eleventh stout, conoidal, basal joint longer than the next two; size smaller ..... **brevicornis**

The striking palpal divergences exhibited by these species have been referred to under the preceding genus. I recently took several specimens of *monilicornis* under a flat stone in the mountains of western North Carolina; they were in a colony of a small slender piceous-brown ant, having the antennal scape one-half longer than the head, with the funicle slender and non-capitate.

**A. brevicornis** n. sp.—Stout, scarcely shining, ferruginous, rather densely clothed throughout with small narrow recumbent squamules. *Head* rather wider than long, strongly constricted behind the frontal tubercle; eyes at the base, the tempora almost obsolete; antennæ but little more than one-half as long as the body, the basal joint cylindrical, twice as long as wide, with rugose sculpture. *Prothorax* two-thirds wider than long, distinctly wider than the head; sides feebly divergent from the base to the middle, then more strongly convergent to the apex which is broadly truncate and three-fourths as wide as the base; three pubescent foreæ shallow, not extending beyond basal third. *Elytra* large, not quite as long as wide, fully twice as long and wide as the prothorax; humeri broadly rounded, obtuse, feebly elevated, the humeral width nearly four-fifths of the subapical; sutural stria deep, discal evanescent near apical fourth. *Abdomen* distinctly narrower than the elytra but nearly as long; border strong; surface even; segments subequal in length. *Legs* rather stout; posterior tibiæ strongly swollen toward apex. Length 2.0 mm.; width 0.9 mm.

Texas.

I have not seen the ant with which this species lives, and am uncertain also of the sex of the unique individual. Sexual differences appear to be very feeble in this particular group of genera.

**ANITRA** n. gen.

Body short, compact, moderately convex. Head triangular, the antennal tubercle short, narrow, strangulated at the sides, not at all divided by a median depression and continuous with the surface behind it; vertex with two very feeble subobsolete foveæ separated by nearly one-third the total width, and also another larger behind the tubercle. Eyes large, nearly at the base, half divided by the posterior canthus; sides of the head behind them transversely excavated beneath; sides between the eyes and the frontal constriction long convergent and perfectly straight. Maxillary palpi moderate, slender, cylindrical, three-jointed, the first minute; second arcuate, gradually increasing in thickness from base to apex; third shorter, cylindrical, with an internal and external seta at apex. Labial palpi slender, the terminal seta very long. Antennæ long, cylindrical, with an elongate terminal joint; club long, very feeble, three-jointed. Prothorax sinuate at apex above, with a broad longitudinal discal depression from the apex to basal fourth, where there is a pronounced obtusely elevated median tubercle before the basal margin. Elytra ample, with a fine sutural, and partial discal, stria, each coarsely bifoveate at base. Abdomen with the first four dorsals subequal, strongly margined; first ventral short but visible from side to side; stomata of last dorsal distinct at the lateral angles. Prosternum deeply, broadly emarginate at apex, prominent laterally, very short before the coxæ which are long and conical. Mesosternum short, smooth. Metasternum moderate. Intermediate coxæ very narrowly, the posterior rather widely, separated; intermediate trochanters long, the insertion terminal; anterior and posterior shorter. Legs rather slender; second joint of the tarsi shorter than the third; ungues well developed, stout, subequal.

This remarkable genus evidently belongs to the Ctenistini, but exactly in which direction its affinities are most pronounced it is difficult to state. In the recent table of the Ctenistini by Mr. Raffray I should be disposed to place it in a distinct section between Chennium and Ctenistes and the three principal headings would then read:—

A. 3—Maxillary palpi very small, of two or three joints.

**Chennium, Atinus and Biotus**

A. 2—Maxillary palpi moderate, elongate, cylindrical, of three joints.

**Anitra**

A. 1—Maxillary palpi well developed, of four joints ..... **Ctenistes**, etc.

Although not at all resembling Chennium, it is probably more closely allied to that genus than to any other thus far described.

Mr. Raffray states on page 32 of the "Étude," that the Ctenistini and Tyrini are distinguished by having the first ventral very small and visible only between the coxæ; this is certainly not the case in Desimia, Ctenisis and Sognorus, typical ctenistide genera, in which I distinctly trace the first segment from side to side behind the coxæ. There also seems to be some uncertainty in the assignment of genera to the Ctenistini and Tyrini, Tmesiphorus, for example, apparently being much more closely allied to Desimia and Ctenistes than to Tyrus, not only in general structure but in the form of the palpi and in the latero-inferior excavations of the head near the base, with the resultant spiniform prominences near the eye.

**A. glaberula** n. sp.—Rather stout, polished and pale yellowish-brown throughout; integuments subglabrous, the anterior parts with excessively minute and remote suberect setæ, long coarse and denser behind the eyes, long sparse and bristling on the ocular canthus and on the large surface of the clypeus below the antennæ, longer and porrect at the apex of the elytra, on the abdomen closer even coarse and recumbent as in Ctenistes; the tubercle at the base of the pronotum is also densely clothed with long coarse decumbent setæ. Head as wide as long, the tubercle very narrow, scarcely more than one-fourth as wide as the width across the eyes; antennæ four-fifths as long as the body, the third joint feebly obconical, twice as long as wide, three to eight equal in width, the latter quadrate, ninth a little thicker, oval, tenth similar, though a little larger, oval, longer than wide, eleventh thicker, cylindrical, obtusely, obliquely pointed at tip, as long as the three preceding. Prothorax scarcely as wide as the head, widest at basal third where the sides are rounded, thence feebly convergent to the apex which is broad and subequal to the base; disk convex, strongly declivous laterally, one-third wider than long. Elytra not as long as wide, three-fourths longer than the prothorax and twice as wide; humeri elevated, rounded and obtuse, the humeral width four-fifths of the subapical. Abdomen as wide as the elytra and slightly shorter, convex, strongly declivous behind, the surface even throughout. Length 1.25 mm.; width 0.6 mm.

Arizona.

The single specimen is a male but with very feeble sexual characters as far as can be observed. This species is probably myrmecophilous.

**SOGNORUS** Reitter.

*Ctenistes* Lec. nec Reich.

There is apparently but little doubt that the American species separated under this name by Reitter should be considered generically distinct from *Ctenistes*, for, apart from the radically different structure of the antennæ, the second joint of the maxillary palpi is very much more slender and elongate in the former than in the latter. The fact that the difference of antennal structure evinces itself principally in one sex does not by any means deprive it of significance in the present family, where sexual characters frequently become of generic import. *Sognorus* is truly very closely allied to *Ctenistes*, but I think that the characters given must compel us to treat it for the present as a valid genus.

The species of the United States may be known as follows:—

Smaller species, not exceeding  $1\frac{3}{4}$  mm. in length. Atlantic and Gulf regions. Appendiculate processes of the maxillary palpi short, not longer than the width of the joints.

Blacker; elytra not as long as wide; antennæ shorter; pubescence sparse ..... **piceus**

More testaceous or ferruginous, the pubescence denser shorter and more squamiform; antennæ longer ..... **consobrinus**

Appendiculate processes very long, about twice as long as the width of the joints; antennæ very slender, more incrassate toward tip, the last joint stouter and subequal to the four preceding together in the male.

**zimmermanni**

Larger species, never less than 2 mm. in length. Arid regions of Arizona and northern Mexico.

Antennæ more slender, the fifth joint in the male shorter than the fourth, though one-half longer than wide; last two joints of the maxillary palpi gradually and greatly produced at the sides, with the apical appendage short.

Eyes small, from above about one-fourth as wide as the interocular surface and situated at one-half their length from the base; body stout.

Southern California ..... **pulvereus**

Eyes very large and prominent, one-half as wide as the interocular surface, the tempora very short; body narrower and less robust.

**ocularis**

Antennæ long but much stouter, the fifth joint in the male much shorter than the fourth and but slightly longer than wide; last two joints of the maxillary palpi abruptly produced at the sides in a much shorter process bearing a short apical appendage; eyes large, prominent, about one-third as wide as the interocular surface; elytra longer, with more oblique sides and narrower humeri ..... **abruptus**



The eastern species form a difficult study, and several specimens in my cabinet seem to indicate varieties or closely allied species, which it is impossible to define at present.

**S. *ocularis*** n. sp.—Elongate, somewhat convex, polished, subimpunctate and rather pale rufo-ferruginous throughout; pubescence coarse, sparse and recumbent but not squamiform. *Head* as long as the width across the eyes, the latter very large and extremely coarsely faceted; foveæ separated by one-third the total width; frontal tubercle narrow, scarcely wider than the eye; antennæ long, slender, cylindrical, fully two-thirds as long as the body, the eleventh joint scarcely perceptibly stouter, as long as the three preceding, the latter mutually subequal and a little shorter than the seventh. *Prothorax* just visibly wider than the head, two-fifths wider than long, the sides subparallel in basal half, feebly convergent thence to the apex; apex and base truncate, the former three-fourths as wide as the latter; three elongate foveæ occupying basal half densely pubescent. *Elytra* scarcely as long as wide, twice as long and twice as wide as the prothorax; humeri distinct, elevated, rounded; humeral width three-fourths of the subapical; discal impression broad, glabrous, very deep toward base, gradually evanescent toward apex. *Abdomen* as long and about as wide as the elytra; border very strong; first four dorsals equal in length. Length 2.2 mm.; width 0.8 mm.

#### Arizona.

Described from the male, which is the only sex known to me. Easily distinguishable from *pulvereus* by the characters given in the table.

**S. *abruptus*** n. sp.—Moderately stout, feebly convex, polished, subimpunctate and dark rufo-testaceous throughout; pubescence short, coarse sparse and recumbent but scarcely squamiform. *Head* about as long as the width across the eyes, the frontal tubercle one-third as wide as the latter; foveæ rather small; nuchal constriction densely pubescent laterally as usual; antennæ long and thick, scarcely at all incrassate toward apex, nearly two-thirds as long as the body, the last joint longer than the preceding three, oblique at tip, eighth much shorter than the seventh or ninth, transverse. *Prothorax* as wide as the head, one-fourth wider than long; sides subparallel in more than basal half then feebly convergent to the truncate apex, which is fully three-fourths as wide as the base; foveæ elongate, densely pubescent, small, extending not quite one-third the length from the base. *Elytra* large, about as long as wide, twice as long as the prothorax and rather more than twice as wide; sides very oblique from apex to base and scarcely arcuate; humeri feebly exposed; humeral width barely two-thirds of the subapical; disk rather flattened; discal line narrower, deep toward base. *Abdomen* not quite as long or wide as the elytra, of the usual structure; border relatively not quite as wide as in *ocularis*. Length 2.3 mm.; width 0.9 mm.

#### Arizona.

This interesting species, which is represented by the male only,



differs from *ocularis* and *pulvereus* not only in the structure of the palpi and antennæ, but in the smaller foveæ of the head and pronotum, and in the larger elytra, much more strongly narrowed from apex to base.

### CTENISIS Raffray.

This genus was proposed by Mr. Raffray. (Rev. d'Ent., 1890, p. 143) to receive certain American species previously described under the names *Ctenistes* and *Desimia*. It is related to the latter of these, but has the second dorsal segment not notably longer than the first and also differs in the form of the palpi. The antennæ are similar to those of the European *Desimia* and *Ctenistes*, but the palpi of *Desimia* have the last joint bifid and in fact perfectly similar throughout to those of *Tmesiphorus*; there are also other suggestive points of resemblance between *Desimia* and *Tmesiphorus*. In *Ctenisis* the last two joints of the palpi are in the form of a regular isosceles triangle, each attached by the acute angle near the internal angle of the preceding. The single known species entering the United States may be described as follows:—

**C. raffrayi** n. sp.—Rather slender, moderately convex, polished, subimpunctate and ferruginous throughout; pubescence short, subrecumbent, sparse, coarse but not squamiform. *Head* across the eyes rather wider than long, the eyes very large and prominent, one-half as wide as the interocular surface; upper surface flattened, with three foveæ forming an equilateral triangle; frontal tubercle narrow, not wider than the eye from above; antennæ long and slender, two-thirds as long as the body, joints three to seven small, moniliform, wider than long, eight to ten thicker, cylindrical, the eighth as long as the preceding four together, a little longer than the ninth but shorter than the tenth, the latter twice as long as wide, eleventh but little thicker, cylindrical, one-half longer than the tenth, obtusely pointed. *Prothorax* as wide as the head, two-fifths wider than long; sides parallel to the middle, then feebly convergent to the truncate apex, which is three-fourths as wide as the base; disk with three very densely pubescent subfoveate areas along the basal margin. *Elytra* nearly as long as wide, twice as wide as the prothorax and nearly twice as long; sides broadly rounded behind; humeri very obtusely rounded; humeral width four-fifths of the subapical; discal glabrous line evanescent toward apex. *Abdomen* a little narrower than the elytra but nearly as long; border strong, inclined. Length 1.65 mm.; width 0.65 mm.

Arizona (Tuçson). Mr. H. F. Wickham.

The description refers to the male, the anterior tibiæ being thickened somewhat as in *Tmesiphorus*. In the unique type the last ventral segment is very short, unimpressed but sinuate at apex; the

last dorsal is also sinuate at apex and is acutely elevated near the middle of the disk—generally a female character in *Batrisus* and *Arthmius*, although common to both male and female in *Batrisus denticauda*. The stomata of the last dorsal form round perforate and conspicuous foveæ at the extreme lateral angles of the disk; they are also visible at the sides of the disk on the penultimate segment. *Raffrayi* differs greatly from the Mexican *dispar* Shp. in the relative proportions of the antennal joints, and especially in the shorter eighth joint; it also differs in the narrower form of the body and uniform dull brownish-ferruginous color. It is presumably identical with the form referred to by Dr. Brendel (Tr. Am. Ent. Soc., XX, p. 282), as having been recently taken by Mr. Bolter in Arizona.

I take pleasure in dedicating this species to Mr. Achille Raffray, whose excellent work is doing so much to advance our knowledge of these fascinating little organisms. The plates recently published by Mr. Raffray, which appear to be simple reproductions of pencil drawings by photo-mechanical processes, were never surpassed by lithographer or engraver, and are doubtless as true to nature as they are beautiful in execution.

In the following synonymical list of the Pselaphidæ thus far described from America north of Mexico, the arrangement of Mr. Raffray is adhered to throughout, except where modified in the preceding notes:—

PSELAPHINÆ.		<b>Morius</b> Csy.	
FARONINI.		occidens Csy.	P.
<b>Sonoma</b> Csy.		<b>Rhexius</b> Lec.	
isabellæ Lec.	P.	insculptus Lec.	A.
corticina Csy.	P.	substriatus Lec.	G.
grandiceps Csy.	P.	schmitti Bndl.	A.
longicollis Csy.	P.	<b>Oropus</b> Csy.	
subsimplis Csy.	P.	striatus Lec.	P.
rubida Csy.	P.	convexus Csy.	P.
parviceps Mäkl.	P.	interruptus Csy.	P.
cavifrons Csy.	P.	abbreviatus Csy.	P.
<b>Rafonus</b> Csy.		*	
tolulæ Lec.	A.	montanus Csy.	P.
EUPLECTINI.		cavicauda Csy.	P.
<b>Rhinoscepsis</b> Lec.			
bistriata Lec.	G.		

<b>Rhexidius</b> Csy.	
<i>Conoplectus</i> Bndl.	
<i>Prorhexius</i> Raffr.	
granulosus Csy.	P.
asperulus Csy.	P.
*	
canaliculatus Lec.	G.
<i>sylvaticus</i> Raffr.	
trogasteroides Bndl.	A.
intermedius Bndl.	A.
<b>Ramecia</b> Csy.	
crinita Bndl.	A.
capitulum Csy.	G.
arcuata Lec.	A.
discreta Csy.	A.
decora Csy.	G.
dentiventris Csy.	A.
<b>Oropodes</b> Csy.	
orbiceps Csy.	P.
<b>Acolonia</b> Csy.	
cavicollis Lec.	G.
<b>Euplectus</b> Leach.	
difficilis Lec.	A.
congener Csy.	A.
sexualis Csy.	A.
spinifer Csy.	G.
linearis Lec.	A.
hudsonicus Csy.	A.
interruptus Lec.	A.
longissimus Bndl.	A.
*	
longicollis Csy.	A.
confluens Lec.	A.
elongatus Bndl.	A.
californicus Csy.	P.
iowensis Csy.	M.
*	
pertenuis Csy.	A.
planipennis Bndl.	M.
rotundicollis Bndl.	M.

<b>Thesiastes</b> Csy.	
fossulatus Bndl.	M.
pumilus Lec.	A. G.
debilis Lec.	G.
<i>tenuis</i> Lec.	
atratus Csy.	A.
<b>Biblopectus</b> Reit.	
ruficeps Lec.	G.
integer Lec.	M.
leviceps Csy.	A.
<b>Trimiopectus</b> Bndl.	
obsoletus Bndl.	M.
<b>Bibloporus</b> Thoms.	
<i>Faliscus</i> Csy.	
bicanalis Csy.	A.
<b>Eutyphlus</b> Lec.	
<i>Nicotheus</i> Csy.	
similis Lec. ♀	A.
<i>tibialis</i> Csy. ♂	
prominens Csy.	A.
<b>Thesium</b> Csy.	
cavifrons Lec.	G.
laticolle Csy.	G.
<b>Actium</b> Csy.	
<i>Propectus</i> Raffr.	
californicum Lec.	P.
<i>pallidum</i> Csy.	
<i>decipiens</i> Raffr.	
politum Csy.	P.
robustum Csy.	P.
testaceum Csy.	P.
candidum Csy.	P.
marinicum Csy.	P.
*	
foveicolle Lec.	A.
costale Bndl.	A.
pacificum Csy.	P.
brevipenne Csy.	P.
clavicorne Mäkl.	P.
durum Bndl.	M.

parabolicum Bndl.	M.
globifer Lec.	A.
impunctatum Bndl.	A.

**Trimioptis** Reit.

gracilis Bndl.	M.
americana Lec.	A.
thoracica Bndl.	M.
laticollis Bndl.	M.
puncticollis Lec.	S.
dubia Lec.	A.
convexula Lec.	A.
discolor Lec.	G.
simplex Lec.	G.
parvula Lec.	G.
maja Bndl.	M.

## BATRISINI.

**Batrisus** Aubé.

ionæ Lec.	A.
armiger Lec.	A.
monstrosus Lec.	A.
<i>v. ferox</i> Lec.	
<i>v. cristatus</i> Lec.	
caviersus Csy.	A.
confinis Lec.	A.
carolinæ Csy.	A.
juveneus Bndl.	M.

\*

monticola Csy.	P.
occiduus Csy.	P.
albionicus Aubé.	P.
<i>aculeatus</i> Lec. i. l.	
zephyrinus Csy.	P.
<i>mendocino</i> Csy.	
<i>v. speculum</i> Csy.	
cicatricosus Bndl.	P.
pygidialis Csy.	P.
denticauda Csy.	P.
schaumi Aubé.	A.
<i>punctatus</i> Lec.	
riparius Say.	A.
scabriceps Lec.	A.
lineaticollis Aubé.	A.
bistriatus Lec.	A.
frontalis Lec.	A.

globosus Lec.	A.
spretus Lec.	A.
foveicornis Csy.	A.
punctifrons Csy.	A.
virginæ Csy.	A.
furcatus Bndl.	A.
sinuatifrons Bndl.	G.
clypeonotus Bndl.	G.
luculentus Csy.	A.
denticollis Csy.	A.
triangulifer Bndl.	M.
<i>spinifer</i>    Bndl.	
nigricans Lec.	A.
striatus Lec.	A. M.
<i>cephalotes</i> Csy.	
<i>aterrimus</i> Csy.	
<i>simplex</i> Lec.	

**Arthmius** Lec.

globoicollis Lec.	A.
bulbifer Csy.	G.
involutus Csy.	A.
gracilior Csy.	G.

**Arianops** Bndl.

<i>Anops</i>    Bndl.	
amblyoponica Bndl.	A.

## BRYAXINI.

**Decarthron** Bndl.

abnorme Lec.	A.
exsectum Bndl.	A.
stigmatosum Bndl.	A.
brendeli Csy.	G.
marinum Bndl.	G.
strenuum Bndl.	A.
longulum Bndl.	A.
scarificatum Bndl.	M.
seriepunctatum Bndl.	A.
discolor Bndl.	S.
formiceti Lec.	A. G.
<i>velutinum</i> Lec.	

**Rybaxis** Sauley.

valida Bndl.	A.
<i>sanguinea</i> † Lec.	





<b>Eupsenius</b> Lec.	
glaber Lec.	A. G.
rufus Lec.	G.

## BYTHININI.

<b>Bythinus</b> Leach.	
<i>Machærodes</i> Bndl.	
tychoides Bndl.	A.
<i>bythinoides</i> Bndl.	Olim.
carinatus Bndl.	A.

<b>Pselaptrichus</b> Bndl.	
tuberculipalpus Bndl.	P.

<b>Cylindrarctus</b> Schf.	
longipalpis Lec.	G.
americanus Schauf.	M.
ludovicianus Bndl.	G.
comes Csy.	G.
crinifer Csy.	M.

<b>Tychus</b> Leach.	
minor Lec.	A.
<i>testaceus</i> Csy.	
spiculifer Csy.	A.
verticalis Csy.	A.
microphthalmus Bndl.	M.
puberulus Lec.	P.
cognatus Lec.	P.
<i>bipuncticeps</i> Csy.	
sonomæ Csy.	P.
tenellus Lec.	P.

<b>Valda</b> Csy.	
frontalis Csy.	P.

## PSELAPHINI.

<b>Pselaphus</b> Hbst.	
erichsoni Lec.	A.
longiclavus Lec.	A.
fustifer Csy.	A.
bellax Csy.	A.

## CTENISTINI.

<b>Biotus</b> Csy.	
formicarius Csy.	P.

<b>Atinus</b> Horn.	
monilicornis Bndl.	A.
brevicornis Csy.	G.

<b>Anitra</b> Csy.	
glaberula Csy.	S.

<b>Sognorus</b> Reit.	
<i>Ctenistes</i> † Lec.	
piceus Lec.	A.
consobrinus Lec.	A.
zimmermanni Lec.	A. G.
pulvereus Lec.	S.
ocularis Csy.	S.
abruptus Csy.	S.

<b>Ctenisis</b> Raffr.	
raffrayi Csy.	S.

<b>Ceophyllus</b> Lec.	
monilis Lec.	M.

## TYRINI.

<b>Tmesiphorus</b> Lec.	
costalis Lec.	A. M.
carinatus Say.	A. M.

<b>Cedius</b> Lec.	
ziegleri Lec.	A. M.
spinosus Lec.	A. M.

<b>Tyrus</b> Aubé.	
<i>Pytna</i> Csy.	

humeralis Aubé.	A.
<i>compar</i> Lec.	
corticinus Csy.	P.
elongatus Bndl.	S.

<b>Cercocerus</b> Lec.	
batrisoides Lec.	G.

CLAVIGERINÆ.		Adranes Lec.	
Fustiger Lec.		cœcus Lec.	A.
fuchsi Bndl.	A.	lecontei Bndl.	M.
californicus Bndl.	S.		

In this list the succession of names in the various genera is, as nearly as possible, that recently given by Dr. Brendel. The letters placed after the various species are intended to give a general idea of their geographic distribution; they represent (A) the Atlantic regions of the continent, (G) the Gulf States from Florida to Texas, (M) the Missouri region including the Great Lakes, (S) the Sonoran region from western Texas and Utah to southern California, and (P) the true Pacific Coast fauna. Because of insufficient data, no form of nomenclature more discriminating than this can be employed at present.

In comparing this list with the most recent catalogue of the European species, there are only three points to which special attention need be invited:—

1—The species are but slightly more than one-half as numerous as those at present recognized as valid in the European fauna.

2—The genera, however, exceed in number those of Europe by about one-third, with twelve, viz.: Euplectus, Biblopectus, Bibloporus, Batrisus, Bryaxis, Reichenbachia, Rybaxis, Bythinus, Tychus, Pselaphus, Sognorus and Tyrus common to the two continents.

3—There are no species at present recognized as being common to Europe and America.

The original estimate of LeConte, that the pselaphide fauna of North America surpasses in richness that of Europe, is true I think as far as the genera are concerned, but not in regard to the species. The conditions of land, water and mountain distribution, with resultant climate, are so much more varied in the vast expanses from Cape North to Gibraltar and the Caucasus, that it is not probable—in spite of the subequality of land area—that the species of America will be found to approach in number those of Europe, even when the two regions are similarly explored, especially, also, as there seems to be no difference in the relative abundance of individuals in the palæarctic region. That the number of genera in the United States should be greater, is to be accounted for, partially at least, by the fact that many neotropical genera such as Thesium, Arthmius, Pselaptus and Ctenisis so readily find their way across our Mexican frontier.

## SCAPHIDIIDÆ.

The Scaphidiidæ are a small family of beetles, which to the general student of the Coleoptera are less interesting than usual, because of their unusually small size and the monotony in outward appearance characterizing the more minute forms, and, to the systematist, because of the fact that some of the more important sclerites of the under surface frequently become amalgamated, in such a way that it is often difficult and sometimes impossible to trace them. On the other hand there is sometimes a remarkable and inexplicable doubling of the sutures. This obliteration of the sutures, has led the author of a recent extended contribution to the literature of the family into the singular error of supposing that the mesosternal episterna in *Scaphisoma* and other allied genera, are very small and hidden under the elytra, or antehumeral, while, as can readily be seen by inspecting such genera as *Scaphium* or *Toxidium*, where the sutures are distinct, the truth is directly the reverse, the mes-episterna being unusually developed and extending almost to the coxæ.

There are no new genera among the American species, and to give the family characters would be almost a repetition of the language used by Lacordaire in the "Genera." There is but one point to which reference should be made in way of criticising the excellent introductory remarks referred to, it being stated (II, p. 237) that the metasternal parapleuræ "sont composées d'une seule pièce." The met-epimeron is nearly always distinct and well developed, although the suture separating it from the episternum very rarely disappears as in *Cyparium*.

In regard to the external affinities of the Scaphidiidæ but little can be said. A few characters seem to remind us of that ollapodrida of discordances known as the Silphidæ, and one or two features vaguely suggest certain parallelism with the Phalacridæ; but the family is really very isolated in the structure of the external skeleton, the connective bonds with other groups of Clavicornia having apparently disappeared.

The family comprises two distinct tribes as follows:—

Antennæ with a broad abrupt and somewhat flattened five-jointed club; scutellum well-developed; mes-epimera sublongitudinal, separating the episterna from the elytra throughout their extent; met-episternal suture double; tarsi shorter and thicker; elytral punctures seriate.....SCAPHIDIINI

Antennæ slender and subfiliform, the outer five or six joints elongate, flattened, loosely connected and more or less asymmetrically dilated; scutellum minute or wanting; mes-epimera transverse, variable in size, sometimes obliterated; met-episternal suture single; tarsi longer and more slender; elytral punctures not seriate .....SCAPHISOMINI

The genera may be thus epitomized:—

Tribe SCAPHIDIINI.

Suture between the metasternum and mes-episterna single; basal angles of the prothorax not posteriorly prolonged; eyes entire.

Basal joint of the hind tarsi short; posterior tibiæ not spinose externally; eighth antennal joint smaller than the seventh; prosternum well developed before the coxæ, not carinate .....**Scaphium**

Basal joint elongate; posterior tibiæ sparsely and finely spinose externally; eighth antennal joint not smaller than the seventh; prosternum very short before the coxæ, the head more inflexed .....**Cyparium**

Suture strongly double; posterior angles acute and somewhat produced; eyes emarginate; prosternum carinate and deeply biexcavate before the coxæ.

**Scaphidium**

Tribe SCAPHISOMINI.

Third antennal joint elongate and cylindrical.

Body oval; sutural stria of the elytra attaining the base; mes-epimera well developed; scutellum generally wanting, when present very transverse, parabolic .....**Bæocera**

Body compressed; sutural stria not attaining the base; mes-epimera not visible; scutellum wanting .....**Toxidium**

Third antennal joint very short, claviform or triangular, always strongly narrowed to the base; scutellum minute but never obsolete, equilaterally triangular; sutural stria attaining the base; mes-epimera variable in size.

**Scaphisoma**

All of these genera, except *Cyparium* and *Toxidium*, occur also in Europe, and the European *Scaphoschema* appears to be unrepresented in America.

**SCAPHIUM** Kirby.

The appreciable interval between the eyes and point of antennal insertion and the very short basal joint of the posterior tarsi, are characters which force us to place this genus at one of the extremes of the family. Its elongate form, small eyes and more regularly striate elytra, are also exceptional features.

We have a single subarctic species:—

**S. castanipes** Kirby—Faun. Bor. Am., IV, p. 109.

Elongate, oblong, convex, polished, black and glabrous, the antennæ rufous; legs piceo-rufous, the head minutely sparsely and obsoletely, the pronotum more closely and strongly punctate, the punctures coarse dense and confused in a transverse area near the base and also broadly along the median line near the base; elytra with feebly impressed, coarsely and closely punctured striæ, confused near the apex and obliterated on the flanks, the intervals feebly sparsely and more finely punctate; sutural stria subimpunctate, becoming at base a series of coarse punctures, curved outward along the base to the fourth stria. Head not quite vertical, flat above; eyes convex, separated by four or five times their own width; antennæ about as long as the prothorax, the third joint a little shorter than the fourth, not quite three times as long as wide. Prothorax one-third wider than long, widest just before the middle; sides subparallel and strongly sinuate thence to the base, broadly rounded and convergent to the apex; base broadly evenly and feebly bisinuate. Scutellum large, semicircular. Elytra one-fourth longer than wide, oblong, nearly twice as long as the prothorax and one-third wider; sides subparallel, feebly arcuate. Length 4.8 mm.; width 2.3 mm.

Lake Superior. Taken in some abundance by Mr. Schwarz, to whom I am indebted for the two specimens in my cabinet. This species was unknown to Dr. LeConte when he drew up his synopsis of the family.

#### **CYPARIUM** Erichs.

This genus is very isolated, but seems to be somewhat more closely related to *Scaphium* than to *Scaphidium*, although resembling the latter in general form and habitus. We have only one species:—

**C. flavipes** Lec.—Proc. Ac. Nat. Sci., Phila., 1860, p. 322.

Broadly oblong-oval, highly polished, glabrous, black, the elytra, legs and antennæ paler, rufo-castaneous; integuments not distinctly punctulate, the elytra with partial series of rather coarse punctures, confused at apex, the series becoming longer toward the suture, the sutural stria alone impressed, punctate, flexed outward at base, becoming a fine impunctate basal stria extending beyond the middle. Head slightly inflexed; eyes very large, separated by less than



their own width; antennæ as long as the prothorax, situated at the margin of the eyes, the third joint fully three times as long as wide, a little longer than the second and much longer than the fourth, sixth slightly longer than wide, tenth twice as wide as long, the club compressed as usual. Prothorax four-fifths wider than long; apex beaded throughout the width, less than one-half as wide as the base, the latter transverse, the scutellar lobe one-fourth of the entire width, feeble and broadly subtruncate; basal angles right, not rounded; sides broadly, evenly rounded from base to apex. Scutellum parabolic, nearly as long as wide. Elytra as long as wide, not quite twice as long as the prothorax, a little wider at basal fourth than at base; sides subparallel, feebly arcuate; apex equal to the base. Post-coxal plates not developed. Legs stout; posterior tibiæ arcuate, the tarsi two-thirds as long as the tibiæ, with the first joint as long as the next two and equal to the fifth. Length 3.5 mm.; width 2.1 mm.

North Carolina. The epipleuræ of the elytra are well defined throughout by the acute lateral edge, and are distinctly inflexed from base to apex.

#### SCAPHIDIUM Oliv.

The emarginate eyes and produced acute basal angles of the prothorax readily distinguish this genus from either of the preceding. The double transverse sutures between the middle coxæ, and between the mesosternal episternum and metasternum, are remarkably developed, and the apex of the metasternum appears to be somewhat bilobed. The male is distinguished from the female by a large depressed punctate and pubescent area occupying the median parts of the metasternum. We appear to have but two species, which may be separated by the following characters:—

Elytra each with two transverse red spots which extend inward two-thirds the entire width, the spots obsolete in var. *piceum*....**quadriguttatum**  
 Elytra each with two small marginal spots of pale flavate, not extending inward more than one-third of the width; body more elongate; size somewhat larger; elytra without coarse discal punctures.....**obliteratum**

These species are evidently allied but appear to be sufficiently distinct. I am unable at present to compare them with the European *quadrimaculatum* Oliv., but they are probably closely related.

**S. quadriguttatum** Say.—Journ. Ac. Phila., III, p. 198; *quadripustulatum* || Say : l. c., p. 198; *quadrimotatum* Casteln? : Hist. Nat., II, p. 19; Dej. Cat., 3d, p. 133; var. *piceum* Melsh. : Proc. Ac. Phila., II, p. 103.

Oval, convex, highly polished, glabrous, black, the elytral maculæ red; antennæ, except the last five joints, testaceous; tarsi rufescent; head subimpunctate; pronotum sparsely and more or less deeply punctate, with a transverse, broadly bisinuate series of coarse punctures near the base; elytra with two to four short, more or less developed series of coarse punctures before the middle and nearer the suture than the sides, the sutural stria feebly impressed, more finely and closely punctate, except the part along the basal margin, which is coarsely punctate, extending to lateral third. Eyes large, separated by less than their own width; antennæ rather longer than the prothorax, the third joint slender, four times as long as wide, much longer than the second and a little longer than the fourth, sixth nearly twice as long as wide, tenth only slightly wider than long. Prothorax one-third wider than long, the convergent sides nearly straight from base to apex, the latter strongly beaded and one-half as wide as the base; scutellar lobe one-third the entire width, broadly, evenly rounded. Scutellum rather small, parabolic, nearly as long as wide. Elytra not quite as long as wide, one-half longer than the prothorax; sides arcuate; apex a little narrower than the base. Posterior tarsi scarcely three-fifths as long as the feebly arcuate tibiæ, the first joint a little longer than the next two, barely as long as the fifth. Length 3.8–4.7 mm.; width 2.2–2.65 mm.

New Jersey to Kansas. I do not know at present whether the variety *piceum* occurs with the spotted specimens or not; at any rate, it is impossible to discover any constant structural difference.

**S. oblitteratum** Lec.—Proc. Ac. Nat. Sci., Phila., 1860, p. 322.

The characters stated in the table are almost the only ones which can be given to distinguish this species from the preceding. The prothorax is a little shorter and more transverse, with more arcuate sides, and the elytra are as long as wide and three-fourths longer than the prothorax. Length 4.7 mm.; width 2.6 mm.

Rhode Island to Indiana. Appears to be rare; I have only seen the female.

**BÆOCERA** Erichs.

In this genus the species are generally very small, but appear to be more constant and more isolated among themselves than in *Scaphisoma*. The most important structural features distinguishing these genera reside in the antennæ and scutellum, and there are but few if any others which are absolutely characteristic of either. The antennæ have the outer three joints enlarged, forming a slender loose club, generally almost bilaterally symmetric, but occasionally more developed on the inner side, thus reverting to *Scaphisoma*; this reversion is further recalled by the frequent, though moderate, enlargement of the seventh and eighth joints. The third joint is always slender and cylindrical, and is generally a little shorter than the fourth; in this form of the third joint really lies the most important antennal difference between the two genera.

The scutellum is usually completely wanting, and, when present, affects a form quite foreign to *Scaphisoma*, being broadly triangular. The post-coxal plate of the first ventral segment is never at all developed in *Bæocera*, and the series of coarse punctures along the posterior margin of the intermediate and posterior acetabula are much better marked than in *Scaphisoma*. The sexual characters seem to be very obscure except in the larger species allied to *concolor*.

The species known to me may be readily identified as follows:—

- Scutellum wanting, the mesonotum completely covered by the prothorax.
- Larger species, not less than 2 mm. in length.
  - Sides of the prothorax feebly and evenly arcuate when viewed laterally; basal stria of the elytra entire.
  - Third antennal joint very long, slender, subequal to the fourth.
    - concolor**
    - Third joint much shorter and thicker; size smaller, less broadly oval.
      - congener**
      - Sides of the prothorax strongly bent downward posteriorly; basal stria of the elytra broadly interrupted; third antennal joint long and slender.
        - deflexa**
  - Smaller species, never much exceeding  $1\frac{1}{2}$  mm. in length.
    - Narrowly oval, the third antennal joint not longer than the fourth; epistomal suture distinct.
    - Larger species; mes-epimera extending two-thirds to the coxæ.
      - speculifer**
      - Minute in size, the mes-epimera longer and narrower .....**apicalis**
      - Broadly oval, minute; third antennal joint a little longer than the fourth; epistomal suture obsolete .....**robustula**

Scutellum minute but distinctly advanced between the elytra.

Larger; basal stria of the elytra entire; third antennal joint as long as the fourth ..... **texana**

Minute species; basal stria interrupted; third antennal joint much shorter than the fourth.

Basal angles of the prothorax acute; met-episternum narrow; color piceous-brown ..... **picea**

Basal angles produced but truncate at apex; met-episternum broad, the suture arcuate; body intense black..... **nana**

**B. concolor** Fab.—Syst. El., II, p. 576 (Scaphidium).

Oblong-oval, broad, strongly convex, highly polished, subglabrous, very sparsely and obsoletely punctulate throughout, black; legs, antennæ and abdominal vertex more or less paler, rufo-piceous. Head vertical; eyes large; antennæ widely separated, very slender, not as long as the head and prothorax, the third joint fully five times as long as wide, very slightly shorter than the fourth, both shorter than the fifth, which is fully seven times as long as wide, seventh shorter than the sixth, eighth still shorter, seventh and eighth but slightly thicker, ninth longer than the tenth but shorter than the eleventh. Prothorax short, three-fourths wider than long, the apex one-third as wide as the base; side margin, viewed laterally, evenly, moderately arcuate. Scutellum wanting. Elytra barely as long as wide, scarcely twice as long as the prothorax, somewhat wider between basal third and fourth than at base, unusually broadly truncate at apex. Mes-epimera extending fully two-thirds to the coxæ; met-episterna between three and four times as long as wide, parallel, the suture coarse and deep. Posterior tarsi scarcely more than two-thirds as long as the tibiæ, the first joint fully as long as the next three. Length 2.7 mm.; width 1.6–1.7 mm.

Pennsylvania to Illinois. This is the largest known species within our boundaries, and may be known by its broadly sub-oblong-oval form. The description is taken from the female, the fifth ventral plate being broadly, feebly lobed in the middle, the sixth strongly produced in a more narrowly rounded lobe, the sides of the lobe feebly, evenly sinuato-oblique. In the male the fifth is broadly, feebly bisinuate toward the middle, the sixth abruptly produced in the middle in a short, gradually narrowed, narrowly rounded ligula, as long as wide, flanked on either side by a small but deep rounded emargination. There appears to be scarcely any sexual divergence in antennal structure. Three specimens, remarkably uniform in size.



**B. congener** n. sp.—Rather stout, oval, black, subglabrous, impunctate; legs and antennæ pale rufous. *Head* vertical, moderate in size; epistomal suture very feeble; antennæ rather distant, not as slender as in *concolor* or *deflexa*, distinctly shorter than the head and prothorax, the third joint not quite three times as long as wide, oblique at apex, much shorter than the second, barely three-fourths as long as the fourth, the latter equal to the sixth, fifth a little longer, seventh and eighth distinctly thicker and more developed on the inner side, club long, subparallel, the ninth joint but little longer than the tenth. *Prothorax* almost semi-circular in outline from above, fully three-fourths wider than long; basal lobe strongly rounded; side margins, viewed laterally, evenly, feebly arcuate; basal angles acute. Scutellum completely wanting. *Elytra* about as long as wide, not quite twice as long as the prothorax, a little wider at basal fourth than at base; apex obliquely and rather widely truncate, the angles moderately broadly rounded; basal stria entire. Mes-epimera narrow, extending only three-fifths to the coxæ; met-episterna narrow, feebly, gradually narrowed throughout to the humeri, the suture coarse, straight; epimera distinct, large, the dividing suture fine. *Legs* long; posterior tarsi slightly shorter than the tibiæ, with the basal joint fully as long as the next three. Length 2.0 mm.; width 1.25 mm.

New York (Long Island); North Carolina; Iowa.

This species closely resembles *deflexa*, but may be known by the short third joint of the antennæ, entire basal stria of the elytra and feebly, evenly arcuate lateral margin of the prothorax. From *concolor* it differs in its much smaller size and in antennal structure. The male has the fifth ventral bisinuate, the sixth produced in a triangular, narrowly rounded process, flanked by deep, strongly rounded emarginations as in *concolor*, except that in *congener* the lobe is larger and more acutely triangular. Three specimens.

**B. deflexa** n. sp.—Stout, broadly oval, subglabrous, the decumbent hairs being remote and very fine as usual, subimpunctate; under surface, legs and antennæ more or less paler, rufo-piceous. *Head* vertical; eyes large but not attaining the base; antennæ moderately distant, very slender, not quite as long as the head and prothorax, the third joint rather more than five times as long as wide, distinctly longer than the second, scarcely as long as the fourth, four and five equal and a little longer than six and seven, eight still shorter though scarcely thicker and four times as long as wide, ninth longer than the tenth, both oblique at apex and distinctly more developed on the inner than on the outer side of the axial line. *Prothorax* from above almost semi-circular, four-fifths wider than long; basal lobe rather large, strongly rounded. Scutellum completely wanting. *Elytra* fully as long as wide, twice as long as the prothorax, a little wider between basal fourth and fifth; apex moderately wide, the external angles broadly rounded; sutural and marginal striæ deep, the basal broadly interrupted. Mes-epimera rather broad, extending two-thirds to the coxæ; met-episterna narrow, exactly parallel, the suture



very coarse and deep; dividing line of the epimera very fine and feeble. *Legs* long, slender, the hind tarsi three-fourths as long as the tibiæ, the basal joint as long as the next three. Length 2.5 mm.; width 1.4 mm.

Rhode Island (Boston Neck); Virginia; Indiana.

The type is a male, having the fifth ventral plate very feebly bisinuate toward the middle, the sixth produced in a slender, gradually narrowed, acutely rounded process, longer than wide, flanked by broadly rounded shallow emarginations which are larger and more feeble than in *concolor*. The species is also distinguishable from *concolor* by its smaller size, less obese form, relatively larger elytra with broadly and completely obliterated basal stria, and by the form of the lateral margin of the prothorax, which is more abruptly though broadly bent downward posteriorly. Four specimens.

**B. specularis** n. sp.—Rather narrowly oval, highly polished, black; legs, antennæ, tips of the elytra and abdominal apex paler, testaceous; integuments subglabrous and subimpunctate. *Head* small, the eyes large, separated by more than their own width; antennæ slender, scarcely as long as the head and prothorax, joints three to seven subequal in length, eighth shorter, third four times as long as wide, seventh and eighth thicker, club almost symmetrical, joints nine and ten nearly equal, obconical, strongly compressed as usual. *Prothorax* short, two-thirds wider than long, strongly declivous anteriorly, the apex not visible from above but scarcely more than one-third as wide as the base; basal lobe strong but evenly rounded; angles rather acute. Scutellum completely wanting. *Elytra* rather longer than wide, twice as long as the prothorax, very broadly, feebly rounded at the sides but somewhat wider at basal fourth than at base; sutural and lateral striæ deep, the latter slightly punctate; basal and apical striæ entire; apex transversely truncate, the external angles broadly rounded. Mes-epimera rather short, barely extending two-thirds to the coxæ; met-episterna narrow, subparallel, the suture coarse deep and unevenly punctate; epimera distinct. *Legs* slender, the posterior tarsi very slender but quite distinctly shorter than the tibiæ. Length 1.6 mm.; width 0.9 mm.

Iowa (Keokuk).

This species perhaps resembles *apicalis* more than any other, but may be separated by its longer antennal joints and much more elongate mes-epimera, as well as by the more broadly oval form of the body and broader, less strongly rounded median thoracic lobe. Two precisely similar specimens.

**B. apicalis** Lec.—Proc. Ac. Nat. Sci., Phila., 1860, p. 323.

Black, polished, subimpunctate and subglabrous; elytra rufescent along the suture and apex; legs and abdomen rufous. Antennæ

short, not as long as the head and prothorax; third and fourth joints subequal, the former not quite three times as long as wide, slightly shorter than the sixth, much less elongate than the fifth and equal to the eighth, the latter much thicker; seventh as long as the fifth, evenly and symmetrically fusiform; club symmetrical. Prothorax short, more than one-half wider than long, the basal lobe small and rounded. Scutellum completely obsolete. Elytra longer than wide, rather more than twice as long as the prothorax, slightly wider at basal third or fourth, the sides broadly, almost evenly arcuate; sutural striæ rather distant; apex obliquely truncate, the outer angles rather narrowly rounded. Mes-epimera long and narrow, extending nearly three-fourths to the coxæ; met-episterna narrow, the suture coarse but smooth, arcuately approaching close to the elytra anteriorly. Legs slender; posterior tarsi not as long as the tibiæ but with the basal joint as long as the next three. Length 1.25 mm.; width 0.7 mm.

Represented in my cabinet from Rhode Island, Pennsylvania and Michigan. The two specimens which I took near Philadelphia are both pale, but probably from immaturity, as I can perceive no structural differences. It does not vary much in size, and the measurements are taken from an average specimen.

**B. robustula** n. sp.—Broadly oval, highly polished, subglabrous and impunctate, black, the legs, antennæ and abdominal apex paler. *Head* slightly inflexed; eyes moderate, separated by nearly twice their own width; epistomal suture completely obsolete; antennæ rather widely separated, very slender, fully as long as the head and prothorax, the third joint slender, four or five times as long as wide, distinctly longer than the fourth and equal to the fifth, fourth, sixth and eighth equal, the latter only just appreciably thicker, seventh longer than any of the preceding four, ninth elongate, obconical. *Prothorax* one-half wider than long, the apex not visible from above, barely two-fifths as wide as the base, the median lobe of the latter rather feebly rounded but distinct; basal angles somewhat short but acute. Scutellum completely wanting. *Elytra* barely as long as wide, not quite twice as long as the prothorax, the sides very evenly elliptical and exactly continuous with those of the prothorax; apex unusually narrow, the angles rounded; sutural and lateral striæ deep, the basal entire though feeble near lateral fifth. Mes-epimera rather short, scarcely extending two-thirds to the coxæ, the met-episterna narrow, parallel, the suture deep and coarse; epimera distinct. *Legs* slender, the basal joint of the hind tarsi not as long as the next three. Length 1.2 mm.; width 0.8 mm.

Texas.

The unusually elongate third antennal joint, with the seventh

and eighth scarcely thicker, the obliterated epistomal suture, absence of scutellum and small, broadly and extremely evenly elliptical form, will readily serve for the identification of this distinct but minute species. Two specimens.

**B. texana** n. sp.—Evenly oval, highly polished, deep black; legs, antennæ and abdomen toward tip dark rufo-testaceous; integuments subglabrous, the head and pronotum subimpunctate, with remote and fine, decumbent and scarcely visible hairs; elytra remotely, obsoletely punctulate and similarly pubescent; sterna impunctate, the row of punctures behind the middle and posterior coxæ very strong. *Head* small; eyes moderate; antennæ slender, not quite as long as the head and prothorax, the joints three, four and six equal and four times as long as wide, five and seven longer, seven and eight thicker, arcuate within, the latter three times as long as wide, joints of the club rapidly increasing in length, the ninth not quite symmetrical. *Prothorax* three-fifths wider than long, the apex scarcely more than one-third as wide as the base; basal lobe rather feeble and broadly rounded; basal angles somewhat acute. Scutellum visible, more than twice as wide as long. *Elytra* as long as wide, three-fourths longer than the prothorax, scarcely at all wider behind the base; sutural stria deep, the lateral coarse, more or less punctate, the basal fine but entire; apex obliquely truncate, the outer angles rounded. Mes-epimera long, extending almost three-fourths to the coxæ; met-episterna more than three times as long as wide, the suture coarse and deep, feebly and arcuately approaching very near to the elytra anteriorly; epimera distinct. Posterior tarsi scarcely as long as the tibiæ. Length 1.7 mm.; width 0.95 mm.

Texas.

Distinguishable at once from *speculifer* by its visible scutellum, and from *deflexa* by the same character, in addition to its much smaller size and narrower form.

**B. picea** n. sp.—Rather broadly oval, dark rufo-piceous, the legs, antennæ and abdominal vertex rufous; integuments subglabrous, impunctate and highly polished. *Head* small; eyes separated by more than their own width, minutely and feebly emarginated by the antennæ as usual; epistoma long, subquadrate, rather longer than wide; antennæ short, scarcely as long as the head and prothorax, the third joint scarcely more than twice as long as wide and only two-thirds as long as the fourth, four to six slender, subequal, seventh and eighth longer and much thicker, but slightly asymmetric, the eighth only slightly shorter than the seventh, eleventh more than twice as long as wide. *Prothorax* nearly three-fourths wider than long, the apex much less than one-half as wide as the base, the basal lobe well developed, rounded; angles acute. Scutellum visible, more than twice as wide as long. *Elytra* fully as long as wide, rather more than twice as long as the prothorax, quite distinctly wider at basal fourth than at base, the basal stria broadly interrupted. Mes-epimera

slender but not extending more than two-thirds to the coxæ; met-episterna long, narrow, the suture strong but even, feebly oblique toward the humeri throughout, almost straight; epimera distinctly separated. *Legs* slender; posterior tarsi almost as long as the tibiæ, the basal joint not as long as the next three. Length 1.25 mm.; width 0.75 mm.

#### Pennsylvania.

Allied somewhat to *nana*, but differing in its larger size, paler coloration, larger and longer epistoma, more distant antennæ, acute basal angles of the prothorax, narrower met-episterna with straight and not evenly arcuate dividing suture, and several other features. Two specimens.

**B. nana** n. sp.—Moderately broad, highly polished and completely impunctate throughout, black, the legs rufo-testaceous; antennæ slightly paler toward base; integuments with extremely sparse recumbent hairs on the head, femora and abdomen. *Head* small; antennæ as long as the head and prothorax, the first two joints as long as the next three, third scarcely more than twice as long as wide and distinctly shorter than the fourth, four to eight subequal in length, the fifth and seventh a little longer, seventh and eighth stouter, nine to eleven broader forming the long loose club. *Prothorax* one-half wider than long, the apex not quite one-half as wide as the base; median lobe distinct, rounded; basal angles but slightly produced and distinctly truncate. Scutellum distinct, more than twice as wide as long. *Elytra* as long as wide, nearly twice as long as the prothorax, widest at about basal fifth; apex truncate, the external angles rather broadly rounded; sutural stria extending along the base nearly to the middle, the lateral slightly inflexed at base. Mes-epimera narrow, extending fully two-thirds to the coxæ; met-episterna unusually wide, barely two and one-half times as long as wide, the suture parallel, distinctly arcuate, moderately coarse; epimera small, the suture deep. Posterior tarsi as long as the tibiæ, the first joint as long as the next two. Length 1.1 mm.; width 0.75 mm.

#### Rhode Island; Michigan; Texas.

Readily known by the truncate basal angles of the pronotum, the extremity of the lateral acute line of the prothorax being far below the line of the elytra, the met-episterna rather broader than usual with the suture arcuate, and by the evident scutellum. It is widely diffused, and the specimens in my cabinet differ very little among themselves even in size.

### TOXIDIUM Lec.

This genus is exceedingly distinct and isolated, but approaches *Bæocera* in general organization much more closely than *Scaphisoma*. It resembles the former in the slender cylindrical third an-



tennal joint, complete absence of scutellum and absence of all trace of a dilated post-coxal plate on the first ventral segment, and suggests certain types of the latter by the excessively small or obsolete mes-epimera. It however differs from both in the compressed body, more transversely elongate and more narrowly separated hind coxæ, narrower met-episterna, narrowed posteriorly and not anteriorly, in the still longer tarsi and longer tibial spurs, in having the large side-piece of the mesosternum clearly separated by a longitudinal suture near the coxæ, and in the fact that the sutural stria of the elytra does not attain the base.

Our two species are very strongly differentiated but cannot be separated generically; they may be defined as follows:—

Basal angles of the prothorax only very feebly produced, obtusely angulate, the side-margin of the prothorax attaining their apices; metasternum generally with a cluster of four or five coarse punctures near the middle coxæ.

**gammaroides**

Basal angles not at all produced, obtuse and somewhat blunt; side-margin of the prothorax rapidly deflexed, meeting the sides of the pronotum far in front of the basal angles, the intervening edge upwardly oblique; metasternum coarsely, deeply punctured throughout.....**compressum**

In *gammaroides* there is a slight downward flexure in the acute lateral margins of the prothorax opposite the point where these margins terminate in *compressum*, suggesting a merely less developed form of the same structure.

**T. gammaroides** Lec.—Proc. Ac. Nat. Sci., Phila., 1860, p. 324.

Narrow, polished, scarcely punctate, black; tip of abdomen, legs and antennæ rufous. Antennæ slender, nearly as long as the head and prothorax, the third joint slender, almost four times as long as wide, shorter than the fourth, the latter not as long as the fifth but equal to the sixth; seventh slightly stout; eighth more slender; club moderate in length. Met-episterna posteriorly only one-half as wide as near the base; suture coarse and deep; epimera small, extending inward far within the episterna, meeting the tips of the hind coxæ. Length 1.6–1.8 mm.; width 0.7–0.75 mm.

Rhode Island and New York; LeConte indicates "Southern and Western States," but may have confounded the next species.

**T. compressum** Zimm.—Trans. Am. Ent. Soc., 1869, p. 251.

Greatly resembles the preceding but rather shorter, broader and dark red-brown in color. Besides the characters already noted



*compressum* differs from *gammaroides* in the narrower and more parallel met-episterna. Length 1.4–1.7 mm.; width 0.7–0.8 mm.

Kansas and Nebraska to Florida. I can distinguish no distinct trace of mes-epimera in either of these species.

**SCAPHISOMA** Leach.

The species of *Scaphisoma* exceed in number those of *Bæocera*, but are less readily differentiable. The antennæ are generally longer and have the outer joints more bilaterally asymmetric as a rule, the third joint always very small, seldom more than one-half as long as the fourth, enlarged and more or less oblique at apex and constricted at base. There are two tolerably well-defined types of antennal structure, one having the sixth joint rather shorter than the fifth, the other with this joint greatly elongate, sometimes equalling the preceding three together. In the latter type the sixth joint is somewhat dilated within and bristling with erect setæ like those beyond it; in fact in the first type, the club—if the loose chain of peculiar flattened internally arcuate joints can be thus designated—begins with the seventh joint, and in the second with the sixth. I have made no use of these types of structure in classifying the species, as the character relating to the mes-epimera seems to be more important and less subject to sexual modification. The scutellum is present in all of our species, though very small and sometimes extremely minute; it is invariably equilateral or nearly so. The basal stria of the elytra is never entire, as it frequently is in *Bæocera*.

The following table may enable the reader to identify the forms in his cabinet, although there are probably a considerable number still to be discovered:—

Mes-epimera extending one-half or more to the coxæ, always distinctly defined.

Metasternum strongly though sparsely punctate throughout, the punctures extending also to the outer parts of the episterna ..... **repanda**

Metasternum subimpunctate or only punctured in part.

Body black, sometimes castaneous from immaturity.

Larger species, never much under 2 mm. in length.

Elytra sparsely but strongly punctate.

Metasternum, between the middle and hind coxæ, coarsely and strongly punctate.. ..... **convexa**

Metasternum minutely and remotely punctate; elytral punctures stronger; form a little more elongate-oval ..... **castanea**

Elytra finely but much more closely punctate, the punctures almost twice as numerous as in *convexa* ..... **punctulata**

- Smaller species, seldom more than  $1\frac{3}{4}$  mm. in length.
- Elytra not paler at apex, except feebly and gradually from diaphaneity.....**suturalis**
- Elytra with a broad and rather distinctly defined pale apical margin.
- Larger, more broadly oval, the metasternum strongly punctured toward base.....**terminata**
- Small, narrowly oval, the metasternum minutely and scarcely visibly punctured.....**evanescens**
- Body pale rufo-testaceous throughout.....**rubens**
- Mes-epimera very small, sometimes completely undefined, and the suture obliterated; species generally smaller, occasionally minute.
- Coxal plate of the first ventral segment shorter, not extending to the middle; body more than 1 mm. in length.
- Body pale rufo-testaceous throughout.....**rufula**
- Body black, the elytral apex sometimes narrowly pale.
- Elytra finely but visibly punctate almost to the basal margin.
- Basal stria of the elytra extending outward beyond the middle of each; larger species.....**desertorum**
- Basal stria extremely abbreviated, scarcely extending at all beyond the outward flexure of the sutural stria; size much smaller.
- inconspicua**
- Elytra impunctate, except occasionally very obsoletely and indefinitely near the apex.
- Posterior elevated margin of the intermediate acetabula strongly rounded behind, extending posteriorly for more than one-fourth of the distance between the middle and hind coxæ.....**obesula**
- Posterior marginal plate shorter and more broadly rounded.
- Post-coxal plate bordered by a transverse series of small but deep punctures; fourth antennal joint much shorter than the fifth, three times as long as wide; met-episterna wide, narrowed anteriorly.....**carolinæ**
- Post-coxal plate without a distinct marginal line of punctures; fourth antennal joint longer and much more slender, fully four times as long as wide; met-episterna narrower, parallel; body slightly narrower, the elytra longer and the prothorax shorter.
- arkansana**
- Coxal plate of the first ventral large, extending to the middle of the segment; body 1 mm. or less in length.....**pusilla**<sup>1</sup>

<sup>1</sup> The gender usually adopted for such words as Scaphisoma, Tyloderma and others, is the neuter, on the ground that the gender of the word in the Greek is neuter. It is evident, however, that as soon as a word is taken into the binomial nomenclature as the symbol of a genus, it immediately and by virtue thereof becomes Latin, whatever may be its derivation. As a genus in the binomial nomenclature, Scaphisoma is therefore a Latin word and should be given a gender corresponding with its Latin termination. It is manifestly

**S. repanda** n. sp.—Rather broadly oval, polished, black, somewhat piceous beneath, the legs and antennæ pale; integuments subglabrous, the decumbent hairs fine and very sparse; head and pronotum impunctate; elytra strongly, sparsely punctured throughout; metasternum, the inner part of its parapleuræ and the first ventral plate, except toward apex, strongly but not so coarsely, sparsely punctured. *Head* vertical, moderate in size; eyes large, distant by twice their width; antennæ distant, as long as the head and prothorax, the third joint not twice as long as wide, barely one-half as long as the fourth, which is four times as long as wide and not quite as long as the fifth or sixth, the latter equal, seventh longer, dilated and arcuate within, three times as long as wide, eighth much shorter and thinner, joints of club elongate, not much wider than the seventh. *Prothorax* three-fourths wider than long, the apex barely two-fifths as wide as the base, the median lobe broadly rounded; basal angles distinctly produced and acute. Scutellum minute but distinct. *Elytra* as long as wide, twice as long as the prothorax, a little wider at basal third than at base; apices obliquely truncate, two-thirds as wide as the maximum width, the angles rather narrowly rounded; sutural and marginal striæ distinct, the basal obsolete at about the middle. *Mesepimera* long, narrow, extending three-fifths to the coxæ; met-episterna wide, the suture fine and only moderately oblique. *Legs* slender; hind tarsi about as long as the tibiæ, the basal joint scarcely as long as the next three. Length 1.7 mm.; width 1.05 mm.

Iowa; Missouri; Massachusetts.

Readily known by the punctuation and by the fact that the usual post-coxal plate of the first ventral segment is as completely obsolete as in *Bæocera*, the hind margin straight and anteriorly oblique outwardly. The size seems to be very uniform.

**S. convexa** Say.—*Journ. Ac. Phila.*, V, p. 183; *Lec.: Proc. Ac. Phila.*, 1860, p. 323.

Broadly oval, highly polished, black, the under surface, legs and antennæ paler, rufous. Antennæ long, the third joint one-half longer than wide, enlarged at apex, scarcely one-half as long as the fourth, which is between three and four times as long as wide; fifth but little longer; sixth and seventh subequal, much longer, nearly as long as the fourth and fifth together, the sixth feebly dilated within, the seventh more strongly and arcuately so; eighth shorter; club very elongate and slender, not wider than the seventh.

impossible to modify a noun of one language by an adjective of another; the combination of letters "Scaphisoma" in the name *Scaphisoma rufula*, cannot therefore be Greek but must be Latin. Why we should maintain the Greek gender, or any other attribute of the symbol as a Greek word, it is difficult to understand.

Prothorax fully three-fifths wider than long, very obsoletely punctulate. Scutellum distinct, equilateral. Elytra about three-fourths longer than the prothorax, widest near basal third, the sides very broadly, evenly arcuate; surface strongly, remotely punctate, the basal stria becoming obsolete near lateral third; apical angles rather broadly rounded. Mes-epimera extending a little more than half way to the coxæ. Legs slender, the hind tarsi long, very slender, as long as the tibiæ, with the basal joint longer than the next two. Length 2.25–2.7 mm.; width 1.4–1.6 mm.

Entire Atlantic slope and westward to the Mississippi. The most abundant of the eastern species and distinguished by its large size, antennal structure and punctuation. The post-coxal plate of the first ventral is very short and broadly rounded behind.

**S. castanea** Mots.—Bull. Mosc., 1845, IV, p. 361; Lec.: Proc. Ac. Phila., 1860, p. 323.

This species resembles *convexa* very closely, but is on the whole a little larger, with the prothorax somewhat shorter and the elytra just visibly longer; the antennæ are a little thicker, the third joint but slightly longer than wide, and, as usual, strongly narrowed toward base, the fourth not more than three times as long as wide, shorter than the fifth, sixth much longer, not as long as the seventh and a little shorter than the fourth and fifth together. The elytra are, as a rule, somewhat more strongly and perhaps a little less remotely punctate. Length 2.25–3.0 mm.; width 1.4–1.7 mm.

The series before me consists of a very large number of specimens from many parts of California, British Columbia, Idaho, Utah, and one labeled "Arizona." The normal color seems to be black, but specimens occasionally occur which are castaneous, undoubtedly from immaturity.

**S. punctulata** Lec.—Proc. Ac. Nat. Sci., Phila., 1860, p. 323.

Broadly oval, highly polished, black, the elytral apex not in the least paler; head, antennæ, legs and most of the abdomen above and beneath rufous; fine hairs unusually distinct on the under surface. Antennæ long and slender, fully as long as the head and prothorax, the third joint triangular, scarcely longer than wide; fourth three times as long as wide; fifth much longer, fully five times as long as wide, much longer than the third and fourth combined, shorter than the sixth, which is unusually long, even longer but

thinner than the seventh; eighth about as long as the fifth; joints of the club very long, not wider than the seventh. Prothorax two-thirds wider than long, extremely obsoletely punctulate. Scutellum minute, equilateral. Elytra scarcely visibly wider at basal fourth than at base; outer apical angles narrowly rounded; basal stria extending to the middle. Mes-epimera long and narrow, extending three-fifths to the coxæ; met-episternal suture fine, moderately oblique. Basal joint of the hind tarsi as long as the next three. Length 1.9–2.1 mm.; width 1.3–1.4 mm.

Georgia and Florida. Readily identifiable by the rather dense but fine, uniformly distributed and unusually close elytral punctuation.

**S. suturalis** Lec.—Proc. Ac. Nat. Sci., Phila., 1860, p. 323.

Rather narrowly oval; body dark castaneous to black, highly polished throughout, the pronotum subimpunctate, the elytra strongly but remotely punctate from apex to base. Antennæ rather thick, the third joint triangular, oblique at apex, one-half longer than wide, one-half as long as the fourth, which is nearly four times as long as wide; fifth slightly swollen within, barely longer than the third and fourth together, very slightly longer than the sixth but distinctly shorter than the seventh; joints after the fourth all more or less dilated and arcuate within. Prothorax rather short, three-fourths wider than long, one-half as long as the elytra. Scutellum distinct. Elytra rather longer than wide, slightly widest at basal fourth; outer apical angles rather broadly rounded; sutural stria deep, the basal fine, extending to the middle. Mes-epimera long, narrow, extending two-thirds to the coxæ; met-episternal suture fine and only very slightly oblique. Posterior tarsi long and extremely slender, the first joint subequal to the next three. Length 1.75 mm.; width 1.1 mm.

Missouri and North Carolina (Hot Springs). The antennæ are unusually thick, the fifth joint being more slender in the majority of species. There is but little variation in the three specimens before me.

**S. terminata** Mels.—Proc. Ac. Nat. Sci., Phila., II, p. 104; Lec.: l. c., 1860, p. 323.

Oval, strongly convex, black, highly polished throughout, the apex of the elytra margined with flavo-testaceous; legs and an-



tennæ pale; head and pronotum subimpunctate; elytra distinctly, sparsely punctate, the punctures becoming finer toward base. Antennæ not quite as long as the head and prothorax, the third joint slightly longer than wide, only a little shorter than the fourth, which is barely twice as long as wide; fifth about as long as the third and fourth together; sixth slender, very long, distinctly longer than the third, fourth and fifth combined, fully as long as the seventh, the latter strongly inflated within. Prothorax short, one-half as long as the elytra. Scutellum distinct. Elytra a little wider at basal fourth than at base, the basal stria extending fully to the middle but approaching very close to the pronotum; sutural deep, feebly and somewhat unevenly arcuate; external apical angles distinctly rounded. Mes-epimera scarcely extending midway to the coxæ; met-episternal suture fine and very oblique. Metasternum coarsely, strongly punctured toward base except along the hind coxæ. Posterior tarsi slender, the basal joint as long as the next three. Length 1.8 mm.; width 1.25 mm.

New York. The very long sixth antennal joint, more than equal to the preceding three together, the coarsely punctured metasternum and pale apex of the elytra, will readily identify this species, which is much larger and rather more broadly oval than the next.

**S. evanescens** n. sp.—Narrowly oval, black, highly polished; elytra with a pale apical margin; antennæ, legs and abdomen toward apex pale, rufous; head and pronotum impunctate; elytra finely, sparsely punctate, the punctures completely evanescent and effaced in basal half; metasternum extremely minutely, sparsely punctulate. *Head* vertical, moderate; eyes large, separated by one-half more than their own width; antennæ not as long as the head and prothorax, the third joint very small, triangular, scarcely longer than wide, fourth very short, barely twice as long as wide, fifth four times as long as wide, distinctly longer than the third and fourth together and a little shorter than the sixth. *Prothorax* two-thirds wider than long, the basal lobe small, strongly rounded; basal angles produced and acute. Scutellum distinct. *Elytra* about as long as wide, twice as long as the prothorax, a little wider at basal fourth than at base; truncate apices nearly three-fourths of the maximum width; angles distinctly rounded; sutural stria fine, nearly straight, the basal fine, scarcely attaining the middle and distant from the pronotum. Mes-epimera rather wide, barely extending halfway to the coxæ; met-episternal suture very fine, strongly oblique, the parapleuræ wide behind; epimeral suture fine but distinct. Post-coxal plate of the first ventral rather strongly rounded behind and extending two-fifths of the length. *Legs* slender; basal joint of the hind tarsi not as long as the next three. Length 1.4–1.55 mm.; width 0.9–1.0 mm.

Iowa ; Texas.

This small species resembles *terminata* in the distinctly defined pale apex of the elytra, but may readily be known by the strongly marked difference in antennal structure and feebly punctate metasternum, sculpture of the elytra and much smaller size.

**S. rubens** n. sp.—Narrowly oval, very convex, highly polished and pale rufo-testaceous throughout, subglabrous, the hairs very distant but visible ; head, pronotum and metasternum subimpunctate ; elytra finely feebly and very sparsely punctate. *Head* vertical, the eyes moderate, distant by nearly twice their own width ; antennæ somewhat longer than the head and prothorax, the third joint almost twice as long as wide, feebly narrowed toward base, barely one-half as long as the fourth, which is evenly cylindrical and four times as long as wide, distinctly shorter than the fifth, the latter thicker beyond the middle, rather longer than the sixth, seventh longer than the fifth, inflated and arcuate within, eleventh much longer than the tenth. *Prothorax* two-thirds wider than long, the apex one-half as wide as the base ; scutellar lobe moderate, rounded ; basal angles produced and acute. Scutellum distinct, a little wider than long. *Elytra* fully as long as wide, twice as long as the prothorax, a little wider at basal third than at base, the truncate apex barely two-thirds of the maximum width ; angles distinctly rounded ; basal stria obsolete, the rather widely and deeply impressed sutural stria simply turned outward slightly at base. Mes-epimera extending halfway to the coxæ ; met-episternal suture fine and distinctly oblique, the episterna however only moderate in width. *Legs* slender, the basal joint of the hind tarsi scarcely longer than the next two. Length 1.7–1.9 mm. ; width 0.95–1.05 mm.

Massachusetts ; New York (Catskill Mts. and Long Island).

The pale coloration of this species recalls *rufula* very greatly at first sight, but it is more elongate and differs altogether in the form of the mes-epimera.

**S. rufula** Lec.—Proc. Ac. Nat. Sci., Phila., 1860, p. 323.

Oval, rather short and stout, highly polished and pale rufo-testaceous throughout, the head and pronotum subimpunctate ; elytra extremely finely sparsely and obsoletely punctulate. Antennæ long, the third joint short, constricted at base, barely one-half as long as the fourth, which is four times as long as wide and distinctly shorter than the fifth, the latter a little longer than the sixth. Prothorax rather long, scarcely one-half wider than long ; basal angles produced and acute. Scutellum excessively minute but present. Elytra not quite as long as wide, not much more than one-half longer than the prothorax ; sutural stria deep, curved outward for a short distance at base, the basal stria represented thence to the middle by

the merest trace; external apical angles moderately rounded, the apex nearly three-fourths of the maximum width. Mes-epimera very short, the suture feeble; met-episternal suture distinctly oblique. Basal joint of the hind tarsi as long as the next three. Length 1.5 mm.; width 1.0 mm.

Arizona (Yuma). The pale coloration, short and broad form and short mes-epimera are features which render this species abundantly distinct. The first ventral segment is more strongly punctate in the middle toward base in one of the specimens before me, which is probably the male.

**S. desertorum** n. sp.—Rather broadly oval, black, highly polished; elytra gradually somewhat pale toward apex; antennæ, legs and abdomen in great part pale; head and pronotum excessively minutely and obsoletely punctulate; elytra finely and sparsely but distinctly punctate; metasternum obsoletely so, the first ventral segment remotely but more distinctly. *Head* moderate; eyes large, separated by one-half more than their own width; antennæ rather longer than the head and prothorax, the third joint longer than wide, expanded at apex, almost as long as the fourth, which is small, not quite twice as long as wide, fifth rather longer than the preceding two combined, though scarcely more than three times as long as wide, sixth very long, feebly dilated within, fully as long as the three preceding, scarcely as long as the seventh, which is strongly dilated and arcuate within. *Prothorax* rather long, about one-half wider than long, the apex barely two-fifths as wide as the base; scutellar lobe moderate. Scutellum extremely minute. *Elytra* not quite as long as wide, two-thirds longer than the prothorax, a little wider at basal fourth than at base; apex a little more than two-thirds the maximum width; apical angles rather narrowly rounded; sutural stria fine, the basal extending rather beyond the middle. Mes-epimera short, extending one-third to the coxæ, the suture strong; met-episternal suture fine, oblique. *Legs* slender; hind tarsi a little shorter than the tibiæ, the first joint not quite as long as the next three; second but slightly longer than the third; fourth much shorter. Length 1.9–2.0 mm.; width 1.3–1.4.

Arizona (Williams); Texas (El Paso). Mr. Wickham.

This species is quite distinct in antennal structure, somewhat shorter elytra and abbreviated mes-epimera. It was obtained apparently in some abundance.

**S. inconspicua** n. sp.—Somewhat narrowly oval, highly polished, black, the elytral apex not paler; under surface rufo-piceous; legs and antennæ still paler; head and pronotum impunctate; elytra finely, sparsely punctate, the punctures becoming almost obsolete toward base. *Head* moderate; eyes separated by one-half more than their own width; antennæ with the third joint small, triangular, scarcely longer than wide, about one-half as long as the fourth, the latter three times as long as wide, fifth longer, fully

four times as long as wide, distinctly longer than the sixth and a little longer than the preceding two together. *Prothorax* short, fully three-fourths wider than long; basal lobe moderate, rounded; angles briefly produced, somewhat deflexed, obtusely acuminate. Scutellum extremely minute. *Elytra* fully as long as wide, twice as long as the prothorax, rather abruptly narrowed to the base; apex three-fourths of the maximum width; angles moderately rounded; sutural stria straight, deeply and broadly impressed. Mes-epimera very small, the suture strong. Posterior tarsi about as long as the tibiae, with the first joint as long as the next three. Length 1.2 mm.; width 0.75 mm.

#### Florida.

A small species, the single type of which is in rather a poor state of preservation. It may be known by its punctured elytra from those more closely allied. The post-coxal plate of the first ventral segment is narrowly rounded, extending nearly through basal third of the length.

**S. obesula** n. sp.—Broadly oval, strongly convex, highly polished, the elytra very obsolete and remotely punctulate toward apex, black, the legs, abdomen and antennae paler. *Head* moderate; antennae slender, the third joint clavate, one-half as long as the fourth, the latter four times as long as wide, fifth as long as the third and fourth combined and subequal to the sixth. *Prothorax* two-thirds wider than long, the apex two-fifths as wide as the base; scutellar lobe rather strongly rounded at apex; basal angles produced and acute. Scutellum extremely minute. *Elytra* scarcely as long as wide, three-fourths longer than the prothorax, somewhat wider near basal third than at base, the sides evenly arcuate; apex oblique, narrow, barely two-thirds of the maximum width; angles narrowly rounded; sutural stria rather fine but deep, the basal not extending beyond the basal arcuation of the sutural. Mes-epimera very small, the suture almost obsolete; met-episternal suture fine, oblique; post-coxal plate of the metasternum extending posteriorly almost one-third of the length; post-coxal plate of the first ventral very short, broadly rounded, with a transverse series of coarse punctures along its edge. Posterior tarsi about as long as the tibiae, the first joint as long as the next two. Length 1.5–1.6 mm.; width 0.95–1.05 mm.

#### Florida.

This species may be recognized at once by its broad form and subimpunctate surface.

**S. carolinæ** n. sp.—Rather broadly oval, highly polished, black and impunctate; abdomen more or less pale; antennae and legs rufous. *Head* vertical; eyes moderate, distant; antennae nearly as long as the head and prothorax, third joint triangular, only slightly longer than wide, not quite one-half as long as the fourth, the latter three times as long as wide, fifth as long as the third and fourth together and somewhat longer than the sixth. *Prothorax* rather short, three-fourths wider than long; apex a little less than



one-half as wide as the base; scutellar lobe small, rather strongly rounded; basal angles acute, moderately produced and somewhat deflexed. Scutellum small but distinct. *Elytra* not quite as long as wide, a little less than twice as long as the prothorax, slightly wider from basal third to fourth than at base; sides evenly rounded; oblique apex three-fourths of the maximum width; angles distinctly rounded; sutural stria deep, the basal obsolete. Mes-epimera very small, the suture obsolete; met-episternal suture coarse, feebly oblique, the episterna broad throughout. Post-coxal plate of the metasternum very short, broadly rounded, bordered by a series of deep conspicuous punctures extending outward along the anterior margin of the metasternum almost to the parapleuræ; post-coxal plate of the first ventral extremely short. Length 1.25 mm.; width 0.8 mm.

North Carolina (Asheville).

Resembles the preceding very much, but differs conspicuously in the form and extent of the elevated plate behind the middle acetabula, in the much less minute scutellum and smaller size.

**S. arkansana** n. sp.—Narrowly oval, impunctate, highly polished, black, the elytral apex not paler except from diaphaneity; under surface rufo-piceous; antennæ blackish, the first six joints and the legs throughout testaceous. *Head* small, the eyes separated by a little less than twice their width; antennæ slender, one-half as long as the body, third joint not twice as long as wide and one-third as long as the fourth, the latter a little shorter than the fifth but correspondingly longer than the sixth, seventh distinctly wider and slightly longer than the fifth, eighth scarcely larger than the sixth, last three joints moderately compressed. *Prothorax* three-fourths wider than long, the apex arcuate and about one-half as wide as the base; sides evenly arcuate; basal angles produced and acute; median lobe distinct, rounded. Scutellum distinct but small, perfectly equilateral. *Elytra* as long as wide, twice as long as the prothorax and, at about basal fourth, a little wider; sides evenly arcuate; apex three-fifths of the discal width; outer angles moderately rounded; sutural stria extending only to the base, the basal stria obsolete. *Legs* slender; hind tarsi wanting in the type. Length 1.25 mm.; width 0.75 mm.

Arkansas.

A single specimen, kindly communicated by Mr. H. C. Fall. It is closely allied to *carolinæ*, but differs in certain well defined structural features referred to in the table.

**S. pusilla** Lec.—Proc. Ac. Nat. Sci., Phila., 1860, p. 323.

This species can always be recognized by its very minute size and generally by the coloration, the elytra being rufous in apical half; two specimens before me depart however in being pale testaceous throughout, and two others in being black with the apex only



paler. There seems to be considerable variation also in the size of the post-coxal plate of the first ventral, which generally attains the middle of the segment, but in one specimen it plainly does not extend so far and in another goes a little beyond the middle. The antennæ differ from those of any other species in being shorter and stouter, the outer joints shorter and less asymmetric than usual, with the large seventh joint rather wider than any one of the outer three; first two joints as long as the next four; third very small, triangular; fourth small, barely twice as long as wide; fifth fully as long as the preceding two combined; sixth unusually small, securiform, scarcely twice as long as wide, about three-fourths as long as the fifth and one-half as long and wide as the seventh. Length 0.75–1.0 mm.; width 0.5–0.7 mm.

Rhode Island to Lake Superior, Iowa and the Carolinas. It is possible that several very closely allied species may be indicated by the above described color variations, but I am unable at present to find any really decisive structural differences.

#### HISTERIDÆ.

But little progress has been made in the systematic treatment of this family since the completion of the superb monograph of Marscul, and but few American species have been made known since the synopsis published by Dr. Horn, now somewhat more than twenty years ago. A considerable number of new forms have been accumulating however, principally through recent collecting in California and parts adjacent, and, in rearranging my cabinet, it seemed desirable that these should be described.

A modification of the present classification would seem to be desirable in order to better determine the positions of the two aberrant genera *Bacanius* and *Plegaderus*. *Bacanius* is evidently out of place at present, although some affinity with *Abræus* may possibly be indicated by the transverse chain of pronotal punctures in *B. rhombophorus*, a feature which appears to be essentially characteristic of *Abræus* and *Acritus*. By placing *Bacanius* immediately after *Anapleus*, and then reversing the order of genera in the Saprini, so as to bring *Abræus* and *Acritus* at the head, this difficulty can however be readily overcome.

According to Mr. Lewis *Tribalus californicus* Horn, is to be referred to *Stictostix* Mars.

**HOLELEPTA** Payk.

The species described below is allied to *princeps* Lec., and is therefore assignable to the subgenus *Leionota*. *Princeps* apparently cannot be the same as *yucateca* Mars. The sexual characters in the former are very feeble, as readily observable in the large series before me, the male being broader and shorter than the female, with longer mandibles and broader propygidium, but the groove along the lateral margin of the pronotum is almost identical in the two sexes.<sup>1</sup>

**H. vernicis** n. sp.—Rather narrow, feebly, evenly convex, highly polished. *Head* without trace of frontal striæ, the lateral striæ near the eyes very short, basal, the surface behind them coarsely punctate; mandibles short, stout, not quite as long as the head, strongly arcuate and acute at tip; mentum broadly, feebly concave, even, finely sparsely and evenly punctate, deeply, subangularly emarginate; triangular gular impression almost obsolete. *Prothorax* four-fifths wider than long, the sides broadly arcuate and convergent anteriorly from the middle, becoming almost parallel and straight in basal half; lateral groove rather fine but deep, slightly dilated at apex; inflexed along the basal margin to lateral sixth; disk with a fine median stria in basal two-fifths, narrowly and sparsely punctate along the lateral stria especially toward base. Scutellum very small, equilateral. *Elytra* equal in width to the prothorax, parallel, the suture less than one-third longer; apical sinuation deep, rounded; subhumeral stria dilated, deep, attaining neither base nor apex; first dorsal deep and coarse, arcuate, scarcely attaining basal third, coarsely double at base, the humeri also with a short basal stria externally; second dorsal fine but deep, interrupted at basal fourth, the apical part beginning rather before the point opposite the termination of the first dorsal, and continuing almost to the apex. *Propygidium* rather sparsely but very coarsely, variolately punctate laterally, the punctate areas joined along the posterior margin by some very small sparse and feeble punctures; pygidium coarsely deeply and very densely cribrate. Anterior tibiæ 4-dentate, the basal tooth very broadly angulate and feeble, the others strong but not very acute; posterior tibiæ with three large acute and spiniform teeth. Posterior half of the prosternum triangular in form, the hind margin evenly rounded; apical half in the form of a rather narrow, transversely rounded and parallel ridge, the apex obtusely rounded. Length (exclusive of mandibles) 11.5 mm.; width 5.4 mm.

Arizona.

There appears to be no Mexican species with which this can be confounded, and it is widely distinct from any form hitherto de-

<sup>1</sup> The measurements of length include the entire body and head, except when otherwise stated.

scribed from the United States. The type seems to be a female. This species is much smaller and narrower than *princeps*.

### OMALODES Erichs.

Of this interesting genus we have three species which may be distinguished as follows:—

Posterior tibiæ with three external spines; punctures of the pygidium and propygidium not interrupted behind.....**texanus** Mars.

Posterior tibiæ with four spines.

Propygidium coarsely punctate only toward the sides, the two areas of punctuation feebly united at apical fourth by a transverse band composed of very fine feeble punctures; pygidium coarsely punctured throughout except in anterior third; elytra without a marginal stria along the apex.

#### **lubricans** n. sp.

Propygidium coarsely punctate, the punctures becoming remote near the center of the disk, minute along the apex; pygidium coarsely punctate, the punctures fine along the anterior margin and almost obliterated toward apex; elytra with a marginal stria along the apex.

#### **vitreolucens** n. sp.

*Texanus* is unknown to me, but may be readily identified by the structure of the hind tibiæ; it is much narrower and more elongate than *lubricans* or *grossus*. The species are all intensely black, very highly polished and feebly sculptured.

**O. lubricans.**—Broadly oval, the extremely minute punctulation rather sparse but dense and distinct near the scutellum. *Head* concave in the middle, finely punctulate, the marginal stria subhexagonal, feebly reëntrant in the middle, subentire. *Prothorax* not quite twice as wide as long, the well marked and deflexed apical angles separated by two-fifths of the basal width; sides oblique, nearly straight, not distinctly sinuate near the middle; marginal stria distinct at apex, very faint at base; lateral deep, entire; disk with a small ante-scutellar puncture. finely and not very densely punctured along the sides, almost equally from apex to base. Scutellum with a discal puncture. *Elytra* a little more than one-half longer, and, at the middle, but slightly wider than the prothorax; striæ fine, that of the flank beginning slightly behind the humeri and becoming obsolete and broken toward apex; humeral excessively fine, extending to basal third; subhumeral arcuate, beginning at the middle and extending to the apex; first dorsal long but not attaining base or apex; second not attaining the base and broken into an uneven series of punctures behind; third extending not quite to the middle. Propygidium not impressed. *Prosternum* very broadly rounded at apex and extremely feebly margined, rounded and slightly dilated behind; mesosternum very short, broadly, deeply sinuate, the marginal stria somewhat narrowly interrupted. Anterior tibiæ strongly 4-dentate, the intermediate with three strong teeth

and two small subbasal denticles; posterior with four teeth, of which the one nearest the base is much the smallest. Length (median line of pronotum and elytra) 9.0 mm.; width 7.8 mm.

Arizona (Sta. Rita Mts.). Mr. Wickham.

Although allied to *texanus* and *grossus*, this species is distinct in several important characters. It is much broader than *texanus*, and *grossus* differs radically in the disposition and extent of the punctured areas of the pygidium and propygidium. Judging by the description and figures, it seems impossible to consider *texanus* and *grossus* identical, as surmised by Dr. LeConte; nor is the habitat of *texanus* necessarily open to doubt; *texanus* is not mentioned at all by Mr. Lewis in treating of the Mexican species.

**O. vitreolucens.**—Broadly oval, excessively finely punctulate throughout, the punctures especially evident and closer on the elytra toward the scutellum. Head broadly impressed along the middle throughout the length, finely, closely punctate, the punctures becoming stronger at base; marginal stria only present at the sides along the eyes; antennæ with the club piceous. Prothorax nearly twice as wide as long, the apical angles distant by scarcely more than two-fifths of the basal width; base oblique but scarcely sinuate laterally; sides oblique, nearly straight, rounded anteriorly, not distinctly sinuate near the middle; marginal stria evident only near the apical angles; lateral stria not quite entire, very close to the edge, deep near the apical angles; disk strongly, densely punctate near the lateral stria, the punctured area becoming narrower and evanescent to the base, broadest at apex; antescutellar puncture small. Scutellum equilateral, not deeply impressed. Elytra one-half longer, and, before the middle, distinctly wider than the prothorax; striæ very fine; flanks with a strong sigmoid stria from the humeri extending unbroken along the apex to the suture; oblique humeral stria straight; subhumeral strongly arcuate, not extending to the middle and approaching close to the marginal at apex; first dorsal subentire; second nearly entire, abbreviated at base and consisting of an uneven series of punctures toward apex; third beginning at the basal margin, not attaining the middle. Prosternum with a short stria before each coxa, feebly dilated and broadly rounded behind, the apical lobe broadly rounded; mesosternum short, broadly, roundly sinuate, the transverse stria very widely interrupted. Anterior and posterior tibiæ 4-dentate, the intermediate 5-dentate. Length (median line of prothorax and elytra) 7.0 mm.; width 6.0 mm.

Southern Florida. Mr. Jülich.

This species has been identified as *klugi* Mars., but the latter is undoubtedly different, although allied in having a transverse marginal stria at the apex of the elytra. In *klugi* the frontal stria is entire and semi-hexagonal, and the posterior tibiæ are 3-dentate externally, while in the present species the frontal stria is only

represented by two oblique grooves at the sides not extending beyond the eyes, and there are four distinct tibial denticles, of which the basal is however small.

### PSILOSCELIS Mars.

The following species belongs near *repleta* Lec., but is smaller and more depressed.

**P. corrosa** n. sp.—Oblong, depressed, piceous-black, moderately shining, densely punctate, the punctures large variolate and intermingled with others which are minute but deep, sparse toward the elytral suture but dense elsewhere, subconfluent on the elytra and almost obliterating the striæ, rather fine beneath. *Head* transverse, densely, rugosely punctate, without a distinct marginal stria, the antero-lateral angles acute; mandibles stout, porrect. *Prothorax* four-fifths wider than long, the sides very feebly convergent from base to apex and feebly arcuate; marginal stria deep and distinct, not attaining the apex; lateral stria coarse, only visible in basal third where it is very close to the marginal, represented thence anteriorly only by feebly defined and detached fragments; disk densely and very deeply punctate even toward the middle. *Scutellum* very small, smooth and polished. *Elytra* not quite as long as wide, one-half longer than the prothorax and scarcely at all wider; sides subparallel, feebly arcuate; striæ coarse but shallow and not well defined; outer subhumeral represented by a short longitudinal and outwardly arcuate stria in basal third, not attaining the base; inner subhumeral entire; first and second dorsals entire, the third obliterated toward base; fourth only visible near the apex. *Propygidium* large, coarsely but not very densely punctate, the punctures rounded and umbilicate; pygidium rather small, strongly and closely punctate. *Prosternum* not striate, the lobe long, deflexed, strongly rounded, margined; disk behind the lobe with two distant punctures. *Meso-sternum* with a small feeble median emargination; marginal stria subentire. *Legs* stout; anterior tibiæ broadly triangular, with four broad external teeth arranged in two pairs; posterior tibiæ parallel, very strongly compressed, the external edge thin and with a single series of four or five distant spinules. Length 4.3 mm.; width 2.4 mm.

Wyoming (Cheyenne).

The antennal cavities are deep and at some distance behind the apical angles, fully exposed, and not at all concealed by the anterior margin of the prosternum.

This interesting species is probably myrmecophilous, but no note to this effect accompanies the unique specimen, for which I am indebted to its discoverer, Mr. Hugo Soltau.



**HISTER** Linné.

In this genus I find a remarkable and puzzling inconstancy in a structural character, which ought apparently to be a very good one—the emargination of the prosternal lobe. For example in two otherwise completely similar specimens of *depurator* before me, both bearing the same label, the lobe is broadly subtruncate at apex, with the angles broadly and continuously rounded in one, while in the other it is visibly emarginate, with the angles acute, prominent and dentiform. Possibly these differences may be sexual, but until their origin is determined it will be unsafe to separate species upon them, unless sustained by decided divergencies in other parts of the body.<sup>1</sup>

In *Hister* the elytra have nine striæ, besides the one or two sulci of the inflexed flanks, but several are more or less abbreviated or radically modified, so that the apparent number is much less. The first two from the suture are generally greatly abbreviated in front, the next four usually more or less nearly entire, the seventh is frequently represented by an obsolete subapical line of punctures which is rarely striiform,<sup>2</sup> the eighth by the outer subhumeral stria, sometimes obsolete or otherwise modified, and the ninth by a series of small, distantly spaced punctures along the crest of the lateral convexity. If this sequence be borne in mind, it will always be easy to understand the detached striæ and series of punctures met with in the various species. For instance in *abbreviatus*, the basal part of the coarse lateral stria is a basal remnant of the outer subhumeral, the apical part being the inner subhumeral. Besides the oblique humeral stria, there is in most species a short subtransverse outer humeral; it is impossible to state the exact significance of either of

<sup>1</sup> Since this was written I have examined good series of *depurator* and *incertus* and find that of nine specimens of the former, seven have the prosternum emarginate, and two broadly rounded. Of twelve examples of *incertus*, six have the prosternal lobe narrowly and evenly rounded, four broadly subtruncate with rounded angles, and two emarginate with acute angles.

<sup>2</sup> The oblique inner humeral is certainly not the basal part of this inner subhumeral as stated by Dr. Horn (Proc. Am. Phil. Soc., XIII, p. 287), the true base of the latter being sometimes seen as a short stria near the base of the former, as remarked under *Epiurus cornutus*. In *Psiloscelis repleta* Lec., the inner subhumeral is entire and similar to the first dorsal; it crosses the oblique humeral stria near its middle point and attains the basal margin, the striæ not being at all distorted at the point of crossing.

these striæ. The lateral line of fine punctures seems to become obsolete in *depurator* and its allies, and in that group the two or three fine marginal punctures of the pronotum are also obsolete. The meaning of these singular punctures is difficult to state, unless they be the remains of tactilo-setigerous pores.

The following species are assigned for convenience to the groups adopted by Dr. Horn:—

#### Group *Arcuatus*.

Margins of the prothorax fimbriate; anterior tibiæ dentate.

**H. semiruber** n. sp.—Stout, oblong and convex, resembling *sellatus*. *Head* minutely, obsoletely punctulate, the frontal stria entire; mandibles minutely, sparsely punctulate. *Prothorax* fully twice as wide as long; sides moderately convergent, broadly, almost evenly arcuate from base to apex; marginal stria fine but distinct, entire; outer lateral entire, inflexed at apex, receding from the edge behind; inner lateral strong, nearly entire, somewhat uneven, the space between the two with one or two short striae anteriorly; disk subimpunctate, with a short deep stria before the scutellum. Scutellum equilateral, feebly impressed. *Elytra* rather less than one-half longer than the prothorax, and, at basal third, quite distinctly wider; apex obliquely arcuate, four-fifths as wide as the base; inflexed flanks coarsely bisulcate; outer subhumeral stria obsolete behind, but represented by a short deep stria near the extremity of the oblique humeral, which is fine; inner subhumeral feebly indicated by a few subobsolete punctures near the first dorsal; first three dorsals entire; fourth represented by a short distinct stria at base and a few subobsolete punctures at apex; fifth and sutural entirely wanting, sometimes rudimentary near the apex. *Propygidium* remotely coarsely and variolately punctate toward the sides, subimpunctate toward the middle behind; pygidium sparsely, feebly punctate, the punctures becoming larger and closer but shallow near the anterior angles. Prosternal lobe finely margined; posterior process spatuliform, received in the deep median emargination of the mesosternum. Anterior tibiæ strongly bidentate, the apical tooth feebly bilobed; posterior confusedly spinose externally, remotely so toward base. Length 6.0 mm.; width 4.5 mm.

Utah (southwestern). Mr. Weidt.

Allied closely to *sellatus*, but differing in the form of the marginal stria of the mesosternum, which in *sellatus* evenly follows the rounded outline of the median emargination; in the present species it is posteriorly and acutely angulate at the emargination; it also differs in its much sparser and finer pygidial sculpture especially along the anterior margin, and in the presence of a distinct impressed appen-

dage of the outer subhumeral stria near the end of the oblique humeral, there being no vestige of this in *sellatus*.

**H. sculpticauda** n. sp.—Moderately broad, convex, resembling *ulkei* in color and form. *Head* minutely, sparsely punctate; frontal stria entire, transverse at apex; mandibles finely but deeply, extremely densely and conspicuously punctate. *Prothorax* not quite twice as wide as long, the sides moderately convergent, broadly, nearly evenly arcuate from base to apex; marginal stria fine, entire; outer lateral entire, arcuate at apex; inner almost entire, nearly straight, slightly approaching the outer toward base; disk minutely, sparsely punctulate, the punctures more distinct near the basal angles; there is a small puncture just within the posterior extremity of the inner stria, three minute and remote punctures along the fine marginal stria and a short deep stria before the scutellum, the latter equilateral and unimpressed. *Elytra* one-third longer and but slightly wider than the prothorax, widest very near the base, the sides feebly convergent, broadly and feebly arcuate throughout; apex oblique, broadly rounded; inflexed flanks bisulcate; punctures of the lateral series extremely minute and remote; outer subhumeral obsolete behind, represented by a short arcuate stria near the end of the oblique humeral; inner subhumeral represented by a series of punctures close to the first dorsal in apical third; first three dorsals entire, moderately coarse; fourth and fifth completely wanting; sutural deep and distinct from basal third to apical fifth. *Propygidium* extremely coarsely, deeply but variolately punctate, the punctures mingled with minute punctures; pygidium strongly, rather closely punctate, more finely so toward apex. Prosternal lobe broadly, evenly rounded, finely but strongly margined; posterior process dilated; mesosternum long, the emargination deep, broadly sinuate; marginal stria entire; sides strongly convergent from the base. Anterior tibiae strongly bidentate; posterior with two rather even external series of spinules. Length 6.5 mm.; width 4.4 mm.

New Mexico (Fort Wingate).

This species is allied to *instratus* and *ulkei*, but differs in the minutely, very densely punctate mandibles and coarse sculpture of the pygidia; the propygidial punctures are oval, more dense and even in distribution than in *ulkei*, generally separated by less than their own dimensions, and are coarser than in any other species of *Hister* known to me. The outer pronotal stria is more distant from the margin than in either of the species mentioned. The three small punctures along the marginal stria are present also in *instratus*, *ulkei* and other species, and seem to be very constant.

#### Group *Merdarius*.

Sides of the prothorax not ciliate; mesosternum emarginate; outer subhumeral stria entire; elytra with four subentire discal

striae, the pronotum with two entire or subentire striae, the outer distant from the margin.

This group contains a number of species, which can be distinguished among themselves as follows:—

Anterior tibiae arcuate externally, the apical tooth smaller and distinctly less prominent than the preceding.

Upper surface finely but distinctly and evenly punctured throughout.

**harrisi** Kby.

Upper surface subimpunctate, polished.

Sutural stria present in apical half more or less, either continuously or as a series of punctures.

Mesosternal emargination broad and extremely feeble; size small; front with an impressed puncture .....**stygicus** Lec.

Mesosternal emargination narrower, distinct; size larger; front flat.

Narrowly oval; pygidium finely, sparsely punctate; prosternal lobe narrowly and evenly rounded.....**interruptus** Beauv.

Broadly oval, the pygidium strongly and very densely punctate; prosternal lobe broadly truncate and subsinuate at tip.

**virginiae** n. sp.

Sutural stria very short, apical; prosternal lobe rounded, margined, very coarsely punctured laterally; pygidium strongly but not very densely punctate; body broadly suboblong. New Jersey to Louisiana.

**immunis** Er.

Anterior tibiae not arcuate, the apical tooth as prominent as the preceding.

Frontal stria distinct, sometimes interrupted in the middle; outer thoracic stria entire.

Propygidium coarsely sparsely and more or less unevenly punctate, the interspaces smooth and impunctate.....**merdarius** Hoffm.

Propygidium much more finely evenly and densely punctate, the punctures intermingled with others which are minute but deep and distinct.

Anterior tibiae broad, coarsely and strongly 5-dentate.....**pluto** n. sp.

Anterior tibiae narrower, much more finely and closely pluridentate; species much smaller .....**fractifrons** n. sp.

Frontal stria obsolete, represented only by feeble and unevenly disconnected traces toward the sides; outer thoracic stria abbreviated behind the middle..... **mormon** n. sp.

The above species are all intensely black throughout, the legs sometimes rufescent.

**H. virginiae.**—Broadly oval, highly polished, the minute punctules extremely feeble and sparse. *Head* rather more distinctly punctulate, the frontal stria not reentrant, narrowly and more or less completely interrupted in the middle. *Prothorax* twice as wide as long, the sides strongly convergent, broadly and rather strongly arcuate from base to apex; fine marginal stria



entire, with two small and very distant internal punctures; outer lateral stria subentire, strongly hooked at apex; inner strong, feebly sigmoid, generally somewhat abbreviated before the base; ante-scutellar stria short but deep. Scutellum unimpressed, small, equilateral. *Elytra* one-half longer than the prothorax, and, at basal third, distinctly wider; sides arcuate; apex feebly oblique, five-sixths as wide as the base; inflexed flanks coarsely, sparsely punctured, with a single fine, nearly entire stria; striæ rather coarse, the subhumeral slightly abbreviated at base; ninth stria composed of small remote punctures along the convex flanks; inner subhumeral composed of more closely spaced punctures between the subhumeral and first dorsal, nearer to the former; oblique humeral very fine and feeble; first four dorsals subentire; fifth short, arcuate, occupying apical third; sutural represented by a series of coarse punctures from the apex to about the middle. *Propygidium* coarsely evenly and rather closely punctate throughout, the interspaces minutely, sparsely punctate; pygidium strongly, densely punctate. Prosternal lobe truncato-sinuate, with broadly rounded angles, finely margined, deeply but not very coarsely punctate laterally. Mesosternum deeply, broadly sinuate in median third, the marginal stria entire. Anterior tibiæ rather closely 5-dentate, sometimes with a minute sixth denticle basally. Length 5.5-6.5 mm.; width 4.2-5.0 mm.

Virginia (Fredericksburg).

In view of the variations noticed in *depurator*, I am unable to estimate the true value of the truncate prosternal lobe in this species; it is however perfectly similar in the three specimens before me. The two minute punctures along the fine marginal stria of the pronotum are constant in size and position in these types.

**H. pluto.**—Rather narrowly oval, convex, polished, the punctules remote, scarcely stronger on the head but becoming distinct punctures toward the inner stria and basal angles of the prothorax. *Head* feebly impressed at the middle of the epistoma, the frontal stria distinct, subentire, with an acutely reëntrant angle at the middle. *Prothorax* quite distinctly less than twice as wide as long; sides moderately convergent and broadly arcuate from base to apex; fine marginal stria entire, with two minute remote internal punctures; outer lateral stria straight, subentire, hooked at apex; inner subentire, coarse, slightly uneven; short ante-scutellar stria very deep. *Elytra* nearly as long as wide, one-half longer than the prothorax, and, before the middle, slightly wider; sides feebly, evenly arcuate; apex distinctly oblique and narrower than the base; inflexed flanks concave behind basal third, coarsely and rugosely punctate; lateral convexity with an entire series of even remote punctures; subhumeral nearly entire, the series of punctures between it and the first dorsal almost completely obsolete; humeral stria distinct; there is also a short basal stria external to this and the usual internally oblique striole from the humeral angles; first three dorsals strong, entire; fourth abbreviated more or less before the middle; fifth represented by a few subapical punctures; sutural short, subapical. *Propygidium* and pygidium densely evenly and not



very coarsely punctate. Prosternal lobe narrowly rounded, margined, finely but densely and deeply punctate laterally; mesosternum abruptly deeply and circularly emarginate in rather more than median third; stria entire. Anterior tibiæ very broad, 5-dentate externally, the apical tooth acute and simple but with a small approximate denticle on the truncate apex. Length 6.6–8.0 mm.; width 4.7–5.1 mm.

Oregon; Kansas.

The specimen from Kansas has the pronotum subimpunctate near the striæ and basal angles, but does not appear to differ otherwise from the Oregon types.

**H. fractifrons.**—Somewhat narrowly oblong-oval, moderately convex, very highly polished, the minute punctules very sparse, not much stronger or denser toward the sides of the pronotum. *Head* a little more distinctly punctulate, the frontal stria narrowly interrupted in the middle. *Prothorax* barely twice as wide as long, the sides moderately convergent, broadly and feebly arcuate from base to apex; marginal stria fine, entire, with two minute internal punctures; outer lateral straight, almost entire; inner sinuate at the middle, subentire; ante-scutellar stria feeble and extremely short. *Elytra* not quite one-half longer than the prothorax, and, at basal third, where the sides are somewhat more strongly rounded, slightly wider; apex broadly rounded, feebly oblique; inflexed flanks flat, strongly but not very coarsely or densely punctate; outer series of remote punctures distinct, entire; inner series between the subhumeral and first dorsal more approximate, distinct, extending to basal third; outer humeral fine, short, subtransverse; inner humeral fine, oblique; subhumeral strong, not quite attaining the base; first four dorsals entire, strong, the fourth only slightly abbreviated at base; fifth and sutural very short, apical. *Pygidia* rather finely evenly and very closely punctate. Prosternal lobe broadly rounded, finely and feebly margined, finely punctate; mesosternum abruptly and circularly emarginate in rather more than median third, the stria entire. Anterior tibiæ with an external series of about seven small, closely placed teeth, formed principally by the short coarse spinules; posterior with an outer series of slender spinules and an inner series of stiff setæ. Length 5.5 mm.; width 3.8 mm.

California (Lake Tahoe); Oregon

A variety of this species with shorter prothorax, much more widely interrupted frontal stria, and with slight but marked divergence in the serrulation of the anterior tibiæ, was recently taken by Mr. Wickham in Vancouver. It may possibly be distinct, but I have at present only a single specimen.

**H. mormon.**—Stout, oblong-oval, convex, very highly polished, the punctules extremely minute, sparse, coarser and distinct near the posterior limit of the inner thoracic stria. *Head* scarcely more distinctly punctulate, flat, the occiput remotely bifoveate near the thoracic edge; epistoma very

broadly, feebly impressed; stria obsolete. *Prothorax* nearly twice as wide as long, the sides moderately convergent from the base, more convergent and rounded near the apex; fine marginal stria abbreviated behind the middle, the two marginal punctures distinct; outer lateral not entire; inner slightly uneven, subentire; ante scutellar stria well developed. *Elytra* one-half longer than the prothorax, and, at basal third, where the sides are slightly prominent, distinctly wider; apex broadly rounded, feebly oblique; inflexed flanks flattened, uneven, strongly but not densely punctate; outer series of punctures distinct, the interstitial row distinct; outer humeral very oblique, with an appendage; inner humeral distinct, not extending to basal third; sub-humeral not extending to the base, with a short oblique inferior appendage at the basal end; first three dorsals strong, entire; fourth obsolete in basal half; fifth and sutural represented by disconnected subapical punctures; there are also several short uneven oblique striæ along the apex of each elytron, of which one between the first and second dorsals is especially distinct. *Pygidia* densely evenly and not very coarsely punctate. Prosternal lobe broadly rounded, strongly margined, finely, closely punctured; mesosternum broadly sinuate in median third, the stria deep and entire. Anterior tibiæ with four strong, widely spaced teeth, of which the apical is bifid, and two minute sub-basal denticles; posterior with series of spinules on the acute edge, the outer series feeble, irregular and in great part discal. Length 7.5 mm.; width 5.3 mm.

Utah.

This appears to be quite an isolated species of large size; it forms a satisfactory transition to the next group.

#### Group *Fœdatus*.

This group is really a part of the preceding, the characters throughout being similar, except that the external of the lateral thoracic striæ is more or less decidedly abbreviated, being sometimes altogether wanting; the extent of this stria is however a variable feature, and it is always more or less inconstant even within specific limits. The species are all intense black and polished, and generally smaller than the allies of *merdarius*; they are also more closely allied among themselves. Those known at present may be thus distinguished:—

Outer lateral stria of the pronotum distinct, though much abbreviated.

Sutural stria generally longer than the fifth dorsal and attaining the middle.

Form narrowly oval, the punctures of the propygidium coarse and strongly umbilicate ..... **umbilicatus** n. sp.

Form broadly oval, the propygidial punctures fine and very dense; elytral striæ much coarser..... **fœdatus** Lec.

Sutural stria generally short, equal to the fifth dorsal and not attaining the middle.

Form broadly oval, the inner lateral stria of the pronotum very broadly arcuate at apex.....**hudsonicus** n. sp.

Form narrowly oval, the inner stria strong and narrowly arcuate at apex ; propygidial punctures fine even and extremely dense.

**umbrosus** n. sp.

Outer lateral stria completely obsolete, or represented by a few small disconnected punctures anteriorly.

Elytra with four entire dorsal striæ, the fourth inwardly arcuate at base ; form broadly oval.....**unicus** n. sp.

Elytra with three entire dorsal striæ, the fourth more or less abbreviated at base.

Form broadly oval, the pronotum punctate toward the lateral stria, the space between the stria and the lateral edges more or less convex.

Fourth dorsal stria abbreviated before the middle.

**marginicollis** Lec.

Fourth dorsal very nearly attaining the base.....**cognatus** Lec.

Form oblong, subparallel, the pronotum subimpunctate toward the lateral stria, the latter more distant from the edge, the enclosed space flatter ; fine marginal stria entire and inflexed at base.....**remotus** Lec.

The characters of *marginicollis* are taken from published descriptions, but the fine marginal stria of the pronotum is probably similar to that of *cognatus*, where it is greatly abbreviated and very different from that of *remotus*; *ædatus* probably does not extend to the Pacific Coast, but is replaced there by the more narrowly oblong *umbrosus*. I have taken *remotus* at San Francisco.

**H. umbilicatus.**—Narrowly oval, the sides evenly arcuate ; minute punctules feeble, only slightly more evident toward the sides of the pronotum. *Head* even, not impressed, obsoletely punctulate, the frontal stria entire, transverse at apex. *Prothorax* not quite twice as wide as long, the sides strongly convergent and almost evenly but feebly arcuate ; fine marginal stria abbreviated at the middle, the marginal punctures almost obsolete ; outer lateral stria greatly abbreviated ; inner strong, more or less abbreviated at base ; ante-scutellar stria very small, feeble. *Elytra* one-half longer than the prothorax, and, before the middle, distinctly wider, the sides evenly arcuate ; apex rather strongly oblique, feebly rounded ; inflexed flanks concave, scarcely punctate, finely unistriate ; marginal series of punctures feeble, not extending before the middle, the interstrial series feeble ; subhumeral stria subentire, with an oblique inferior basal appendage ; outer humeral fine ; inner extending to basal fourth ; dorsals moderately coarse, the first three entire ; fourth slightly abbreviated at base ; fifth present in apical third, the sutural in about apical half. *Propygidium* coarsely, closely punctate, the pygidium less coarsely but extremely densely and polygonally cribrate ;

all the punctures strongly umbilicate. Prosternal lobe finely but distinctly margined, narrowly rounded; mesosternum feebly but abruptly and circularly emarginate in median third, the stria entire. Anterior tibiæ with five small acute teeth, the apical double. Length 4.4–5.5 mm.; width 2.9–3.4 mm.

California (Marin Co.).

In one of the two specimens before me the outer thoracic stria is only a short straight line in apical fourth, not arcuate at apex; in the other it extends to, or a little beyond, the middle and is inwardly arcuate at apex; there is however no other perceptible difference, except in size and in the fact that the first mentioned has the mesosternal stria imperfectly interrupted in the middle. Another specimen, taken at San Francisco, is almost similar but has the punctures of the propygidium still coarser, less umbilicate and very noticeably less dense, in fact rather sparse, and the sutural stria shorter.

**H. hudsonicus.**—Broadly oval, convex, the minute punctules extremely feeble and sparse, becoming distinct punctures toward the apices of the elytra and very near the deep pronotal stria. *Head* obsoletely punctulate, feebly convex, unimpressed, the frontal stria deep and coarse, entire but somewhat uneven, feebly reëntrant at apex. *Prothorax* twice as wide as long, the sides strongly convergent, strongly, almost evenly arcuate from base to apex, the fine marginal stria entire; two marginal punctures distinct; outer lateral stria straight, extending almost to the middle, hooked at apex; inner coarse and subentire, nearly even, feebly crenulate along the apex; ante-scutellar stria very short but coarse. *Elytra* distinctly wider than long, about one-half longer than the prothorax, at or just before the middle a little wider; sides broadly, evenly arcuate; inflexed flanks unevenly punctate, unevenly unistriate; punctures of the lateral series fine, the interstrial series almost obsolete; outer humeral feeble, subtransverse; inner feeble, deeper at base; subhumeral strong, punctulate, subentire, with a transverse inner basal appendage and another oblique and inferior; dorsals coarse, subpunctulate, the first three entire; fourth slightly abbreviated at base; fifth and sutural equal and apical. *Propygidium* coarsely deeply densely and evenly punctate, the pygidium more finely but deeply, very densely so. Prosternal lobe evenly rounded, strongly margined, coarsely punctate laterally; mesosternum truncate, broadly, feebly emarginate in the middle, the stria deep close and entire, subpunctate. Anterior tibiæ arcuate externally, with about six small serri-form teeth, principally formed by the short stout spinules; posterior with two even series of slender spines, the inner setiform. Length 6.0 mm.; width 4.7 mm.

New York.

Somewhat resembles *fœdatus*, but readily distinguishable by its larger size, more broadly arcuate inner pronotal stria at the apical



angles, margined prosternal lobe, more strongly emarginate mesosternum, shorter sutural stria, more coarsely punctured propygidium and several other characters.

**H. umbrosus.**—Oblong, convex, the minute punctules invisible on the elytra but distinct and moderately close over the entire surface of the pronotum, with a few stronger punctures near the middle of, and behind, the inner stria. *Head* minutely punctulate, unimpressed, the frontal stria entire, transverse at apex. *Prothorax* twice as wide as long, the sides rather strongly convergent and evenly arcuate from base to apex; fine marginal stria abbreviated at the middle, the two marginal punctures visible; outer lateral stria straight, extending to the middle but scarcely at all hooked at apex; inner subentire, coarse, nearly straight; ante-scutellar stria short, strong. *Elytra* two-thirds longer than the prothorax and but little wider, the sides evenly, feebly arcuate; inflexed flanks minutely, strongly punctulate and convex anteriorly, abruptly, longitudinally excavated, smooth, more coarsely but sparsely punctate behind, unistriate throughout; lateral series of punctures only visible toward apex; outer humeral stria feeble, subtransverse; inner rather long, continued to apex by the interstitial series of punctures which are feeble; subhumeral subentire, inwardly hooked at base, the inferior oblique appendage feeble; dorsals rather coarse, the first three entire; fourth abbreviated at base; fifth and sutural equal, apical. *Propygidium* not very coarsely, densely and evenly punctate, the pygidium scarcely more finely, extremely densely so. Prosternal lobe rounded, feebly margined; mesosternum broadly truncate, the median emargination rather shallow; stria entire. Anterior tibiae arcuate externally, pluridentate, the teeth small, serriform, formed principally by the stout spinules; posterior with an outer series of spinules and an inner row of rather long, stiff, close-set setae. Length 4.4-5.4 mm.; width 3.3-3.7 mm.

#### Oregon.

May be distinguished from *fædatus* by its more elongate and oblong form, more strongly punctulate entire disk of the pronotum, shorter sutural stria, more strongly emarginate mesosternum and less transverse elytra. It is however closely allied to *fædatus*, the principal differential character being the obviously narrower and oblong outline. Three specimens.

**H. unicus.**—Broadly oval, rather strongly convex, the punctulation completely obsolete on the elytra and nearly so on the pronotum, the latter strongly closely and rather coarsely punctate in a broad area along the lateral stria, equally broadly from apex to base, the convex surface thence to the lateral edge minutely but distinctly punctulate. *Head* subimpunctate, unimpressed, the stria strong, entire, the transverse apical part feebly sinuate throughout. *Prothorax* rather small, fully twice as wide as long, the sides strongly convergent and evenly arcuate from base to apex; fine marginal stria



entire, distinct, the marginal punctures obsolete; lateral stria strong, subentire, straight and somewhat crenulate, especially along the transverse apex; ante-scutellar stria extremely short, punctiform. *Elytra* transverse, one-half longer than the prothorax, and, at the middle, rather more than one-fifth wider; sides evenly and strongly arcuate; inflexed flanks flattened and feebly punctate posteriorly, the single stria much coarser in the flattened area; marginal series of distant punctures obsolete; interstrial row subobsolete; outer humeral short, oblique, feeble; inner rather long, fine, extending beyond basal third; subhumeral rather coarse, subentire, feebly arcuate basally, with a fine oblique inferior appendage only; dorsals coarse and deep, the first four entire, the fourth arcuate at base halfway to the scutellum; fifth and sutural finer, short, equal and apical; surface near the base of the first dorsal distinctly and broadly impressed. *Propygidium* rather coarsely evenly and very densely punctate, the pygidium strongly, very densely so toward base, gradually more finely and obsoletely toward tip. Prosternal lobe broadly rounded, subtransverse and strongly margined at apex; mesosternal emargination very feeble and broadly rounded. Anterior tibiæ arcuate externally, and with about six small spiculiform teeth; spinules of the posterior small but rather close-set. Length 4.5 mm.; width 3.6 mm.

New York (Catskill Mts.).

Readily distinguishable by the broadly oval form with subinflated elytra, and by the pronotal sculpture; from *marginicollis* it may be known by the entire and basally arcuate fourth dorsal stria and very densely punctate propygidium.

#### Group *Abbreviatus*.

Resembles the preceding, but with the subhumeral stria greatly abbreviated, interrupted or obsolete. The anterior tibiæ are minutely serrulate externally, sometimes almost mutic. The two species here described may be known from any of the others by the coloration, which is similar to that of *militaris*:—

**H. electus** n. sp.—Oblong-oval, thick, convex, the punctulation extremely minute and sparse, the pronotum strongly, densely punctate along the basal margin, gradually more narrowly to the middle; elytra red and black. *Head* feebly punctulate, very broadly and feebly concave anteriorly; stria entire, the apical part wide and feebly sinuate. *Prothorax* twice as wide as long, the sides feebly convergent and nearly straight to beyond the middle, then more rapidly rounded; fine marginal stria entire; three marginal punctures very feeble; outer lateral stria strongly hooked at apex, extending only to apical third; inner subentire, nearly straight, very distant from the sides anteriorly, gradually approaching the edge posteriorly; ante-scutellar stria very short, strong. Scutellum small, equilateral. *Elytra* wider than long, not quite one-half longer than the prothorax, and, at basal third, scarcely perceptibly

wider; inflexed flanks feebly concave, sparsely, finely punctate, unevenly bistriate; lateral series of punctures feeble, present in apical half only; outer subhumeral completely wanting; inner represented by a feeble row of scarcely perceptible punctures; outer humeral feeble, subtransverse; inner very short and feeble, longitudinal and coarse at base; dorsal striæ moderately coarse, feebly crenulate within, the first three entire; fourth and fifth subequal, not extending to the middle; sutural but little longer; all the striæ ending abruptly at a considerable distance from the posterior margin. *Propygidium* rather coarsely, extremely densely punctate, the punctures contiguous, a small area at each side near the base impunctate; pygidium but slightly less coarsely, very densely punctate, subimpunctate at tip. Prosternal lobe finely, sparsely punctate, broadly rounded, scarcely at all margined at apex; mesosternal sinus deep, the stria entire. Anterior tibiæ with five or six small external denticles formed by the robust spinules. Length 5.5 mm.; width 3.7 mm.

Washington State.

The coloration will distinguish *electus* from any other species except the following, but in the complete absence of the subhumeral stria it is allied to *civilis*; the latter is much less convex.

**H. oregonus** n. sp.—Narrowly oblong, convex; minute punctules obsolete, the pronotum punctate along the base as in *electus*. *Head* impunctulate, broadly, feebly concave anteriorly, the stria entire, the apical part very long and nearly straight. *Prothorax* notably less than twice as wide as long; sides parallel and nearly straight in basal half, gradually rounded and convergent anteriorly; fine marginal stria distinct, entire, slightly incurved at base; three marginal punctures almost completely obsolete; outer lateral stria slightly hooked at apex, extending nearly to the middle; inner subentire, distant from, but nearly parallel to, the sides, sinuate in the middle; surface between the two striæ distinctly but finely, unevenly punctate. *Elytra* not more than one-third longer than the prothorax, and, near basal fourth, where the sides are a little more strongly rounded, only slightly wider; inflexed flanks with a broad dilated sulcus, which is coarsely and rugulose sculptured, the second stria not distinct; inner humeral stria very feeble, short, with a fine detached basal appendix; striæ otherwise as in *electus*, except that the dorsals are finer and not crenulate, and the sutural extending to basal third. *Propygidium* not very coarsely but deeply, very densely punctate, with two distant impunctate spots near the base; pygidium scarcely, more finely, equally densely punctate, gradually becoming subimpunctate behind basal two-fifths, especially along the middle. Anterior tibiæ triangular, with a prolonged outwardly oblique bifid terminal tooth, but without trace of further serration, except a minute isolated denticuliform spinule near basal third; posterior tibiæ rather narrow but strongly, closely, biserially spinulose. Length 4.4 mm.; width 2.7 mm.

Oregon.

The sterna are nearly as in *electus*, to which this species is closely allied. It differs in the deep, coarsely sculptured and dilated sulcus of the elytral flanks, structure of the anterior tibiæ, in the smaller, more narrowly oblong and parallel body, more finely sculptured pygidia, longer sutural stria, subparallel inner thoracic stria and in several other features.

#### PHELISTER Mars.

The small species separated under this name by Marseul are peculiarly American and may prove to be tolerably numerous in the United States. Of those described thus far, *æneomicans* and *venustus* are metallic æneous and greenish-blue respectively. Of the non-metallic species *gentilis* has all the striæ entire, the sutural and next dorsal joined at base; *subrotundus* has the sutural stria alone abbreviated, the inner dorsal not hooked at base; *vernus* and *saunieri* have the inner dorsal and sutural striæ equally abbreviated at base, the former represented at base by a puncture, the fourth dorsal not hooked at base; the last two species must be very closely allied if distinct.

**P. geometricus** n. sp.—Broadly oval, rather feebly convex, highly polished, impunctate except a broad line of coarse punctures along the sides of the pronotum, dark rufo-castaneous, the elytra piceous-black except at apex. *Head* small, feebly concave, the stria feeble. *Prothorax* twice as wide as long, the sides moderately convergent and nearly straight, becoming more convergent and arcuate near the apex; fine marginal stria entire; submarginal fine, very close to the edge, abbreviated at the middle, broadly, inwardly hooked at apex; subapical stria crenulate, reflexed at the extremities. *Elytra* one half longer, and, before the middle, quite distinctly wider than the prothorax; sides evenly rounded; apex narrow, scarcely more than three-fourths as wide as the base; inflexed flanks finely crenulato-bistriate; inner and outer humeral striæ excessively faint; subhumeral completely wanting; dorsals rather coarse, punctulate; first four entire, the fourth strongly hooked halfway to the scutellum at base; fifth and sutural abbreviated at basal third. *Propygidium* moderately coarsely, densely and evenly punctate the punctures almost contiguous; pygidium very minutely and rather sparsely punctate. Prosternal striæ becoming subparallel; posterior margin not distinctly sinuate; mesosternum evenly, transversely truncate at apex. Antennal fossæ very deep. Length 2.0 mm.; width 1.5 mm.

Texas (Austin).

Readily distinguishable from *vernus* by the hooked fourth dorsal stria, impunctate surface and truncate mesosternum. One specimen.

**PLATYSOMA** Leach.

The following species is allied to *lecontei*:—

**P. tabella** n. sp.—Oblong, broad, parallel, depressed, highly polished, impunctate except along the sides of the pronotum, where the punctures are rather small but deep and sparse, closer smaller and more uneven near the apical angles. *Head* broadly, feebly concave anteriorly; stria fine but entire, convergent toward base. *Prothorax* not quite twice as wide as long, the submarginal stria entire coarse and deep; transverse apical stria extending to the apical part of the submarginal, where it is feebly reflexed. *Elytra* three-fourths longer and scarcely visibly wider than the prothorax; inflexed flanks closely bisulcate; humeral stria feeble, diverging but slightly from the first dorsal; dorsals rather fine but deep, impunctate, the first four entire; fifth and sutural short, not quite extending to the middle. *Propygidium* rather coarsely but sparsely punctate, finely so in the middle; pygidium rather coarsely but sparsely punctate, the punctures shallow and becoming small toward tip. Prosternal lobe large, very broadly rounded, minutely margined at apex; mesosternum broadly, distinctly sinuate at apex, the marginal stria fine but entire. Anterior tibiæ acutely and strongly 4-dentate. Length 4.0 mm.; width 2.0 mm.

Indiana?

Differs from *lecontei* not only in its larger size, but in the perfectly entire fourth dorsal stria and in the apical angles of the prothorax, which are less transversely rounded and more anteriorly prominent. The locality is possibly somewhat doubtful, as the single specimen had no label in the Levette cabinet. There is no corresponding Mexican species however.

**EPIERUS** Erichs.

The species of *Epierus* present but little diversity of appearance, but may be readily separated by the following structural characters:—

Elytra with all the striæ entire, the fifth and especially the sutural, sometimes very feeble or obsolescent toward base.

Fifth dorsal and sutural striæ distinct and strong to the base.

Inflexed flanks of the elytra strongly bisulcate; body strongly convex.

Form broadly oval; pygidium extremely finely and feebly punctulate; prosternal striæ widely separated (*nigrellus* Say).

**regularis** Beauv.

Form more narrowly oval; pygidium distinctly but sparsely punctate anteriorly; prosternal striæ narrowly separated and less divergent anteriorly.....**vicinus** Lec.

Inflexed flanks not bisulcate, unistriate or with a line of confused punctures.

Body convex.

Pygidium and pronotum more coarsely and strongly punctate.

**novellus** Zimm.

Pygidium and pronotum very finely punctulate; prosternal striæ becoming parallel and very close, not divergent anteriorly.

**pulicarius** Er.

Body subdepressed, elliptical; prosternal striæ feebly divergent anteriorly from the middle; subhumeral stria nearly straight, not inferior.

**ellipticus** Lec.

Fifth dorsal and sutural striæ subobsolete near the base, the former however always traceable; body strongly depressed; male with a small corniform frontal process; prosternal striæ very distant and strongly divergent anteriorly from the middle; sternal suture simple; mesosternal stria entire; apical stria of the pronotum broadly interrupted.

Short, broadly oval; prosternum extremely minutely, sparsely punctulate, the apical lobe not margined; elytra without trace of the inner subhumeral stria; pygidium indistinctly punctulate (*decipiens* Lec., *nasutus* Horn).....**planulus** Er.

Elongate, narrowly oval; prosternum densely and strongly punctulate, the apical lobe finely, deeply margined; elytra with the inner subhumeral distinct in apical half and very close to the first dorsal; pygidium finely but strongly and distinctly punctate.

**cornutus** n. sp.

Elytra with the fifth dorsal and sutural completely obliterated in basal third; body short, strongly convex; transverse sternal suture double.

**subtropicus** n. sp.

In most of the species the two minute marginal punctures of the pronotum referred to under the various species of *Hister*, are evident and constant.

**E. cornutus.**—Rather elongate, oblong-oval, depressed, shining, black, the tarsi dark rufous; antennæ piceo-rufous, the club pale flavo-testaceous; integuments very finely, densely punctate throughout. *Head* not margined, more prominent at the sides above the antennæ; clypeus large, nearly vertical, with a short erect process at apex, bearing a short stiff seta, the clypeal suture feeble. *Prothorax* almost twice as wide as long, the sides feebly convergent, broadly, feebly arcuate throughout; marginal stria deep, inferiorly arcuate in the middle of the sides, broadly interrupted at apex; two marginal punctures distinct; disk with a very obsolete impression along the median line in nearly basal half. *Elytra* as long as wide, twice as long as the prothorax and only very slightly wider; sides evenly, feebly arcuate; base broadly, angularly emarginate throughout; inflexed flanks unistriate; marginal stria inferior, gradually ascending near the base; outer subhumeral represented by a few remote punctures; inner distinct toward apex and with



traces at base which appear to be independent of the oblique humeral, the latter distinct; dorsals strong, finely punctate within, entire; sutural obsolescent at base. *Propygidium* finely but strongly, rather closely, the pygidium more sparsely but equally distinctly punctate, the punctures intermixed with others which are minute. Prosternum strongly, remotely bistriate; mesosternum broadly, feebly sinuato-truncate; marginal stria entire. Length 2.3–2.5 mm.; width 1.2–1.3 mm.

New Mexico (Las Vegas).

Resembles *planulus*, but remarkably distinct by reason of the characters stated in the table. It is allied also to *longulus*, and there are probably several other species having the clypeus similarly tuberculate in the male. Three specimens.

In this species the marginal stria is the ninth, and is represented only by a row of distant punctures in Hister; the two or three remote and evanescent punctures on the convex flanks here represent the outer subhumeral, and the inner subhumeral evidently attains the basal margin irrespective of the oblique inner humeral.

**E. subtropicus.**—Broadly oval, strongly convex, highly polished, black throughout; antennal club very pale. *Head* minutely, closely punctate, equally prominent throughout the width between the antennæ; clypeus large, slightly inflexed, more densely punctate, the suture transverse and very fine; apical margin slightly tuberculate at the middle. *Prothorax* fully twice as wide as long; sides strongly convergent, a little more arcuate toward apex; marginal stria straight, not interrupted at apex; disk uniformly, finely but strongly and not densely punctate, the punctures coarser at the basal margin, rather broadly so in the middle. *Elytra* distinctly shorter than wide, not quite twice as long as the prothorax, and, near the middle, quite distinctly wider; sides evenly, distinctly arcuate; disk very minutely, evenly, sparsely but distinctly punctulate, less strongly than the pronotum; inflexed flanks unistriate; lateral stria entirely inferior, only slightly ascendent toward base; outer subhumeral wanting, the inner represented only by a short trace near the middle; oblique humeral fine but long; dorsal striæ not very coarse, abrupt, not distinctly punctate; first three entire; fourth not quite attaining the base; fifth and sutural abruptly abbreviated, the sutural also abbreviated before the apex. *Propygidium* finely but strongly, not densely punctate, the pygidium large, flat, with the punctures fine deep and rather close. Prosternum with the deflexed lobe very short, wide, strongly and finely margined at apex, the intercoxal striæ distant, becoming subparallel and slightly abbreviated anteriorly; mesosternum with a broad and shallow emargination, the apical stria broadly interrupted. Intersternal suture widely double, the anterior line broadly subangulate throughout the width, distinct, evenly crenulate, extending anteriorly two-thirds to the emargination; posterior line almost obliterated. Length 2.3 mm.; width 1.6 mm.

Florida.

This species is possibly the same as that which is identified in our lists as the Colombian *brunnipennis* of Marseul; it differs greatly from *brunnipennis*, irrespective of color, in its non-interrupted apical stria of the pronotum and by the widely interrupted mesosternal stria.

### CARCINOPS Mars.

This genus is well distinguished from *Paromalus* by the distinct scutellum and striate elytra. In *conjunctus* and *opuntia* the fine sculpture is very remarkable, the minute punctulation in the former being arranged in short transverse lines, each consisting of two or three minute approximate points, and in the latter, in more rounded clusters of two or three. In some of the allied species the minute punctures, although simple, bear evidence from their somewhat irregular outlines, of being an incipient stage of the clustered points of *opuntia*. *Conjunctus* is abundant at Fredericksburg, Virginia.

The species allied to *gilensis* by the partial obliteration of the subhumeral stria, may be distinguished among themselves as follows:—

Surface convex, the prothorax longer, barely twice as wide as long.

Subhumeral stria obsolete; size larger, more oblong-elongate.

**gilensis** Lec.

Subhumeral represented behind by a fine stria or series of punctures.

Broadly oval; outer subhumeral at base—near the oblique humeral—long and striiform.....**consors** Lec.

Narrowly oval, smaller, the outer subhumeral represented at base by a deep elongate puncture.....**papagoana** n. sp.

Surface depressed; size smaller; prothorax much shorter, more than twice as wide as long.....**corticalis** Lec.

*Corticalis* is apparently not the same as *tenellus* Er., the size being much smaller, and the prothorax is still shorter according to the figure of Marseul. The width given by Marseul for *tenellus* is 1.5 mm., while the largest specimen of *corticalis* which I have seen is not more than 1.0 mm. wide; Marseul is however somewhat uncertain in his measurements. Of *14-striatus* I have a specimen taken in Lake Co., California; it is doubtless cosmopolitan.

**C. papagoana.**—Narrowly oblong-oval, black, the legs and antennae dark rufous, polished, the minute punctulation sparse, scarcely visible, simple, with stronger sparse punctures only narrowly along the elytral apex and

broadly, unevenly at the sides of the pronotum. *Head* evenly, feebly convex, not at all impressed, finely, sparsely punctulate, the punctures larger and minute intermingled, distinctly striate along the lateral edges almost to the front. *Prothorax* not quite twice as wide as long, the sides feebly convergent and nearly straight in basal two-thirds, more rounded and convergent at apex; marginal stria deep, entire, continuous along the apex. *Elytra* but little wider than the prothorax, three-fourths longer, the apex two-thirds as wide as the base; sides broadly, evenly arcuate; inflexed flanks strongly bistrigate; inner subhumeral represented by a feeble series of uneven punctures; oblique humeral short and very fine; dorsals coarse, deeply impressed and finely crenulate; first four entire; fifth and sutural abbreviated at basal third. *Propygidium* rather coarsely deeply and densely punctate, except near the hind margin; pygidium finely but deeply, sparsely and unevenly punctate, also with intermingled minute punctules; stria attaining the basal angles. Prosternal lobe large, subquadrate, finely, dually punctulate; intercoxal part strongly bistrigate; mesosternum broadly, very feebly sinuate, the marginal stria very broadly, posteriorly angulate. Anterior tibiæ strongly bidentate. Length 1.9–2.2 mm.; width 1.2–1.25 mm.

Arizona (Benson).

Three specimens. In this genus there is no true antennal fossa, the antennæ being simply protected by the anterior legs when the latter are folded into the large crural excavation toward the sides of the prothorax beneath.

**PAROMALUS** Erichs.

The species of this genus inhabiting the United States may be outlined as follows:—

Prosternum with two long deep striæ; body larger, strongly depressed.

**æqualis** Say.

Prosternum not striate, except sometimes feebly or partially; body smaller, narrower and more convex.

Elytra without trace of sutural stria.

Elytra with two deeply impressed oblique striæ sublaterally at base.

**bistriatus** Er.

Elytra with the oblique striæ very feeble or obsolete.

Form cylindrical, short, resembling *Teretrius americanus*; prosternum flattened ..... **teres** Lec.

Form oblong-oval.

Punctures small, much finer than in *difficilis* ..... **debilis** Lec.

Punctures strong but sparse, fully as large as in *difficilis* but more distant..... **mancus** n. sp.

Elytra with a distinct abbreviated sutural stria.

Prosternum with two long feeble and interrupted striæ; pygidium merely with a few fine vermiculate lines in the male; form oval, more convex,

smaller, the elytra subinflated at basal fourth, and distinctly wider than the prothorax; sides of the latter more convergent from the base.

**seminulum** Er.

Prosternum without striæ, or with two very short striæ posteriorly; form oblong-oval, the elytra but slightly wider than the prothorax.

Subdepressed, the elytra not quite as long as wide....**difficilis** Horn.

Rather more convex and elongate, the elytra longer and more narrowed at apex, fully as long as wide.....**complexus** n. sp.

I cannot distinguish *estriatus* and *affinis* of LeConte from *æqualis*, in which species there is considerable sexual disparity, some specimens—probably the males—being more narrowed posteriorly than others. *Æqualis* is very different in general appearance from the other species of the table.

The species above identified as *seminulum* is common in the Mississippi Valley and North Carolina, but does not agree very well with Marseul's figure, where the elytra are represented as only slightly more than one-half longer than the prothorax; in the specimens before me the elytra are twice as long as the prothorax, and there are several other notable differences.

**P. mancus.**—Narrowly oblong, moderately convex, black, polished, strongly but sparsely punctate, more finely and closely on the pronotum. *Head* even, finely punctate; marginal stria fine but entire, following the sub-lateral sinuations. *Prothorax* scarcely more than three fourths wider than long; sides very feebly convergent and scarcely arcuate, becoming gradually more arcuate and distinctly convergent toward apex; marginal groove deep, entire, unbroken along the apex; punctures toward the sides scarcely at all larger but sensibly closer; base transverse. *Elytra* fully as long as wide, not much more than twice as long as the prothorax and only just visibly wider; sides feebly arcuate; apex three-fourths as wide as the base; inflexed flanks with a fine subcariniform entire stria, continuing unbroken around the apical angles, forming an apical stria which is curved slightly forward at the suture and then obliterated; two oblique striæ very feeble, the outer traceable far behind the middle. *Propygidium* finely, not densely punctate, the pygidium very minutely, less distinctly but less sparsely so, in one of the sexes with a few central vermiculate erosions. Prosternum with the lobe broadly rounded, not margined and finely, sparsely punctate, flattened behind, without trace of striæ, the process rounded; mesosternum not striate at apex, the emargination distinct; lateral striæ coarse; surface with a broadly trapeziform stria behind the emargination. Anterior tibiæ broad, semi-circularly rounded externally, and with four small acute equal and equidistant teeth, the apex broadly oblique and straight. Length 2.1–2.25 mm.; width 1.0–1.15 mm.

California (Humboldt Co.).

A little larger than *bistriatus* and with a broader prosternum. The suture between the meso- and metasterna is singularly and



variously modified in this genus; in *bistriatus*, for example, it becomes broadly double, the anterior margin strongly biarcuate; the trapeziform stria of *mancus* is also a peculiar and very different modification. Three specimens.

**P. complexus.**—Oblong-oval, moderately convex, polished, piceous-black, the legs and antennæ rufous; punctures of the head and pronotum very fine, sparse, even, of the elytra stronger but fine and rather sparser. *Head* not impressed, the marginal stria extremely fine and feeble but entire. *Prothorax* three-fourths wider than long, the sides feebly convergent and just visibly arcuate, becoming more convergent and arcuate toward the apex; marginal stria entire, not interrupted at apex. *Elytra* nearly as long as wide, three-fourths longer than the prothorax, and, before the middle, only very slightly wider; marginal stria with a row of distinct punctures internally, extending along the apex almost to the suture; oblique basal striæ feeble; sutural strong, straight, extending to basal third. *Propygidium* finely but deeply, evenly and rather closely punctate, the pygidium finely, about equally closely so, almost entirely occupied, except in basal fourth, by a large and very deep, circular excavation, which is longitudinally divided along the middle by a compressed carina, the bottom of the excavation coarsely granulose, two or three of the tubercles near the posterior extremity being large and prominent. Prosternum prominent and rounded behind, with two very short subapical striæ, the lobe large, strongly deflexed, not margined and more strongly punctate; mesosternum not margined at apex, the emargination deep; transverse suture feebly double, the anterior line unevenly, feebly bicuspid. Anterior tibiæ with four nearly equidistant external teeth. Length 1.9 mm.; wid h 1.0 mm.

Alabama.

The single type is probably a male, the sculpture of the pygidium being very remarkable. *Complexus* is allied to *seminulum*, but in the male of that species the pygidium is simply vermiculate.

### ONTHOPHILUS Leach.

The following species is allied to *lecontei*:—

**O. soltau** n. sp.—Evenly oval, moderately convex, polished, black, the legs rufo-piceous. *Head* finely, strongly, very densely punctate, more sparsely and coarsely so in the feeble impression between the slightly oblique latero-frontal ridges; epistoma large, evenly convex, trapezoidal, the suture obsolete. *Prothorax* twice as wide as long, the sides straight and parallel to the middle, then abruptly, strongly convergent and straight to the apex, the apical angles slightly obtuse and scarcely at all rounded; disk strongly but not very coarsely or closely punctate, the punctures somewhat uneven, large and small in size; lateral margin thickened and strongly, abruptly reflexed; lateral



ridge strong, becoming attenuated and outwardly curvate anteriorly in the direction of the apical angle, attaining apical fifth, perfectly straight and feebly, outwardly oblique throughout posteriorly, attaining the base; remaining ridges only feebly traceable, on each side one fine and basal, near the lateral ridge, another attaining neither base nor apex, and a third near the middle in apical half. *Elytra* more distinctly rounded in basal third, behind the base quite distinctly wider than the prothorax, more than twice as long, nearly as long as wide, each with seven strong fine and even ridges, the interspaces coarsely grooved, the grooves remotely, not strongly punctate and enclosed each by two fine, less elevated carinæ; inflexed flanks coarsely, strongly punctato-reticulate, with an abrupt deep and remotely punctate groove near the lateral ridge, inferiorly arcuate near the base, not attaining the latter, the carina fine only visible in basal fifth. *Propygidium* not twice as wide as long, strongly, rather closely but not very coarsely punctate, somewhat strongly carinate; pygidium very strongly inflexed, longer than wide, strongly, rather closely and unevenly punctate, the punctures finer toward apex. Prosternum wide, coarsely but sparsely punctate; mesosternum broadly, strongly cuspid at apex, fitting closely into the prosternum, very coarsely, somewhat closely punctate. *Legs* long, slender; tarsi notably elongate, the ungues very long slender and feebly arcuate. Length 3.0 mm.; width 2.2 mm.

#### Colorado (Denver).

Two specimens taken by Mr. Hugo Soltau, one of which he has kindly placed in my cabinet. From *lecontei* this species differs greatly in the broadly but strongly angulate sides of the prothorax, and in the wholly different form of the strong lateral ridges of the pronotum.

### ANAPLEUS Horn.

The two species in my cabinet may be readily known as follows:—

Evenly oval, the elytral apex narrow, less than one-half of the maximum width; prosternum between the coxæ rather wider than long; punctures throughout very coarse and strong.....**marginatus** Lec.  
 More oblong-oval; elytral apex fully one-half of the maximum width; prosternum narrower between the coxæ, about as long as wide; punctuation less coarse and more superficial.....**compactus** n. sp.

These two species can be readily discriminated by certain peculiarities of facies, which are difficult to describe exactly.

**A. compactus.**—Oblong-subrotund, rufo-testaceous throughout, moderately shining, rather coarsely, densely punctate. *Head* concave between the antennæ, the point of insertion of the latter visible anteriorly. *Prothorax* about two and one-half times as wide as long, the apex one-half as wide as

the base, the latter broadly, obtusely angulate; sides strongly convergent, evenly and distinctly arcuate; disk with an acute lateral edge but devoid of marginal stria. Scutellum distinct, small, equilateral. *Elytra* not as long as wide, fully two and one-half times as long as the prothorax, and, near basal third, distinctly wider; apex transversely truncate; sides strongly, evenly rounded; epipleuræ distinctly unistriate; acute lateral edge feebly reflexed; disk with two short oblique and extremely obsolete elevated lines laterally at base; suture gradually and feebly elevated. *Propygidium* partially covered by the elytra, not exposed from above; pygidium large, moderately inflexed, convex, shining, finely, sparsely punctate. Prosternal lobe short, not margined, parallel intercoxal striæ distant; posterior margin truncate, feebly sinuate in the middle; mesosternum not margined at apex. Length 1.45 mm.; width 1.2 mm.

California (San Diego).

A single specimen of undetermined sex. Of *marginatus* I obtained a single specimen at Austin, Texas.

**BACANIUS** Lec.

The general characters of this genus indicate a strong affinity with *Anaples*, and it bears much the same relation to the other genera of *Histrini* that *Abræus* does to *Saprinus* and its allies. The prosternal lobe is strongly developed throughout the genus, and there seems to be scarcely any other reason for associating it with *Abræus* than the minute size of the body. *Bacanius* is a very definitely limited and widely distributed genus, in which the species are much better defined and more isolated among themselves than in *Acritus*. The species of our fauna may be readily identified as follows:—

*Elytra* without an entire marginal carina.

*Elytra* without discal striæ.

*Elytra* with a fine entire and oblique sublateral stria; elytral punctures forming long coarse longitudinal rugæ; size minute.

**punctiformis** Lec.

*Elytra* with a fine sublateral stria in apical half; elytral punctures distinct rounded and isolated; size larger.....**tantillus** Lec.

*Elytra* with several coarse oblique discal striæ; surface very convex, the punctures isolated; size still larger .....**globulinus** n. sp.

*Elytra* with an entire marginal carina and an entire or subentire sublateral stria.

Sublateral stria entire; pygidium very minutely and remotely punctulate.

**misellus** Lec.

Sublateral stria abbreviated at base; pygidium strongly and rather closely punctate.....**debilitans** n. sp.

Elytra with two fine and acute, parallel approximate and entire marginal carinæ; surface much less convex ..... **acuminatus** n. sp.

Other forms doubtless exist in cabinets, but the species are much less numerous than in *Acritus*.

**B. globulinus.**—Broadly oval, very convex, polished, dark rufo-testaceous throughout. *Head* even, not concave, very minutely, sparsely punctulate, gradually more closely and strongly punctate toward the epistomal apex; antennal tubercles rather acute, not vertically prominent. *Prothorax* nearer thrice than twice as wide as long; sides very strongly convergent, broadly, strongly and evenly arcuate throughout; apical angles acute; marginal line acute, extending unbroken along the apex; punctures very fine and sparse anteriorly, becoming gradually slightly larger and less sparse toward base. Scutellum invisible. *Elytra* long, convex and declivous behind, narrowly subtruncate at apex viewed posteriorly, a little wider than the prothorax and three times as long, evenly rounded at the sides, the punctures moderately coarse, deep, rounded, rather sparse, gradually closer behind; inflexed flanks with the marginal stria very feeble, punctate, visible toward base; sublateral stria distinct in more than apical half; each elytron also with three or four coarse, oblique, sublateral striæ toward base, of which the external appears to be the internal humeral. *Pygidium* rather coarsely, very densely punctate. Prosternum truncate behind, much wider than long, with a large deflexed and broadly rounded apical lobe, finely, sparsely punctate; mesosternum more strongly, less sparsely punctate, not striate at apex, the lateral striæ very oblique from the coxæ to the prosternal angles. Anterior tibiæ very broad, rounded externally, with a fringe of very small erect setæ, not spinulose. Length 1.1 mm.; width 0.8 mm.

California (Humboldt and Siskiyou Cos.).

Distinguishable by its rather large size and coarsely eroded elytral striæ. It is not rare in northern California.

**B. debilitans.**—Somewhat broadly oval, very strongly convex, polished and dark rufo-testaceous throughout. *Head* finely, sparsely punctulate, more strongly anteriorly. *Prothorax* much more than twice as wide as long, the sides moderately convergent, broadly and almost evenly arcuate from base to apex, the apical angles acute; marginal line acute, entire along the apex but very fine; punctures fine, even and sparse throughout. Scutellum wanting. *Elytra* globose, twice as long as the prothorax viewed vertically, and slightly wider; sides broadly, evenly arcuate; punctures fine but strong, rather sparse; carina of the inflexed flanks very fine and puncto-crenulate, uniting with the first sublateral stria before the apex; disk also with an evanescent oblique stria extending to the middle of the base. *Pygidium* finely, strongly, rather closely punctate. Prosternum very short and transverse, finely, sparsely punctate, the lobe well developed, more closely punctate, finely margined at apex. Meso-metasternal surface finely but strongly, sparsely punctate. Anterior tibiæ broad, rounded externally. Length 0.7 mm.; width 0.45 mm.

Florida (Crescent City). Mr. Schwarz.

This is the smallest species which I have seen, and is allied to *misellus*, differing by the characters mentioned in the table. In addition, *misellus* is broader and less convex, with a more transverse prothorax, more convergent and rounded at the sides, and there is no trace of the long median stria of the elytra.

**B. acuminatus.**—Evenly, rather narrowly elliptical, only moderately convex, shining, pale testaceous throughout. *Head* extremely minutely, sparsely punctulate, slightly more stronger and closely so on the epistoma. *Prothorax* much more than twice as wide as long, the sides very strongly convergent, broadly and evenly arcuate from base to apex; margin finely acute; punctures fine and very sparse, becoming almost obsolete anteriorly, slightly coarser near the base. Scutellum not definable but apparently not wholly wanting. *Elytra* from above nearly three times as long as the prothorax, only very slightly wider, together rather narrowly rounded behind viewed posteriorly, broadly rounded on the sides, apparently connate, the suture broadly, feebly impressed on the posterior declivity; punctures minute, rather sparse; surface finely, obliquely rugose except toward apex and toward base externally; discal striæ wanting, the two fine carinæ of the inflexed flanks equal entire and rather close throughout. *Pygidium* strongly inflexed as usual, nearly flat, minutely, remotely punctulate, more closely and strongly so toward the lateral and apical edges. Prosternum moderately broad between the coxæ, the lobe large and well developed, deflexed, very finely margined at apex and minutely, remotely punctulate. Anterior tibiæ broad, rounded externally, with a minute external spine near the apex. Length 0.9 mm.; width 0.65 mm.

California (Sta. Cruz Co.).

This is one of the most distinct species of the genus in having the sublateral stria of the elytra parallel and close to the marginal line throughout, and not inwardly oblique toward base as is usual. This character is suggestive of *Anapleus*, but the apices of the elytra are formed very differently, and there is no trace of the doubly carinate lateral edges of the pronotum, which is so characteristic a feature in *Anapleus*. A single specimen.

### SAPRINUS Erichs.

The species of this large and difficult genus seem to be more especially subarctic in distribution and are abundant in the United States, especially on the Pacific Coast; those in the neighborhood of *fimbriatus* are very closely allied and more than usually variable, necessitating large series and careful study in the discrimination of species. The following new forms are assigned to the various groups of Dr. Horn as follows:—



## Group IV.

- External subhumeral stria contiguous to the marginal; elytral punctures abruptly coarse posteriorly, not distinct near the base (type *pectoralis*).
- Larger, black, without æneous lustre; mesosternum coarsely, densely punctate.....**obsidianus**
- Smaller, more narrowly oval; lustre evidently æneous; mesosternum finely and sparsely punctate.....**subætatus**
- External subhumeral distinct and diverging from the marginal; elytral punctures not abruptly coarse posteriorly and visible over the entire disk (type *obscurus*).
- Dorsal striæ long, almost extending to apical fourth; body oblong-oval, larger.....**laramienseis**
- Dorsal striæ shorter, extending but slightly behind the middle; body shorter, oval.....**audax**

## Group V.

- Form, coloration and sculpture very nearly similar to *pennsylvanicus*; pygidium tumid and carinate toward apex, broadly impressed toward the sides except near the base.....**profusus**

## Group VI.

- Elytra without distinct punctuation except in about apical half.....**socius**
- Elytra punctate throughout, but generally feebly and finely so toward base, the punctures sometimes rather abruptly coarser and denser behind.
- Pronotum evidently more coarsely and densely punctate near the sides.  
**lentus**
- Pronotum not more strongly and generally scarcely more densely punctate toward the sides, distinctly and evenly punctate throughout the disk.
- Sutural stria entire; lustre dull; punctures strong and dense throughout.  
**opacellus**
- Sutural stria abbreviated at basal fourth; punctures strong and dense throughout, more or less confluent posteriorly.....**cribrum**
- Sutural stria abbreviated or obsolescent in basal third; punctures sparse throughout; lustre polished.
- Larger, broadly oval; sutural stria wholly obsolete toward apex.  
**detractus**
- Small, narrowly oval; sutural stria attaining the apex...**contractus**

## Group VII.

- Prothorax fimbriate at the sides; body black, opaque, punctured throughout.  
**intritus**

## Group VIII.

- Elytra with a distinct sutural stria which is abbreviated or interrupted behind.
- Elytra without trace of punctuation at any part.....**impunctellus**
- Elytra punctured nearly as in *fraternus*; pronotal sculpture narrowly effaced along the lateral margins.....**laxatus**



## Group IX.

Small species resembling *lucidulus*; anterior tibiæ strongly tridentate; sides of the prothorax fimbriate.

Punctures of the elytra extending, near the suture, to basal fourth.

**propensus**

Punctures of the elytra not extending much within basal third, very small and sparse ..... **servilis**

Group II of Dr. Horn cannot remain as originally proposed, and in reality comprises only *Gnathoncus rotundatus*. The other three species are widely discordant; *behrensi* belongs to group IV, and is probably not different from *pectoralis*, in which species the prosternal striæ display a tendency to unite in front in some specimens, for, in *laramiensis*, there are examples having the two striæ parallel, convergent in front, or shorter and completely united. *Planisternus* and *rugipennis* are aberrant types, each possibly requiring a special group.

The four species now placed at the end of group IX, belong to *Pachylopus* as extended by Marseul, and the genus is apparently valid.

**S. obsidianus.**—Oval, strongly convex, highly polished, black, the tibiæ and tarsi rufescent. *Head* finely evenly and sparsely punctate, with a larger median puncture near the base; transverse frontal stria fine but distinct, widely interrupted at the base of the clypeus. *Prothorax* fully twice as wide as long, the sides distinctly convergent and feebly arcuate from the base, becoming strongly convergent and arcuate anteriorly; marginal stria distinct; disk subimpunctate except abruptly and coarsely so along the basal margin and more gradually coarsely and closely at the sides, the punctures much finer toward base. *Elytra* at basal third distinctly wider than the prothorax, one-half longer; sides broadly arcuate; marginal stria on the flank, distinct, gradually ascending toward base and confused with the outer subhumeral; inner subhumeral completely obsolete; oblique humeral fine, distinct, straight, extending to basal third; dorsals coarse and very coarsely punctate, subequal, extending distinctly behind the middle, the first not extending beyond apical third, the fourth broadly arcuate at base, joining the deep entire and punctate sutural; punctures coarse, deep, moderately close in apical two-thirds near the suture and apical third at the first dorsal, not extending laterally beyond the latter. *Propygidium* densely punctate, the punctures gradually becoming very coarse posteriorly; pygidium closely punctate, finely so toward apex. Prosternal striæ long, coarse, deep, gradually convergent anteriorly and almost confluent just behind the apical margin; surface convex. Anterior tibiæ strongly arcuate externally in apical half, finely pleuridenticulate. Length 3.5 mm.; width 2.6 mm.

Alabama (Mobile). Mr. Soltau.

Differs from *pectoralis*, which it strongly resembles, in the coarser punctuation and especially in the much coarser and more coarsely punctate elytral striæ. The prosternal striæ are very much longer than is usual in *pectoralis*. A single specimen.

**S. subæratatus.**—Narrowly oval, convex, very highly polished, black, with a feeble but distinct æneous lustre; legs scarcely paler. *Head* finely sparsely and rather feebly punctate; frontal stria extremely fine, oblique at each side. *Prothorax* four-fifths wider than long; sides convergent from the base, broadly arcuate and strongly convergent anteriorly; marginal stria distinct; disk punctured as in *pectoralis*. *Elytra* rounded at the sides, one-half longer than the prothorax, and, at basal third, distinctly wider, the marginal and outer subhumeral striæ as in *obsidianus*; inner subhumeral completely obsolete; oblique humeral straight, scarcely extending beyond basal fourth and distant from the first dorsal even at base; dorsal striæ coarse and coarsely punctate, short, slightly irregular, extending to about the middle, the first scarcely longer and bent inward at base; second much more distant from the third toward base than the latter is from the fourth, which is broadly arched at base joining the sutural, the latter very fine toward base and not extending quite to the apex; punctures rather coarse and decidedly sparser, distributed nearly as in *obsidianus*. *Pygidia* finely but strongly, densely punctate throughout. *Prosternum* feebly convex, the striæ nearly straight, distant behind, gradually convergent and almost contiguous just behind the apical margin. *Anterior tibiæ* very finely serrulate externally. Length 2.8 mm.; width 2.1 mm.

Louisiana (New Orleans).

This species may be readily distinguished from the preceding by the smaller size, narrower form, æneous lustre and finer, sparser sculpture. They both differ from *pectoralis* in the coarser elytral striæ and disposition of the elytral punctures, which in the latter extend forward scarcely more near the suture than laterally.

**S. laramiensis.**—Oblong, the sides broadly arcuate, moderately convex, highly polished, black, the elytra and femora dark rufo-piceous; tibiæ and tarsi rufescent; lustre not metallic. *Head* finely, evenly, rather closely punctate, the marginal stria feebly traceable only at each side of the front; disk with a larger puncture just behind the middle and quite distant from the base. *Prothorax* a little more than twice as wide as long, the sides only feebly convergent near the base, broadly rounded and strongly convergent in apical third; marginal stria fine; punctures sparse but distinct throughout, finer toward the middle, only slightly closer laterally, much coarser near the basal margin. *Elytra* more strongly rounded at basal fourth where they are rather distinctly wider than the prothorax, one-half longer; punctures sparse and visible throughout, becoming gradually rather coarse posteriorly except toward

the sides; marginal stria inferior, distinct from the outer subhumeral at base; inner subhumeral distinct in apical half to two-thirds; oblique humeral deep but rather short; dorsals long, subequal, strong, slightly punctulate, the fourth rather narrowly arched at base, joining the entire sutural. *Pygidia* not very coarsely but deeply and closely punctate. Prosternum slightly convex, the striae rather approximate, variable in length, generally more or less convergent anteriorly. Mesosternum broadly sinuate, rather coarsely but not very densely punctate, the apical stria entire. Anterior tibiae expanded externally toward apex as usual, finely multispinulose. Length 3.0-3.4 mm.; width 2.0-2.25 mm.

Wyoming (Cheyenne). Mr. Soltau.

A fine distinct species, readily known from any other of this group by its oblong form and coloration. It may be placed near *floridæ*, but differs notably in the feebly convex and non-carinate prosternum.

**S. audax.**—Rather broadly oval, convex, black, polished, without metallic lustre. *Head* finely, sparsely punctate, the marginal stria obsolete above the eyes and at apex. *Prothorax* rather more than twice as wide as long; sides strongly convergent and very feebly arcuate, broadly so anteriorly; marginal stria deep, entire; disk finely, sparsely punctulate, rather coarsely and perforately but not densely punctate in a broad area at the sides and unevenly along the base. *Elytra* at basal third slightly wider than the prothorax, two-thirds longer, distinctly wider than long; punctures strong but very sparse, gradually becoming minute to the base throughout the width; marginal stria inferior, nearly straight, the attendant series of punctures strong and close-set; outer subhumeral acutely defined below the humeri, one-fifth the total length; inner represented by a mere short trace behind the middle; oblique humeral very fine and feeble; dorsals fine, broadly arcuate, punctured within, the first extending to apical fourth, two to four evenly, gradually shorter, the fourth ending at the middle, one to three hooked at base, the fourth broadly arched to the sutural which is only distinct in median third of the length; apical stria extending only to the middle of each elytron. *Propygidium* very short, five times as wide as long, strongly, densely punctate, gradually more finely so from apex to base; pygidium large, convex, strongly, closely punctate, the punctures gradually subobsolete toward apex. Prosternum evenly but distinctly convex, with a median fovea at some distance behind the anterior margin, the striae strong, distant, somewhat divergent anteriorly; sides anteriorly deeply foveate. Anterior tibiae finely serrulate. Length 2.9 mm.; width 2.2 mm.

New Jersey.

Greatly resembles *pæminosus*, but differs in the obsolete basal parts of the sutural stria, the shorter second and third dorsals, much less arcuate toward base, more approximate prosternal striae and several other characters.

**S. profusus.**—Broadly oval, strongly convex, highly polished, brilliant metallic bluish-green in color. *Head* nearly flat above, minutely, sparsely punctulate, with a small deep median puncture near the base; marginal striæ entire but not united in front, where they are flexed forward to the middle of the clypeus; transverse clypeal suture sometimes distinct. *Prothorax* scarcely twice as wide as long; sides strongly convergent and nearly straight to apical third, then broadly rounded; marginal stria fine, not quite attaining the base; punctures wanting except sparsely and very narrowly along the basal margin, and in a moderately wide dense area from the apex to basal third at some distance from the lateral margin. *Elytra* nearly as in *pennsylvanicus*, the third dorsal longer, the sutural obsolescent toward base and the posterior punctured area scarcely extending beyond the middle. *Propygidium* coarsely, sparsely punctate; pygidium elongate, gradually attenuate and convex toward apex, rather coarsely but not very densely punctate, with two elongate-oval impunctate subapical areas, separated by a longitudinal carina, broadly impressed toward the sides. *Prosternum* nearly as in *pennsylvanicus*, but with the basal part of the striæ longer, the apical much shorter; mesosternum strongly but sparsely punctate, the apical stria broadly interrupted. *Anterior tibiæ* broad, with three or four strong external teeth. Length 4.0-5.5 mm.; width 3.0-3.8 mm.

Kansas; Colorado; Texas (Galveston).

This species closely resembles *pennsylvanicus*, but may be readily distinguished by the structure of the pygidium, more strongly trapezoidal prothorax, coarser broader and stronger denticulation of the anterior tibiæ, broadly interrupted mesosternal border, less punctate integuments and several other details. From *æneicollis* it differs altogether in the structure of the prosternal striæ and in elytral punctuation. The apical carina of the pygidium is at all times feeble and occasionally becomes obsolete.

**S. socius.**—Oblong-oval, piceous-black, highly polished, only moderately convex. *Head* feebly but densely, subrugosely punctate, the marginal stria obsolete; clypeus rather short and broad. *Prothorax* more than twice as wide as long, the sides broadly, rather strongly arcuate, becoming almost parallel near the base, marginal stria fine, distinct; disk minutely, sparsely punctulate, becoming broadly deeply strongly and densely punctate sublaterally, and narrowly along the basal margin. *Elytra* one-half longer than the prothorax, a little wider, slightly swollen laterally toward base; marginal stria coarse but feeble, inferior, not attaining the middle of the apices; internal subhumeral represented by a short deep stria behind the middle; oblique humeral deep, distinct and straight; four dorsals strong, evenly, feebly arcuate, scarcely punctate, long, almost exactly equal in length and attaining apical third, only slightly hooked at base, the fourth joining the sutural which is distinct to the apex; punctures strong but sparse, extending beyond the middle in the first three interspaces gradually becoming very fine, along the suture not extend-



ing much beyond apical third. *Pygidia* strongly, moderately coarsely, very densely punctate. Prosternum strongly convex but not compressed, the striæ rapidly and strongly ascending; latero-subapical foveæ small but deep, well defined; sides of the mesosternum strongly convergent; apical stria entire. Anterior tibiæ triangular, not very wide, finely but strongly, rather closely serrulo-spinose externally. Length 1.9–2.7 mm.; width 1.4–1.9 mm.

Utah (southwestern). Mr. Weidt.

To be associated with *convexiusculus* and *minutus*, resembling the former in its long dorsal striæ but differing in the disposition of the elytral punctured areas; from *minutus* it differs in its much longer dorsal striæ. Two specimens, differing greatly in size.

**S. lentus.**—Oval, strongly convex, highly polished, black with pronounced aeneous lustre; legs rufescent. *Head* minutely but strongly, closely punctate, with a small but distinct puncture in the middle near the base; marginal striæ obsolete above the eyes. *Prothorax* a little more than twice as wide as long, the sides strongly convergent, broadly, evenly arcuate from base to apex; apical angles narrowly rounded; marginal stria distinct; disk very minutely, sparsely punctulate, gradually more closely anteriorly, abruptly coarsely and very densely punctate near the sides and narrowly along the basal margin. *Elytra* not quite twice as long as the prothorax, and, at basal fourth, much wider, extremely, minutely, sparsely punctulate, somewhat abruptly, rather coarsely and densely punctate behind, from basal two-fifths near the first dorsal, to apical two-fifths near the suture; marginal stria deep, inferior, nearly straight; outer subhumeral distinct, separated from the marginal; oblique humeral coarse and deep, continued at some distance behind by the inner subhumeral, which is short and feeble; dorsals coarse, the first and third equal, extending nearly to apical two-fifths, second and fourth equal but slightly shorter, the latter broadly arched at base joining the entire sutural; transverse apical stria nearly attaining the suture. *Pygidia* finely but deeply, densely and evenly punctate. Prosternum evenly convex, the striæ distinct, rapidly ascending, the foveæ deep; mesosternum finely punctate, sparsely in the middle; apical stria entire, transverse; suture crenato-punctate. Anterior tibiæ with about seven long and very acute, anteriorly inclined, serriform teeth. Length 3.5 mm. width 2.5 mm.

California (Truckee—elevation 6000 ft.).

Allied somewhat to *insertus*, but differing altogether in the punctation of the pronotum and elytra, and in the widely distant and isolated external subhumeral stria.

**S. opacellus.**—Oval, strongly convex, deep black, dull or feebly shining. *Head* rather finely but strongly, very densely punctate, without trace of the subbasal puncture; marginal stria obsolete, not distinct even subapically. *Prothorax* twice as wide as long, trapezoidal; sides moderately arcuate, visibly more so toward apex; marginal stria fine; punctures not very coarse



but deep and dense throughout, gradually scarcely larger but extremely dense and contiguous at the sides, also coarser along the basal margin. *Elytra* at basal fourth quite distinctly wider than the prothorax, not quite twice as long; punctures close throughout, fine near the base, gradually, at about basal third, becoming coarse, very deep, extremely dense and subaciculate to the apex; marginal stria inferior, extending along the apex to the suture; outer subhumeral very close to the marginal but not confluent; oblique humeral fine, generally joining the inner subhumeral, which extends to apical fourth; dorsals moderate, acute externally, punctulate internally, nearly straight, gradually decreasing in length, the first extending to apical third, the fourth to or slightly beyond the middle, abruptly arched at base joining the entire sutural. *Pygidia* rather finely but deeply, extremely densely punctate. Prosternum convex, the striæ remote, rapidly ascending; surface finely, extremely densely and deeply punctate; subapical foveæ deep; mesosternum sparsely punctate, the marginal stria entire. Anterior tibiæ with five or six low broad and oblique serrulations. Length 3.3–3.7 mm.; width 2.3–2.4 mm.

California (Humboldt Co.).

This species is closely allied to *insertus*, but differs greatly in its deep black, less shining, more coarsely and much more densely punctate integuments, and very much in the structure of the anterior tibiæ, which, in *insertus*, are armed externally with a close-set series of long slender erect and spinuliform denticles. In *insertus*, also, the external subhumeral stria is not visible, being perfectly confluent with the marginal stria throughout its length. Three specimens.

**S. cribrum.**—Evenly oval, strongly convex, black, the legs just visibly picescent; lustre moderately shining, the narrow interspaces between the punctures polished. *Head* finely but strongly, very densely punctate, the marginal stria feebly traceable at each side of the epistoma, which is much wider than long. *Prothorax* rather more than twice as wide as long, the sides not fimbriate, strongly convergent and feebly, almost evenly arcuate from base to apex; marginal stria fine; disk rather coarsely deeply and very densely punctate throughout, the punctures separated by nearly their own diameters toward the middle. *Elytra* nearly as long as wide, three-fourths longer than the prothorax, and, at basal fourth, but little wider; sides broadly, evenly arcuate; disk rather coarsely, very deeply and densely punctate, the punctures longitudinally subcoalescent except near the scutellum; marginal stria strongly inferior, almost straight, continued along the apex to the middle of each elytron; outer subhumeral almost obsolete but distinct from the marginal; inner subhumeral represented by a short stria behind the middle; oblique humeral distinct; dorsals coarse but scarcely at all punctate, only very feebly arcuate, the first extending to apical fourth, the fourth to apical third, the latter abruptly, transversely hooked at base nearly to the scutellum; sutural obsolete in basal fourth, almost attaining the apex. *Propygidium*

very short, finely closely punctate, feebly subcarinate in the middle; pygidium large, vertical, feebly convex, a little more coarsely and very densely punctate. Prosternum transversely convex, finely, feebly punctate, the striae only distinct at the sides anteriorly; foveæ deep. Mesosternum feebly sinuate, more coarsely but not very densely punctate; apical stria entire. Anterior tibiae with six or seven acute triangular external spines. Length 3.3 mm.; width 2.4 mm.

Wyoming (Cheyenne).

Also related to *insertus* and especially *opacellus*, but differing in the still coarser sculpture and in the obliterated basal part of the sutural stria.

**S. detractus.**—Rather broadly oval, strongly convex, black, polished. *Head* finely, closely punctate, the marginal stria feeble but long and oblique subapically, obliterated near the base. *Prothorax* more than twice as wide as long; sides very strongly convergent, feebly arcuate, more so near the apex; marginal stria distinct; disk rather finely but deeply and conspicuously—though sparsely—punctate, the punctures not distinctly larger but rather dense near the sides, a little coarser near the base only in the middle. *Elytra* three-fourths longer than the prothorax, and, at basal fourth, quite distinctly wider, finely, remotely punctulate toward base, gradually rather coarsely, deeply but sparsely punctate in apical two-thirds near the suture, to apical fourth near the end of the second dorsal; marginal stria inferior, extending along the apex to the middle of each elytron; outer subhumeral scarcely distinct from the marginal; oblique humeral with one or two uneven internal appendages; inner subhumeral represented by a short stria behind the middle; dorsals strong, feebly arcuate, slightly crenulate internally, the first three extending to about apical third, the fourth scarcely behind the middle, broadly hooked at base to the suture, the sutural stria only distinct in median third. *Pygidia* rather finely deeply and densely punctate. *Sterna* minutely and remotely punctulate, the prosternum broadly convex, the striae remote, strongly ascending, the foveæ distinct; mesosternal stria fine but entire at apex; transverse suture strongly crenato-punctate. Anterior tibiae with seven or eight small close-set and acute, spiniform teeth. Length 2.2–2.6 mm.; width 1.7–1.9 mm.

Colorado; Kansas.

Allied to *laridus*, differing greatly however in its more broadly oval form and minute punctulation of the mesosternum, this being coarsely and conspicuously punctate in *laridus*; the latter species, in addition, has the outer subhumeral stria widely separated from the marginal. Each elytron seems to have an obsolete impression in the middle near the sutural stria. One specimen has the first dorsal stria very short, abbreviated at the middle on both sides of the body; it is simply a deformity however. My first specimen

was picked up in the streets of Denver, during a casual visit some years ago, and it has since been taken by Mr. Wickham at Greeley.

**S. contractus.**—Narrowly oblong-oval, moderately convex, highly polished, piceous-black, with a very feeble æneous lustre. *Head* finely, closely punctate, the punctures rather rugose anteriorly; marginal stria wholly obsolete; antennal emarginations bisinuate. *Prothorax* a little more than twice as wide as long, the sides feebly convergent and arcuate near the base but becoming more so near the apex; marginal stria fine, feeble; disk finely but strongly and remotely punctate, the punctures less remote anteriorly and distinctly closer but not dense and not much larger near the sides, coarser at base near the middle. *Elytra* three-fourths longer than the prothorax and slightly wider at basal fourth, strongly, remotely but not very coarsely punctate, the punctures distinct at base, becoming gradually less remote and somewhat larger toward apex; marginal stria fine, gradually evanescent along the apex; outer subhumeral fine but distinctly diverging from the marginal; oblique humeral feeble; inner subhumeral rather long, oblique and uneven; dorsals somewhat fine, distinctly but finely punctate, subequal, extending to about the middle, the third slightly, fourth broadly, hooked at base, the latter not extending to the middle, sutural altogether untraceable in basal third. *Pygidia* very finely, extremely densely punctate. Prosternum evenly but strongly convex, the striæ rather approximate behind, rapidly ascending, the parallel apical parts twice as distant as the basal; foveæ elongate and feeble. Anterior tibiæ finely, closely serrato-spinulose externally. Length 2.0 mm.; width 1.4 mm.

Arizona (Tuçson).

The single specimen before me represents a species which is also allied to *laridus*, but distinguishable readily by its sparser and coarser punctuation, more approximate basal part of the prosternal striæ, and by the longer sutural stria, which fully attains the apical angles; it also differs in its stronger and rather denser sculpture of the pygidium.

**S. intritus.**—Stout, oblong-oval, convex, dull, black, the legs dark rufotestaceous. *Head* strongly, densely punctato-rugose, the clypeus still more densely and finely; margins of the front near the clypeus almost transverse; marginal stria obsolete. *Prothorax* a little more than twice as wide as long; sides feebly convergent and slightly arcuate, gradually much more convergent and broadly arcuate beyond the middle; marginal setæ short; lateral margin broadly arched throughout the length when viewed laterally; stria fine, distinct; disk strongly, rather densely punctate throughout, the punctures finer toward the middle, extremely dense and somewhat rugose toward the sides. *Elytra* somewhat prominent at the sides near the base and slightly wider than the prothorax, one-half longer, much wider than long; lateral stria inferior, coarse, straight, fine along the apex to the suture; outer subhumeral distinct,

distant from the lateral; oblique humeral fine; inner subhumeral isolated, short, strongly oblique, at about the middle; dorsals rather fine, acute externally, finely punctate within, one to three gradually longer, the first extending about to the middle, the third to apical third, fourth shorter, extending slightly behind the middle, broadly arched at base, joining the entire but fine sutural; disk strongly, distinctly punctate throughout, the punctures small and sparse near the scutellum, gradually coarse dense and aciculate behind. *Pygidia* not coarsely but deeply, extremely densely punctate. Prosternum acutely compresso-carinate, the striæ fine, ascending, abbreviated behind the foveæ which are very small. Anterior tibiæ multispinulose externally, the spinules erect and short. Length 3.5 mm.; width 2.6 mm.

California (San Diego).

This fine species is allied to *vestitus*, but is larger and blacker, with the punctuation coarser and denser, and the integuments still more opaque throughout. The prosternal striæ are shorter and abbreviated far behind the foveæ, and the surface is more acute and compressed than in *vestitus*; in the latter, also, the apical stria of the elytra is abbreviated at outer third or fourth, and the punctures of the elytra become abruptly fine and excessively dense broadly along the apex.

**S. impunctellus.**—Broadly oblong-oval, strongly convex, polished, black, without æneous lustre. *Head* impunctate, arcuately and unevenly eroded anteriorly, surrounded at the sides and apex by a deep groove and beaded edge, rectangular at the sides. *Prothorax* twice as wide as long, the sides rather strongly convergent and nearly straight to apical third, then gradually broadly rounded to the obtuse apical angles; marginal groove deep, distinct throughout the apex; disk feebly and not densely punctato-rugulose, smooth in the middle except toward apex, coarsely closely and deeply punctate along the base. *Elytra* distinctly wider and three-fourths longer than the prothorax, completely devoid of all trace of punctuation at any part; marginal stria deep, not coarse, abruptly abbreviated at outer third of the apex; outer subhumeral fine, distant from the marginal; striæ throughout as in *sphæroides*, except that the fourth is distinctly shorter than the third, the sutural broadly interrupted near the apex. *Propygidium* transversely bi-impressed and subimpunctate in basal half, the punctures apically very fine, dense; pygidium very finely, evenly, not densely punctate. Prosternum with the two almost entire approximate striæ rapidly divergent behind; lateral convergent carinæ strong, the subapical foveæ deep, rounded; mesosternum finely, sparsely punctate, the apical stria deep, entire; transverse suture punctate; metasternum with a clearly limited, transverse, strongly and confusedly punctured band posteriorly. Length 4.2 mm.; width 3.0 mm.

Indiana.

In general form and structure this species is a close ally of *sphæroides*, but it differs greatly, not only in its larger size and wholly



impunctate elytra, but in the more strongly margined front and very radically in the serrulation of the anterior tibiæ, which in the present species have about six strong triangular external teeth, increasing in size and prominence toward apex; in *sphæroides* the teeth become broader and almost obsolete toward apex. The mesosternum in the form alluded to is much more coarsely and closely punctured.

**S. laxatus.**—Oblong-oval, convex, polished, black, without æneous lustre. *Head* impunctate, strongly margined at the sides and apex, the lateral angles right; surface with a feeble and unevenly eroded chevron, ending behind in the subbasal puncture which is visible in many other unrelated species. *Prothorax* barely twice as wide as long, the sides rather strongly convergent, very feebly and evenly arcuate from base to the apical angles, which are broadly, transversely rounded; margin strongly striate, feebly sigmoid viewed laterally, distinct along the apex; disk very feebly sparsely obliquely and subrugosely punctate, the lateral margin rather broadly smooth posteriorly; central parts broadly smooth and unsculptured; basal margin closely coarsely and deeply punctate. *Elytra* throughout nearly as in *fraternus*, except that the outer subhumeral is more distinct from the marginal stria, the fourth dorsal a little shorter, the sutural wholly obsolete just behind the middle and not even traceable further, and the punctures of the posterior area finer and very much less dense. *Propygidium* feebly impressed and subimpunctate throughout the width in basal half, with a median cariniform interruption, finely, closely punctate posteriorly; pygidium very finely, sparsely punctate, closely so near the sides anteriorly. Prosternal striae abbreviated at apical third, gradually divergent throughout posteriorly, more rapidly behind; lateral converging carinae very strong, arcuate; subapical foveæ small, deep; mesosternum minutely, remotely punctulate, the apical stria entire. Anterior tibiæ with five or six erect subacute teeth, becoming much stronger, though still longer than wide, toward apex. Length 3.9 mm.; width 2.8 mm.

Florida.

Allied closely to *fraternus*, but a little larger than the largest of that species, with finer, much less dense elytral punctures and stronger but less numerous external denticles of the anterior tibiæ. In *fraternus* the sutural stria can always be distinctly traced to the apex.

**S. propensus.**—Oblong-oval, convex, polished, dark piceo-rufous, the legs paler. *Head* distinctly margined at the sides and front, scarcely at all punctate, but with a transversely arcuate subapical line. *Prothorax* twice as wide as long, the sides moderately convergent, broadly, feebly arcuate; disk sculptured almost exactly as in *lucidulus*. *Elytra* slightly wider and one-half longer than the prothorax; lateral stria distinct and broadly arcuate; outer subhumeral not visible; oblique humeral coarse; inner subhumeral distinct,



very oblique; dorsals distinct, the first extending almost to the apex, arcuate behind, two to four abbreviated far behind the middle, the latter arched at base, joining the sutural which is entire but faint; punctures not fine but sparse and very shallow, extending, near the suture, fully to basal fourth. *Pygidia* rather finely, very densely and somewhat unevenly punctate. Prosternal striæ as in *lucidulus*. Anterior tibiæ with three very large external teeth. Length 1.9 mm.; width 1.4 mm.

California (San Diego).

This species greatly resembles a very small *lucidulus*, but is distinguishable at once by its small size and by the elytral punctured area advancing well toward the base. Both this species and the next differ radically from *lucidulus* in having the pronotal hypomera feebly inflexed, almost horizontal, coarsely, densely punctured and clothed with long coarse pubescence which bristles also along the sides. In *lucidulus* the hypomera are strongly inflexed, smooth and glabrous.

**S. servilis.**—Oval, strongly convex, polished, rufo-piceous in color. *Head* impunctate, with an arcuate subapical transverse line, strongly margined at the sides and apex; clypeus feebly sculptured. *Prothorax* about twice as wide as long, the sides strongly convergent and broadly arcuate from base to apex; marginal stria strong; disk sparsely, rather finely but strongly punctate toward the sides and apex, broadly impunctate behind the middle, moderately punctate along the base; punctures only feebly rugiform. *Elytra* near the base slightly wider than the prothorax, barely one-half longer, the punctures fine, sparse, not entering any of the interstriæ; extending near the suture about to basal third; external stria strong, arcuate toward base; outer subhumeral wanting; inner feeble, oblique, separated from the oblique humeral, which is strong; dorsals distinct, the first nearly attaining the apex but becoming fragmentary and feeble behind, second to fourth abbreviated at the middle, the latter broadly arched at base, joining the sutural which is entire but fine. *Pygidia* not coarsely but deeply and rather closely punctate. Prosternal striæ nearly as in *lucidulus*. Anterior tibiæ strongly tridentate, with some long distant hairs externally toward base, and a fringe of very long close-set hairs internally toward apex; anterior femora with a lower fringe of long broad flattened hairs. Length 2.0 mm.; width 1.4 mm.

Texas (Galveston).

Allied to the preceding, but readily distinguishable by its finer and sparser punctuation, longer prothorax with more convergent sides, shorter elytral striæ, more evenly oval and less oblong form and many other characters. The three large teeth of the anterior tibiæ in this and the preceding species are formed principally by enormous inset spines, shortened and broadly rounded at tip. In

both of these species the spines of the intermediate and posterior tibiæ are nearly as in *lucidulus* but less close-set.

The anterior tarsi are peculiarly modified in this and possibly allied species, the first four joints each having beneath a long thin transparent and spatuliform appendage; this is a common character also in the American species of *Pachylopus*.

#### ACRITUS Lec.

The following species belongs near *floridæ*, but differs in having a distinct scutellum, of which there is no trace whatever in the latter:—

**A. cælator** n. sp.—Oval, moderately convex, polished, piceous-black. *Head* finely, sparsely punctulate, more distinctly so on the large epistoma. *Prothorax* but little more than twice as wide as long, the sides broadly arcuate and convergent from base to apex; marginal stria very fine, continuous along the apex; punctures fine and rather sparse, the disk with a transverse line of punctures near the base, obsolete at lateral sixth, abruptly and anteriorly arched in less than median third. Scutellum equilateral, small. *Elytra* a little wider than the prothorax and about twice as long, evenly rounded at the sides, the apex truncate, three-fifths of the maximum width; inflexed flanks with a fine strong and entire stria; disk without trace of striæ; punctures fine, sparse, those toward apex each with an anterior striiform prolongation. *Propygidium* minutely, sparsely punctulate; pygidium not distinctly punctulate. Prosternum nearly twice as long as its median interstitial width, the striæ about equally and strongly divergent toward base and apex; metasternum large, finely, sparsely punctate, without lateral striæ, the post-mesocoxal plate rounded behind. *Legs* slender; anterior tibiæ not dilated. Length 0.9 mm.; width rather less than 0.7 mm.

#### Indiana?

A single specimen from the Levette cabinet. The species differs from *floridæ* in its rather more narrowly oval form, and from all other species most closely allied, in the strong anterior arcuation of the transverse chain of pronotal punctures. In the position and extent of the antennal fossæ and structure of the anterior tibiæ, as well as prosternal and elytral structure, this genus is wholly different from *Bacanius*. In the latter the antennal fossæ are not at all defined, the antennæ being merely protected under the folded legs in the very large crural excavations.

I have before me several specimens from the Catskill Mts., New York, which seem to be referable to *cribripennis* Mars.; the elytra are more inflated toward base than in *exiguus*, and, if the identification is correct, the two forms are specifically distinct.

**PLEGADERUS** Erichs.

This is one of the most peculiar genera of the Histeridæ, although there are many singular forms which at first sight appear to be more isolated; it is generally found however, that the divergence in these cases is less real than apparent, the external organs and appendages of the body merely being specialized in various directions. Here there is a radical difference in the formation of one of the most important of the fundamental segments of the body, probably accompanied by corresponding modification of the internal anatomy. The division of the prothorax into two transverse lobes is met with in some other widely separated groups, such as the Paussidæ, but in the present family all forms leading up to or foretelling this peculiarity have seemingly disappeared, so that it is scarcely possible to reason upon its true etiological significance.<sup>1</sup>

The deep diverging fossæ of the prosternum are obviously an extreme development of the usual prosternal striæ, but the transverse excavation uniting them is, as far as known to me, without any suggestion of parallelism in the entire family. I dwell with some emphasis upon this character because it has never been given the weight which apparently belongs to it. The genus should in fact be separated rather widely from those with which it is now associated.

The species are moderately numerous in the United States, and may be distinguished by the following table:—

Anterior prosternal lobe longer than wide, more or less acutely rounded behind, and strongly and rather closely punctate; punctures of the elytra rounded and not longitudinally confluent; transverse pronotal sulcus always deep and conspicuous.

Punctures of the elytra not very dense, distinctly separated; apical lobe of the pronotum much shorter than the basal.

Margin of the pronotum broad, less convex.

Meso-metasternal plate densely, coarsely punctate.....**sayi** Mars.

Meso-metasternal plate more finely and sparsely punctate.

**consors** Horn.

Margin of the pronotum narrower and more convex; entire body narrower and less depressed, piceous-brown, polished, sparsely and coarsely sculptured.....**fraternus** Horn.

<sup>1</sup> The transverse row of prosternal foveæ in *Glymma* does not bear much resemblance to the division in *Plegaderus*, for there is no sign of a division upon the dorsal surface. *Glymma* should probably be referred to the *Histrini*, the foveæ being the delimiting line of the prosternal lobe.

Punctures of the elytra extremely dense, very narrowly separated.

Prosternal grooves narrow behind, the intermediate posterior lobe wide and distinct; elytral punctures small; pronotum less unequally divided.

**rigidus** n. sp.

Prosternal grooves very wide behind, the enclosed posterior lobe minute, compressed and subcariniform.

Pronotum closely punctate throughout, only a little more finely so anteriorly; lateral margins broad.....**cribratus** n. sp.

Pronotum finely, closely punctate anteriorly, coarsely and much more sparsely so behind; lateral margins narrower.....**molestus** n. sp.

Anterior prosternal lobe large but shorter and broader, not quite as long as wide, very remotely punctate; posterior lobe minute and subobsolete; elytral punctures longitudinally confluent; sulcus deep.

**transversus** Say.

Anterior lobe very small, wider than long, the posterior almost obsolete.

Pronotum with the transverse line distinct throughout; dorsal punctuation fine and remote; larger species .....**nitidus** Horn.

Pronotum with the transverse sulcus almost completely obliterated; sculpture coarse and not dense; size very small.....**barbelini** Mars.

Of *sayi* and *consors* I have single examples, taken in Indiana and Arizona respectively, of *fraternus* a large series taken in various localities in California. *Transversus* occurred abundantly, and *barbelini* in smaller number, under the bark of undecomposed stumps at Houston, Texas, the former also at Asheville, North Carolina. My small series of *nitidus* is from Siskiyou, El Dorado and San Diego, California, the single example from San Diego, given me by Mr. Dunn, not differing in any way from the others.

**P. rigidus.**—Narrowly oblong-oval, moderately convex, shining, black, the pronotum feebly picescent; legs and antennal club pale; all the punctures bearing minute setæ. *Head* finely, somewhat closely punctate; front only very feebly concave. *Prothorax* two-fifths wider than long; sides subparallel, broadly rounded and feebly convergent toward apex, broadly sinuato-parallel in basal half; lateral groove deep, entire; marginal space rather wide, somewhat feebly convex, strongly, densely punctate; transverse sulcus deep, the segments convex, the anterior only slightly, though distinctly, shorter than the posterior, equally finely, deeply punctate, the anterior rather closely, the posterior a little more sparsely. *Elytra* feebly inflated toward base, quite distinctly wider than the prothorax and one-half longer, not very coarsely but strongly and very closely punctate, with two short feeble and oblique basal striæ externally; suture elevated except near the scutellum; inflexed flanks devoid of stria or carina. *Pygidia* rather finely but strongly, very densely punctate, the propygidium less densely so; punctures distinctly setulose. Under surface coarsely, rather closely punctate throughout; posterior lobe



of the prosternum a little longer than wide, large, distinct, subtruncate anteriorly. Mesosternum triimpressed between the coxæ, the oblique groove of the metasternum fine and striiform. Anterior tibiæ dilated and thinner externally toward apex. Length 1.25 mm.; width 0.7 mm.

Utah (southwestern).

Readily distinguishable from the two following species by the narrower form, finer sculpture, prosternal structure, and less unequally divided pronotum. A single specimen, recently taken by Mr. C. J. Weidt.

**P. cribratus.**—Somewhat broadly oblong-oval, moderately convex, shining, black, the prothorax scarcely perceptibly picescent; punctures extremely minutely setigerous. *Head* strongly, closely punctate, the supra-antennal prominences feeble. *Prothorax* nearly one-half wider than long, the sides parallel and feebly sinuate to apical third, there broadly rounded to the apex; marginal stria strong and sinuate toward base; inner marginal strong, straight, flexed outward at base; interspace broad and feebly convex anteriorly, strongly, densely punctate; discal sulcus strong, the segments convex, the anterior three-fourths as long as the posterior, both deeply, closely punctate. Scutellum small, triangular. *Elytra* not quite as long as wide, rather abruptly tumid at the sides behind the humeri and slightly wider than the prothorax, about one-half longer, the oblique basal striæ feeble; punctures rather coarse and very dense; suture distinctly, acutely elevated; inflexed flanks deep but not modified, the lower margin broadly angulate. *Pygidia* strongly, closely punctate, the propygidium less densely so. Under surface coarsely, densely punctate, the punctures more or less longitudinally subconfluent. Hypomera deeply impressed internally, the subapical internal emargination broadly rounded. Posterior lobe of the prosternum very small, narrow, feebly punctulate, tuberculiform and compressed; median line of the mesosternum feebly impressed. Length 1.4 mm.; width 0.85 mm.

Colorado.

This distinct species may be known at once by its dense cribrate sculpture and small posterior lobe of the prosternum.

**P. molestus.**—Rather broadly oblong-oval and convex, polished, dark piceous-brown, the prothorax dark rufous; legs and antennal club pale. *Head* finely but strongly, moderately closely punctate, the antennal prominences rather feeble. *Prothorax* about one-half wider than long, the sides subparallel and feebly sinuate in basal two-thirds, then broadly arcuate and convergent to the truncate apex; inner lateral groove strong, the marginal surface rather narrow, convex, strongly and closely punctate, becoming almost obsolete at base between the widely expanded marginal and lateral grooves; discal sulcus very deep, the segments convex, the anterior rather more than three-fourths as long as the posterior, finely but strongly, evenly and closely punctate, the posterior rather sparsely and unevenly so, the punctures much



coarser near the base. *Elytra* distinctly shorter than wide, broadly, evenly inflated and rounded at the sides toward base, distinctly wider than the prothorax but scarcely one-half longer; oblique basal striæ very short but deeply eroded; suture acutely elevated; inflexed flanks not striate; punctures coarse, circular, deep, perforate, separated by rather less than their own widths. *Pygidia* somewhat coarsely and closely punctate throughout. Under surface very coarsely, rather closely but not confluent punctate; hypomera coarsely, deeply concave; posterior lobe of the prosternum very small, rather feeble, tuberculiform, bearing a few rather long setiform hairs. *Legs* short; anterior tibiae somewhat abruptly dilated, externally rounded and with seven or eight short erect acuminate spicules in apical two-fifths. Length 1.2–1.3 mm.; width 0.7–0.75 mm.

California (Lake Tahoe).

The dense cribrate sculpture and minute posterior lobe of the prosternum will enable one to separate this species at once from *fraternus*, which occurs abundantly in the same region, and, from *cribratus*, it may be readily known by its smaller size, shorter elytra—more rounded at the sides and more rapidly narrowed behind,—more narrowly margined and more unevenly sculptured pronotum, pale coloration and several other characters.

#### PARNIDÆ.

The Parnidæ are closely related to the Heteroceridæ, and those genera allied to *Dryops* display, in addition, an unmistakable affinity with the Elateridæ. Their life habits are so obscure that probably only a somewhat small proportion of the species are known at present, and the number of genera is very large in proportion to the species.

#### PSEPHIENUS Hald.

The species known to me may be arranged as follows:—

Impression of the head not longitudinally divided; elytra uniform in coloration.

Sides of the prothorax strongly convergent, the apex not more than one-half as wide as the base; antennæ longer (*trentonensis* Zimm.).

**lecontei** Lec.

Sides of the prothorax feebly convergent, the apex much wider, two-thirds to three-fourths as wide as the base.

Sides of the prothorax broadly rounded and subparallel toward base, more convergent and nearly straight anteriorly.....**falli** n. sp.

Sides evenly and feebly arcuate from base to apex... **veluticollis** n. sp.  
Impression of the head longitudinally divided; elytra pale at base.

**haldemani** Horn.

The characters of *haldemani* are taken from the original description.

**Ps. falli.**—Rather depressed, subcuneate, wider behind, black, the second antennal joint paler; legs scarcely paler; integuments feebly shining, very finely, closely sculptured, the pronotal punctures fine, obscure, those of the elytra more distinct; vestiture dense, consisting of very small coarse dense and decumbent silvery hairs, intermixed with short stiff and sparser erect setæ. *Head* one-half as wide as the pronotal base, the eyes very convex and prominent; front broadly, evenly concave; antennæ as long as the head and prothorax, the two basal joints thicker, the first much longer than the second, remaining joints subequal in thickness, except the sixth which is just visibly larger, outer joints gradually shorter and a little more closely united; maxillary palpi long. *Prothorax* nearly twice as wide as long, the apex truncate, two-thirds as wide as the base, the latter transverse, deeply and evenly bisinuate; basal angles not rounded, directed posteriorly, less lateral than the sides at basal fourth where the width is greatest; disk convex toward the middle, even. *Scutellum* nearly as long as wide, rounded, pubescent. *Elytra* at base as wide as the prothorax, much wider behind, nearly three times as long, one-half longer than wide; humeri slightly rounded to the thoracic angles; disk feebly and rather broadly elevated along the suture, somewhat tumid near the base, the humeri prominent; impressed lines feebly traceable posteriorly. *Legs* moderate; femora stout; tibiæ slender, finely carinate externally, the carina becoming broader and feeble, glabrous and longitudinally, feebly strigilate toward apex; tarsi slender, moderate in length. Length 3.8 mm.; width 1.9 mm.

California (Los Angeles Co.).

The trochantin of the anterior coxæ is very large, nearly as wide as the entire coxa. The type is a male and I have not seen the female.

This species was recently alluded to by Mr. Fall as having been identified by me under the name *lecontei*. Since remounting the single specimen, however, I find that it cannot be referred to *lecontei*, and take pleasure in giving it the name announced above.

**Ps. veluticollis.**—Moderately depressed, suboblong, feebly inflated behind, rather shining though finely, closely punctulate, black throughout, the legs only slightly paler; pronotal punctures rather strong and dense anteriorly, becoming finer and sparse behind, sparse, fine and uneven on the elytra. *Head* small, scarcely one-half as wide as the pronotal base; eyes convex; frontal impression prolonged backward along the median line; antennæ about as long as the head and prothorax, the basal joint nearly twice as long

as wide, second but slightly wider and a little shorter than the third, remaining joints equal in width, feebly subserrate, slightly smaller and closer toward apex; maxillary palpi well developed, the last joint subsecuriform, rounded at apex, deeply canaliculate along the under surface at the cariniform outer edge throughout the length. *Prothorax* twice as wide as long, the apex fully two-thirds as wide as the base, the latter broadly, strongly bisinuate; disk widest at the basal angles, convex toward the middle, the lateral edges narrowly reflexed. Scutellum a little wider than long, opaque, impressed. *Elytra* one-third longer than wide, broadly rounded behind, debiscent at apex, broadly impressed in the middle, and obliquely from the humeri, to beyond the middle, with feeble traces of impressed lines. *Legs* rather short; femora stout; tibiae finely carinate externally; tarsi slender, glabrous; claws moderate, strongly arcuate, with an internal dentiform swelling near the base. Length 3.8-4.8 mm.; width 2.0-2.7 mm.

California (Mendocino Co.).

I obtained a small colony of this species, almost motionless on the under surface of a stone near a running brook. The description is drawn from the male, the female being larger, with the pronotum dense and opaque velvety-black, the maxillary palpi much less developed, the last joint being small, obliquely oval, with the apex glabrous and polished, and the abdomen having only six segments. The shape of the prothorax is altogether different from that of *falli*, and the sexual differences in the palpi are remarkable, though probably more or less similar throughout the genus.

### LUTROCHUS Erichs.

Our two species, both of which have long been known in collections, may be distinguished as follows:—

Smaller, less elongate, the vestiture yellowish. Head small, not more than one-half as wide as the thoracic base. Sides of the prothorax more convergent from base to apex. Scutellum smaller, but slightly wider than long.

#### ***luteus* Lec.**

More elongate-oval, the elytra acute and slightly prominent at apex; pubescence darker. Head large, fully two-thirds as wide as the thoracic base. Prothorax much more than twice as wide as long, the apex only slightly narrower than the base; sides just visibly convergent from base to apex, slightly arcuate; disk broadly convex. Scutellum one-half wider than long, broadly ogival behind, very broadly arcuate at base. Remaining characters nearly as in *luteus*. Length 2.9-3.6 mm.; width 1.6-2.0 mm. Michigan.....***laticeps* n. sp.**

*Laticeps* is represented by a large series; it is closely allied to *luteus* but must be regarded as distinct.

Certain features of the under surface of this genus are suggestive of the Histeridæ. The glabrous intermediate tibiæ and tarsi do not seem to have been referred to in the books.

### PELONOMUS Erichs.

The species of this genus are few in number; the one described below is closely allied to *obscurus*, but is shorter, broader and paler in color.

**P. rufescens** n. sp.—Dark red-brown, stout, convex, densely clothed with very short coarse hairs and less densely with longer erect setæ, the punctures fine but strong, extremely dense on the head and pronotum, less dense on the elytra, the latter with very feeble longitudinal impressed lines. *Head* two-thirds as wide as the pronotal base; eyes large, convex and prominent, densely setose; antennæ nearly as in *obscurus*. *Prothorax* one-half wider than long, the sides feebly convergent from base to apex, broadly, feebly arcuate, just visibly sinuate near the basal and apical angles, the latter acute and anteriorly prominent; disk evenly, rather strongly convex; apex subtruncate, the base broadly, strongly bisinuate and also emarginate at the scutellum. Scutellum transverse, obtusely angulate behind. *Elytra* barely twice as long as wide, a little more than three times as long as the prothorax, acutely ogival behind, the suture broadly and feebly impressed on the posterior declivity. Under surface paler, the three pairs of coxæ separated by exactly the same distance. *Legs* moderate, the tibial spurs short, stout, widely separated; tarsi slender, the posterior two-thirds as long as the tibiæ. Length 5.5–6.3 mm.; width 2.3–2.5 mm.

Florida.

Readily separable from *obscurus* by the more obese form, more widely separated middle coxæ, more transverse and much more broadly angulate scutellum, and by the very narrow and not broadly angulate apical prosternal fissure behind the eyes. The type is a female; the male has the last joint of the anterior tarsi very feebly dilated but scarcely as strongly so as in *obscurus*.

### OBERONUS n. gen.

Eyes, palpi and general structure nearly as in *Pelonomus*. Intermediate coxæ large, subglobular, contiguous, the metasternum forming an acutely elevated transverse and feebly arcuate ridge behind them, the mesosternum a transversely tumid, deeply and anteriorly excavated process before.

**O. obesus** n. sp.—Broadly oblong-oval, convex, black; palpi, tibiæ, tarsi and abdomen toward apex rufescent, densely clothed with very short stiff



silvery hairs and long erect setæ; punctures fine but strong, very dense on the pronotum, smaller and much sparser on the elytra, the latter rather shining and with feebly impressed longitudinal lines. Head three-fifths as wide as the pronotal disk; eyes large, prominent, densely pubescent; antennæ closely approximate, nearly as in *Pelonomus*; last joint of the maxillary palpi nearly twice as long as the third, slender, subfusiform, slightly thicker beyond than behind the middle, acuminate toward apex. *Prothorax* two-fifths wider than long, the sides very feebly convergent from base to apex, feebly arcuate, straight near the basal angles, broadly, strongly sinuate near the apical, the latter acute and obliquely, anteriorly prominent; apex truncate; base transverse, deeply bisinuate, emarginate at the scutellum; disk evenly convex, the side-margins acute. Scutellum well developed, a little wider than long, rounded anteriorly, strongly angulate behind. *Elytra* three-fourths longer than wide, barely three times as long as the prothorax, gradually feebly inflated behind, at base as wide as the prothorax; apex broadly, obtusely ogival; disk declivous behind. *Prosternum* greatly developed before the coxæ, broadly arcuate, the sublateral fissures behind the eyes open but short, triangular; coxæ rather widely separated, the process obtusely acuminate, carinate along the middle, received in the deep mesosternal aperture. *Legs* short; femora stout, densely pubescent; tibiæ and tarsi more sparsely clothed with longer flying hairs; tibial spurs small, remote; posterior tarsi two-thirds as long as the tibiæ, nearly as in *Pelonomus*. Length 5.3 mm.; width 2.5 mm.

Tennessee (Memphis). Mr. Soltau.

The structure of the intermediate coxæ and of the adjoining parts of the metasternum is so radically different from *Pelonomus*, that I am forced to separate this species generically, although its facies is completely that of *Pelonomus*. The type is a male, having the last joint of the anterior tarsi dilated, more broadly than in *Pelonomus*, gradually more inflated toward base and with its under surface sensitive, though only feebly pubescent.

#### **NARPUS** n. gen.

Body narrow, convex, the elytra striato-punctate. Head received rather deeply in the prothorax, the eyes moderately large, nude, distant, somewhat coarsely faceted; antennæ widely distant, inserted in foveæ adjacent to the eyes; epistoma large, feebly trapezoidal with the angles rounded, the apex broadly sinuato-truncate; suture fine, straight; antennæ and oral organs missing in the type. *Prothorax* long, the pronotum very declivous at the sides, almost vertical toward apex, without sublateral line, the margin acute, narrowly reflexed; hypomera only inflexed very slightly beyond the vertical, wide, the inner margin wide and thickened, still more so



at the coxæ, which are transversely oval, furnished with a distinct external trochantin, and separated by a little less than their own width, the process gradually narrowed posteriorly, flat, obtusely rounded behind, the sides continued forward along the well developed prosternum to the anterior margin by diverging straight ridges; apical lobe short, broadly rounded and deflexed. Intermediate coxæ very remote, the mesosternum with a shallow median pit which receives the apex of the prosternal process. Posterior coxæ transverse, the upper margin not at all lamelliform, separated by about one-half the meso-coxal interval. Metasternum large, the parapleuræ narrow, parallel. Abdomen with five subequal segments, the fifth a little longer, the third and especially the fourth suture strongly flexed posteriorly at the sides. Legs slender, moderately long; tarsi very long, the posterior about as long as the tibiæ, with the four basal joints elongate, the fifth slightly longer than the two preceding combined; claws long, arcuate; tibial spurs small, remote.

This interesting genus is founded upon a single example, which I found dead and mutilated some years ago. It should be placed near *Dryops*, and differs in having raised prosternal lines, in its much longer prosternum and distinct epipleuræ; the latter are distinctly defined but narrow, not quite attaining the elytral apex and gradually slightly wider toward base.

**N. angustus** n. sp.—Slender, very convex, black, the tarsi paler; integuments shining, sparsely clothed with rather long coarse and decumbent silvery pubescence. *Head* only slightly visible from above. *Prothorax* nearly as long as wide, the sides feebly convergent and slightly arcuate from base to apex, the latter broadly arcuate, advanced beyond the greatly deflexed apical angles, which are acute and slightly prominent; base closely fitted to the elytra, transverse, broadly evenly and feebly bisinuate, not at all emarginate at the scutellum, the angles acute but not exposed; disk very convex, greatly declivous laterally, transversely biimpressed near the middle before the base, not very coarsely but deeply, perforately punctate, the punctures very dense laterally but well separated toward the middle. *Scutellum* moderate, as long as wide, ogival behind, parallel toward base, the latter truncate. *Elytra* very slightly inflated behind the middle, rather more than twice as long as wide, nearly one-third wider than the prothorax and scarcely three times as long, acutely triangular behind in apical third; humeri somewhat broadly rounded to the prothorax; disk gradually feebly declivous behind, with nine narrow but strong, even, coarsely and approximately punctate striæ, the intervals nearly flat, minutely, confusedly, not densely punctulate. Length 3.0 mm.; width 1.2 mm

California (Mendocino Co.).

The small size, narrow form and complete absence of any scutellar modification of the basal lobe of the pronotum, will readily distinguish this species from any *Dryops* known to our fauna.

## ELATERIDÆ.

### AL AUS Esch.

**A. zunianus** n. sp.—Elongate, very convex, shining, black throughout, the upper surface with sparse patches of dense yellowish-white squamiform pubescence; vestiture elsewhere less dense, black; integuments finely closely and distinctly punctate, the punctures larger on the prothorax, becoming coarse and very dense anteriorly, the elytra with series of small but strong, close-set punctures, the two or three series nearest the suture not coinciding with the feebly impressed lines. *Head* impressed anteriorly, coarsely, densely punctate, the punctures intermingled with finer punctules; vestiture in great part pale; antennæ scarcely extending to basal third of the prothorax, nearly as in *gorgops*. *Prothorax* scarcely as long as wide, parallel, broadly and distinctly arcuate at the sides, the ornamentation as in *gorgops*. *Scutellum* abruptly more declivous anteriorly. *Elytra* as wide as the prothorax and distinctly more than twice as long, the usual large black spot at the sides well defined and bordered anteriorly by a large solid patch of the pale pubescence. Under surface with some patches, more or less isolated, of pale pubescence near the sides; prosternum longitudinally canaliculate between the coxæ. Length 33.0–44.0 mm.; width 10.0–13.5 mm.

#### Arizona.

The three specimens before me represent a species allied to *gorgops*, resembling that species especially in the large uneven and isolated patches of pale pubescence, which are here still larger and less numerous. It differs greatly in general form and sculpture, the sides of the prothorax being nearly straight in *gorgops*, with the elytra scarcely twice as long, and with the elytral punctures very fine and sparse, the series composed of much smaller and more remote punctures, and coinciding with the feeble impressed lines. In *zunianus* the pronotum is finely but distinctly canaliculate along the middle, and the eye-like spots are more distant from the edge and more approximate than in *gorgops*; the last segment of the abdomen is devoid of pale vestiture in the three specimens before me.

*Lusciosus* Hope, with which *gorgops* is united by Candèze, is stated to be shorter in form than *oculatus*; this is distinctly true

of *gorgops*, but in *zunianus* the form is fully as elongate as in *oculatus*.

Note—*Chalcolepidius behrensi* Cand., has been taken by Mr. Dunn at Benson, Arizona.

## THROSCIDÆ.

### FACTOPUS Lec.

The two species of this genus, which are indicated by the material in my cabinet, may be distinguished thus:—

Very elongate, the elytra more than twice as long as wide; prothorax strongly enveloping the humeri, the sides deeply sinuate anteriorly, as well as convergent; eyes larger, separated by about twice their own width. Length 4.6 mm.; width 1.6 mm.....**horni** Lec.  
 Less elongate, the elytra not more than twice as long as wide, the eyes rather smaller, separated by distinctly more than twice their own width; prothorax a little less strongly enveloping the elytral humeri, the sides strongly convergent to the apex but only very feebly sinuate. Remaining characters nearly as in *horni*, the intermediate coxæ very slightly more widely separated. Length 3.2–4.2 mm.; width 1.3–1.6 mm. California (San Francisco and Sta. Cruz Cos.).....**fuchsi** n. sp.

Of *fuchsi*, I have three specimens, similar among themselves but differing greatly in size; they were very kindly presented to me by Mr. Chas. Fuchs of San Francisco, to whom I take pleasure in dedicating an interesting addition to the family. My four examples of *horni* are more uniform in size, and are from Washington State and Nevada; it is probably more boreal in habitat than *fuchsi*.

## CERAMBYCIDÆ.

### ANCYLOCERA Serv.

In general facies the species of Ancylocera are very similar among themselves, and the two separated below are identical in coloration; they may be distinguished as follows:—

Antennæ of the female two-thirds as long as the body; flanks of the prothorax transversely rugose as far as the coxæ, where the plications abruptly terminate, the prosternum before the coxæ very coarsely punctate.

**bicolor** Oliv.

Antennæ in the female one-half as long as the body; flanks of the prothorax simply punctate beneath, the prosternum much less coarsely punctate. Black, the elytra and abdomen red, polished. Head coarsely, strongly punctate, feebly impressed along the middle. Prothorax one-half longer than wide, the sides broadly arcuate, more convergent and feebly constricted near the base, the latter equal in width to the apex, both truncate; disk coarsely, deeply punctate, the punctures forming transverse rugæ which are obsolete along the median line and gradually evanescent beneath. Scutellum small, impunctate, the horizontal posterior part not carinate and not longer than wide. Elytra parallel, not quite twice as long as the prothorax, nearly two and one-half times as long as wide, narrowly truncate at apex, impressed and punctate nearly as in *bicolor*, but rather less densely. Length 8.5 mm.; width 2.0 mm. Florida.....**brevicornis** n. sp.

In *bicolor* the transverse area behind the buccal opening is more finely sculptured than in *brevicornis*, and the transverse prosternal constriction is very much deeper; *brevicornis* is slightly the smaller of the two.

#### TRAGIDION Serv.

The species of this genus may be known by the following characters:—

Third joint of the hind tarsi not longer, and but seldom visibly wider than, the second; elytra corrugated.

Antennæ more or less pale, the swollen apices of the pale joints black and abruptly more densely pubescent.

Antennæ entirely black toward apex; elytra strongly narrowed from base to apex; large species, the black hairs of the pronotum and legs with a strong cobalt-blue reflection .....**annulatum**

Antennæ pale throughout, the apices of all the joints black; elytra parallel; size smaller, black; the hairs without blue reflection; hind tibiæ moderately dilated and compressed.....**auripenne**

Antennæ black throughout; apices of the joints feebly swollen but not more densely pubescent.

Third joint of the hind tarsi scarcely shorter than the second; posterior tibiæ not distinctly modified; elytra varying from black with a small fulvous spot behind the humeri to completely fulvous except at the basal margin.....**coquus**

Third joint small, very much shorter than the second; posterior tibiæ broader, strongly compressed; elytra fulvous throughout except at base.....**fulvipenne**

Third joint of the hind tarsi distinctly longer and somewhat wider than the second; elytra not corrugated, parallel, each with three feeble and minutely costuliform lines; pronotal punctures in the male minute and dense but becoming abruptly coarse in an apical band, the posterior transverse margin of which is multisinuate; in the female minute and dense throughout.

**armatum**

*Fulvipenne* Say, is not by any means a variety of *coquus*, but is specifically distinct. *Coquus* Linn. has the pronotum in the male rather coarsely punctured throughout, except near the base, but in the female very finely extremely densely so; this character may also be common to the other allied species, but cannot be verified at present because of their denser and longer vestiture. The sexual disparity of *armatum* in pronotal sculpture is very remarkable.

**T. auripenne** n. sp.—Parallel, convex, black, the elytra bright aureo-fulvous except at the basal margin; pubescence dense, assuming the color of the integuments, recumbent on the elytra where it is dense and arranged obliquely on the strong corrugations but very inconspicuous in the intervals, erect on the pronotum where it is short, not concealing the surface sculpture. *Head* moderate, densely punctate, the antennal prominences acute; antennæ very slender, about one-half longer than the body, basal joint oval, twice as long as wide, three-fifths as long as the third, second slightly longer than wide, four to seven equal, a little shorter than the third, eleventh with the appendage as long as the basal part and feebly bent at apex. *Prothorax* a little wider than long; apex slightly wider than the base, the acute and prominent lateral tubercles slightly behind the middle; disk opaque, feebly and finely 5-tuberculate, the median tubercle larger and polished; punctures coarse, very dense, abruptly fine and extremely dense near the base. *Scutellum* roughly punctate. *Elytra* three times as long as wide; sides parallel, the humeri obtusely prominent; apex conjointly broadly rounded; disk of each with five strong narrow ridges, the fourth joining the fifth before the middle. *Legs* slender, the posterior much longer, with the tibiæ somewhat dilated and compressed. Length 14.0–20.0 mm.; width 3.8–5.7 mm.

Utah (southwestern); Arizona.

The three specimens in my cabinet are males and I have not seen the female. This species is somewhat smaller than *coquus*, but all the species vary enormously in size.

Among the eleven specimens of *coquus* in my cabinet there are only three females; the elytral corrugations in that species are always much wider and more feeble than in *fulvipenne*; the form of the hind tibiæ will however distinguish them at once.

#### BATYLE Thom.

**B. cylindrella** n. sp.—Narrow, cylindrical, polished, bright red throughout, the elytral suture not darker, post-sterna blackish; legs pale, the tarsi black except near base and apex; antennæ rufo-testaceous, dark toward apex especially toward the apices of the joints; vestiture very sparse, coarse, erect, not very long, pale luteous in color. *Head* finely, remotely punctate, almost completely impunctate before the antennæ, the latter slender,



not quite as long as the body, the third joint one-third longer than the fourth. *Prothorax* nearly as long as wide, the base and apex subequal, truncate; sides parallel, evenly and strongly arcuate; disk even, finely feebly and very remotely punctate. Scutellum small, impressed, scarcely darker. *Elytra* long, fully two and one-half times as long as wide; humeri slightly prominent; sides parallel and straight; apices individually evenly and strongly rounded; suture margined; disk coarsely, sparsely punctate, the punctures less coarse toward apex. *Legs* slender, moderately densely clothed with rather short even pubescence; hind femora slightly darker at tip; tarsi slender, first joint of the posterior as long as the entire remainder, second rather more than twice as long as wide. Length 9.5 mm.; width 2.3 mm.

Texas (El Paso).

The male serving as the type has the prosternum before the coxæ scarcely depressed but coarsely very densely punctate and more densely pubescent, as in many species of *Stenosphenus*. This sexual mark exists also in *B. suturalis*, from which the present species differs in its more elongate form, shorter and coarser pubescence, which is pale and not black, less punctate head and more elongate legs.

#### OXOPLUS Lec.

The differences between this genus and *Crossidius* are exceedingly slight, and it is probable that the two will have to be merged at no distant day; the type of ornamentation is identical in each. The following species differs from any of those hitherto described in the development of the fine elytral ridges, which are distinct very nearly to the apex.

**O. coccineus** n. sp.—Moderately stout, convex, feebly shining, bright scarlet, the head, antennæ, entire under surface between the anterior and posterior coxæ, apical and basal beads of the prothorax, scutellum, basal margin of the elytra, and a common narrow sutural dash in apical half black; pubescence pale, extremely short, sparse and inconspicuous, rather short sparse and blackish on the legs. *Head* coarsely densely and unevenly punctate; antennæ slender, about one-fourth longer than the body, the appendage of the eleventh joint scarcely more than one-third of the total length, with its apex abruptly concave internally and arcuately pointed. *Prothorax* one-half wider than long, the lateral tubercles acute and strong; basal bead very prominent at the sides; disk very coarsely, closely punctate, with five large concolorous tubercles which are scarcely less punctate than the remainder of the surface. Scutellum finely, closely punctate. *Elytra* at base distinctly wider than the prothorax, fully four times as long; sides distinctly convergent from the rather prominent humeri to the apex, which is truncate, the sutural angles acute and slightly prolonged; disk very coarsely, closely punctate.

tate, less coarsely so toward apex, and with three fine almost entire carinules, narrowly impressed along each side of the suture toward base. *Legs* slender, the posterior long, with the tarsi fully three-fourths as long as the tibiæ. Length 19.0–20.0 mm.; width 5.7–6.3 mm.

Utah (southwestern).

The description is taken from three perfectly similar males, the single female before me being slightly more robust, with more parallel elytra, in which the narrow sutural dash of black becomes very broad, abruptly narrowed to the suture just before the middle, not extending to the edges except at apex. The antennæ in the female are scarcely three-fourths as long as the body but not much stouter than in the male, and the posterior legs, and especially the tarsi, are decidedly shorter. This species belongs near *corallinus* Lec.

#### CROSSIDIUS Lec.

**C. blandi** n. sp.—Narrow, cylindrical, shining, bright rufous, the head and postpectus black; elytral blue-black area extending from the base for a short distance, then abruptly contracted, extending narrowly along the suture, gradually becoming wider to the middle where it becomes parallel, extending with two-thirds of the total width to apical fourth where it is abruptly widened nearly to the lateral edges, thence extending broadly to and enveloping the apex; pubescence long, sparse, erect and cinereous throughout. *Head* very densely, coarsely punctate; antennæ a little longer than the body in the male, two-thirds as long in the female, slender. *Prothorax* wider than long, parallel and evenly rounded at the sides, evenly convex, coarsely punctate, the punctures very uneven, dense near the apex, sparse elsewhere. *Elytra* slightly wider than the prothorax, a little more than twice as long as the head and prothorax combined, each broadly and evenly rounded at apex without trace of truncature, reëntrant at the suture, the angles rounded; disk very coarsely punctate, the punctures everywhere distinctly separated and becoming but slightly less coarse toward apex. *Prosternum* before the coxæ very coarsely punctate in the male, finely and inconspicuously so and less pubescent in the female. Length 7.7–9.5 mm.; width 2.0–2.5 mm.

Utah (southwestern).

This beautiful little species is widely distinct from *discoideus* in its smaller size, narrower form and sparse punctuation, especially of the pronotum, and from *pulchrior* Bland—which does not appear to be exactly the same as *discoideus*—it differs in the uneven pronotal punctuation, and in the gradually and not abruptly anteriorly narrowed black area of the elytra. In *discoideus* the elytra are always feebly but perceptibly truncate at apex, and the pronotum is scarcely ever devoid of the two subapical black spots, of which there is no trace in *blandi*. Four specimens.

**XYLOTRECHUS** Chev.

The following species is allied to *undulatus* Say, but differs in the much broader bands before and behind the middle of the elytra, interrupted only at the suture.

**X. gemellus** n. sp.—Moderately stout, convex, dark red-brown in color, densely clothed with short pubescence, generally dark in color but suffusedly white at the apex of the pronotum and obliquely at the sides toward base; on the elytra the white pubescence is suffused at base throughout the width, and, on each elytron there is a short longitudinal line behind the scutellum, a short transverse discal line near the base, a broad and transversely lunate band at basal two-fifths not produced anteriorly along the suture, a transverse internally dilated spot at apical third, and a more suffused apical band. *Head* with the two short frontal carinæ distinct; antennæ slender, filiform and equal throughout, two-fifths as long as the body, first four joints clothed with paler ashy hairs, third distinctly the longest, tenth fully one-half longer than wide. *Prothorax* wider than long, constricted and broadly pedunculate at base, coarsely and rugosely sculptured in short transverse confused ridges throughout. *Elytra* a little more than twice as long as wide, at base equal in width to the pronotal disk; sides nearly straight, distinctly convergent from base to apex, the latter broadly arcuato-truncate and feebly oblique, the external angle obtuse but not at all rounded. *Legs* slender; basal joint of the hind tarsi strongly compressed and much longer than the remainder. Length 14.0–15.0 mm.; width 4.0 mm.

Indiana.

From *undulatus* and its varieties this species may be known at once by the coarser sculpture of the pronotum, suffused pale pubescence at the base of the elytra throughout the width, much less prominent frontal carinæ and several other features. The transverse bands are wholly different in form, being wider, and posteriorly arcuate at the point where, in *undulatus*, they are anteriorly angulate. There can be scarcely any doubt of the distinctness of these species, although *gemellus* has possibly been regarded heretofore as a variety of *undulatus*. Two specimens.

**CYRTOPHORUS** Lec.

The two species may be distinguished as follows:—

Larger and stouter, the pronotum compressed and prominent along the middle; basal elevations of the elytra strong; third antennal joint strongly spinose.

**verrucosus** Oliv.

Smaller and less convex, the pronotum not at all compressed; basal elevations feeble; third antennal joint briefly dentato-spinose within at apex.

**insinuans** n. sp.

The second species makes one of the passages between *Cyrtophorus* and *Microclytus*, but the third joint of the antennæ in the latter is not in the least spinose, and the second is very nearly as long as the fourth; the body and legs, also, are clothed with long flying hairs, which are almost, but not quite, wanting in *Cyrtophorus*.

**C. insinuans.**—Parallel, moderately convex, black in color; antennæ, except the basal joint, and the legs in part more or less indefinitely paler; elytra rufescent toward base; head and pronotum densely dull, the elytra shining. *Head* finely, densely sculptured; eyes as in *verrucosus*, the upper lobe not acute; antennæ slender, almost as long as the body, the second joint scarcely more than one-half as long as the fourth, the latter distinctly shorter than the fifth, third nearly one-half longer than the fourth. *Prothorax* not quite as long as wide; sides parallel, feebly arcuate, strongly convergent near the base, the latter much narrower than the apex; disk finely, densely sculptured, the larger punctures isolated and defined by slightly elevated margins; pubescence short, decumbent and inconspicuous. *Elytra* more than twice as long as wide, one-third wider than the prothorax and more than three times as long; sides parallel; apices narrowly truncate; angles not prominent; pubescent spots and bands as in *verrucosus* but with the basal line much less oblique, more oblique however than in *Microclytus*. *Legs* short, slender; femora moderately clavate; tibiæ with short subdecumbent and uniform pubescence; tarsi short, the basal joint not as long as the remainder. Length 6.0 mm.; width 1.8 mm.

Canada (Ontario).

The characters given in the table will readily distinguish this species from *verrucosus*; in fact it much more closely resembles *Microclytus gazellula*, but differs in the characters which have been given to separate the two genera. A single example, probably male.

#### EUDERCES Lec.

**E. exilis** n. sp.—Moderately convex, pale rufous throughout, except the abdomen and apical half of the elytra, which are black; head and pronotum alutaceous, minutely but strongly, evenly reticulate, not at all longitudinally strigose. *Head* flat above, rather coarsely, unevenly punctate, the eyes completely divided, the upper lobe small, smooth, devoid of lenses except two or three near the upper angle; antennæ slender, three-fourths as long as the body, the second joint scarcely twice as long as wide, about one-third as long as the third, a little shorter than the fourth, the latter much shorter than five to seven, which are equal, third joint with a strong and distinct internal spine at apex, the fourth with a minute spine. *Prothorax* one-third longer than wide, the sides parallel and feebly arcuate in apical half, becoming



strongly convergent and arcuate toward base, the latter very briefly pedunculate and scarcely more than one-half as wide as the disk; apex broadly arcuate; disk impunctate, except in a large oblong-oval median area, where the punctures are small but strong, distinct and tuberculiform; interspaces perfectly smooth but dull. *Elytra* twice as long as wide, at base scarcely wider than the prothorax, gradually moderately inflated and more convex in apical half, together broadly rounded behind; basal tubercles feeble; disk dull and with dense deep and polygonally crowded punctures in basal half, except at the humeri, feebly rugulose but shining behind, with a single transverse raised ivory band before the middle and interrupted at the suture. *Legs* moderate; femora strongly swollen beyond the middle and again narrow at apex; tarsi short. Length 4.25 mm.; width 1.25 mm.

#### Texas.

The vestiture is very sparse, consisting of some long erect pale hairs on the prothorax, a few longer near the base of the elytra, and numerous short erect pale ashy hairs on the posterior declivity. This species is stouter than *reichei* and may be known immediately by the spinose antennæ. It is not at all closely allied to *spinicornis* Chev. In *reichei* the pronotal punctures are confined similarly to a large discal patch, but the interspaces are finely rugose; the prothorax in that species is narrower and much less strongly and abruptly narrowed toward base.

### LEPTURA Linn.

**L. gaurotoides** n. sp.—Broad, nearly as in *Gaurotes*, moderately convex, dull, the elytra feebly shining; body, legs and antennæ intense black throughout; pubescence short, dark and inconspicuous. *Head* moderately finely, extremely densely punctate; eyes rather large, the emargination small but deep; antennæ very short, filiform but stout, with the joints compactly joined, one-half as long as the body, without trace of sensitive patches, first joint longer than the next two combined, third twice as long as wide, longer than the fourth but shorter than the fifth, tenth less than twice as long as wide, eleventh a little shorter than the two preceding together, gradually and acutely pointed from near the middle. *Prothorax* transverse, one-half wider than long, more than three-fourths wider than the head, the sides angulate and slightly prominent at apical third, where the width is slightly less than at base; sides broadly sinuate in basal two-thirds, rapidly convergent from the lateral angles to the apex, which is truncate and one-half as wide as the base; basal angles only very slightly prominent laterally; disk scarcely visibly and widely impressed transversely near the base, just perceptibly flattened along the middle, convex, rather coarsely, extremely densely punctate, the punctures circular and deep. *Scutellum* a little wider than long, the apex broadly and transversely truncate. *Elytra* three-fourths longer than wide, at the humeri one-third wider than the prothorax; sides convergent from the



evenly rounded humeri to the apex, each elytron evenly and strongly rounded at apex, without trace of truncature, slightly dehiscent at the suture toward tip; disk strongly, evenly, rather closely but not densely punctate. *Legs* slender, moderate in length, the first joint of the hind tarsi a little longer than the next two, not at all finely pubescent beneath. Length 9.5 mm.; width 4.4 mm.

Utah (southwestern).

This very distinct species may be placed at present near *instabilis*, which it resembles in general form and in the outline of the prothorax. The truncate scutellum is however a feature which differentiates it widely from that and nearly every other form; in *dolorosa* the scutellum is truncate, but otherwise that species is not at all allied. *Gaurotoides* is only distantly related to *brevicornis*.

#### PTYCHODES Serv.

The two species of this tropical genus which cross the southern border of the United States may be known by the following characters:—

Pronotum and elytra with three crenate vittæ, the sutural vitta extending to about apical fourth or fifth and irregular in outline; antennæ longer, the third joint more than twice as long as the fourth; anterior legs of the male greatly elongate, the femur about two-thirds as long as the elytra.

##### **trilineatus** Linn.

Pronotum without trace of the median white vitta, the sutural vitta of the elytra confined to basal fifth, where it abruptly and completely terminates; antennæ shorter, the third joint rather less than twice as long as the fourth; anterior legs of the male less elongate, the femur not more than one-half as long as the elytra. *Head* deeply, narrowly furrowed between the antennæ, the latter twice as long as the body, slender, the third joint gradually thicker and strongly rugose toward base, eleventh distinctly shorter than the third, very slender, the appendage nearly as long as the basal part and just visibly arcuate. Prothorax scarcely as long as wide, coarsely, transversely plicate. Elytra two and one-half times as long as wide, the lateral vitta equal and continuous from the eyes nearly to the apex; disk sparsely punctate, strongly so toward base, clothed rather densely with short gray hairs, also with scattered spots of reddish-ochreous pubescence of similar structure. Length 23.0 mm.; width 5.8 mm. Arizona.

##### **abbreviatus** n. sp.

The spots of dense ochreous pubescence are much more conspicuous than in *trilineatus* (= *vittatus* Fab.) and are less lineate in arrangement; the elytral punctures are stronger, and the sutural spines are only one-half as long. A single male example.

**APPENDIX.**

## I.

As the present paper was passing through the press I received an important set of western Aleocharini from Mr. Wickham, of which the two following species deserve notice at the present time.

**MYRMOBIOTA** n. gen.

Head well inserted, subparallel at the sides, not constricted, the eyes rather small, at distinctly more than their own length from the base; infralateral carina strong, entire. Antennæ thick, the basal joint but slightly longer and thicker than the second, each one-half longer than wide; third slightly shorter than the second, only very feebly obconical, a little longer than wide; fourth slightly wider than long; four to ten evenly and gradually but rapidly increasing in width, obconical and perfoliate, the tenth nearly twice as wide as long; eleventh short, conoidal, a little longer than wide, not as long as the two preceding. Maxillary palpi slender; third joint longer than the second, almost cylindrical; fourth feebly oblique, rather small. Mentum transverse, trapezoidal, with a thin translucent apical extension. Ligula with a short thick parallel process which is broadly rounded at apex; labial palpi three-jointed, the joints distinct, rapidly decreasing in thickness. Prothorax narrowed at base, the hypomera broad, entire and horizontal. Elytra ample. Abdomen rapidly narrowed from base to apex, the first two tergites broadly impressed at base; third a little longer than the fourth and much shorter than the fifth. Anterior coxæ large and elongate, the intermediate narrowly separated, the mesosternal process long, gradually finely acuminate, extending nearly to their summits, with its apex free and superposed upon the apex of the short triangular metasternal process. Metasternum moderate, the side-pieces gradually wider behind, the epimera obliquely truncate posteriorly, the obliquely pointed apex extending behind the elytra. Legs slender, moderate in length,

clothed with short coarse pubescence; tarsi distinctly 5-5-5-jointed, the posterior only slightly more than one-half as long as the tibiae, with the first joint a little longer than the second and equal to the fifth; claws small.

This genus is allied closely to *Homœusa*, but differs altogether in the form of the prothorax, in the less inflexed hypomera, shorter and stouter process of the ligula, triangular process of the metasternum, this being transverse and not entering the intercoxal space in *Homœusa*, in its more posteriorly prominent met-epimera, much shorter basal joint of the hind tarsi and longer fourth ventral segment.

**M. crassicornis** n. sp.—Rather narrowly fusiform, convex, moderately shining, minutely reticulate, the abdomen more finely and densely so and quite dull; color rufo-testaceous throughout; integuments rather coarsely and strongly punctate, the pronotum very densely so, the abdomen much more sparsely; pubescence short, decumbent and rather inconspicuous, the abdomen with longer erect hairs toward apex. *Head* transversely orbicular, convex, the front subimpunctate and polished, two-thirds as wide as the prothorax; antennæ very distant at base, somewhat short, but slightly longer than the head and prothorax, very strongly incrassate, finely pubescent and with moderately long erect setæ. *Prothorax* two-thirds wider than long, widest at the middle where the sides are broadly and obtusely angulate, thence convergent and straight to base and apex, the latter broadly arcuate and much narrower than the base which is broadly arcuate, becoming straight near the basal angles, the latter slightly obtuse, not rounded and not at all prominent; apical deflexed, obtusely rounded; disk strongly convex, feebly, somewhat obliquely impressed toward the sides and broadly, very feebly so along the median line. *Elytra* equal in width to the base of the prothorax, about as long as the latter; sides straight and parallel; humeri concealed; disk perceptibly and transversely convex. *Abdomen* as long as the anterior parts, at base just visibly narrower than the elytra, at the apex of the fifth segment one-half as wide as the latter; sides straight; border moderate; surface transversely convex, becoming subtubulate toward tip. Length 2.3 mm.; width 0.65 mm.

Iowa (Iowa City).

I have not seen any specimens of the ant with which this species occurs. The pubescence of the under surface of the abdomen is long and bristling. A single specimen, probably female.

#### MYRMECOCHARA Kraatz.

As remarked by Mr. Schwarz, it is beyond doubt that this genus—which is also related to *Homœusa*—is myrmecophilous and not

termitophilous. The following species occurs with a small slender yellow ant, apparently of the genus *Solenopsis*:—

**M. crinita** n. sp.—Fusiform, convex, somewhat shining, pale yellowish-testaceous throughout, the pubescence long, suberect, rather dense and very conspicuous, with long sparse setæ bristling along the sides of the body; punctuation fine, somewhat close but not at all conspicuous. *Head* transverse, three-fourths as wide as the prothorax, the eyes rather small and coarsely faceted, obliquely oval, at their own length from the base; infra-lateral carina feeble but distinct; antennæ slender, quite distinctly longer than the head and prothorax, just visibly incrassate, the second joint longer than the third, the latter longer than wide, four to ten subsimilar, rather compactly joined, small, only slightly wider than long, eleventh very long, compressed, gradually pointed, nearly as long as the four preceding combined. *Prothorax* twice as wide as long, the sides convergent and very feebly arcuate from base to apex, the latter transversely truncate, narrower than the base which is strongly and evenly arcuate throughout; angles slightly rounded, the anterior scarcely at all deflexed; hypomera strongly inflexed and invisible from the side. *Elytra* a little shorter and narrower than the prothorax, strongly transverse; sides feebly divergent from base to apex, the latter transverse; humeri completely concealed. *Abdomen* conical, at base slightly narrower than the elytra; first three tergites subequal and much shorter than either the fourth, fifth or sixth. *Legs* slender; tarsi short, evidently 5-5-5-jointed, the first joint of the posterior slightly longer than the second. Length 1.3 mm.; width 0.4 mm.

Colorado (Cañon City).

This species differs from *pictipennis* in coloration and several other characters, but is apparently closely allied, if not identical, with the form hitherto known from the District of Columbia.

Among other species, the material referred to includes in addition a specimen of *Orypoda nigriceps* from Iowa City, Iowa, and one of *Microdonia occipitalis* from Walnut, Arizona. In the latter the broad feeble impression near each side of the depressed pronotum is strongly developed, proving that it is a normal character and not produced by shrinkage of the exoskeleton; analogous lateral impressions of the pronotum are well developed in *Ecitophila omnivora* of Wasmann, which may be somewhat related to *Microdonia*.

There is also a specimen of *Amblopusa brevipes* from Victoria, Vancouver, which is pale flavate throughout, doubtless immature; it is just possible that there may be a minute basal node ankylosed to the very elongate first joint of the labial palpi, but it is not clearly discernible without dissection. *Actocharis* of Fauvel, is closely allied to *Amblopusa* and belongs to the same group, the labial palpi being 2-jointed; but the joints are equal in length, with the

first much stouter than the second and clothed with stiff sparse setæ throughout, this being a very remarkable feature.

## II.

## ADDITIONAL NOTES AND SYNONYMY.

*Plinodes cristatus* Csy. (Col. Not. II, p. 323) should be referred to the genus *Trichodesma*; it is much stouter than the eastern species.

*Coniontellus subglaber* Csy. (l. c., p. 389), should be united with *obesus* Lec.

*Eleodes tarsalis* Csy. (l. c., p. 399), is without doubt the species intended by Mannerheim as *quadricollis*; the female is frequently altogether devoid of the series of coarse punctures, and the original type of *tarsalis* has a singular bilaterally symmetric deformity of the posterior tarsi. I have before me a large series. The single specimen referred to *quadricollis* (l. c., p. 395), is either a closely allied species with coarser pronotal sculpture, or a simple aberration. *Estriatus* is a widely distinct species, also represented by a large series.

*Argoporis nitida* Csy. (l. c., p. 405), has been erroneously referred by Mr. Champion (Biol. Cent.-Amer., Coleop., IV, i. p. 518), to *rufipes* Chmp. A male of the latter species kindly sent me by the author, shows that *rufipes* is a stouter and much duller species, with smaller punctures of the elytral series, and differs greatly in the structure of the anterior legs in the male. In the male of *rufipes* the anterior femora are stouter, with a much less developed internal subbasal dentiform lamina, and the corresponding tibiæ have only five or six widely spaced granuliform serrules internally, while in *nitida* the internal cariniform elevation of the femur is very pronounced, and the tibiæ are finely and closely serrulate within throughout the length; the last joint of the anterior tarsi in *nitida* is relatively longer, nearly equalling the three preceding combined.

The reference made (Col. Not. III, p. 21, footnote), to a single mandibular tooth in *Ergates neomexicanus* is not exactly correct, as I find by prying the mandibles further apart; the basal tooth is however more feeble than in *spiculatus*. The proper status of *neomexicanus* is probably that of a well-marked variety of *spiculatus*. All the specimens which I have seen have large pallid blotches on the elytra; whatever may be the cause of these blotches, they are completely wanting in my two specimens of *spiculatus*.



*Epitragodes* (l. c., p. 54), is closely allied to *Schœnicus* but differs in the stouter body, less prominent eyes, securiform fourth palpal joint and prominent prosternal process with vertical posterior wall; in *Schœnicus* the last palpal joint is more slender and triangular, rounded at apex with the inner side but slightly shorter than the outer, and the prosternal process is longitudinally convex and gradually declivous behind.

*Hymenorus obesus* Csy. (l. c., p. 93), is not distinct from *pilosus* Melsh. In *difficilis* (l. c., p. 94), the measurements are somewhat in error, the true dimensions of the type being about 6.0 by 2.5 mm.; the third antennal joint, also, is more than two-thirds as long as the fourth. Of *Mycetochara megalops* I have recently received a fine example taken in New York. The species of *Andrimus* defined under that genus, are distinct in my opinion; only two of them are known to the authors of certain recent hints to the contrary, and even they appear to have been misunderstood.

*Thysanocnemis horridula* Csy. (Col. Not. IV, p. 426), cannot be maintained as distinct from *fraxini* Lec.; the locality label on the type of *horridula* is probably erroneous.

The name *Otidocephalus myrmecodes* Chev., was assumed by me (l. c., p. 435), under a wrong impression. The reference given by Dr. Horn, "*myrmecodes* || Chev.," conveys the idea that Chevrolat described independently a species under the preoccupied name *myrmecodes*, and, under such circumstances, this name would of course stand when the original *myrmecodes* fell into synonymy. The truth, however, as I subsequently discovered—it did not occur to me to investigate further at the time,—is that Chevrolat described what he considered to be *myrmecodes* Say, and the reference should have been "*myrmecodes* Chev. nec Say," which has quite a different meaning. The true name of the species is therefore:—

**O. chevrolati** Horn—Proc. Am. Phil. Soc., XIII, p. 450; *myrmecodes* Chev. nec Say: Ann. Ent. Soc. Fr., 1832, p. 445; Casey: Ann. N. Y. Acad. Sci., VI, p. 435.

Specimens of *Tyloderma contusa* Csy. (l. c., p. 452), recently received, show that the humeri are generally nearly as widely exposed as in *foveolata*, and that the integuments beneath the pubescent patches of the elytra are rufescent; there are also a few hairs near the scutellum. The species would consequently be plainly allied to *variegata*, if it were not for the very coarse deep foveæ of the pronotum and elytra, which suggest an affinity with *foveolata*.

In *Centrinus acuminatus* and *globifer* (l. c., pp. 464, 591), the tooth referred to as belonging to the trochanters, really projects from the femora very near the trochanters.

*Centrinus nubecula* Csy. (l. c., p. 594), must be regarded as a large female of *capillatus*, and *Centrinopus helvinus* (p. 602), is to be placed in synonymy with *alternatus*, the latter being the name of the species. A series recently sent to me plainly unites these two forms, the latter of which was founded upon a specimen standing at one of the extremes, both in size and ornamentation, of a very variable species. In *Calandrinus insignis* the elytra are relatively shorter and paler than in *granaicollis*, the striae coarser, the intervals narrower and subequal, each with a single line of punctures, the four lateral spots of white scales well defined with scarcely any scattered pale scales.

The species which I regarded as the *Centrinus canus* of LeConte, because of its extended distribution under that name, proves to be quite different, and this will account for the apparent discrepancy in the original description.<sup>1</sup> The true *canus* is the form, a specimen of which was compared, on page 646, with *Limnobaris longula*. It is allied rather closely to *longula*, but is a larger and broader species. The description of LeConte will probably prove sufficient for its recognition, and is from a female type, the beak in that sex being rather slender, smooth, polished, subimpunctate except near the base and as long as the head and prothorax; in my male specimen the beak is shorter thicker and coarsely sculptured, as described on the page referred to. The species is therefore to be placed immediately after *Limnobaris longula* with the following references:—

**Limnobaris cana** Lec.—Proc. Am. Phil. Soc., XV, p. 421 (*Centrinus*); *longula* var. Casey: Ann. N. Y. Acad. Sci., VI, p. 646.

There is a large series of this species in the cabinet of Mr. Ulke.

The form identified by me as *canus* and placed in the genus *Nicentrus*, must receive another name as follows:—

**Nicentrus grossulus** n. n.—*N. canus* Csy. nec Lec.: Ann. N. Y. Acad. Sci., VI, p. 614.

The series in my cabinet now consists of eight specimens, varying in length from 4 to 5 mm., but otherwise quite homogeneous. The vestiture is generally more yellowish than whitish.

<sup>1</sup> This is the only species not described from the original type or a specimen carefully compared therewith.

It would not be far wide of the truth to say that *Centrinus* and its allied genera form one of the most difficult studies to be met with in the Coleoptera. After completing my recent revision, I went carefully over the manuscript and withdrew the descriptions of many forms, which at first seemed to represent distinct species. As seen above, however, this eliminating process was not carried quite far enough, and there may be others which must eventually disappear, but the number of these will probably be inconsiderable. I have no hesitation in stating the total number of species of Barini within our limits to be about 300. In my cabinet there are at present nearly 600 species from Brazil, and the number inhabiting that country cannot be far short of 1500. For the world at large 4000 species would be a conservative estimate.

The three following species, recently submitted to me for examination by Mr. Ulke, are sufficiently interesting to be made known on the present occasion.

***Stethobaris cicatricosa*** n. sp.—Oblong-oval, convex, subglabrous, highly polished, black, the entire elytra bright red, the scutellum black; legs and antennæ black, with a piceous tinge. *Head* finely, sparsely punctate; beak short, thick, feebly arcuate, much shorter than the prothorax, finely punctate, the punctures coarser and dense at the sides; antennæ inserted at the middle, funicle short, stout, cylindrical, the basal joint stouter and as long as the next three, two to seven equal, short, strongly transverse and closely coarctate, club moderate, oval, nearly as long as the preceding six joints. *Prothorax* one-half wider than long, the sides feebly convergent and broadly arcuate from the base to apical fourth, then abruptly and strongly constricted, the apex conically subtubulate; base more than twice as wide as the apex, very feebly bisinuate; disk strongly but sparsely punctate, the punctures distinctly isolated beneath at the sides; median impunctate line imperfect. Scutellum small, subquadrate, glabrous, impressed. *Elytra* distinctly wider than the prothorax and about twice as long, the humeral callus but moderately developed; sides less than usually convergent, the apex very broadly rounded; striæ coarse, very deep, with the edges obtuse, not at all crenate but finely, strongly punctate along the bottom, the eighth represented only by a series of remote punctures from the humeri to a little behind the middle, then abruptly assuming the form of a deep narrow cleft to apical sixth, the cleft-like portion margined on both sides by a broader, deep, abruptly defined and setose fossa, the combination giving the appearance of a longitudinal scar; intervals nearly flat, two or three times as wide as the striæ, minutely, sparsely punctate, the punctures in single uneven series, more confused on the second and fifth. Under surface sparsely setose, strongly punctured, the abdomen rather sparsely so. Tarsal claws small, slender, free and divergent. Length 3.5 mm.; width 1.9 mm.

Texas.

The type of this remarkable species is apparently unique. The prosternum is rather broadly and deeply sulcate. In my recently published table of the genus it may be placed immediately after *corpulenta*.

**EUMONONYCHA** n. gen.

Body subrhomboidal, convex. Beak short, stout, feebly arcuate, slightly flattened toward apex, the epistomal lobe prominent and the mandibles small, stout, broadly decussate and deeply notched; basal transverse groove deep, abrupt and impunctate. Antennæ inserted at the middle of the sides, the scrobes obliquely descending; scape not quite attaining the eye; funicle short, the basal joint stout and as long as the next three, the second quadrate, two to seven subequal in length, increasing gradually in width, the club oval, moderate in thickness, as long as the five preceding joints, finely pubescent, with the basal joint large. Prothorax constricted. Scutellum small. Elytral striæ normal. Prosternum nearly flat, feebly emarginate at apex, with a deep transverse post-apical fovea. Anterior coxæ large, prominent, narrowly separated. Legs somewhat short and stout; femora long and parallel, unarmed; tibiæ short, very feebly enlarged and everted toward apex, not carinate externally; tarsi short, stout, the third joint small but wider than the second and deeply bilobed. Tarsal claws long, single.

The present genus is the third now known in the Barini having the tarsal claws single; they differ greatly however among themselves in all other features. The type above defined approaches *Eisonyx* more closely than any other, but differs in its normal elytral striation, non-carinate tibiæ, and very greatly in general facies and sculpture.

**E. opaca** n. sp.—Black, the legs, especially the intermediate and posterior, rufo-piceous; integuments very dull throughout and minutely granular-reticulate, the pronotum more shining than the elytra; vestiture sparse and uneven, consisting on the elytra of long, very fine, closely recumbent whitish hairs, slightly coarser and more distinct in certain feebly defined spots posteriorly, and quite coarse before the humeral callus; on the pronotum widely scattered but more noticeable narrowly at the sides toward base; on the under surface very inconspicuous but more distinct at the sides of the abdomen behind; legs and tarsi much more conspicuously setose. *Head* and beak finely but strongly punctate, the latter densely so throughout, subequal in length to the prothorax, thick and slightly compressed. *Prothorax* small, subconical,



but little wider than long, the sides convergent and nearly straight to apical fourth, then constricted, the apex broadly subtubulate and a little more than one-half as wide as the base, the latter feebly oblique and nearly straight from the obsolete median lobe to the sides; disk coarsely deeply and densely punctate, the punctures tending to form longitudinal rugæ, with an entire and feebly impressed median line, and a large impunctate spot at each side near lateral fourth and behind the middle. Scutellum small, tumid, deeply seated. *Elytra* large, widest near basal third where they are three-fourths wider than the prothorax, fully twice as long as the latter and longer than wide; sides just visibly convergent from posterior third to the conspicuous humeral callus, convergent and feebly arcuate behind, the apex rather narrowly rounded; disk with moderately fine, very shallow, opaque striæ; intervals flat, three to four times as wide as the striæ, opaque, finely and feebly, somewhat sparsely and confusedly punctate throughout their entire extent. Under surface dull, the abdomen much more shining and minutely, sparsely punctate. Length 3.5 mm.; width 1.8 mm.

Missouri.

A single specimen.

#### **AMERCEDES** n.gen.

Body oval, stout, convex, semi-glabrous. Head and eyes normal. Beak consisting of two dissimilar elements, the basal fourth abruptly swollen and bulbiform, coarsely sculptured, the remainder almost perfectly straight, forming a very slight angle with the basal part, very slender, cylindrical, polished and almost impunctate. Mandibles short, stout, obliquely vertical in action nearly as in *Eunyssobia*, minutely tridentate. Antennæ inserted at the sides near the base at the anterior limit of the bulbous portion, the scape very short, claviform, attaining the eye; funicle long, very slender, nearly nude, the basal joint long, rather longer than the scape, slightly claviform, second extremely long, slender, almost twice as long as the first and as long as the entire remainder, three to seven subequal in length, gradually a little thicker, the seventh finely pubescent; club moderate, normal, oval, not very abrupt, finely pubescent, with the basal joint constituting about one-half of the mass. Prosternum with a broad and profound median sulcus, the anterior coxæ separated by distinctly less than their own width. Legs rather thick; femora unarmed; tibiæ finely fluted, bent outward and slightly thickened toward apex; tarsi well developed, the two basal joints small, wider than long, the third large, the lobes long and widely divergent, claw-joint very long, slender, feebly



arcuate. Ungues rather long, completely connate and without suture in rather less than basal half.

This wonderful genus is entirely without near relatives within our faunal limits. The slender beak abruptly dilated at base and subvertical mandibles remind us of *Eunyssobia*, but the dilated third tarsal joint and connate claws, deeply sulcate prosternum and general habitus of the body, depart very widely from that genus and show that it must be considered an intermediate and remarkably synthetic type.

**A. subulirostris** n. sp.—Oval, shining, coarsely sculptured, piceous-brown in color throughout. *Head* finely but strongly, rather closely punctate, scarcely visibly, broadly impressed between the eyes and with a small interocular fovea. *Prothorax* nearly two-thirds wider than long, the sides broadly, evenly arcuate, becoming nearly parallel in basal half, strongly convergent but very feebly constricted toward apex, the latter less than one-half as wide as the base, which is transverse and straight, with the median lobe rather narrow but strong, abrupt and rounded; disk coarsely punctate, the punctures contiguous laterally but smaller and slightly separated toward the ill-defined median impunctate line. *Scutellum* small, subquadrate, flat, roughly sculptured. *Elytra*, at the moderately developed humeral callus, distinctly wider than the prothorax, about three-fourths longer than the latter, scarcely as long as wide, broadly hemi-elliptical in outline; striæ coarse, deep, finely and remotely punctate at the bottom, the intervals flat, twice as wide as the striæ, extremely coarsely roughly and unevenly but not very deeply punctate, polished. Under surface densely punctate, the metasternum very coarsely so, the abdomen more finely, and with small sparsely distributed squamules throughout. Length 3.0 mm.; width 1.7 mm.

Texas.

The upper surface has a few widely scattered slender squamules toward the sides of the pronotum and along the elytral intervals, more conspicuous at the base of the second. A single specimen.

The following is interesting as being the second known species of *Madarellus* thus far discovered in the United States:—

**M. cuneatus** n. sp.—Strongly convex and cuneiform, highly polished, black throughout. *Head* finely but strongly, sparsely punctate, the transverse impression distinct and broadly angulate in profile; beak stout, evenly arcuate, gradually and feebly tapering from base to apex, rather longer than the prothorax, somewhat coarsely deeply and moderately densely punctate throughout, with a median impunctate line; antennæ inserted at basal third, the scape short, scrobes deep, basal joint of the funicle elongate, club cylindrical, subequal in length to the five or six preceding joints, densely opaque and pubescent. *Prothorax* large, one-half wider than long, inflated, widest

just behind the middle, abruptly, strongly constricted and tubulate at apex, the latter but slightly more than one-third as wide as the disk; sides broadly arcuate; base transverse, broadly, deeply bisinuate, the median lobe strongly, narrowly rounded; disk minutely but distinctly, remotely punctate, abruptly becoming obliquely and coarsely punctato-rugose at the sides and beneath. Scutellum small, transversely lunate. *Elytra* but slightly longer than wide, less than one-half longer than the prothorax and distinctly narrower; outline narrowly parabolic, the sides rapidly convergent; surface broadly undulated; striæ fine but deep, finely but distinctly punctate, the intervals flat, three or four times as wide as the striæ, each with a single series of minute distant punctures which become more visible laterally; striæ coarse on the apical concave declivity, the intervals becoming there acutely prominent. Under surface strongly, closely sculptured. *Legs* stout; femora strongly punctate. Length 2.7 mm.; width 1.4 mm.

Texas (San Antonio). Mr. Wickham.

Closely allied to *undulatus*, but differing in its shorter broader and more rapidly cuneate form, more strongly punctate elytral striæ and smaller size. The punctuation of the femora is less rugose than in *undulatus*. The tooth of the anterior femora is alone distinct, and the anterior tibiæ are scarcely at all prominent within in the male, though bent and slightly narrowed toward base. A single specimen, apparently male.

There is a specimen from Honduras before me which very closely resembles *cuneatus*, but the anterior tibiæ are more abruptly swollen or subtuberculate within at the middle.

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After the revision of our Scaphidiidæ (*ante* p. 510) had been printed, I discovered by chance that Mr. Reitter had described several American species of this family in 1880 (*Verhandl. Naturf. Ver. Brünn*, XVIII, p. 35, *et seq.*). This paper is at present inaccessible to me, but the species are: *Scaphidium antennatum* (Texas), *Cyparium substriatum* (Alabama), *Scaphisoma impunctata* (Missouri), and *S. lævis* (Nordam.). The last two are probably allied to *obesula*, *carolinæ* and *arkansana*, and there is doubtless some synonymy involved which I shall attempt to make known at a future time.

The Californian species published by Schmidt (*Ent. Nach.*, XVI, 1890, p. 51) under the name *Saprinus sulcatulus*, is identical with *scissus* Lec. in every character mentioned in the description. Several years ago I sent a small series of this species—which is one of the

most abundant and characteristic of the California sea-beaches—to Mr. Lewis, and it is possibly some of these specimens which have been described by Mr. Schmidt, as he mentions having received them from Mr. Lewis.

### ERRATUM.

On page 506, after *Decarthron longulum*, for "Bndl." read "Lec." It is singular that this mistake should also have been made by Dr. Brendel in the recent monograph.

### EXPLANATION OF PLATE I.

- Fig. 1. *Rafonus tolulæ* Lec.—apex of venter ♀.  
 Fig. 2. *Sonoma isabellæ* Lec.—apex of venter ♀.  
 Fig. 3. *Sonoma cavifrons* Csy.—apex of venter ♀.  
 Fig. 4. *Sonoma subsimilis* Csy.—apex of venter ♂.  
 Fig. 5. *Arthmius globicollis* Lec.—apex of venter ♂.  
 Fig. 5a. " " —antenna ♂.  
 Fig. 6. *Arthmius gracillior* Csy.—apex of venter ♂.  
 Fig. 6a. " " —antenna ♂.  
 Fig. 7. *Arthmius bulbifer* Csy.—apex of venter ♂.  
 Fig. 7a. " " antenna ♂.  
 Fig. 8. *Arthmius involutus* Csy.—apex of venter ♂.  
 Fig. 8a. " " —antenna ♂.

The antennæ are all viewed upon the under surface.

- Fig. 9. *Tyrus mucronatus* Panz.—intermediate trochanter (above) and anterior femur (below) ♂.  
 Fig. 10. *Tyrus corticinus* Csy.—same.  
 Fig. 11. *Tyrus humeralis* Aubé—same.  
 Fig. 12. *Reichenbachia wickhami* Bndl.—antenna ♂ and ♀, under surface.  
 Fig. 12a. *Reichenbachia tumida* Lec.—antenna ♂ and ♀, under surface.  
 Fig. 12b. *Reichenbachia complectens* Lec.—antenna ♀.  
 Fig. 12c. *Reichenbachia subtilis* Lec.—antenna ♀.

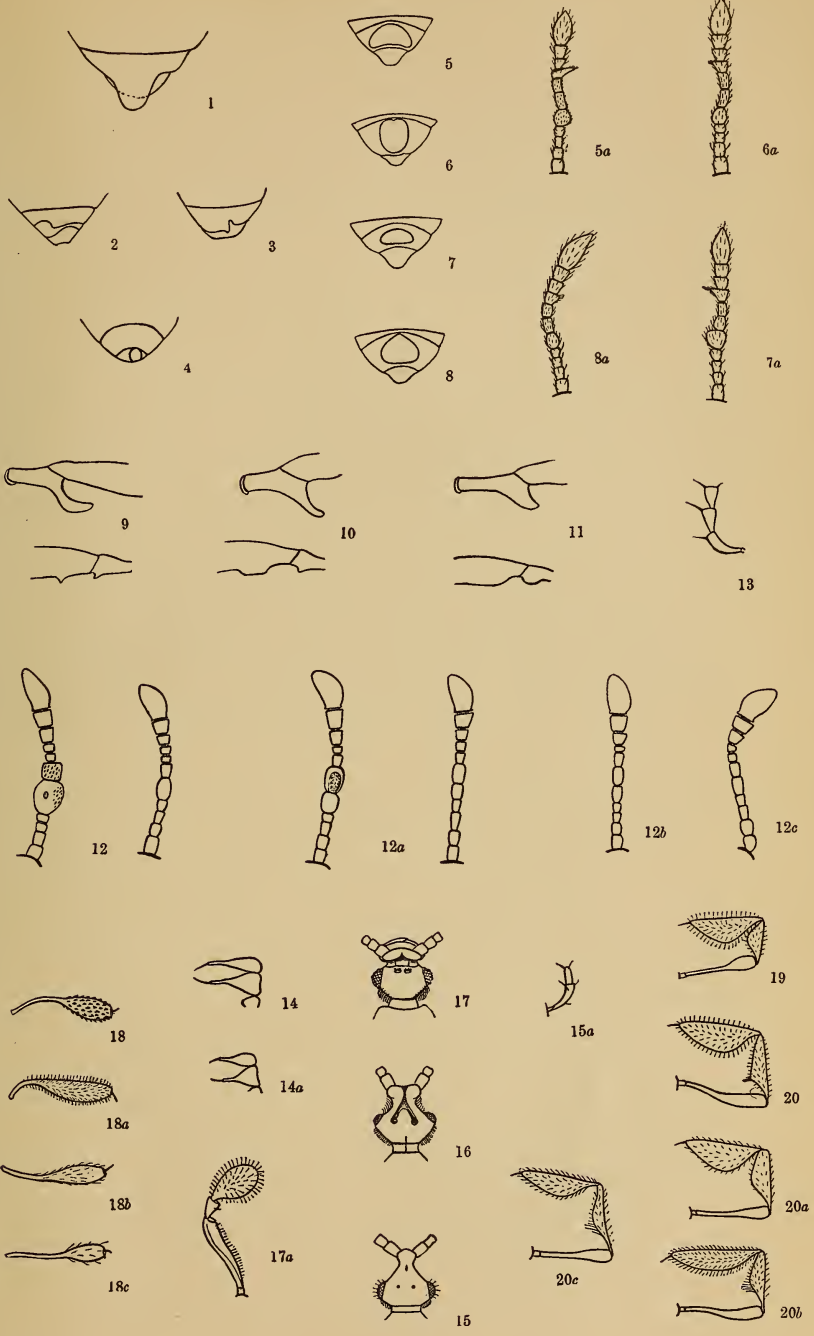
Joints 7 and 8 are drawn relatively too small; they are subequal in width to the preceding.

- Fig. 13. *Ctenisis raffrayi* Csy.—maxillary palpus.  
 Fig. 14. *Sognorus pulvereus* Lec.—last two joints of the maxillary palpus.

- Fig. 14a. *Sognorus abruptus* Csy.—same.  
Fig. 15. *Anitra glaberula* Csy.—head.  
Fig. 15a. “ “ —maxillary palpus.  
Fig. 16. *Morius occidentis* Csy.—head.  
Fig. 17. *Valda frontalis* Csy.—head.  
Fig. 17a. “ “ —maxillary palpus.  
Fig. 18. *Pselaphus bellax* Csy.—last joint of the maxillary palpus.  
Fig. 18a. *Pselaphus fustifer* Csy.—same.  
Fig. 18b. *Pselaphus longiclavus* Lec.—same.  
Fig. 18c. *Pselaphus erichsoni* Lec.—same.  
Fig. 19. *Tychus minor* Lec.—maxillary palpus.  
Fig. 20. *Cylindrartus longipalpis* Lec.—maxillary palpus.  
Fig. 20a. *Cylindrartus crinifer* Csy.—same.  
Fig. 20b. *Cylindrartus comes* Csy.—same.

The last joint should be a little more oblique and less arcuate internally toward apex.

- Fig. 20c. *Cylindrartus*. Maxillary palpus of a doubtful form very closely allied to *comes*, and represented by a single immature specimen.







IV.—*A Revision of the American Cichlidæ.*<sup>1</sup>

BY CARL H. EIGENMANN AND WILLIAM L. BRAY.

Read Dec. 4, 1893.

While examining the specimens of Cichlidæ, of Cornell University, the need of a revision of the generic definitions became evident. We have attempted this revision in the present paper. The synonymy of the genera has been added, and where we have had a sufficient number of species, or where the genus has been small, we have added keys to the species. Several genera, as *Astronotus*, *Crenicichla*, and *Geophagus*, need revision; but with the limited amount of material at our disposal, such a revision would necessarily have been a compilation and have failed entirely in its object.

The specimens were largely collected by the late Frederick C. Hartt. We have been able to examine them through the courtesy of Prof. B. G. Wilder, of Cornell University.

ANALYSIS OF THE GENERA AND SUBGENERA OF AMERICAN CICHLIDÆ.

- a. Spinous and soft portions of the dorsal of equal extent, or the former the longer.
- b. First gill arch normal. (Without additional lobe above.)
- c. Gill-rakers long.
- d. Gill-rakers close set and very long, setiform, numerous (about 85).
- e. Anal spines three, alternating. Body compressed, oblong, covered with scales of moderate size. Dorsal spines numerous (13 or 14). Each jaw with a front series of small awl-shaped teeth, behind which is one or more series of smaller teeth. Cleft of mouth of moderate width. Scales on cheeks in five or more series. Soft dorsal and anal naked .....1. **Chætobranchus**
- ee. Anal spines six. Dorsal spines 15 or 16. Preorbital less than orbit in width. Scales on cheek in 3 or 4 series. Soft dorsal and anal scaled .....2. **Chætobranchopsis**

<sup>1</sup> Contributions from the Zoölogical Laboratory of the Indiana University, No. V.

- dd.* Gill-rakers stiff, lanceolate, crenulate on inner margin. Perciform. Scales small. Spinous and soft dorsals of nearly equal extent, and separated by a notch. Anal spines three. Each jaw with a broad band of villiform teeth. Dorsal and anal fins scaly .....3. **Cichla**
- cc.* Gill-rakers short and few.
- f.* Vertical limb of preopercle entire.
- g.* Scales of the lateral line much longer than the others. About two transverse series of scales in the anterior part to each scale of the lateral line. First series of teeth incisors, separated from the rest by a moderate space.....4. **Uaru**
- gg.* Scales of the lateral line not larger than the others.
- h.* A series of incisors, a band of villiform teeth behind them. Anal with 8 spines.....5. **Neetroplus**
- hh.* Teeth all conical, the front series remote or not.
- i.* Premaxillary very greatly protractile.
- j.* Anal spines three.
- k.* Lateral line not overlapping. Snout equal to post-orbital portion of head. Mouth oblique, preorbital narrow ( $\frac{1}{2}$  orbit). Nostrils nearer tip of snout than eye.
- 6. Acaropsis**
- kk.* Lateral line with the upper and lower limbs overlapping. Snout much produced, more than twice the length of postorbital portion of head. Preorbital very large, nearly twice as wide as the eye. Nostrils much nearer orbit than tip of snout. Mouth low, nearly horizontal. Premaxillary an orbital diameter below the eye. Caudal densely scaled. Maxillary reaching to nostrils.
- 7. Retroculus**
- jj.* Anal spines 6. Snout not greater than postorbital portion of head. Preorbital narrow. Mouth oblique, premaxillary on level of lower third of eye, more protractile than in the other genera. Maxillary reaching to front margin of eye. The origin of the ventral falls vertically below that of dorsal.....8 **Petenia**
- ii.* Premaxillary comparatively little protractile.
- l.* Ventrals inserted behind origin of dorsal.
- m.* Jaws subequal .....9. **Astronotus**
- n.* Anal spines three.
- o.* Soft portions of vertical fins densely scaled to near the tip; dividing line between fins and body indistinct. About 6 of the anterior teeth of lower jaw enlarged canines .....(**Astronotus**)
- oo.* Soft portions of dorsal and anal naked or scaled on base only. Caudal scaled at its basal half. Lower jaw without enlarged canines.....(**Æquidens**)
- nn.* Anal spines more than three.....(**Cichlasoma**)

*mm.* Upper jaw projecting. Anal spines four. Cleft of mouth short. Scales on cheek small, in more than five series.

10. **Theraps**

*ll.* Ventrals in front of origin of dorsal.....11. **Mesonauta**

*ff.* Vertical limb of preopercle serrate.

*p.* Jaws equal. Scales rather large; those of the lateral line equal ordinary scales in size.

*q.* Body short and deep, as in *Astronotus* .....12. **Crenicara**

*qq.* Body elongate, as in *Crenicichla* .....13. **Dicrossus**

*pp.* Lower jaw much projecting. Mouth wide, snout depressed. Fewer scales in the lateral line than in the series just above it.

14. **Crenicichla**

*bb.* First gill arch with a downward projecting lobe on its upper limb, the rakers carried on the free margin of this limb.....15. **Geophagus**

*r.* Preorbital not deeper than eye. Eye equidistant from tip of snout and upper angle of gill opening.....(**Mesops**)

*rr.* Preorbital in adult prolonged, much deeper than the eye. Eye placed high, much nearer upper angle of gill opening than tip of snout.

(**Geophagus**)

*aa.* Soft portion of dorsal longer than spinous portion.

*s.* First gill arch with a downward projecting lobe above, as in *Geophagus*. Anal spines three, dorsal spines 7 or 8. Body very long. Preopercle entire .....16. **Saraca**

*ss.* First gill arch normal. Body short and deep.

*t.* Gill-rakers obsolete. Anal spines 6 to 10. Covered with small ctenoid scales. Soft dorsal and anal scaly. Teeth small, occupying only the symphyseal portion of jaws. Mouth small, very oblique.

17. **Symphysodon**

*tt.* Gill-rakers setiform. Anal spines six, graduated. Narrow bands of teeth in the jaws. Mouth small, oblique. Anterior parts of soft dorsal, anal, and first ventral ray much prolonged. Caudal truncate.

18. **Pterophyllum**

1. **CHÆTOBRANCHUS** Heckel.

Heckel, Bras. Fluss-Fische, in Ann. Wien. Mus., II, 1840, p. 401 (*flavescens*, *brunneus*).

Günther, Cat. Fish. Brit. Mus., IV, 1862, p. 309 (*flavescens*).

Steind., Beitr. zur Kenntniss der Chromiden des Amazonenstromes, 1875, p. 68 (*flavescens*).

Eigenmann & Eigenmann, Proc. U. S. Nat. Mus., XIV, 1891, p. 70.

The genera *Chætobranchus* and *Chætobranchopsis* stand apart from the remaining genera of Cichlidæ on account of the peculiar gill-rakers. The characters separating these two genera from each

other are of no great importance. The species of *Chætobranchus* may be distinguished by the following characters:—

- A. III, 11 or 12; scales  $3\frac{1}{2}$ —25 to 27—10 or 11; depth 2— $2\frac{1}{2}$  in the length. A dark spot on middle of sides on lateral line ..... **flavescens**  
 A. III, 14 or 15; scales 5 or 6—28 or 29—10 or 11; depth  $1\frac{5}{8}$ —2 in length. Four broad dark cross-bands on upper part of sides; a black spot surrounded with white in front of upper caudal lobe ..... **semifasciatus**

### **Chætobranchus flavescens** Heckel.

*Chætobranchus flavescens* Heck., Bras. Fluss-Fische in Ann. Wien. Mus., 1840, II, p. 402 (Guapore; Rio Negro). Günther, Catal. Fish. Br. Mus., IV, 1862, p. 310 (Rio Negro and Guapore). Steind., Beitr. zur Kenntniss der Chrom. d. Amazonenstromes, 1875, p. 68 (Cudajas; Santarem; Villa Bella; Coary; Teffé; Gurupa; Rio Xingu; Hyutay; Rio Negro; Guapore; Hyavary; Lake Hyanuary). Eigenmann & Eigenmann, Proc. U. S. Nat. Mus., 1891, 70 (name).

*Chætobranchus brunneus* Heck., l. c., p. 405 (Rio Negro). Günther, Cat. Fish. Br. Mus., IV, 1862, p. 310 (Rio Negro).

*Chætobranchus robustus*, l. c., p. 310 (Br. Guiana).

*Chromys ucayalensis* Casteln., "Anim. Nouv. ou Rares de l'Amérique du Sud. Poissons, 1855, p. 15, pl. vi, fig. 2. Adult female."

*Geophagus badiipinnis* Cope, Proc. Acad. Nat. Sci. Phila., 1872, p. 251, pl. xi, fig. 1, juv. (Ambyiacu).

*Habitat*.—Amazons and tributaries to Guiana.

Many specimens of this species were collected by Hartt, marked "Lower Amazon," without any more definite locality.

### **Chætobranchus semifasciatus** Steindachner.

*Chætobranchus semifasciatus* Steind., Beitr. zur Kenntniss der Chrom. d. Amazonenstr., 1875, p. 70 (Obidos; Cudajas; Teffé; Rio Iça; Lake Hyanuary; Lake Saraca, near Silva). Eigenmann & Eigenmann, Proc. U. S. Nat. Mus., 1891, 70 (name).

*Habitat*.—Amazons.

## 2. **CHÆTOBRANCHOPSIS** Steindachner.

*Chætobranchopsis* Steind., Beitr. zur Kenntniss der Chrom. d. Amazonenstr., 1875, p. 73 (*orbicularis*).

But a single species of this genus is known.

### **Chætobranchopsis orbicularis** Steindachner.

*Chætobranchopsis orbicularis* Steind., l. c., 1875, p. 73 (Para; Santarem; Gurupa; Rio Xingu, near Porto do Moz; Rio Negro; Rio Hyanuary). Eigenmann & Eigenmann, Proc. U. S. Nat. Mus., XIV, 1891, p. 70 (name).

*Habitat*.—Amazons.



3. **CICHLA** Bloch & Schneider.

*Cichla* Bloch & Schneider, 340, pl. 66, 1801 (*ocellaris*).

Cuv., Règne Anim., II, 279, 1817 (*ocellaris*).

Heck., Bras. Fluss-Fische in Ann. Wien. Mus., 1840, II, p. 408 (sp.).

Günther, Cat. Fish. Br. Mus., IV, 1862, p. 303 (sp.).

Type: *Cichla ocellaris* Bloch & Schneider.

The members of this genus stand out prominently in general appearance as well as in minor details. In external form they resemble *Micropterus* and *Perca* of the North America fauna.

Four species are known. They may be distinguished by the following characters:—

Body with three dark cross-bars or bands.

Scales 10—88—? A. III, 11; caudal rounded.....**ocellaris**

Scales 13—110—? A. III, 9; caudal emarginate.....**temensis**

Body with seven dark cross-bands; caudal forked; depth 5 in the total length; dorsal spines 14.....**conibos**

Body with eleven oblique black cross-bands; caudal rounded; depth nearly  $\frac{1}{3}$  of the total length; dorsal spines 16.....**multifasciata**

***Cichla ocellaris*** Bloch.

*Cichla ocellaris* Bl. & Schn., 1801, p. 340, pl. 66; Müll. & Troschel in Schomb. Guiana, III, p. 625 (all rivers of British Guiana). Günther, Cat. Fish. Br. Mus., IV, 1862, p. 304 (Guiana, Demarara). Cope, Proc. Amer. Phil. Soc., 1878, p. 697 (Peruvian Amazon). Steind., Beitr. zur Kennt. der Fluss-Fische Südamerika's, IV, 1882, p. 3, pl. I, fig. 2 (Rio Hualaga). E. & E., Proc. U. S. Nat. Mus., XIV, 1891, p. 69.

*Cichla monocolus* Agass. in Spix pisc. Bras., p. 100, pl. 63, and pl. E (Brazil).

*Cichla monocolus* Heck., Bras. Flussf., p. 411 (Rio Guaporé).

*Cichla atabapensis* Humb., "Observ. Zool., II, p. 168."

*Cyca toucouarai* Casteln., "Anim. Nouv. ou Rares de l'Amér. Sud. Poiss., p. 17, pl. 10, fig. 1."

*Habitat*.—Amazons and northward. Our specimens, numbering six, are from Brazil.

***Cichla multifasciata*** Castelnau.

*Cichla multifasciata* Casteln., "l. c., p. 18, pl. 10, fig. 2." Günther, Cat. Fish. Br. Mus., IV, 1862, p. 305 (Ucayale, Peru). E. & E., Proc. U. S. Nat. Mus., XIV, 1891, p. 69 (name).

This species is known only from the original specimens.

**Cichla conibos** Castelnau.

*Cichla conibos* Casteln., "l. c., p. 18, pl. 10, fig. 3." Günther, Cat. Fish. Br. Mus., XIV, 1862, p. 305 (Ucayale, Peru). E. & E., Proc. U. S. Nat. Mus., XIV, 1891, p. 69.

Known only from the types.

**Cichla temensis** Humboldt.

*Cichla temensis* Humb., "Observ. Zoöl., II, 1811, p. 169." Heck., Bras. Fluss-Fische, p. 413 (Rio Negro). Günther, Cat. Fish. Br. Mus., 1862, IV, p. 304 (Brazil, River Cupai). Steind., Beitr. zur Kennt. des Fluss-Fische Süd Amerikas, IV, 1882, p. 3, pl. I, fig. 3, juv. (Iquitos). E. & E., Proc. U. S. Nat. Mus., XIV, 1891, p. 69 (name).

*Cichla tucumare* Heck., l. c., p. 409.

*Habitat.*—Amazons.

4. **UARU** Heckel.

*Uaru* Heck., in Ann. Wien. Mus., 1840, p. 330 (*amphiacanthoides*).

Günther, Cat. Fish. Brit. Mus., 1862, IV, p. 302 (redefined).

E. & E., Proc. U. S. Nat. Mus., XIV, 1891, p. 69 (redefined).

Type: *Uaru amphiacanthoides* Heckel.

This genus is readily distinguished from related genera by the enlarged scales in the lateral line. In this respect it resembles those species of *Crenicichla* having a large number of scales, but differs from them widely in shape, dentition, and preopercular margin.

**Uaru amphiacanthoides** Heckel.

*Uaru amphiacanthoides* Heck., Bras. Fluss-Fische in Ann. Wien. Mus., 1840, II, p. 331 (Rio Negro, above Airao).

*Acara* (*Heros*) *amphiacanthoides* Steind., Beitr. zur Kennt. der Chrom. des Amaz'st., 1875, p. 34 (Tonantins; Tefé; Obidos; Coary; Serpa; Cudajas; Fonteboa; Jatuarana; Ueranduba; Rio Negro; Madeira; Xingu; Lakes Hyauuary, Alexo, Saraca, Maximo; Rio Cupai).

*Astronotus* (*Uaru*) *amphiacanthoides* E. & E., Proc. U. S. Nat. Mus., XIV, 1891, p. 69 (name).

*Pomotus fasciatus* R. Schomb., Fish of Guiana, part II, p. 169, pl. XVII, 1852 (Guiana).

*Uaru obscurum* Günther, Cat. Fish. Brit. Mus., 1862, IV, p. 302 (River Cupai).

*Habitat.*—Amazons to Guiana.

5. **NEETROPLUS** Günther.

*Neetroplus* Günther, Fishes Central America, 469, 1866 (*N. nematopus*).

This genus is known from two species. It differs from related forms in having flat incisor-like teeth.

**Neetroplus nematopus** Günther.

*Neetroplus nematopus* Günther, l. c. (Lake Managua).

**Neetroplus nicaraguensis** Gill & Bransford.

*Neetroplus nicaraguensis* Gill & Bransford, "Proc. Acad. Nat. Sci. Phila., 1877, 186 (Lake Nicaragua)."

We have not had access to a description of this species, and are therefore unable to give its distinguishing characters.

6. **ACAROOPSIS** Steindachner.

*Acaropsis* Steind., Beitr. Kennt. der Chrom. des Amazonenstromes, 1875, p. 20 (*nassa*).

Eigenmann & Eigenmann, Proc. U. S. Nat. Mus., XIV, 1891, p. 68 (name only).

Type: *Acara nassa* Heckel.

This genus differs from related forms in its greatly protractile snout and short anal. It is nearly related to *Retroculus*, from which it differs in the characters mentioned in the key.

**Acaropsis nassa** Heckel.

*Acara nassa* Heckel, Bras. Fluss-Fische, p. 353 (Rio Guapore). Günther, Cat. Fish. Br. Mus., IV, 1862, p. 281 (River Cupai).

*Acara (Acaropsis) nassa* Steind., Beitr. Kennt. Chromid. Amaz'str., 1875, p. 20 (Gurupa; Montalegre; Tonantins; Villa Bella; Santarem; Tefé; Coary; Serpa; Obidos; Curupira; Ueranduba. From rivers Tapajos, Negro, Xingu, Hyutay, Madeira, Guapore; from lakes Alexo, Maximo, José Assu; Saraca, near Silva; Manacapuru). E. & E., Proc. U. S. Nat. Mus., XIV, 1891, p. 68 (name).

*Acara cognatus* Heckel, l. c., p. 356 (Barra do Rio Negro).

*Acara unicolor* Heckel, l. c., p. 357 (Barra do Rio Negro).

*Centrarchus cyanopterus* Rob. Schomb., Fish of Guiana, part II, p. 165, pl. XVI, 1852.

*Habitat*.—Amazons and Guiana.

7. **RETROCOLUS** gen. nov.

This genus is closely allied to *Acaropsis*, from which it differs to a remarkable degree in the shape of the head. The difference is largely due to the high development of the snout and the pre-orbitals.

**Retroculus boulengeri** sp. nov.

Type: One specimen (No. 1922), 240 mm. long, Brazil. F. C. Hartt.

D. XVI, 11; A. III, 7. Head about 3; depth 3. Lateral line  $27 + 19 + 2$  or 3 on caudal. Lateral line overlapping by 7—9 scales. Seven series of scales from origin of dorsal to lateral line; ten or eleven from lower limb to vent.

Anal margined with dusky, a black spot on base of the first five dorsal rays. Upper lip dusky.

General shape of a *Geophagus*. Ventral outline nearly straight. Profile steep to first dorsal spine, then gradually descending to caudal. Eye entirely above the gill opening and in the posterior half of the head, 2 in preorbital,  $1\frac{2}{3}$  in interorbital, about 5 in head. Snout much produced, more than twice the postorbital portion of the head. Mouth nearly horizontal, maxillary reaching to nares, which are nearer the eye than the tip of the snout. Pre-maxillary when protracted equals one-third of the distance from its tip to the orbit. Four series of scales on the cheeks. A series of strong conical teeth, those of the lower jaw smaller, a band of villiform teeth behind them.

Gill-rakers small, compressed claw-shaped, the anterior border pectinate. Soft dorsal and anal angular reaching the caudal. A few scales along the rays. Caudal rounded, thickly scaled to its tip.

We take pleasure in dedicating this species to Dr. G. A. Boulenger, of the British Museum.

8. **PETENIA** Günther.

*Petenia* Günther, Cat. Fish. Brit. Mus., IV, 1862, p. 301 (*splendida*). Steind.

Beitr. Kenntn. Chrom. Amazon'str., 1875, p. 36 (redefined). Eigenmann & Eigenmann, Proc. U. S. Nat. Mus., XIV, 1891, p. 69 (redefined).

Type: *Petenia splendida* Günther.

This genus is known from three species. It is closely allied to *Acaropsis* and *Retroculus*, from which it differs in its elongate anal. There is no difficulty in finding intermediate numbers of spines, if all the species which have hitherto been united under *Acara* are to be retained as one lump? There are, however, characters aside from the anal spines to warrant the separation of at least some of the species as separate genera. As soon as this is done the remain-

der fall apart as an incoherent mass. The species with long protractile snouts are sharply divided into those with but 3 anal spines and those with 5 or 6.

Scales 6—30—12.

Depth of body 2 in the length. A dark brown spot near middle of body. A second much smaller spot on base of upper caudal rays....**spectabilis**

Depth  $2\frac{1}{3}$ — $2\frac{1}{6}$  in the length. A large spot at the beginning of lat. line. A second small spot near middle of body, and a much smaller one at base of upper caudal rays.....**kraussii**

Scales 6—41—17. A series of six or seven large round black spots along the middle of the side, the last spot being edged with white and located on the upper half of the root of the caudal.....**splendida**

### **Petenia spectabilis** Steindachner.

*Acara (Petenia) spectabilis* Std., Beitr. Kenntn. Chromid. Amazonenstr. 36, pl. iv, 1875 (Amazon, near Gurupa and Obidos).

*Astronotus (Petenia) spectabilis* E. & E., Proc. U. S. Nat. Mus., 1891, 69.

### **Petenia kraussi** Steindachner.

*Petenia kraussi* Steind., Fischfauna Magdalenastr., 12, pl. ii, 1878 (Magdalena River). Id., Fischfauna Cauca and Flüsse bei Guayaquil 4, 1879 (Cauca).

*Astronotus (Petenia) kraussi* E. & E., Proc. U. S. Nat. Mus., 1891, 69 (name).

### **Petenia splendida** Günther.

*Petenia splendida* Günther, Cat. Fish. Brit. Mus., IV, 301, 1862 (Lake Peten). E. & E., Proc. U. S. Nat. Mus., 1893, 59 (name).

## 9. **ASTRONOTUS** Swainson.

### § **ASTRONOTUS.**

= *Astronotus* Swainson, Nat. Hist. Fish. Amph. Rept., II, 1839, p. 229 (*ocellata*).

> § *Astronotus* Eigenmann & Eigenmann, Proc. U. S. Nat. Mus., XIV, 1891, p. 68 (redefined).

> *Acara* Heck., Ann. Wien. Mus., 1840 (sp.).

= *Acara* Gill, Synopsis Fresh Water Fishes of Trinidad, 1858, p. 20 (restricted to *crassispinis* = *ocellatus*).

< *Acara* Steind., Beitr. Kennt. Chrom. Amazon'str., 1875, p. 3 (sp.).

= *Hydrogonus* Günther, Cat. Fish. Brit. Mus., 1862, XV, p. 303 (*ocellatus*).

### § **CICHLASOMA.**

*Cichlasoma* Swainson, Nat. Hist. Fish. Amph. Rept., II, 1839, p. 230.

*Cichlasoma* Gill, Synopsis Fresh Water Fish of Trinidad, 1858, p. 20 (redefined), (*punctatus* = *bimaculata*).

*Acara* Heck., Ann. Wien. Mus., 1840, p. 338 (sp.).



*Acara* Günther, Cat. Fish. Brit. Mus., IV, 1862, p. 276 (sp.).

*Heros* Heck., l. c., p. 362 (sp.).

*Heros* Günther, Cat. Fish. Brit. Mus., IV, 1862, p. 285 (sp.).

*Heros* Steind., Beitr. Kennt. Chrom. Amazonenstr., 1875, p. 22 (sp.).

*Heros* Eigenmann & Eigenmann, Proc. U. S. Nat. Mus., XIV, 1891, p. 68 (redefined).

*Herichthys* Baird & Girard, Proc. Acad. Nat. Sci. Phila., 1854, p. 25, and Rept. U. S. Mex. Bound. Survey, p. 30 (*cyanoguttatus*).

*Hoplarchus* Kaup, Wieg. Arch., 1860, p. 128 (*pentacanthus*).

### § **ÆQUIDENS** Nov.

*Acara* Eigenmann & Eigenmann, Proc. U. S. Nat. Mus., XIV, 1891, p. 68 (not *Acara* of Heckel, Gill, or of Günther).

Type: *Acara tetramerus* Heckel.

The limited number of species available for examination do not warrant a key. The species are enumerated in the Catalogue of the Fresh Water Fishes of South America and the Catalogue of the Fresh Water Fishes of Central America and Southern Mexico. (Proc. U. S. Nat. Mus., 1891 and 1893.)

*Astronotus* seems to be the first name that was applied to these fishes in a generic sense. *Lobotes ocellatus* Agassiz was the only species mentioned by the author of this name (Swainson, 1839), and *Astronotus* must be applied to *ocellatus* and its relatives. On the next page of the same work Swainson gives the name *Cichlasoma* to *Labrus punctatus* of Bloch (= *Sciæna bimaculata* L.). This name is to be retained for the relatives of *bimaculata*.

A year after the names *Astronotus* and *Cichlasoma* were proposed, Heckel published the name *Acara* (339) for a large number of species, including also the type of the name *Astronotus*. No type was indicated for *Acara* until Gill in 1858 restricted it by exclusion of species of *Astronotus* and *Cichlasoma* to Heckel's *Acara crassispinis*. But it has since been determined that the *Acara crassispinis* of Heckel is a synonym of *Lobotes ocellatus* Agassiz, which is the type of *Astronotus*. The name *Acara* is, therefore, the exact synonym of *Astronotus*. Günther overlooking Swainson's name, used *Acara* for the species of *Cichlasoma* in his catalogue.

Heckel also (361) gave the name *Heros* to a number of species, whose "auffallenste Kennzeichen . . . ist die grössere Anzahl von Stachelstrale in der Analflosse," the anal having 5—9 spines. This name becomes a synonym of *Cichlasoma*; if, as in the present

instance, the species are divided into those with three and those with more than three anal spines, a division which is purely artificial, but to be preferred over the division into those with 3—4, and into those with more than 4 spines, since none of those with three spines show any variations, while species with 4 spines, sometimes as in the case of *A. bimaculata*, the type of *Cichlasoma*, have as many as 6 anal spines. We are not aware that a type has ever been appointed for this name. The *Heros severus*, of Heckel, may serve as such, since it is the first species described by Heckel, and since three of his other species have been shown to be synonyms of this species.

The later names give little difficulty. *Hydrogonus*, of Günther, is the exact synonym of *Astronotus*. The type of *Hoplarchus* was always conceded a *Heros* (*Cichlasoma*). And *Herichthys* is based on a northern species of *Cichlasoma*.

For the species showing the peculiarities of *Acara tetramerus*, of Heckel, we propose the subgeneric name **Æquidens**.

We have seen no advantage in retaining in this genus the other forms which have sometimes been grouped with it.

***Astronotus* (*Astronotus*) *ocellatus*** (Agassiz).

*Lobotes ocellatus* Agassiz, in Spix Selecta Gen. et Spec. Pisc. Bras., 129, pl. 68, 1829 (Brazil; Paraguay; Amazons; Guiana).

*Astronotus ocellatus* Swainson, Nat. Hist. Fish. Amph. Rept., II, 229, 1839 (Spix plate 68); E. & E., Proc. U. S. Nat. Mus., 1891, 68 (name).

*Acara ocellata* Steindachner, Beitr. Kenntn. Chrom. Amazonenstr., 17, 1875 (Para; Santarem; Montalegre; Coary; Obidos; Tonantins; Tefé; Cudajas; Rio Negro; Rio Hyavary; Rio Madeira; Lake Hyanuary; Lake Saraca, near Silva; Lake Manacapuru). Cope, Proc. Amer. Phil. Soc., 1878, 697 (Peruvian Amazon).

*Hydrogonus ocellatus* Günther, Cat. Fish. Brit. Mus., IV, 303, 1862 (copied).

*Acara crassispinis* Heckel, Fluss-Fische Brasiliens, 357, 1840 (Rio Paraguay, near Villa Maria and Caiçara; Rio Guapore, near Mattogrosso; Rio Negro; Rio Branco).

*Cychna rubro-ocellata* Rob. Schomburgk, Fishes of Guiana, II, 153, pl. x, 1852 (British Guiana).

*Acara compressus* Cope, Proc. Acad. Nat. Sci. Phila., 1872, 256 (Ambyiaeu).

The specimens examined are from Brazil.

***Astronotus* (*Æquidens*) *tetramerus*** (Heckel).

*Acara tetramerus* Heckel, Fluss-Fische Brasiliens., 341, 1840 (Rio Branco). Günther, Cat. Fish. Brit. Mus., IV, 277, 1862 (Guiana; Rio Branco). Cope, Proc. Acad. Nat. Sci., Phila., 1872, 255 (Ambyiaeu). Steindach-

ner, Beiträge Kenntn. Chrom. Amazonenstr., 5, 1875 (Tabatinga; Teffe; Obidos; Villa Bella; Cudajas; Santarem; Gurupa; Para; Rio Hyutay; Tajapuru; Rio Negro; Rio Branco; Porto do Moz; Rio Puty; Rio Guapore, near Mattogrosso; Lakes Jose Assu; Hyanuary; Alexo; Saraca; and Maximo). Id., Flussf. Süd Amer., IV, 2, 1882 (Rio Huallaga; Rio Amazonas; Iquitos).

*Astronotus tetramerus* E. & E., Proc. U. S. Nat. Mus., XIV, 1891, 68 (name).

*Acara viridis* Heckel, l. c., 343 (Matogrosso).

*Acara diadema* Heckel, l. c., 344 (Marabitanos, on the Rio Negro).

*Acara pallidus* Heckel, l. c., 347 (Rio Negro).

*Acara dimerus* Heckel, l. c., 351 (Cujaba).

*Chromys uniozellata* Castelnau, "Anim. Nouv. Rares Amér. Sud Poiss. 15, pl. VI, fig. 1, 1855 (Ucayale, Peru)."

*Acara uniozellata* Günther, Cat. Fish. Brit. Mus., IV, 281 (copied).

*Acara flavilabris* Cope, Proc. Am. Phil. Soc., 1870, 570 (Marañon; Pebas; Ecuador). Id., Proc. Acad. Nat. Sci. Phila., 1872, 255, pl. xi, fig. 4 (Ambyiacu). Id., Proc. Am. Phil. Soc., 1878, 696 (Peruvian Amazon).

The specimens examined are from the Lower Amazons.

#### ***Astronotus (Cichlasoma) bimaculata* (Linnæus).**

*Acara* Piso, Hist. Natural. Medic., 67, 1658.

*Labrus*, No. 87, Gronow, Mus. Ichthyol., 36, 1754 (Rivers of Surinam).

*Sparus*, No. 223, Gronow, "Zoophyl., 64, tab. v, fig. 4."

*Sciæna bimaculata* Linnæus, "Mus. Ad. Fried., I, 66."

*Labrus bimaculatus* Linnæus, Syst. Nat., Ed. XII, I, 477, 1766 (Mediterranean).

*Perca bimaculata* Bloch, "VI, 82, tab. 310, fig. 1."

*Cichla bimaculata* Bloch & Schneider, "338, 1801."

*Acara bimaculatus* Günther, Cat. Fish. Brit. Mus., IV, 276, 1862 (Guiana; Guapore; Trinidad; Demarara).

*Acara (Heros) bimaculatus* Steindachner, Beitr. Kennt. Chrom. Amazonenstr., 22, 1875 (Para; Gurupa; Santarem; Tapajos; Trombetas; Cudajas; Villa Bella; Tabatinga; Serpa; Curupira; Rio Hyutay; Xingu, near Porto do Moz; Cujaba; Ambyiacu).

*Astronotus (Cichlasoma) bimaculata* E. & E., Proc. U. S. Nat. Mus., 1891, 68 (name).

*Sciæna punctata* Linnæus, "Mus. Ad. Fried., I, 66."

*Labrus punctatus* Bloch, "tab. 295." Bloch & Schneider, "338, 1801."

*Acara punctatus* Heckel, Fluss-Fische Brasiliens 360 (Surinam).

*Chromis tenia* Benn., "Proc. Comm. Zool. Soc., I, 1830, 112 (Trinidad)." Storer, "Syn. Fish. N. Amer., 68," and "Mem. Am. Acad., II, 520."

*Acara tenia* Heckel, Fluss-Fische Brasiliens, 361, 1840 (name).

*Cychlosoma tenia* Gill, Fishes of Trinidad, 23, 1858 (Trinidad).

*Acara margarita* Heckel, l. c., 338 (Guapore).

*Acara gronovii* Heckel, l. c., 361 (based on *Labrus*, No. 87, of Gronow = *L. bimaculatus* L.).

The specimens examined are marked "Brazil."

**Astronotus (Cichlasoma) severus** (Heckel).

*Heros severus* Heckel, Ann. Wien. Mus., 1840, p. 362 (Rio Negro, near Marabitanos).

*Astronotus (Cichlasoma) severus* E. & E., Proc. U. S. Nat. Mus., 1891, p. 68 (name).

*Heros coryphæus* Heckel, Ann. Wien. Mus., 1840, p. 364 (Rio Guapore).

*Heros modestus* Heckel, l. c., p. 366 (Rio Guapore).

*Heros spurius* Heckel, l. c., p. 368 (Rio Guapore). Günther, Cat. Fish. Brit. Mus., IV, 1862, p. 293 (Guiana and Brazil).

*Acara (Heros) spuria* Steind., Süßwasserf. des Südöstl. Bras., 1874, p. 9, taf. iv, var.; and Beitr. Kennt. Chrom. Amazonenstr., 1875, p. 23 (Tabatinga; Tonantins; Coary; Teffé; Obidos; Cudajas; Santarem; Gurupa; Xingu, near Porto do Moz; Rio Tapajos; Madeira; Guapore; Rio Negro; Rio Iça or Putumayo; Rio Hyntay; Ambyiacu; Lakes Alexo, Hyanuary, José Assu, Saraca, near Silva, and Maximo).

*Chromys appendiculata* Casteln., "Anim. Nouv. ou Rares Amér. Sud. Poiss., 1855, p. 15, pl. vii, fig. 3."

*Chromys fasciata* Casteln., l. c., p. 17, pl. ix, fig. 2, juv.

*Uarus centrarchoides* Cope, Proc. Acad. Nat. Sci. Phila., Jan. 1872, p. 253, pl. xi, fig. 2, juv.

The specimens examined are from Brazil.

10. **THERAPS** Günther.

*Theraps* Günther, Cat. Fish. Brit. Mus., IV, 284, 1862 (*irregularis*).

**Theraps irregularis** Günther.

*Theraps irregularis* Günther, l. c. (Guatemala).

11. **MESONAUTA** Günther.

*Mesonauta* Günther, Cat. Fish. Brit. Mus., IV, 300, 1862 (*insignis*).

**Mesonauta festivus** (Heckel).

*Heros festivus* Heckel, Fluss-Fische Brasiliens, 376, 1840 (Guapore).

*Astronotus (Mesonauta) festivus* E. & E., Proc. U. S. Nat. Mus., 1891, 69 (name).

*Heros insignis* Heckel, l. c., 379 (Marabitanos, on the Rio Negro).

*Mesonauta insignis* Günther, Cat. Fish. Brit. Mus., IV, 300, 1862 (Tropical America).

*Chromys acora* Castelnau, "Anim. Nouv. ou Rares Amér. Sud. Poiss., 17, pl. 9, fig. 1."

12. **CRENICARA** Steindachner.

*Crenicara* Steindachner, Beitr. Chrom. Amazonenstromes, 39, 1875 (*elegans*).

Type: *Crenicara elegans* Steind.

But a single species of this genus is as yet known.

**Crenicara elegans** Steindachner.

*Crenicara elegans* Steindachner, l. c., 39, 1875 (Gurupa; Cudajas; Curupira).  
E. & E., Proc. U. S. Nat. Mus., 1891, p. 69 (name only).

13. **DICROSSUS** Agassiz.

*Dicrossus* Agassiz MS., Steindachner, Beitr. Kenntniss Chrom. Amazonenstr.,  
42, 1875 (*maculatus*).

Type: *Dicrossus maculatus* Steindachner.

The only species of this genus is—

**Dicrossus maculatus** Steindachner.

*Dicrossus maculatus* Steind., l. c., 42, 1875 (Lago Maximo; Jose Assu, Tonantins; Rio Hyauary; Rio Tajapuru). E. & E., Proc. U. S. Nat. Mus., 1891, p. 69 (name only).

14. **CRENICICHLA** Heckel.

*Crenicichla* Heckel, Fluss-Fische Brasiliens, 416, 1840 (*macrophthalmus*).  
*Batrachops* Heckel, l. c. 432 (*reticulatus*).

We have selected for the types of Heckel's names the species evidently considered typical by him. He refers to the figures of *macrophthalmus* and *reticulatus* in his generic diagnoses.

On account of the few species at hand no synopsis of the genus is attempted. The species fall into two groups. Those with 100 or more scales in the lateral line (*Crenicichla*) and those with fewer than 100 scales (*Batrachops*).

**Crenicichla brasiliensis adpersa** Heckel.

*Crenicichla adpersa* Heckel, l. c., 421, 1840 (Guapore).

*Crenicichla johanna* var. *adpersa* Günther, Cat. Fish. Brit. Mus., IV, 307, 1862 (Guapore).

*Crenicichla brasiliensis adpersa* E. & E., Proc. U. S. Nat. Mus., 1891, 69 (name).

The specimens examined are from the lower Amazon.

**Crenicichla saxatilis** (Linnæus).

*Sciæna* Linnæus, "Mus. Ad. Fried., 65, tab. 31, fig. 1."

*Sparus*, No. 185, Gronow, Mus. Ichth., II, 29, tab. vi, fig. 3 (Surinam).

*Scarus rufescens* Gronow, "Zoophyl, 67, tab. 6, fig. 3."

*Sparus saxatilis* Linnæus, Syst. Nat., Ed. XII, I, 468, 1766 (Surinam).

*Perca saxatilis* Bloch, "plate 309."



*Crenicichla saxatilis* Heckel, l. c., 432 (name). Günther, Cat. Fish. Brit. Mus., IV, 308, 1862 (Brazil; Guiana; Rio Capin; Demarara). Boulenger, Proc. Zool. Soc. London, 1887, 275.

*Cichla labrina* Agassiz, Spix Selecta Genera et Spec. Pisc., 99, pl. 62, fig. 1, 1829 (Brazil).

*Crenicichla lepidota* Heckel, l. c., 429 (Guapore).

*Scarus pavoninus* Gronow, Catalogue of Fish, 67, 1854 (Surinam).

Lower Amazon.

## 16. **GEOPHAGUS** Heckel.

### § **GEOPHAGUS.**

*Geophagus* Heckel, Fluss-Fische Brasil., in Ann. Wien. Mus., II, 1840, 383 (typical species *altifrons* and *dæmon*). Günther, Cat. Fish. Brit. Mus., IV, 315 (*surinamensis*).

*Satanoperca* Günther, l. c., 313, 1862 (sp.).

Type: *Geophagus altifrons* Heckel = *Sparus surinamensis* Bl.

### § **MESOPS.**

*Mesops* Günther, Cat. Fish. Brit. Mus., IV, 311, 1862 (*cupido* and *teniatus*).

*Geophagus (Mesops)* Steindachner, Beitr. Kenntn. Chromid. Amazonenstr., 47, 1875. E. & E., Proc. U. S. Nat. Mus., 1891.

Type: *Geophagus cupido* Heckel.

The genera *Geophagus* and *Satanoperca* were separated on the presence or absence of scales on the dorsals, a character which has been shown to be variable. *Mesops* has better claims for an independent existence, but some species of *Geophagus* are said to have the eye median in position while young, and we have retained it as a subgenus.

### **Geophagus (Mesops) cupido** Heckel.

*Geophagus cupido* Heck., Fluss-Fische Bras., p. 399, 1840 (Rio Negro; Rio Guapore). Cope, Amer. Phil. Soc., 1878, p. 697 (Peruvian Amazon).

*Mesops cupido* Günther, Cat. Fish. Brit. Mus., 1862, Vol. IV, p. 311 (Rio Negro; Guapore).

*Geophagus (Mesops) cupido* Steind., Beitr. zur Kenntniss Chrom. Amazonenstr., 1875, p. 47 (Amazon, near Teffé; Coary; Cudajas; Lake Hyanuary; Rio Negro; Guapore; Iça; Hyutay; Sambaia; and Jatuarana). E. & E., Proc. U. S. Nat. Mus., 1891, p. 70 (name).

The single specimen is probably from Brazil.

**Geophagus acuticeps** Heckel.

*Geophagus acuticeps* Heckel, Fluss-Fische Brasiliens, 394, 1840 (Barra do Rio Negro).

*Satanoperca acuticeps* Günther, Cat. Fish. Brit. Mus., IV, 312, 1862 (River Cupai).

*Geophagus (Satanoperca) acuticeps* Steindachner, Beitr. Kenntn. Chrom. Amazonenstr., 57, 1875 (Teffé; Obidos; Coary; Villa Bella; Cudajas; Fonteboa; Tonantins; Serpa; Jatuarana; Ueranduba; Rio Trombetas; Tapajos; Rio Negro; Hyutay; Tajapiru; Hyanuary; Jose Assu). E. & E., Proc. U. S. Nat. Mus., 1891, 70 (name).

The specimens examined are from Teffé.

**Geophagus jurupari** Heckel.

*Geophagus jurupari* Heckel, Fluss-Fische Brasiliens, 392, 1840 (Barra do Rio Negro). Steindachner, Beitr. Kenntn. Chrom. Amazonenstr., 60, 1875 (Tabatinga; Tonantins; Fonteboa; Serpa; Teffé; Gurupa; Para; Rio Trombetas; Rio Negro, at Manaos; Rio Xingu, at Porto do Moz; Rio Hyutay; Hyavary; Ambyiacu).

*Satanoperca jurupari* Günther, Cat. Fish. Brit. Mus., IV, 313, 1862 (copied).

*Geophagus (Satanoperca) jurupari* E. & E., Proc. U. S. Nat. Mus., 1891, 71 (name).

*Geophagus leucostictus* Müller & Troschel, in Schomb. Reisen in Brit.-Guiana, III, 625, 1848 (Lake Amucu; swamps of the Savanna).

*Satanoperca leucosticta* Günther, l. c., 314 (copied).

*Satanoperca macrolepis* Günther, l. c., 314 (Demarara; British Guiana).

The specimens examined are labelled Itaituba and Brazil.

**Geophagus scymnophilus** Hensel.

*Geophagus scymnophilus* Hensel, l. c., 65 (mountain streams of Rio Grande do Sul).

*Geophagus pygmaeus* Hensel, l. c., 68 (GuaHyba at Porto Alegre).

The specimens examined are from Rio Janeiro.

**Geophagus surinamensis** (Bloch).

*Sparus surinamensis* Bloch, " taf. 277, fig. 2."

*Geophagus surinamensis* Müller & Troschel in Schomb. Reisen in Brit. Guiana, III, 625, 1848 (Lakes Tapacuma, Capoye, and Amucu; swamps of the Savanna). Günther, Cat. Fish. Brit. Mus., IV, 315, 1862 (river Capin, Guiana). Steindachner, Beitr. Kenntn. Chromid. Amazonenstr., 63, 1875 (Para; Gurupa; Villa Bella; Obidos; Tabatinga; Montalegre; Teffé; Coary; Fonteboa; Santarem; Tonantins; Alexo; Jose Assu; Hyanuary; Maximo; Rio Negro; Iça; Xingu; Trombetas; Madeira; Guapore; Tocantins, near Cameta; Hyutay; Tapajos). E. & E., Proc. U. S. Nat. Mus., 1891, 71 (name).

*Geophagus altifrons* Heckel, l. c., 385 (Barra do Rio Negro).

- Geophagus megasema* Heckel, Fluss-Fische Brasiliens, 388, 1840 (Guapore).  
*Chromis proxima* Casteln., "Anim. Nouv. ou Rares de l'Amér. Sud. Poiss., 14, pl. vii, fig. 1, 1855 (Ucayale, Peru)."  
*Satanoperca proxima* Günther, Cat. Fish. Brit. Mus., IV, 71, 1891 (copied).

The specimens examined are from the Falls of the Tapajos; Itaituba; and Cameta.

**Geophagus brasiliensis** Quoy & Gaimard.

- Chromis brasiliensis* Q. & G., "Voy. Uran. Zool. Poiss., 286."  
*Geophagus brasiliensis* Heckel, in "Kner Fische der Novara Exped., 266, pl. x, fig. 3." Hensel, Wirbelth. Südbras., 59, 1868 (Rio Janeiro; Porto Alegre). Steindachner, Süswasserf. Südöstl. Bras., 13, pl. ii & iii, 1874 (Rio Cadea, Rio Santa Maria, in Rio Grande do Sul; Rio Parahyba, near Campos and Mendez; Rio Novo and Rio Muriahe, tribts. of Parahyba; rivers and lakes near S. Antonio de Sa; Rio Macahe; Rio de S. Joao; Rio Quenda, near Santa Cruz; Rio S. Matheos; Rio Arrasuaby; Itabapua; Rio Mucuri, above Porto Alegre and at Santa Clara; Cannavieras, at the union of rios Pardo, Salsa, Jundiahy, and Jequitinhonha; Rio Paraguassu, near Bahia). E. & E., Proc. U. S. Nat. Mus., 1891, 71 (name).  
*Chromis unipunctata* Castelnau, "Anim. Nouv. ou Rares de l'Amér. Sud. Poiss., 13, pl. viii, fig. 2 (juv.)."  
*Acara unipunctata* Günther, Cat. Fish. Brit. Mus., IV, 283, 1862 (name).  
*Chromys unimaculata* Castelnau, l. c., "13, pl. vii, fig. 2 (adult mas.)."  
*Geophagus rhabdotus* Hensel, l. c., 60 (Rio Cadea).  
*Geophagus gymnogenus* Hensel, l. c., 61 (mountain streams of Rio Grande do Sul).  
*Geophagus bucephalus* Hensel, l. c., 63 (Rio Cadea).  
*Geophagus labiatus* Hensel, l. c., 64 (Rio Santa Maria).

16. **SARACA** Steindachner.

- Saraca* Steindachner, Beitr. Kenntn. Chromid. Amazonenstr., 65, 1875 (*opercularis*).  
 Type: *Saraca opercularis* Steind.

**Saraca opercularis** Steindachner.

- Saraca opercularis* Steind., l. c. (Lake Saraca; Villa Bella).

17. **SYMPHYSODON** Heckel.

- Symphysodon* Heckel, Fluss-Fische Bras. in Ann. Wien. Mus., II, 1840, 332 (*discus*).  
 Type: *Symphysodon discus* Heckel.

This genus is composed of but a single species.

**Symphysodon discus** Heckel.

*Symphysodon discus* Heckel, l. c. (Rio Negro). Günther, Cat. Fish. Brit. Mus., IV, 315, 1862 (river Cupai). Steindachner, Beitr. Kenntn. Chromiden Amazonenstromes, 47, 1875 (Teffé; Xingu, near Porto do Moz; Rio Madeira, near Manes; Rio Negro).

18. **PTEROPHYLLUM** Heckel.

*Pterophyllum* Heckel, Fluss-Fische Bras. in Ann. Wien. Mus., II, 1840, 334 (*scalaris*).

*Plataxoides* Casteln., Anim. Nouv. ou Rares de l'Amér. Sud. Poiss., 21 (*dumerilii*).

Type: *Platax scalaris* Cuvier & Valenciennes.

The genus is composed of but one species.

**Pterophyllum scalaris** (Cuv. & Val.).

*Platax scalaris* Cuv. & Val., Hist. Nat. Poiss., VII, 237 (Brazil).

*Pterophyllum scalaris* Heckel, l. c., 335 (Barra do Rio Negro). Günther, Cat. Fish. Brit. Mus., IV, 316, 1862 (river Cupai). Steindachner, Beitr. Kenntn. Chromiden Amazonenstromes, 76, 1875 (Santarem; Montalegre; Villa Bella; Obidos; Coary; Ueranduba; Tonantins; Tabatinga; Hyutay; Xingu; Lago Manacapuru; Lago Maximo; Barra do Rio Negro).

*Plataxoides dumerilii* Castelnau, l. c. (Para).

V.—Notes on some South American Fishes.<sup>1</sup>

BY CARL H. EIGENMANN.

Read Dec. 4, 1893.

A. Fishes collected by FREDERICK C. HARTT.

Through the courtesy of Prof. B. G. Wilder, I have been able to examine the collections of South American fishes, of Cornell University. These are for the most part fresh-water fishes collected by the late Frederick C. Hartt in the eastern parts of Brazil. The collection is interesting in that it adds several new species and extends the known habitat of others. The Nematognaths of the collections have been described by one of my students in the Annals of the New York Academy of Sciences (Mr. E. M. Kindle). The Cichlidæ have been examined by Mr. W. L. Bray and myself. The Characinidæ have been examined by my associate Mr. A. B. Ulrey. These groups are not included in the present notes, which embrace all but these.

**Symbranchus marmoratus** Bloch. One specimen. Para. - See p. 632 above

**Electrophorus electricus** (L.). Three specimens. Itaituba, Brazil.

**Sternarchorhynchus mülleri** Steindachner. One specimen. Para.

**Rhamphichthys marmoratus** Castelnau. Two specimens, one of them from Itaituba.

**Brachyrhamphichthys brevisrostris** Steindachner. Many specimens from Itaituba, on the Tocantins, and from the lower Amazons.

**STERNOPYGUS** Müller and Troschel.

*Sternopygus* Müller and Troschel, Horæ Ichthyol., III, 13 (sp.).

*Sternopygus* Günther, VIII, 7 (sp.).

Type: *Gymnotus carapo* Linnæus.

This genus, as understood by all previous writers, included both species with a free orbital rim and without a free orbital rim. No

<sup>1</sup> Contributions from the Zoölogical Laboratory of the Indiana University, No. VI.



type has so far been indicated. I here wish to restrict the name to *Sternopygus macrurus* Bloch (= *Gymnotus carapo* L.), the first species described by Müller and Troschel. This genus is to include those species of the genus as hitherto understood, which have a free orbital rim. They are:—

- 1 ***Sternopygus carapo*** (L.). One specimen from Marajo, another without habitat.
- 2 ***Sternopygus æquilabiatus*** Humboldt.
- 3 ***Sternopygus obtusirostris*** Steindachner.

For those species without free orbital rim I propose the name:—

#### **CRYPTOPS** gen. nov.

Type: *Sternopygus humboldtii* Steindachner.

The species of this genus are:—

- 1 ***Cryptops humboldtii*** Steind. Three specimens. Two of them from Marajo.
- 2 ***Cryptops virescens*** (Val.).
- 3 ***Cryptops axillaris*** (Günther).
- 4 ***Cryptops troschelii*** (Kaup).

***Carapus fasciatus*** (Pallas). One specimen. Braret.

#### ***Cetengraulis edentulus*** (Cuv.).

Oblong, not greatly compressed, the snout sharply pointed and projecting much beyond the narrow lower jaw. Maxillary not reaching to the angle of the lower jaw. Upper jaw with minute but distinct teeth. Eye twice as long as snout, little more than interorbital, 4 in head. Gill-rakers slender and very numerous, longer than eye. Scales largely persistent. Dorsal and anal with complete sheaths. Origin of dorsal equidistant from base of middle caudal rays and from anterior margin of eye. Anal inserted under end of dorsal. Ventrals about as long as eye, just anterior to dorsal in position. Pectorals small, not covering the bluntly trenchant breast, scarcely reaching ventrals. Silvery, darker above. Head  $3\frac{1}{4}$ ; depth 3; D. II, 14; A. II, 23; scales about 40.

One specimen, 125 mm. to base of caudal. Rio Janeiro.

#### ***Lycengraulis grossidens*** (Cuv.).

Head  $4\frac{1}{2}$  ( $4\frac{1}{3}$ ); depth  $4\frac{4}{5}$  (4); D. I,  $14\frac{1}{2}$  (I,  $11\frac{1}{2}$ ); A. II,  $28\frac{1}{2}$  (II,  $29\frac{1}{2}$ ). Scales 40. Compressed. Maxillary reaching to angle of lower jaw, its teeth in a single series and nearly equal. Lower jaw with about 17 much larger teeth on each side, between them are found a few smaller teeth (with about

40 teeth on each side, the anterior 8 not larger than those of the upper jaw, the rest somewhat larger). Gill-rakers slender and short 10 + 12 (14 + 16). Scales largely deciduous (persistent). Dorsal inserted slightly in front of anal, its origin equidistant from base of middle caudal rays and from anterior angle of gill opening (inserted directly over first anal ray). Pectorals reaching ventrals. A distinct broad silvery lateral band.

Two specimens from Braret may be referred to this species, although the smaller one differs considerably from the larger. They measure 135 mm. and 105 mm. In the description the statements in parentheses refer to the smaller specimen.

These specimens differ considerably from the one described by Dr. Günther. Most of the differences can, however, be explained by the difference in size of the specimens examined.

**Pterengraulis atherinoides (L.).**

Origin of dorsal behind origin of anal. Maxillary reaching to angle of lower jaw. Teeth in the jaws minute. D. II, 10½; A. II, 30½. Depth 4; head 4½; scales 40. Gill-rakers 7 + 14, the longest ½ of eye.

Elongate, compressed, the lower profile arched like the upper, the ventral surface trenchant. Snout upturned, not greatly projecting beyond the lower jaw. Eye 5½ in head. Scales deciduous. Origin of dorsal equidistant from base of middle caudal rays and from origin of pectoral. Origin of anal equidistant from base of caudal and from angle of mouth. Pectorals large. A broad silvery lateral band, narrowed on the tail.

One specimen, 230 mm. Loc. ?

**Pellona altamazonica** Cope.

D. II, 15½; A. III, 35½. Scales 75. Depth 4; head 4. Dorsal behind the ventrals, last ray over origin of anal. Origin of dorsal equidistant from tips of snout and from base of upper caudal rays. Eye little less than snout, nearly 5 in head. Ventral fins longer than eye. Silvery, with golden reflections. A dark blotch on shoulder above.

One specimen, 270 mm. Tocantins.

This species may prove identical with the *P. flavipinnis* Val.

**Clupea janeiro** nom. nov.

*Clupea brasiliensis* Steind., Ichthyol. Beitr., VIII, 64 (Rio Janeiro), not of Bloch & Schneider, which is *Albula vulpes* L.

A single specimen, agrees in all respects with Dr. Steindachner's description quoted above.

**Cyprinodon amazona** sp. nov.

D. 9 or 10; A. 12. Scales 21 in the male, 24 or 25 in the females. Depth 4—5; head 3½—4. Eye large, longer than snout, 3 in head. Dorsal but

slightly behind ventrals; anal much behind dorsal. Snout pointed. A silvery lateral band from above the eye to the end of the middle caudal rays. Above and below this are brown bands extending the whole length to end of caudal, the lower one forward to tip of snout. Male with a third dark band from the base of the pectoral to the tip of the first anal rays.

Types: 18 specimens (one a male?); up to 23 mm. long. Lower Amazonas.

This species is much more elongate than any other of this genus known to me. In shape it approaches more the species of *Characodon*, but the teeth are certainly in but a single series. In only one specimen I observed the semblance of a single pointed tooth behind the outer row of from three to four-pointed incisors.

***Poecilia vivipera paræ* var. nov.**

*P. surinamensis* and *unimaculata* Val. *P. schneideri* C. & V.

Head  $3\frac{3}{4}$ ; D. 7 in male, 6 in female; A. 8—9; scales 26. Eye about 3 in head, much more than half interorbital.

*Color of females.*—Dorsal dotted with black; scales with dark border. A narrow vertical dark bar two scales high on the sixth or seventh series of scales from the head. This rarely absent. A more or less distinct black blotch on lower posterior part of abdomen.

*Color of male.*—Dorsal with two or three oblique spots between each two rays. The rays elevated, reaching in some individuals to the caudal. Traces of an oblique dark bar from middle of root of caudal up and back. Sometimes with a short dark streak between two of the upper rays of the caudal and a similar vertical streak between two of the posterior dorsal rays.

About 150 specimens, taken in the ditches of the Rua das Mongubas of Para, probably belong to this species. The greatest differences between them and the typical *vivipera* lie in the fact that the dorsal in the female is inserted above the last ray of the anal, and that the anal in the female has 6 rays, in the male 7. If these characters should prove constant, these specimens represent a distinct species.

A number (12) of other males differ in being slightly darker. The vertical humeral spot is less distinct, but the abdominal spot is much more conspicuous and well circumscribed. There is in addition a dark spot on the root of the caudal, but little smaller than the abdominal spot. The oblique bar of the caudal is conspicuous in these, and there is in addition a straight band along the upper part of the caudal. These are so conspicuously marked that had any females been taken at the same time I should have considered them a distinct species.

A number of specimens from Braret show the following variation. Old males with a horizontal <-shaped spot on the root of the caudal, the upper limb continued onto the caudal. From the end of the lower limb a dusky streak extends upward and backward on the caudal. Behind this the caudal is dusky, in front of it white. Dorsal high, with oblique dark spots on the membranes. On other, mostly smaller, males, the coloration does not differ from that of the females, which are unmarked, save for the darker borders of the scales and an occasional humeral and ventral spot, as in the specimens from Para. The fin formulas and scales as in the specimens from Para.

**Poecilia branneri** sp. nov.

D. 7 in female, 9 in male; A. 9. Lat. 1. 25; depth  $3\frac{1}{2}$  at origin of anal. Rather short and deep. Origin of dorsal in female over end of anal. Eye large, about 3 in head. Teeth in broad bands, all pointed. Dorsal of the female low, last but one ray of the male produced, reaching to near middle of caudal. Margins of the scales, especially those of the back, dark. A well-defined black spot at base of caudal, rounded forward, truncated behind. Fins unspotted.

Male with traces of about 8 dark vertical lines on body; caudal spot margined with white (blue in life?) behind, its upper angle continuous with a black crescent on the caudal behind the white border. A dark streak on the caudal upward and backward from near the middle of the crescent. Membranes of the dorsal dotted with black.

Types: One male (Santarem—D. B. Meinot); two females (Para); three females and two males (Para—H. H. Smith); ten females and five males (loc. doubtful, probably Para).

To Dr. J. C. Branner, of the Stanford University, for some years an associate of Hartt in Brazil.

**Rivulus urophthalmus** Günther.

*Rivulus poeyi* Steindachner.

Many specimens from Para.

**Orestias agassizii** C. & V. One specimen. Lake Titicaca.

**Orestias pentlandi** C. & V. One specimen. Lake Titicaca.

**Anableps anableps** (L.). One specimen. Para.

**Potamorrhaphis guianensis** (Schomburgk). Nine specimens (No. 1610). Brazil.

**Caranx latus** Agassiz. Two specimens. Braret and Pernambuco.

**Caranx hippos** (Linnaeus). Two specimens. Braret.

**Nomeus gronovii** (Gmelin). Five specimens. Rocky pools at Panama.

**Stromateus xanthurus** (Quoy & Gaimard). One specimen. Rio Janeiro, Brazil. D. IV, 39; A. III, 37.

**Holocentrum pentacanthus** Bloch. One specimen. Rio Janeiro. D. XI, 16; A. IV, 11. Lat. l. 45. Depth 3; head  $3\frac{3}{5}$ . Interorbital 6 in head.

**Centropomus undecimalis** (Bloch). One specimen. Sao Matheo.

**Centropristis striatus** (L.). One specimen. Loc. ?

**Genyatremus cavifrons** (C. & V.). One specimen. Brazil.

**Lutjanus jocu** (Bloch & Schneider). One specimen. Braret.

**Calamus calamus** (C. & V.). One specimen. St. Thomas, W. I.

**Cryptotomus ustus** C. & V. One specimen. Rio Janeiro.

#### **Harpe nævius** sp. nov.

A dark spot as large as eye at the distal ends of the three upper pectoral rays. First dorsal spine and its membrane black; second dorsal spine and all but the margin of its membrane black; base of the third spine black; a very narrow margin of the soft dorsal dusky. A rusty spot above and in front of the pectoral just within the gill cover. Color otherwise (in alcohol) yellowish. D. XII,  $10\frac{1}{2}$ ; A. III,  $12\frac{1}{2}$ . Scales 5—33—10; head  $3\frac{3}{5}$ ; depth 3. Pectorals broad, rounded,  $1\frac{3}{10}$  in head; first ventral ray prolonged, reaching anus. Soft dorsal, anal, and caudal as in *H. rufa*. Head as in *rufa*. Anterior canines  $\frac{2}{2}$ . Upper posterior canine stronger than lower. Profile slightly convex, preopercle finely serrate. Eye 5 in head.

One specimen (No. 1263), 210 mm. Rio Janeiro.

#### **Pachyurus schomburgkii** Günther.

D. X, I,  $31\frac{1}{2}$ ; A. II,  $7\frac{1}{2}$ . Eye  $3\frac{1}{2}$  in head. A dusky blotch before dorsal, dorsals spotted, the upper half of the spinous dusky. Sides of body with larger spots. Caudal thickly scaled to its tip, soft dorsal with fewer scales on its basal four-fifths. Teeth well developed in both jaws. Spines of angle of preopercle much enlarged, flat.

One specimen, 215 mm. Para (1911).

In squamation this specimen agrees well with the original description of *schomburgkii*; it has, however, more dorsal rays. Steindachner's figure of *P. nattereri* is evidently intended for the same fish. The squamation of the head is not well reproduced.

#### **Pachyurus squamipinnis** Agassiz.

Preopercular angle prominent, the spines at this point scarcely larger than those of the vertical limb. Gill-rakers longer than broad, 6 + 10. Longest dorsal spine 2 in head. Anal spine strong  $1\frac{2}{3}$  in head. D. X, I,  $24\frac{1}{2}$ ; A. II,



7½. Eye 4⅓ in head. Spinous dorsal with two rows of spots on its basal third. Soft dorsal with about four series of much smaller spots. Sides plain.

One specimen, 190 mm. Para (1782).

**Plagioscion surinamensis** (Bleeker).

Agreeing well with Dr. Steindachner's figure (Fische des Magdalenen Stromes, plate I). First pectoral ray prolonged in a filament. Preopercle with a spine at its angle. Two specimens, 135 and 187 mm. Para (1773 and 1784).

**Plagioscion squamosissimus** (Heckel).

This species differs from the preceding in having a much weaker second anal spine. The filaments of the pectoral are but rarely developed.

Eighteen specimens. Para; Marajo; Itaituba.

**Sciæna adusta** Agassiz.

D. X, I, 26½ (25½ in one specimen); A. II, 6½. Scales 51. Maxillary extending to front of pupil, its length 3—3½ in head. Head subconic, snout blunt, projecting beyond premaxillaries, *without slits or pores*, 3¼—3⅔ in head. Eye large, oval, orbit 3 in head. Mouth small, inferior, horizontal. Teeth equal. About ten spines on the vertical part of the preopercle, increasing in size from above to the angle. Smaller spines on the horizontal limb. Pre-orbital convex, narrower than eye. Gill-rakers about twice as high as wide. Caudal lanceolate, the middle rays prolonged, about as long as head. Spinous dorsal dusky. Sides and remaining fins plain.

Ten specimens. Lower Amazonas; Carapi, Brazil.

These specimens may not be specifically identical with those described by Jordan (Report U. S. Fish Comm., 1886, 398 and 403). The specimens examined approach *S. adusta*, as described by Agassiz, much more nearly than the specimens described by Jordan, which have but 22 or 23 rays in the dorsal.

The dorsal rays of this species have been given as follows:—

Agassiz's figure . . . . .	19
Jordan's specimens . . . . .	22—23
Cornell specimens . . . . .	25—26
Agassiz's description . . . . .	28

**Gerres olisthostoma** Goode & Bean. One specimen. Braret.

**Chætodipterus faber** (Brouss.). One specimen. Rio Janeiro.

**Teuthis tractus** (Poey). One specimen. St. Thomas, W. I.

**Eleotris pisonis** (Gmelin). One specimen. Lower Amazonas.

- Dormitator maculatus** (Bloch). Many specimens. Cameta; Braret; from the ditches of the Rua Mongubas, Para.
- Chonophorus taiasica** (Lichtenstein). One specimen. Brazil.
- Gobius soporator** C. & V. One specimen. Braret.
- Achirus lineatus** lineatus (L.). Two specimens. Braret.  
D. 58, A. 43, 9.5; scales 89. Fins plain.
- Achirus punctifer** (Castelnau). Five specimens. Lower Amazonas; Braret; Itaituba.
- Symphurus atricauda** J. & G. One specimen. Panama.
- Lagocephalus lævigatus** (L.). Two specimens. Para.

**B. Notes on Fishes collected by Dr. H. VON IHERING, at  
Rio Grande do Sul.**

The following is a list of the Fishes recently received by the Indiana University from Dr. H. von Ihering, at Rio Grande do Sul.

- Symbranchus marmoratus** Bloch. Many specimens.
- Bunocephalus iheringii** Boulenger. Three specimens. Rio Grande do Sul.
- Tachisurus barbatus** Lacépède. Five young. Rio Grande do Sul.
- Pseudopimelodus cottoides** Boulenger. Many specimens.
- ?Rhamdia hilarii** (C. & V.). One small specimen probably belongs to this species. D. I, 8.
- Heptapterus mustelinus** (Val.). Many specimens.
- Pimelodella lateristriga?** (M. & T.).— Three specimens.

Maxillary barbel extending to the middle of the anal. About 18 spines on inner margin of pectoral, longest about half the width of the spine in height. It is probable that these specimens should be referred to *P. vittata* Lütken. The serrations of the pectoral are not at all as in other specimens of *lateristriga* examined by me, and in one of these specimens the lateral band seems to be continued to the snout.

**Pimelodus valenciennis** Kröyer.

*Pimelodus valenciennis* (Kröyer MS.) Lütken, Vidensk, Meded. 1874, 200 (La Plata). E. & E., Revision South Am. Nematognathi, 180, 1890 (La Plata).

*Pimelodus (Pseudorhamdia) nigribarbis* Boulenger, Ann. and Mag. Nat. Hist. (6), IV, 1889, 266 (Camapuam); Proceedings Zoöl. Soc. Lond., 1891, 232, pl. xxv, fig. 1 (Camapuam).

I have before me three specimens 165—172 mm. long, which are certainly the excellently described and figured *P. nigribarbis* Boulenger. The length of the barbels varies considerably. These specimens are just as certainly identical with the *P. valenciennis* Lütken. In justice to Dr. Boulenger I may state that the fault lies in the transcription of the original description into our "Revision of the Nematognathi." The width of the head is given as " $2\frac{1}{3}$  in its length," and "eye 6 in length of head." The authors of the "Revision" neglected to state that in this particular species the length of the head was measured "til Enden af Nakkendvæxten." Measured in this way the specimens before me have the following proportions: width of head  $2\frac{1}{4}$  ( $1\frac{6}{7}$ —2 to end of opercle); eye 6 in length of head ( $4\frac{1}{2}$ —5). The type was about 240 mm. long, and in the Latin diagnosis Lütken does not mention what he means by the length of the head, but in the Norwegian text (Vidensk. Med., 1874, 201), he defines the length of the head as above.

***Pimelodus clarias*** (Bloch). Three specimens of form *maculatus*.

***Plecostomus commersoni*** (Valenciennes). Four small specimens.

***Microlepidogaster nigricauda*** (Boulenger). A large number of specimens.

In many the belly is naked, but usually it is covered with small irregular granular plates. In the related genus *Otocinclus* the belly is always covered with two or three series of large plates. In the position of its ventrals this species agrees with *Otocinclus*.

***Ancistrus cirrhosus*** (Val.). Many specimens.

***Loricaria lima*** Kner. Seven specimens.

***Callichthys callichthys*** (Linnaeus). Two specimens; a specimen about 30 mm. long, has no trace as yet of the lateral plates.

***Corydoras paleatus*** (Jenyns). Nine specimens.

***Macrodon malabaricus*** (Bloch). Four specimens. Rio Grande do Sul.

***Curimatus gilberti*** Quoy & Gaim. One specimen. Rio Grande do Sul.

***Tetragonopterus rutilus*** Jenyns. Many specimens. Rio Grande do Sul. Anal 3, 26—28; Lat. 1. 40—42.

***Tetragonopterus maculatus lacustris*** Lütken.

There is no difficulty in distinguishing the adult of this species from the adult of *fasciatus*, but a large number of younger specimens I could only separate on the greater or less development of the striations of the scales—a character not to be relied upon. The differences between 2 females, one of *fasciatus* 125 mm. long, and one of *lacustris* 116 mm. long, are precisely as figured by Lütken (Velhas Flodens Fiske), figs. 13 and 15.

<i>fasciatus.</i>	<i>lacustris.</i>
Head longer than deep at the occiput.	Head deeper than long.
Depth $2\frac{6}{7}$ ; head 4.	Depth $2\frac{1}{2}$ ; head 4.
Anal 3, 21.	Anal 3, 25.
Scales of the sides with from 8—12 longitudinal ridges.	Scales of the sides with one or two longitudinal ridges.
Suborbital with strong ridges.	Suborbital nearly smooth.
Eye $3\frac{2}{3}$ in head.	Eye 3 in head.
Humeral spot small, round.	Humeral spot longitudinally ovate.

These differences, striking as they are, completely disappear with smaller and smaller specimens. The anal in each species has on an average 3, 22 rays, the number of rays of *lacustris* in the Rio Grande being less than in the Rio das Velhas. Scales between lat. l. and ventrals  $4\frac{1}{2}$ — $5\frac{1}{2}$ .

**Tetragonopterus fasciatus** (Cuvier). Numerous specimens, ♀ and ♂, 26—125 mm. from Rio Grande do Sul.

Scales 6 or 7—32 to 36—4 to 6; D. 10; A. 2 or 3, 19—25. Head 4; depth  $2\frac{1}{2}$ —3. Eye  $2\frac{2}{3}$ —4, equal (in young) or less (in adult) than interorbital space. Profile depressed over the eye. Maxillary with one to three teeth. Occipital process rather long and pointed; 10 to 12 scales in front of the dorsal; 13—15 scales from lateral line to lateral line in front of the dorsal; 11—14 behind the dorsal; usually no distinct median dorsal series of scales.

Sides silvery, back bluish, a circular or vertical ovate spot on the shoulder. A large conspicuous spear-shaped black spot on the caudal peduncle and caudal, the black median caudal rays forming the shaft of the spear.

The specimens agree well with the forms figured by Lütken as *T. rivularis*.

**Tetragonopterus fasciatus interruptus** Lütken. Five specimens, ♀ and ♂, 45—67 mm. long. Rio Grande do Sul.

These specimens are probably identical with those specimens of *T. rivularis* mentioned by Lütken as having an interrupted lateral line. In general appearance, and especially in coloration, they are exact images of *T. fasciatus*, from the same place. There are,

however, but 11 scales across the back between the lateral line and lateral line in front of the dorsal. Scales 32—35; A. 2, 20—24. Eye slightly less than interorbital.

**Tetragonopterus obscurus** Hensel.

Scales 5—35 to 37—4 to ventrals; D. 10; A. 1 or 2, 17 or 18. Head  $4-4\frac{1}{3}$ ; depth  $2\frac{1}{2}$ —nearly 3. Eye 3 in head, equal to the interorbital space. Profile evenly curved. Maxillary with 1 to 3 teeth. Occipital process short, about 12 scales between its tip and the dorsal. 11 scales from lateral line to lateral line in front of the dorsal. 9 just behind the dorsal. A distinct median series of scales along the middorsal line. Ventrals reaching to vent, pectoral to the ventrals.

Color in spirits. Lower parts and sides golden, back darker not metallic in color. A faint, vertical humeral spot, a silvery lateral band, a large obscure spot on base of caudal peduncle extending to end of middle caudal rays.

Five specimens from Rio Grande do Sul differ slightly from typical specimens of *T. fasciatus*, from the same place. They probably represent *T. obscurus* Hensel, although they do not agree in the proportions. They have conspicuously larger scales, although in number they do not differ greatly from typical specimens of *fasciatus*. The anal is shorter, and the humeral and caudal spots are much less distinct.

**Salminus cuvieri** C. & V. One specimen. Rio Grande do Sul.

*Salminus cuvieri* C. & V., Hist. Nat. Poiss., xxii, p. 56; Lütken, Velhas-Flodens Fiske, 1875, 227, xvi (Rio das Velhas). Steindachner, Fisch. f. Cauca & Flüsse bei Guayaquil, 1880, 30, pl. ix, figs. 2—2a (Rio das Velhas; Rio San Francisco).

*Salminus brevidens* Günther, Cat. Fish. Brit. Mus., V, 350, 1864 (Cipo River).

*Salminus orbignyianus* Hensel, Wieg. Arch., 1868, II, 356 (Jacuhy).

**Xiphorhamphus jenynsii** Günther. 2 specimens.

**Cryptops virescens** (Val.). Many specimens.

**Cryptops lineatus** (Müller & Troschel). Two specimens.

This species is well described by Müller & Troschel, and seems to me to be quite different from *C. virescens*.

**Carapus fasciatus** (Pallas). Three specimens.

**Jenynsia lineata** (Jenyns).

Each jaw with a series of tricuspid incisors behind which is a broad band of villiform teeth. Intestinal canal scarcely if any longer than the body. Lateral line double in front, interrupted in front of the dorsal, and continued on the row of scales just below. D. 9; A. 8; Lat. 1. 29, 28. Anal of the



male but slightly in front of the origin of the dorsal. Brown, longitudinal streaks becoming individual spots on each scale on the caudal peduncle.

32 males and 45 females from Rio Grande do Sul.

### PÆCILIA?

The three following species have hitherto been placed in the genus *Girardinus*. But, as their discoverer claimed, they certainly have more than one series of teeth. The anterior series consists of flat incisors, and they would thus also be excluded from *Pæcilia*. A close inspection has shown however that the anterior series of teeth of species of *Pæcilia* are not truly conical, but are more or less flattened, but without broadened tips. The anterior teeth of the following three species differ from these only in degree, and I have thought best not to create a new genus for them.

#### ***Pæcilia caudomaculatus* (Hensel).**

Viviparous; anal of the male advanced and transformed into a long sword-shaped intromittant organ. Each jaw with a series of spatulate incisors with obliquely truncated, entire cutting edge, and much narrowed base. Behind these one irregular or two series of much smaller conical teeth. Bones of the lower jaw firmly united. Intestinal canal about  $1\frac{1}{2}$  times as long as the body. D. 8; A. 10; Lat. l. 27—30. Head  $3\frac{3}{4}$ —4; depth  $3\frac{1}{4}$ — $4\frac{1}{4}$ . Dorsal equidistant from caudal and from occiput; anal in female partly under the dorsal; third anal ray in male most modified and enlarged, origin of the anal equidistant from origin of dorsal and from tip of snout.

A conspicuous vertical black bar below last dorsal rays, margined by light in front and behind. Much narrower and fainter vertical lines behind and in front of it, these scarcely evident in female. Two horizontal black bands in the dorsal of the male; one on the margin and one near the middle of the fin; much reduced in the female.

9 males and 18 females from Rio Grande do Sul.

#### ***Pæcilia januarius* (Hensel).**

*Girardinus januarius* Hensel, Wiegman's Arch., 1868, Vol. II, 360 (Rio Janeiro).  
*Girardinus iheringii* Boulenger, Ann. & Mag. Nat. Hist., 1889, 266 (Rio Grande do Sul).

D. 9; A. 10; Lat. l. 27—30; Head  $3\frac{1}{2}$ —4; depth  $3\frac{1}{4}$ —4. Dorsal equidistant from caudal and from eye; placed little behind origin of the anal in the female; anal in male 2 in the length. Six to eight vertical lines on the tail, those of the caudal peduncle usually interrupted, several shorter lines on the sides of the abdomen, above the lateral line.

Each jaw with a series of incisors with very oblique cutting edge, behind which are several series of much smaller conical teeth.

45 females, 6 males. Rio Grande do Sul.

**Pecilia decemmaculata** (Jenyns).

D. 8; A. 10; Lat. 1. 29. 8—11 black spots along the sides. The edges of the scales darker. A series of incisors with obliquely truncate cutting edge, behind which are smaller conical teeth.

Four females.

**Mugil cephalus** L., or *platanus* Günther.

Many young. I am unable to say with certainty whether these specimens are *M. cephalus* or *M. platanus*.

**Atherinichthys bonariensis** (C. & V.). One specimen.

**Astronotus portalagrensis** Hensel. Three specimens.

**Astronotus facetus** (Jenyns). Many specimens.

**Crenicichla saxatilis** L. Five specimens.

These specimens represent the *lepidota* of Heckel, but the characters separating this species from *saxatilis* are variable. While the typical *saxatilis* is said to contain 54 series of scales, *lepidota* has but 44. Specimens examined from the lower Amazon have 48 and 50.

**Geophagus brasiliensis** Quoy & Gaimard. Four specimens.

VI.—*The Granite at Mounts Adam and Eve, Warwick, Orange Co., N. Y., and its Contact Phenomena.*

[PLATES II AND III.]

BY J. F. KEMP AND ARTHUR HOLLICK.

Read May 22, 1893.

For five or six years past, one of us (J. F. Kemp) has been especially interested in the igneous rocks of northwestern New Jersey, as developed in the Walkill Valley. From several sojourns in the region, the papers cited below have resulted.<sup>1</sup> While reflecting on the great dike of elaeolite syenite near Beemerville, and casting about for some other undoubted igneous body of commensurate size and importance in the neighborhood, the granite of Mt. Adam and Mt. Eve, across the New York State line, suggested itself. Although this locality is familiar as a source of granite for building stone,<sup>2</sup> search through the literature developed almost nothing regarding its geological and petrographical character, which had been written since Mather's Report on the Geology of the First District, N. Y. State Survey, 1843. But even in this paper the granite is only casually referred to, in connection with the neighboring white and blue limestones, to the mineralogy of which the chief burden of the report relates. The opportunity came to visit the locality in June, 1892, and by the aid of the appropriation which the trustees of Columbia College allow the geological department for field-work, a party was organized, consisting of the two authors of this paper and Messrs. Ries and Fenner, of the class of '92, School of Mines.

<sup>1</sup> J. F. Kemp, On Certain Porphyrite Bosses in Northwestern New Jersey, *Amer. Journ. Sci.*, iii, xxxviii, 130. Elaeolite Syenite near Beemerville, N. J., *Trans. N. Y. Acad. Sci.*, vol. xi, p. 60, 1892. Basic Dike near Hamburg, Sussex Co., N. J., which has been thought to contain Leucite, *Amer. Journ. Sci.*, April, 1893, p. 298. Additional Note on Leucite in New Jersey, *Amer. Journ. Sci.*, March or April, 1894.

<sup>2</sup> J. C. Smock, *Bull. N. Y. State Mus.*, vol. ii, No. 10, p. 231.

To the latter gentlemen we acknowledge our great indebtedness for assistance.

Once on the ground, the problems of the blue and white limestone, which have recently been brought to general attention in New Jersey, by F. L. Nason, also attracted us, and the results of the trip became concerned with a wider subject than the petrography of the granite alone. The belt of closely involved blue and white limestones, which begins in Warwick Township, of Orange Co., N. Y., and just north of Mt. Eve, runs southwesterly through New Jersey, for a total unbroken stretch of over thirty miles. Isolated patches, usually of small size, run still further—quite to the Delaware River. The general width varies greatly. At Amity, N. Y., it is two miles across, but elsewhere it rules much narrower, and as stated it may disappear entirely. A detailed sketch of the New Jersey exposures is given by F. L. Nason, in the Annual Report of the New Jersey Survey for 1890, pp. 25–50 (*The Post-Archæan Age of the White Limestones of Sussex Co., N. J.*), and many details and sections are recorded.<sup>1</sup>

A vast amount of attention has been directed to this belt in the past, because it is one of the most prolific sources of fine minerals the world over. The great and unique zinc mines of Franklin Furnace and Ogdensburgh<sup>2</sup> are in it, and innumerable localities elsewhere have contributed their share, not least of which are Amity and Edenville in the tract visited by us. The geological questions are briefly the following. A white crystalline limestone is closely involved with a blue, and rarely fossiliferous one, which latter has been shown to be of Cambrian Age. The white borders gneissic or granitic rocks, and is abundantly penetrated by masses of granitic affinities, and by others of curious mineralogical composition. In these portions it is copiously charged with interesting minerals.

<sup>1</sup> Additional papers by Mr. Nason have appeared under the same title in the *Amer. Geol.*, April, 1891, p. 241, and September, 1891, p. 166. The former gives an historical review of opinions advanced in the last seventy years, while the latter is a reply to a review of the New Jersey Report for 1890, by Professor J. D. Dana, in the *Amer. Journ. Sci.*, July, 1891, p. 70. Great credit is due Mr. Nason for his endeavor to base the decision of this question on detailed records of observations, and not on generalities, as was done by most of his predecessors.

<sup>2</sup> In the *Transactions of the N. Y. Academy of Sciences* for Nov. 1893, J. F. Kemp has given a description of these ore bodies with a bibliography and annotated list of minerals.

Briefly, is the white crystalline limestone Archæan in age, deposited on the gneisses and granites, and regionally metamorphosed, while the blue is a later overlying Cambrian deposit; or, are they both one and the same formation, originally blue, of which the part next the great, intruded granite knobs and dikes, now perhaps gneissic, has been metamorphosed by this intrusion to white, and charged with silicates? Keating and Vanuxem (1822),<sup>1</sup> C. U. Shepard (1832),<sup>2</sup> Cook (1868),<sup>3</sup> and Britton (1886),<sup>4</sup> have supported the former; while Nutall (1822),<sup>5</sup> Rogers (1836),<sup>6</sup> Mather (1843),<sup>7</sup> Nason (1890)<sup>8</sup> have urged the latter. Kitchell, State geologist of New Jersey from 1854–1861, did not definitely commit himself, and the results of the U. S. Geol. Survey, under J. E. Wolff, are not yet available.<sup>9</sup> There is still a third view possible, to wit, that the white limestone is Archæan in age, but metamorphosed along granite intrusions, and so charged with minerals, while the blue is later. These contact effects we regard as beyond question, however uncertain the relations of the blue and white limestone may be regarded.

*Difficulties in Reaching a Decision.*—There are difficulties in the way of deciding the stratigraphic relations of the two which become apparent in the field. In Orange County the region is richly cultivated, and outcrops are not as numerous as one could wish. Even when they are to be seen, the white limestone is almost entirely lacking in dip and strike, and is of very massive character. At no point were we able to trace either variety to an actual contact with the other; but we did find the outcrops along the road running due

<sup>1</sup> Journ. Phila. Acad. Sci., 1822, p. 277.

<sup>2</sup> Amer. Journ. Sci., i, xxi, p. 323. A geological map of the vicinity of Mt. Adam and Mt. Eve, by Messrs. Young and Heron, accompanies this paper, and is reprinted in Mather's Rept. (see Reference 7) as Plate 41.

<sup>3</sup> Geology of New Jersey, 1868, p. 310. The same view is upheld in later reports, notably on the geological map accompanying that of 1880.

<sup>4</sup> New Jersey Survey, 1886, pp. 77–83.

<sup>5</sup> Amer. Journ. Sci., i, v, p. 247, last paragraph.

<sup>6</sup> Geological Survey of New Jersey, Report of 1840, pp. 47–67 (as quoted by Nason).

<sup>7</sup> Report on the Geology of the Fourth District, N. Y., p. 465, fifth paragraph.

<sup>8</sup> Annual Report N. J. State Survey, 1890, pp. 25–50.

<sup>9</sup> Reference should be made to the recent paper by A. F. Foerste (Amer. Journ. Sci., Dec. 1893, p. 435), who discusses fossiliferous localities in the blue limestone, etc.



north from Edenville and then northwest in a general way along the line of section 3 (see Map and Sections, Plates II and III), within about 200 feet of each other, and on the northeast slopes of Mt. Eve, and at the north end the two are much mixed up together. It is doubtful if a very pronounced contact would show at any point, even were the soil all stripped away. The blue becomes graphitic, and notably crystalline towards the white, and in a series of specimens almost all intermediate grades may be illustrated. Where, as on the eastern side of Round Hill, the blue approaches closely to the granite, it is excessively siliceous, if not actually a quartzite, and hence not a favorable material for contact effects. On the whole we felt forced to the opinion that the white is metamorphosed blue, and we think it most reasonable to attribute the change to the granite intrusions. The petrographic details and local observations will be next given.

#### PETROGRAPHY OF THE GRANITIC ROCKS OF MT. ADAM AND MT. EVE.

On the eastern side of Mt. Adam and the western side of Mt. Eve quite extensive quarries have been opened, where they are indicated by the conventional sign on the map. Practically the same rock as shown by the slides makes up both ridges, although, in places, it is fairly gneissic. It is a hornblende granite, rather coarsely crystalline at the quarries, with its individual components appearing a  $\frac{1}{4}$  to  $\frac{1}{2}$  inch in diameter. It resembles the well-known Quincy granite somewhat, but is rather darker and has a pinkish cast in with the green, due to the varying tints of the feldspar. More or less biotite is also present, and, especially near the edges, some augite. Under the microscope these larger crystals break up into smaller ones, and the actual size is nearer  $\frac{1}{5}$ – $\frac{1}{8}$  inch.

The granite is at once seen to be a very basic variety, with quite as much plagioclase as orthoclase, and in instances even more. The rock might with almost as much propriety be called a quartz-diorite. It suggests strongly the "diorite-granites" of S. F. Emmons (*Geology of Butte, Mont.*, *Trans. Inst. Min. Eng.*, xvi, 52, and *Geological Sketches* by same author), which are so important in Butte, and elsewhere in Montana, where the same variability occurs. Quartz is quite abundant, but not especially so. It is charged with the usual dusty inclusions, solid, liquid, and gaseous. Normal orthoclase is not especially common, but is largely replaced by microcline

and microperthite. The microperthite may be a secondary result, and due to the development of albite along cleavage planes from incoming soda solutions. This view has been held both abroad and here, where the microperthite has been found alike in districts of regional metamorphism, and in gneisses regarded as altered sediments. The undulatory phenomena that accompany dynamic disturbances are not lacking, though not especially notable in the slides. Plagioclase is, as stated above, often in excess.

The hornblende is a dense black variety that becomes transparent only in the thinnest sections. It then appears yellowish-green, parallel *a*; black, parallel *b*; deep green, parallel *c*. Brown biotite is in much less amount. On Round Hill, however, to the north it is the only dark silicate in specimens from the summit. Allanite is frequent in the granite from the quarries on Adam and Eve, and also in especially large amount in rather coarse pegmatitic masses of feldspar and quartz, that occur in the granite, and that cause imperfections in the stone. These contributed to the failure of the enterprise on Mt. Adam. The allanite is at times in well-bounded crystals, but of these the best were collected in the early days of the openings and near the surface. The specimens are in all large collections of minerals. At present, rude crystals and masses are the only ones found. The mineral is so extremely brittle that the crystals, when fairly well developed, were almost always shattered to pieces when we tried to get them out. In sections, the mineral is yellowish-brown to seal-brown, and as usual is strongly pleochroic. It becomes dark and almost opaque on revolving the stage. The mineral is so opaque, and withal so brittle, that it is not easy to get a satisfactory section. It is almost always accompanied by purple fluor spar, which appears along the edges of the crystals. It is also, at times, bounded by a lighter colored brown rim of what is probably slightly decomposed allanite. The optical properties of the Edenville allanite have been measured by Michel-Levy and Lacroix, who determine the mean index of refraction to be above 1.78, and the difference between the greatest and least indices to be 0.032. (Bull. Soc. Min. Trans., xi, 65, 1888.)

The comparative abundance of this rare mineral is interesting. The elements of the cerium group seem especially associated with the granites along the belt of white limestone. At Franklin Furnace allanite is very abundant, alike in the granite dike that pierces

the ore body of the Trotter mine,<sup>1</sup> and in pegmatitic masses in the abandoned iron mines on the hill north of the depot. It also occurs with pyroxene in the Mud mine at Ogdensburgh, where granitic or dioritic intrusions are well developed.

Although allanite or orthite has been analyzed from Monroe, a neighboring township, none from Mt. Adam has yet been reported on. Prof. Dennis, of Cornell, who has given much attention to the difficult chemistry of the rare earths, now has some under way. Minute zircons of excellent crystallization are common in the granite, and titanite in rude masses is frequent. Magnetite not infrequently appears. The pegmatitic masses that contain the allanite yield beautiful microscopic crystals of zircon when crushed and panned out. The granite varies in structure and appearance in the Mt. Adam quarries much more than in those of Mt. Eve, and this variability in large part has rendered the former unsuccessful. The pegmatitic imperfections have already been cited; but in addition, the normal, coarsely crystalline and relatively light-colored granite changes abruptly into close-grained and dark streaks up to several feet across, which however possess practically the same minerals as the former, although much more dioritic in appearance. They appear to be due to differences in the original magma, as they are certainly not later intrusions. In the applications as a building stone they were of course fatal.

At the north end of Mt. Eve the granite is quite gneissic, but the same minerals are shown by the sections. Still here, even more than to the south, evidences of dynamic disturbances appear. Crushed crystals of quartz and feldspar, micropertthite, and the like are all abundant. In the granite from Round Hill the hornblende gives way to biotite, and some variations of structure are shown. While all the minerals are well crystallized, the structure occasionally approximates that of quartz-porphry. In a knob east of Mt. Eve we found fine graphic granite. It is formed of quartz blades in microcline of micropertthitic habit. In the smaller knobs the granite is prevailingly gneissic.

<sup>1</sup> J. F. Kemp, *The Ore-deposits at Franklin Furnace and Ogdensburgh, N. J.*, *Trans. N. Y. Acad. Sci.*, Oct. 1893. A. S. Eakle, *The Allanite of the Trotter Mine*, *idem*, Nov. 1893, *Amer. Jour. Sci.*, April or May, 1894.

## PETROGRAPHY OF THE LIMESTONES.

The white limestone at a distance from the granite shows little of interest. It is a coarsely crystalline mass of calcite individuals with an occasional scale of graphite. Scattered six-sided crystals of phlogopite are now and then present. They are colorless to very faint brown, have a small angle of the optic axes, perhaps  $5^{\circ}$ , and show the normal properties of mica of the second order, as regards the percussion figure. The streaks of chondrodite that also appear lead one always to suspect the proximity of granite, even though it may not outcrop. Chondrodite appears in or near the undoubted contacts in its best development.

The blue limestone is much finer in crystallization, but is made up of small calcite crystals, and near the borders of the white limestone it becomes itself graphitic, and in fact shows all intermediate stages of transition.

## THE CONTACTS.

The most interesting features of the exposures are to be found along the contacts of the granite and white limestone. In several places we found these in place, and in many other instances traced either the white limestone or the granite to a point where they could not have been over a few feet apart. Interesting and marked changes manifest themselves in both granite and limestone. In general it may be said that either the former becomes an aggregate of light green monoclinic pyroxene and scapolite, or we find a granite-like zone formed by these two. With them titanite is quite invariable. This association was so often found that it justifies speaking of the "scapolite zone." Whether this zone is to be considered a contact phase of the limestone or of the granite may be a question, but the specimens were in most cases gathered as granite and only recognized in the thin sections. Where, however, the scapolite is sufficiently coarse, it looks, to use the felicitous comparison of the Norwegian geologists, like "wet snow." The limestone near the contacts becomes charged with silicates, either in bunches and irregular masses, or else in general dissemination. These masses are chiefly brownish-green hornblende of a peculiar tint, dark brown biotite or phlogopite (the distinction between these is obscure), light green pyroxene, titanite, calcite, pyrite, and some



scapolite. Some even more complex aggregates will be mentioned in the detailed notes that follow. Chondrodite, at times, thickly charges the limestone, and with it is spinel. These contacts have been the fruitful source of the many interesting minerals that have come from this region in the past. One of the best contacts is seen along the southern prolongation of Mt. Eve on the farm of Mr. Onderdonk. The limestone, thickly charged with dark silicates, resembles the franklinite ore of New Jersey, and has excited some unwarranted local hopes. The silicates are chiefly the characteristic brownish-green hornblende, dark yellowish-brown biotite, titanite, and faint green pyroxene. The granite outcrops at a short distance on the land of Mr. James Hedges. North of the highway the limestone and the granite are in actual contact. The former shows coarsely crystalline calcite and phlogopite; the latter light green pyroxene and scapolite. Fifteen feet from the contact the granite consists of quartz, microcline, and green pyroxene.

A fine exposure occurs near the old boarding-house formerly used by the hands of the Mt. Adam quarry. This limestone lies between Mt. Adam and Mt. Eve, so that it has been in a very favorable situation for alteration. North of the boarding-house the limestone is surcharged with streaks of silicates. These consist chiefly of the greenish-brown hornblende characteristic of the contacts. Its pleochroism is very light yellow, parallel *a*; faint yellowish-brown, parallel *b*; faint bluish-green, parallel *c*. It forms large, irregular crystals in the slide with an extinction of 20°. Closely involved with it is clear green pyroxene, while the remainder of the slide (13) is scapolite. This mixture, with some additions and variations, we find quite invariably along these contacts. The nearest outcrop of granitic rock, back of the boarding-house and about 50 yards away, is a quartz diorite (slide 14) with quartz, plagioclase, dirty brown hornblende, titanite, and little if any orthoclase. A little way south of the barracks a ledge has been blasted. It proved to contain (slide 15) microcline, light green, monoclinic pyroxene and titanite, and to be much like 11. One-eighth of a mile south of Mt. Adam the highway crosses the contact. The limestone contains bunches of coarsely crystalline, dark biotite a foot or more through (spec. 27), while the granite four feet distant consists of the usual mixture of green pyroxene and scapolite (slide 28). On the southwest side of Mt. Adam one of the most interesting sections of all is afforded. It is illustrated by the accompanying Figure 1. Leaving Mt. Adam a



swampy stretch is first passed, and then a ledge of coarsely crystalline white limestone is met, which is charged with great masses of red chondrodite, up to two inches in diameter. Beyond this granite appears, and then the usual scapolite zone. This last is very coarsely

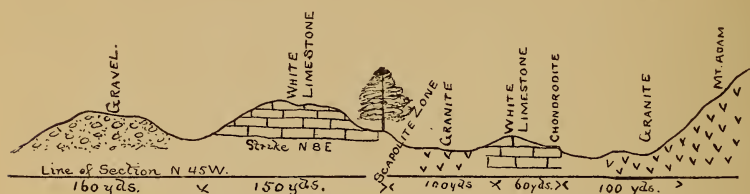


Fig. 1.—Section from the Southwest side of Mt. Adam—Northwest toward the Drowned Lands. The tree is a lone butternut.

crystalline and contains fine prisms of scapolite, in cavities, due probably to the solution and removal of calcite. We found them up to two inches in diameter, and well terminated. Prisms of pyroxene are all through the scapolite, often  $\frac{1}{2}$  to  $\frac{3}{4}$  of an inch in diameter, and having the usual eight faces of the prism zone. Titanites too of large size appear, showing OP, —P, and  $\infty$  P. Doubtless some rarer minerals could be found by searching, but the three mentioned are by far the commonest. Beyond the scapolite lies coarse white limestone, which runs under gravel until all flatten down beneath the old lake bottom of the Drowned Lands.<sup>1</sup> In a quarry on the Miller farm, which lies on the east side of Mt. Eve, along the line of section 2 (Fig. 1), an interesting contact appears. The usual zone of pyroxene and scapolite is well developed, and in the limestone are many bunches of silicates, etc. In the thin sections phlogopite is abundant, and chondrodite with spinel and fluorite is well developed. The chondrodite with its honey-yellow to colorless pleochroism furnishes a very beautiful mineral. It lacks crystal boundaries as is usual along this belt of limestone. In one section a fine twin was

<sup>1</sup> This old lake bottom is a most interesting topographical study, and is as fine an illustration of such phenomena as could be desired. For miles along the Walkill River it forms a level, more or less swampy stretch, above which some hills project known as "islands." Such are Big Island, Pine Island, etc. The land is now pretty well drained and devoted to raising onions. The workmen engaged in the early drainage ditches suffered from some peculiar malarial fevers. (See, "An Account of the Fever which lately prevailed in the Drowned Lands in Orange Co., N. Y., by Dr. D. R. Arnell, Amer. Med. and Phil. Register, II, 8, 1822.)

met (slide 150). The section proved to be approximately perpendicular to the acute bisectrix, and the plane of the optic axes in one-half of the twin made an angle of about  $34^{\circ}$  with the trace of the twinning plane, and in the other half about  $44^{\circ}$ , but in the same sense as that of the first half, placing thus the two planes of the optic axes at  $10^{\circ}$  with each other. The alteration yields an isotropic aggregate, in which the fresh kernels are embedded, and the whole effect is very like that of altered olivine. Specimens from the farm of Mr. E. Green, southeast of Mt. Eve, from a prospect that had been dug for minerals, proved to contain the usual contact mixture of silicates, etc., including hornblende, biotite, titanite, scapolite, and with these leucopyrite, well known from this region (slides 100–103). The small granite exposures northwest of Amity, on the land of Mr. D. Knapp, exhibited in section the usual malacolite, plagioclase, a little orthoclase, and a fine rutile crystal. While the neighboring limestone showed the usual silicates.

In résumé of these contacts it may be said that the granite becomes much richer in pyroxene (malacolite) as they are approached, but it shows no developments of porphyritic structure, so that we are justified in concluding that we have to do with a plutonic mass. Along the contact is the scapolite zone, consisting of coarsely crystalline scapolite and malacolite. Next comes the coarsely crystalline limestone charged with the aggregates of silicates so often mentioned above. These are oftenest in bunches and knobs, but also appear in general dissemination in many places. The presence of chondrodite and fluorite, with their percentages in fluorine, is worthy of comment in these surroundings. The rare borotitanate of magnesia and iron, warwickite, that has been found near Amity is also not to be overlooked, as containing boracic acid, a characteristic associate of granite contacts. The following additional contact minerals have been noted by collectors of minerals—vesuvianite, tourmaline, and corundum.

Mineral aggregates in limestone, along igneous contacts, and similar to those described above, are known elsewhere in this country, and have been described from several European sources. In the prolongation of this white limestone belt into New Jersey, F. L. Nason has recorded the presence of the scapolite rock as a contact phenomenon of granite.<sup>1</sup> Its mineralogy, as determined by

<sup>1</sup> Annual Report State Geologist of N. J., 1890, p. 32.

G. H. Williams (l. c., p. 33), is exactly the same that is so often mentioned in these pages. Nason mentions also the development of scapolite in limestone, next the great trap dike at Rudeville, near Hamburg, N. J. (l. c., p. 33). J. F. Kemp has already cited such from Van Artsdalen's quarry, Bucks Co., Penna.,<sup>1</sup> where the minerals are practically the same and norite is near. On Lake Champlain, especially near Port Henry, such aggregates are very prominent features of the limestone near the gabbro intrusions.<sup>2</sup> G. H. Williams mentions as the result of the intrusion of mica-diorite and peridotite into the Cambrian limestones of Stony Point, N. Y.,<sup>3</sup> pale pyroxene (malacolite), light green hornblende, zoisite, sphene, and quite abundant scapolite, a practical repetition of the contacts at Mt. Adam and Mt. Eve.

It is in Spain, France, and Norway that the most interesting parallels are found. For many years the rich development of scapolite (dipyrr, couseranite) in the Mesozoic limestone of the Pyrenees along intrusions of granite, nepheline syenite, and ophite (diabase) has been known—Zirkel,<sup>4</sup> Lacroix,<sup>5</sup> Frossard,<sup>6</sup> and others have described them. Zirkel mentions, on a granite contact (l. c., p. 201), tremolite, epidote, and couseranite, and again, p. 205, dipyrr in crystals over an inch long. Along the contacts with the ophite, the coarsely crystalline limestones are charged with dipyrr, couseranite, green hornblende, pyrite, white mica and a little quartz (p. 206). Lacroix mentions a zone formed of brecciated limestone, containing great crystals of dipyrr, also actinolite, pyrite, etc. Frossard gives a quite extended list of minerals, and cites dipyrr and couseranite.

Probably the best known of all developments of scapolite are in Norway in association with the great deposits of apatite, whose geology has been such a difficult problem. A very complete review

<sup>1</sup> Trans. N. Y. Acad. Sci., xii, 74, Jan. 1893.

<sup>2</sup> J. F. Kemp, Gabbros on the West Shore of Lake Champlain, Bull. Geol. Soc. Amer., v, Boston Meeting.

<sup>3</sup> G. H. Williams, Contact Phenomena of the Cortland Series, Amer. Journ. Sci., Oct. 1888, p. 267.

<sup>4</sup> F. Zirkel, Beiträge zur geolog. Kenntniss der Pyrenäen Zeit. d. d. g. Ges., xix, 68-216, 1867.

<sup>5</sup> A. Lacroix, Description des Syénites néphéliniques de Pouzac, etc., Bull. Geol. Soc. de France, 1890, 511.

<sup>6</sup> C. L. Frossard, Sur les Roches métamorphiques de Pouzac, etc., Comptes Rendus, cx, 1890, 1013.

with bibliography of the geological relations has been prepared by F. D. Adams and A. C. Lawson,<sup>1</sup> which, being in English, and generally accessible, need not be repeated here. A gabbro in these Scandinavian localities is a quite regular associate of the deposits of apatite, and towards its contact with the latter it becomes a mixture of scapolite and hornblende, and is called "geffecter Gabbro." It is regarded as a contact facies of the gabbro, and as a favorable indication of apatite. While not finding it in the same relations in Canada, Adams and Lawson conclude their paper with the following statement, of great interest in connection with the Warwick occurrences: "That scapolite diorite, and transition rocks between it and gabbro, identical with the Norwegian rocks, do occur in our Laurentian System, associated with amphibolites and crystalline limestones."

Lacroix<sup>2</sup> has recently reviewed the Norwegian localities anew with many drawings of microscopic sections. The rocks described from Brittany, in the same paper, are in instances much like ours. M. Lacroix has also studied the geology of the scapolite of Canton, St. Lawrence Co., N. Y., without, however, because of limited exposures, establishing so fully, as in the other cases, its contact nature.

In the contacts around Mt. Adam and Mt. Eve, those scapolites that are disseminated in limestone in the bunches of silicates are doubtless due to solutions, stimulated by the intrusive rock; but it is quite likely that in the massive granitic mixture, forming the characteristic scapolite zone, this mineral is an altered plagioclase. It is a favorite secondary product after oligoclase, and possibly this relatively basic feldspar has been the original of it. The increasing basicity of the granite toward the contacts has already been commented upon. If a portion of the limestone wall had been fused into the granitic magma, such a mixture might readily be explained. If the white limestone is metamorphosed blue, the granite must be post-Cambrian. The Beemerville nepheline syenite is later than the Oneida conglomerate at the base of the Upper Silurian.

The following propositions sum up the petrographical part of the paper, after which some further stratigraphical notes are appended:

<sup>1</sup> On some Canadian Rocks containing Scapolite, etc., Canadian Record of Science, iii, 185, 1888.

<sup>2</sup> Contributions a l'étude des gneiss à pyroxène et des roches à wernérite, Bull. Soc. Fran. de Minéralogie, xii, 181, 1889.



1. There is undoubted intrusive and true igneous granite present in extended development.

2. There are heavily metamorphosed white limestones invariably next it, and they are charged with minerals peculiar to these contacts elsewhere.

3. The white lime graduates into blue, with transitional, graphitic forms.

4. The remote blue limestone shows no metamorphism, and the same belt in New Jersey contains Cambrian fossils.

The only locality where fossils were found in the area mapped was in a limited outcrop of blue limestone just north of the Lehigh and Hudson River R. R., between Warwick and Stone Bridge, where several easterly dip and strike symbols appear on the line of Section 2. The layer in which they occur consists of a purplish shale, immediately overlying a hard band of cherty limestone. The fossils are exceedingly fragmentary and difficult to determine with accuracy. They consist principally of bryozoans, leperditia, molluscs, and detached portions of trilobites.

The bryozoans are indeterminate. In the trilobite remains we may recognize provisionally a Dalmanites, and in the Leperditia we have either *L. alta* or one closely allied to it. *Meristella laevis*, *Nucleospira ventricosa* and *Caelospira concava* are the only mollusks which can be determined with any degree of certainty. From this unsatisfactory material we can only infer in a general way that this portion of blue limestone represents the lower Helderberg horizon. Our failure to find fossils in the other blue limestone areas examined prevented the determination of their relations, but as we did not specially search for them, they may yet be discovered.

The only indication of organic matter in them which we met, or in the white limestone, was the occurrence of graphite. In this connection it is of interest to note that throughout the white limestone, wherever slips or shear planes were found, the graphite was flattened and extended into long ribbon-like streaks, in the direction of the slipping or shearing, which were hardly to be distinguished, so far as appearances are concerned, from *Archæophyton Newberryanum*, described by Dr. N. L. Britton, from the white crystalline limestone of Sussex Co., N. J.<sup>1</sup>

<sup>1</sup> Annals N. Y. Acad. Sci., iv, 123, 124, pl. vii.



## APPENDIX.

List and Bibliography of the Minerals occurring  
in Warwick Township.

By Heinrich Ries, Fellow in Mineralogy, Columbia College.

The following abbreviations are used:—

**A.**, Amity. **B.**, Beck's Mineralogy of N. Y., 1843—A good reference work. **D.**, Dana's System of Mineralogy, 1893. **E.**, Edenville. **F.**, S. Fowler, An account of some new and extraordinary minerals discovered at Warwick, Orange Co., N. Y., A. J. S., i, ix, p. 242. **L.**, Ann. N. Y. Lyceum Nat. Hist. **M.**, List of Minerals of Orange Co., by R. Horton, in Mather's Rep. Geol., 1st Dist., N. Y., 1843, p. 577, and N. Y. Geol. Surv., 1839, p. 166—a very complete list. **R.**, Robinson's American Mineral Localities, Boston, 1822. **S.**, C. U. Shepard, Mineralogy of Orange Co., N. Y., and Sussex, N. J., A. J. S., i, xxi, p. 333. **W.**, Warwick.

Dana's last edition, 1893, of the System of Mineralogy has been taken as the standard of species, but in the case of feldspar and mica, general names not always subdivided by the older writers, they are allowed to stand as species, being not repeated.

*Actinolite.* See Amphibole.

1. **Allanite.** E., D.

*Amianthus.* See Amphibole.

2. **Amphibole.** A., E., W., D., p. 397; B., p. 301; M., S.

*Asbestos* or *Amianthus.* A., Mt. Eve, M.

*Actinolite.* W., F.

*Edenite.* E., S., Breithaupt Handb., p. 558, 1847. B., p. 302; D. Has also been described as Hairbrown Amphibole, Augite, and Pyralolite, see S.

*Pargasite.* E., A., M., D., S. Shepard says it has been called Coccoelite.

*Tremolite.* E., A., M.

3. **Apatite.** A., E., D., B., p. 241; M., S.

4. **Aragonite.** E., B., p. 236; M., S.

5. **Arsenopyrite.** A., E., W., D., R., B., p. 394. Cleveland's Min. 2d Ed., 1822.

*Asbestos.* See Amphibole.

*Augite.* See Pyroxene.

*Boltonite.* See Forsterite.

*Bronzite.* A., S. Probably refers to Seybertite. The name Bronzite was given by J. Finch, A. J. S., xvi, p. 185, 1829.

*Brown spar.* See Dolomite.

- Brucite.* See Chondrodite.  
*Cacholong.* See Opal.
6. **Calcite.** A., D., B., p. 222; M., S.  
*Chalcedony.* See Quartz.
7. **Chalcopyrite.** E., D., B., p. 424.  
*Chlorite.* A chlorite near leuchtenbergite is stated by Tschermak to accompany seybertite—D., p. 639.
8. **Chondrodite.** A., E., W., D., p. 539; B., p. 282; M., M., R. and S. call it brucite. T. Thomson, L., iii, p. 54.  
*Cinnamon stone.* See Garnet.  
*Clintonite.* See Seybertite.  
*Coccolite.* See Pyroxene.
9. **Corundum.** A., W., D., p. 213, S. Also called Sapphire.  
*Crichtonite.* See Ilmenite.
10. **Cyanite.** W., B., p. 365.  
*Diallage.* See Pyroxene.
11. **Dolomite.** W., B., p. 254.  
*Brown spar.* W., D., p. 271. M.  
*Edenite.* See Amphibole.
12. **Epidote.** A., W., D., B., p. 355; M.
13. **Feldspar.** A., E., W., D., p. 320; B., p. 337; M.  
*Labradorite.* W., M. Orthoclase also occurs.
14. **Fluorite.** A., E., D., p. 163; B., p. 245; M., S.
15. **Forsterite.** L., vol. iii, p. 50; B., p. 283.  
 Has been described as *Boltonite*.
16. **Garnet.** A., W., D., p. 447; B., p. 327; M.  
*Grossularite* or *Cinnamon stone.* M., D., p. 446.
17. **Graphite.** A., W., D., p. 7; R., M., S.  
 The last three call it *Plumbago*.  
 See also Finch, A. J. S., xvi, p. 185.
18. **Hematite.** W., A., M., S.  
*Hornblende.* See Amphibole.  
*Idocrase.* See Vesuvianite.
19. **Ilmenite.** W., A., E., D., p. 219; B., p. 432.  
 M., who calls it *Crichtonite*.  
*Iron Sinter.* W., E., D., B., p. 397.  
*Jasper.* See Quartz.  
*Labradorite.* See Feldspar.
20. **Leucopyrite.** W., E., D., B., p. 393; S.
21. **Limonite.** W., M.
22. **Lollingite.** E., D., p. 96.
23. **Magnetite.** A., W., D., B., p. 385; M., S.
24. **Marcasite.** W., D.
25. **Mica.** W., E., D., B., p. 371; M., S. Doubtless includes biotite, phlogopite, and Muscovite, all of which are known.
26. **Molybdenite.** W., D., B., p. 438.

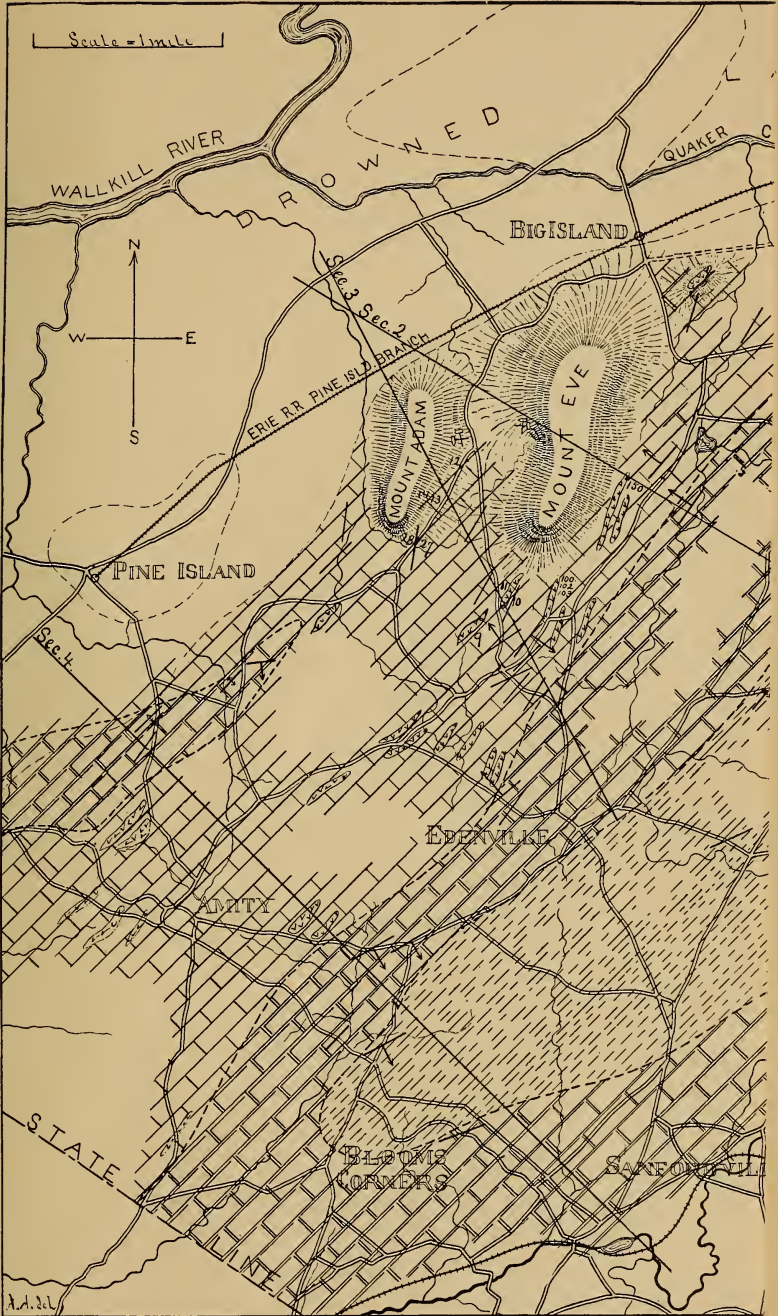
27. **Opal.** W., M., who calls it Cacholong.
28. **Orpiment.** E., D., p. 35; M.  
Small traces on arsenopyrite.  
*Pargasite.* See Amphibole.
29. **Phlogopite.** A., D.  
*Pseudolite.* See Talc.
30. **Pyrite.** W., D., B., p. 389; M., S.
31. **Pyroxene.** W., A., E., D., p. 362; B., p. 293.  
*Augite.* W., E., A., M., F., S.; also G. H. Williams, A. J. S., iii, xxxiv, p. 275, xxxviii, p. 115.  
*Coccolite.* A., W., D., M. Some of this may be Pargasite according to Shephard.  
*Diallage.* A., M.
32. **Quartz.** W., D., p. 183; B., p. 265; M.  
*Chalcedony.* W., M.  
*Jasper.* W.
33. **Rutile.** A., E., W., D., B., p. 429; S.  
*Sapphire.* See Corundum.  
*Scapolite.* See Wernerite.  
*Schiller spar?* A., D., B., p. 312.
34. **Scorodite.** E., D., p. 822; B., p. 396; M.
35. **Serpentine.** A., W., D., p. 673; B., p. 275.  
A. J. S., i, ix, p. 242; S.
36. **Seybertite.** A., W., D., p. 638. Discovered by Finch, Mather, and Horton in 1828, and called *Clintonite* by them in 1843; called *Bronzite* by Finch in 1829, and *Seybertite* by Clemson in 1832. See J. Finch, A. J. S., xvi, p. 185, 1829; and M., p. 467; and Clemson, A. J. S., xxiv, p. 171, 1833; also Ann. and Mines, ii, p. 493, 1832.  
*Chrysophane* (from Amity). Breith. Char., p. 92, 1832.  
*Holmite* (from Amity). Thomson, Rec. Gen. Sci., vol. iii, p. 335, 1836.  
*Sphene.* See Titanite.
37. **Spinel.** A., E., W., D., p. 222; B., p. 316; M., F., S., Thomson, Min., vol. i, p. 214, 1836, Ceylonite.  
*Steatite.* See Talc.
38. **Talc.** A., B., p. 285; M.  
*Steatite* (pseudomorphous). W., D., p. 680.  
*Pseudolite.* A., M. A name first given by F. to Talc from Warwick.
39. **Titanite.** A., E., W., D., B., p. 433; M., S.
40. **Tourmaline.** W., E., A., D., p. 557; B., p. 358; M.  
*Tremolite.* See Amphibole.
41. **Vesuvianite.** A., E., D., M., S.  
*Xanthite.* A. Thomson, L., vol. iii, p. 44, 1828; A. J. S., i, xviii, p. 359; D., p. 479; S.
42. **Warwickite.** E., A., D., p. 881; B., p. 437; M. First described by S., A. J. S., xxxiv, p. 313, 1838; also xxxvi, p. 87, 1839; and xvi, p. 293, 1853; xix, p. 369, 1855; xxxiv, p. 130, 1857.

*Enceladite.* A name given by T. S. Hunt. *Ibid.*, vol. ii, p. 30, 1846, and xi, p. 352, 1851.

43. **Wernerite.** W., A., E., D., p. 47; B., p. 332; M., F., S.

44. **Zircon.** W., A., D., B., p. 379; M., S.

Two species, seybertite and warwickite, and two varieties, edenite and xanthite, have been named from this locality. Clintonite, chrysophane, and holmite, though based on this occurrence, are synonyms of seybertite; pseudolite is a synonym of talc, and enceladite of warwickite.



GEOLOGICAL MAP OF THE VICINITY OF MOUNTS A





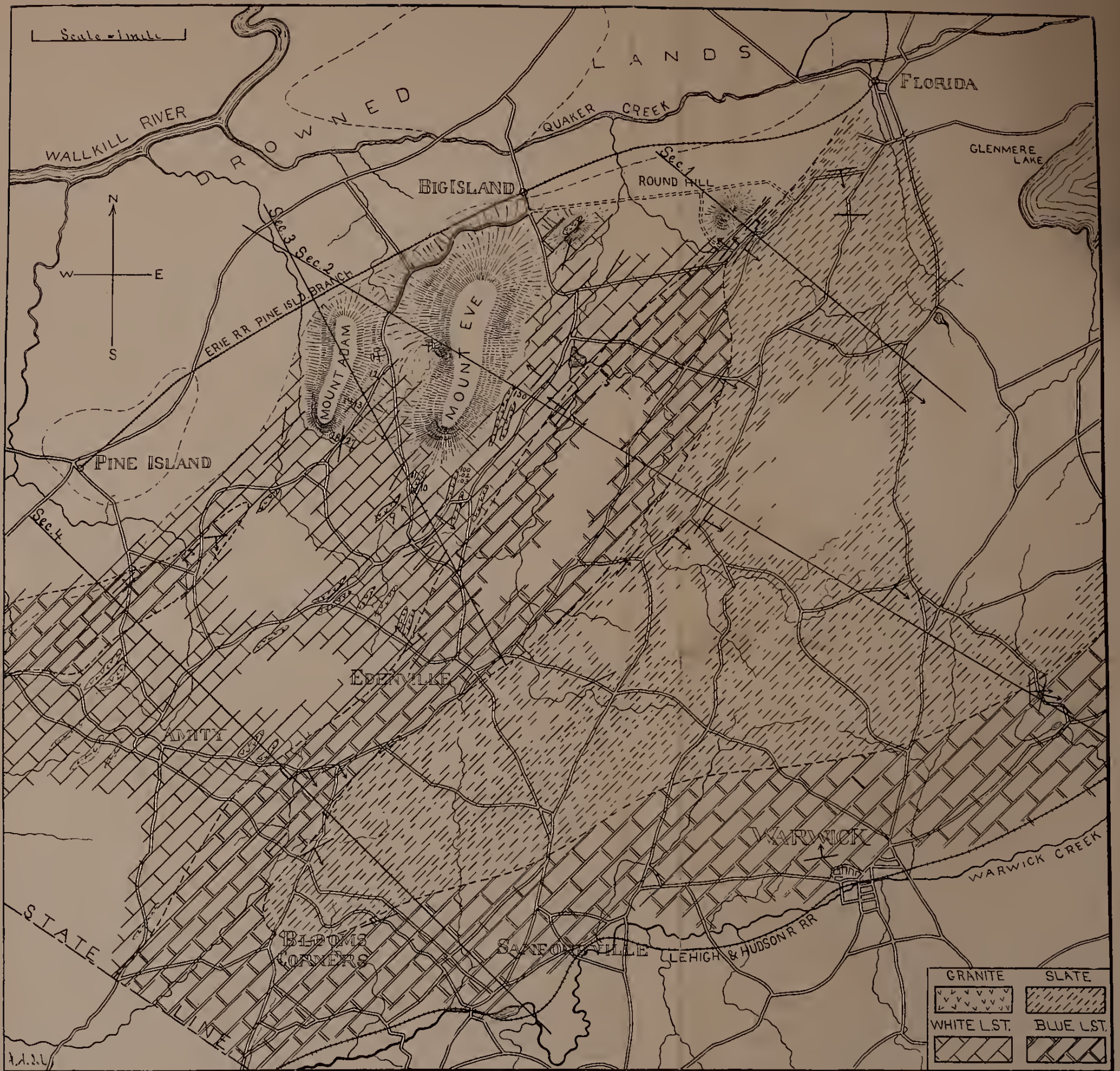
DAM AND EYE, ORANGE CO., N. Y.

## GENERAL INDEX.

The names of groups higher than genera are in SMALL CAPITALS ; names of synonyms and of species assigned to erroneous genera are in *italics*. References to the lists constituting papers I., II., and V. are restricted to generic and higher group names.

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